

## EPD - Beach Water Quality

# Beach Water Quality in Hong Kong 2018

### 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: Beaches adorning Hong Kong's coastline]

### Introduction

Bathing in coastal beaches is a popular leisure activity to local residents and tourists. Each summer, our beaches attract millions of bathers coming to enjoy the sun, the wave and the sand.

The objective of the Environmental Protection Department (EPD)'s Beach Water Quality Monitoring Programme is to monitor beach water quality and protect the health of bathers. This report summarises the beach monitoring data and the corresponding beach grading during the 2018 bathing season, and assesses the annual compliance with the bacteriological Water Quality Objective (WQO) for bathing waters.

[Photo: Beaches energized by bathers]

In 2018, the EPD monitored 41 gazetted beaches and three non-gazetted beaches in different parts of the territory. The gazetted beaches were monitored weekly during the bathing season from March to October, and EPD staff conducted field observations and collected water samples for laboratory analyses of *Escherichia coli* (*E. coli*) as the bacteriological water quality indicator. EPD staff also took *in-situ* measurements of dissolved oxygen, pH, salinity, temperature and turbidity of beach water.

[Photo: EPD staff collecting water samples and measuring field data at beaches on a weekly basis during the bathing season]

[Photo: Analysis of bacteriological water quality at EPD's environmental microbiology laboratory]

Hong Kong adopts a dual rating system to assess beach water quality: annual ranking and weekly grading which are both based on the *E. coli* level in beach water to indicate the suitability of the beaches for swimming. The annual ranking reflects the overall water quality of the beach over the entire bathing season, while the weekly grading traces the recent change in water quality. Under the dual rating system, beaches are categorised into “Good”, “Fair”, “Poor” and “Very Poor”. Beaches with “Good” or “Fair” annual ranking meet the bacteriological WQO for bathing waters.

[Photo: Water quality grading board displayed at the gazetted beaches]

## Annual Beach Ranking in 2018

All 41 gazetted beaches in Hong Kong complied with the bacteriological WQO in 2018. When compared to 2017, the number of beaches ranked as “Good” has increased from 23 (or 56 %) to 26 (or 63 %), and the number of beaches ranked as “Fair” has decreased from 18 (or 44%) to 15 (or 37%). No beach was ranked as “Poor” or “Very Poor” this year.

The overall beach water quality was better in 2018 due to the very dry weather in the year. The cumulative rainfall in the 2018 bathing season was 44% lower than the same period in 2017, and 38% lower than the 1981-2010 climatological normal. Among all months, it was particularly hot and dry in May, with monthly rainfall and number of bright sunshine hours 81% lower and 69% higher, respectively, than the climatological normal.

[Photo: Cafeteria New Beach in Tuen Mun District receiving its very first “Good” annual ranking since 1986]

Despite the fact that the overall water quality remained good, temporary fluctuations could be occasionally observed at individual beaches, especially when the weather condition deteriorated in August and September, such as the heavy rainstorm occasions brought by the Typhoon “Mangkhut” in mid-September. In general, the *E. coli* levels were still within the natural range of fluctuation of the bacteriological water quality, and returned to normal level in days.

Among all 41 gazetted beaches in Hong Kong, the beaches located in the Southern (Hong Kong Island South), Islands and Sai Kung Districts generally received better annual ranking, similar to previous years.

Ten of the 12 beaches in the Southern District were ranked as “Good”. Rocky Bay Beach has changed from “Good” to “Fair”, while Big Wave Bay Beach continued to be ranked as “Fair” for the third consecutive year. Among the nine beaches in the Islands District, Pui O Beach has improved ranking from “Fair” to “Good”, on par seven other beaches in the District. Silver Mine Bay Beach, on the other hand, continued to receive a “Fair” ranking. In the Sai Kung District, as Silverstrand Beach received an improved ranking from “Fair” to “Good”, all six beaches were ranked as “Good”.

[Photo: Silver Mine Bay Beach closed in 2017 for execution of improvement works and reopened in mid-2018.]

All eight beaches in the Tsuen Wan District remained to receive a “Fair” ranking. Of the six beaches in the Tuen Mun District, four received a “Fair” ranking as in last year, while Cafeteria New Beach and Golden Beach has improved from “Fair” to “Good” for the very first time since monitoring started.

[Photo: Approach Beach meeting the bacteriological Water Quality Objective for bathing waters for the ninth consecutive year]

The water quality of Tsuen Wan beaches continued to be satisfactory after the commissioning of Harbour Area Treatment Scheme Stage 2A in December 2015. The seven beaches along Castle Peak Road had once been closed due to poor water quality before 2010. Since the completion of sewerage works along Castle Peak Road in the beach hinterland and the commissioning of the Advanced Disinfection Facilities of the Harbour Area Treatment Scheme in March 2010, the water quality of these seven beaches has improved and met the bacteriological WQO for bathing waters. This has led to the gradual re-opening of all these beaches during 2011 – 2014.

EPD also monitored three non-gazetted beaches: Discovery Bay (a popular beach in Lantau Island), New Kiu Tsui (a sandy beach adjacent to Kiu Tsui Beach in Sai Kung), and Lung Mei (a planned artificial beach in Tai Po). In 2018, Discovery Bay and New Kiu Tsui Beach continued to receive a “Good” ranking. Lung Mei received its first “Good” ranking since its monitoring started. Most of the village houses in the Lung Mei area have been connected to the public sewerage network, and the remaining connection work is still ongoing. Together with the pollution abatement measures, considerable improvement in water quality at Lung Mei has been observed, and is expected to continue.

### **Weekly Beach Grading in 2018**

To make the public aware of the latest beach water quality, the EPD issues the latest grading of all open beaches through weekly press releases, EPD's website, the beach enquiry hotline, GeoInfo Map of the GovHK website and noticeboards at the beaches.

In 2018, the ten beaches in the Southern District had decent water quality in their open period in general, and received mostly “Good” or “Fair” grading over the bathing season. Four beaches, i.e. Chung Hom Kok Beach, Repulse Bay Beach, South Bay Beach and Turtle Cove Beach, achieved 100% “Good” grading. Shek O Beach however had once changed to “Very Poor” in mid-June after heavy rain.

The general cleanliness of beaches in the Islands District could be reflected by their weekly grading distribution. Cheung Chau Tung Wan Beach, Hung Shing Yeh Beach, Lo So Shing Beach, Tong Fuk Beach and Upper Cheung Sha Beach, a total of five beaches received “Good” grading for the entire bathing season, in which Upper Cheung Sha Beach has already maintained the “Good” record for four consecutive years. Only Kwun Yam Beach was once rated as “Very Poor” in early July after rainfall. Upon reopening of Silver Mine Bay Beach in mid-July 2018 after completion of the improvement works, the beach was largely graded as “Fair”.

[Photo: Upper Cheung Sha Beach achieving 100% “Good” weekly grading for four consecutive years]

Beaches in the Sai Kung District continued to enjoy fine water quality. Hap Mun Bay Beach, Trio Beach and Kiu Tsui Beach achieved “Good” grading 100%, 97% and 92% of the occasions in this bathing season. Both Clear Water Bay First Beach and Silverstrand Beach changed to “Very Poor” once in September due to antecedent rainfall.

Most of the beaches in Tuen Mun District had better water quality when compared to last year, and usually received “Good” or “Fair” weekly grading. Butterfly Beach and Kadoorie Beach received a “Very Poor” grading in the first half of the bathing season after heavy downpours.

[Photo: Golden Beach receiving “Good” grading for more than a half of the 2018 bathing season]

Water quality of Tsuen Wan beaches continued to be stable. For most of the time the beaches were graded as “Fair”, and occasionally changed to “Good” or “Poor”. Anglers’ Beach, Ma Wan Tung Wan Beach and Ting Kau Beach were rated as “Very Poor” one to three times, mostly associated with rainfall.

### Water Quality Trend

For the last nine years, Hong Kong beach water quality has been able to fully comply with the bacteriological WQO, and suitable for swimming. The WQO compliance rate had changed from 74% in 1986 (29 of 39 beaches) to 63% (26 of 41 beaches) in 1997, and then had achieved 100% (all 41 beaches) since 2010.

### Comparison of annual beach ranking of gazetted beaches in 1986, 1997 and 2018

Year	WQO Compliant		WQO Non-compliant	
	Good	Fair	Poor	Very Poor
<b>1986</b>	23.1% (9)	51.3% (20)	17.9% (7)	7.7% (3)
<b>1997</b>	24.4% (10)	39.0% (16)	29.3% (12)	7.3% (3)
<b>2018</b>	63.4% (26)	36.6% (15)	-	-

( ) No. of beaches

Note: Two beaches degazetted in 1995 were excluded from all the statistics above.

Looking back to the 1980s, many beaches were closed (e.g. Cafeteria Old Beach, Castle Peak Beach and Silver Mine Bay Beach) or on the verge of being closed (e.g. Middle Bay Beach and Repulse Bay Beach) due to poor water quality. There was a further drop in compliance rate in the mid-1990s due to population growth particularly in the new town areas. In the last decade, there has been progressive improvement in beach water quality which could be attributed to various proactive pollution abatement measures, including enforcement of environmental legislation, extension of the sewerage network and provision of new sewage treatment facilities across the territory including the beach hinterland, as well as implementation of the Harbour Area Treatment Scheme. Major improvement measures implemented in the past are summarized in the following table.

<b>Major improvement measures for the beaches since the implementation of beach water quality monitoring programme in 1986</b>	
<b>1986 – 1990</b>	<b>Beaches with Water Quality Improvement</b>
Implementation of the Livestock Waste Control Scheme under the Waste Disposal (Livestock Waste) Regulation.	Most beaches, particularly Silver Mine Bay Beach
Declaration of the Southern Water Control Zone (WCZ) under the Water Pollution Control Ordinance (WPCO) for legislative enforcement.	Southern beaches
Interception and diversion of polluted storm drains at beaches in Southern District.	Southern beaches
<b>1991- 1995</b>	
Implementation of chemical waste control.	All beaches
Declaration of the North Western WCZ under the WPCO for legislative enforcement.	Tuen Mun beaches
Diversion of polluted storm water drains away from Castle Peak Beach.	Castle Peak Beach
Provision of public sewers for So Kwun Wat and Sam Shing Estate.	Tuen Mun Beaches
Commissioning of Stanley Sewage Treatment Works (STW).	Stanley Main Beach
<b>1996 - 2000</b>	
Full implementation of the 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.	Shek O Beach
Completion of all major works under Southern Sewerage Master Plan.	Southern beaches
Commissioning of the new 2 km long Pillar Point sewage submarine outfall.	Tuen Mun beaches
<b>2001 - 2005</b>	
Completion of Harbour Area Treatment Scheme Stage 1.	Big Wave Bay, Shek O, Rocky Bay Beaches
Provision of public sewers in the Silverstrand area.	Silverstrand Beach
Full operation of the Sham Tseng STW.	Beaches along the Tsuen Wan coast
<b>2006 - 2018</b>	
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
Full scale commissioning of all facilities of the Harbour Area Treatment Scheme (HATS) Stage 2A.	Beaches along the Tsuen Wan coast

All of Hong Kong's gazetted beaches have now achieved the required standard for swimming for the ninth consecutive year. EPD will continue to closely monitor the beach water quality to support water quality management policy and as reference for beach users.

### **Compliance with WQO at gazetted beaches during 1997 – 2018**

[Figure: Compliance with WQO at gazetted beaches during 1997 - 2018]

Water quality trend lines of gazetted beaches over the last 33 years are provided in this report. More in-depth background and details of the beach monitoring programme are available at the beach water quality thematic website (<https://www.epd.gov.hk/epd/beach>), which also provides access to the annual beach water quality reports and data published since 2000.

[Photos: Family fun]

## The Monitoring Programme

### 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 Mej**
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	
Hairpin		Approach		Hung Shing Yeh	
Turtle Cove				Lo So Shing	
Shek O				Discovery Bay**	
Rocky Bay					
Big Wave Bay					

\*\* Non-gazetted beaches

### Beach monitoring frequency

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

\* March to October

### Overview of various stages of the Beach Monitoring Programme

[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

## **The 2018 Findings**

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**2018 Annual ranking and bathing season geometric mean *E. coli* levels of Hong Kong's gazetted beaches**

<b>Annual Ranking</b>	<b>Beach</b>	<b><i>E. coli</i> (counts/100ml)</b>
<b>Good</b>	South Bay	2
	Hap Mun Bay	3
	Turtle Cove	3
	Chung Hom Kok	4
	Hung Shing Yeh	4
	Lo So Shing	4
	Repulse Bay	4
	St. Stephen's	4
	Tong Fuk	4
	Upper Cheung Sha	4
	Trio	7
	Hairpin*	8
	Kiu Tsui	8
	Kwun Yam	8
	Cheung Chau Tung Wan	9
	Lower Cheung Sha	9
	Middle Bay	9
	Deep Water Bay	11
	Stanley Main	11
	Clear Water Bay Second	13
	Cafeteria New	18
	Clear Water Bay First	19
	Pui O	19
Shek O	19	
Golden	22	
Silverstrand	24	
<b>Fair</b>	Kadoorie	28
	Rocky Bay*	29
	Cafeteria Old	30
	Big Wave Bay	34
	Silver Mine Bay**	36
	Butterfly	39
	Castle Peak	70
	Ma Wan Tung Wan	74
	Lido	76
	Approach	92
	Hoi Mei Wan	92
	Casam	94
	Ting Kau	101
	Geminies*	120
	Anglers'	143

\*Beaches not open for swimming (no lifeguard service)

\*\*Reopened on 18 July 2018 after completion of improvement works

## Annual ranking of gazetted beaches at a glance in 2018

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

\*Beaches not open for swimming (no lifeguard service)

\*\*Reopened on 18 July 2018 after completion of improvement works

**Weekly beach grading summary of open gazetted beaches by district in 2018**

District	Percentage of Weekly Gradings				Total no. of Grading Occasions
	Grade 1	Grade 2	Grade 3	Grade 4	
<b>Southern</b>	81%	17%	1%	0%	351
<b>Sai Kung</b>	74%	24%	0%	1%	215
<b>Tsuen Wan</b>	8%	66%	24%	2%	257
<b>Tuen Mun</b>	35%	59%	5%	1%	212
<b>Islands</b>	89%	10%	0%	0%	289

Note: Figures may not add up to 100% due to roundings

### Annual ranking and weekly grading summary - Southern District beaches

Beach	Annual Ranking	Percentage of Weekly Gradings			
		Grade 1	Grade 2	Grade 3	Grade 4
<b>Big Wave Bay</b>	Fair	34 %	54 %	11 %	0 %
<b>Chung Hom Kok</b>	Good	100 %	0 %	0 %	0 %
<b>Deep Water Bay</b>	Good	77 %	23 %	0 %	0 %
<b>Hairpin *</b>	Good	86 %	14 %	0 %	0 %
<b>Middle Bay</b>	Good	83 %	17 %	0 %	0 %
<b>Repulse Bay</b>	Good	100 %	0 %	0 %	0 %
<b>Rocky Bay *</b>	Fair	40 %	60 %	0 %	0 %
<b>Shek O</b>	Good	56 %	42 %	0 %	3 %
<b>South Bay</b>	Good	100 %	0 %	0 %	0 %
<b>St. Stephen's</b>	Good	97 %	3 %	0 %	0 %
<b>Stanley Main</b>	Good	66 %	34 %	0 %	0 %
<b>Turtle Cove</b>	Good	100 %	0 %	0 %	0 %

Note: Figures may not add up to 100% due to roundings

\* Beaches not open for swimming (no lifeguard service)

## Annual ranking and weekly grading summary - Sai Kung District beaches

Beach	Annual Ranking	Percentage of Weekly Gradings			
		Grade 1	Grade 2	Grade 3	Grade 4
<b>Clear Water Bay First</b>	Good	39 %	58 %	0 %	3 %
<b>Clear Water Bay Second</b>	Good	66 %	31 %	3 %	0 %
<b>Hap Mun Bay</b>	Good	100 %	0 %	0 %	0 %
<b>Kiu Tsui</b>	Good	92 %	8 %	0 %	0 %
<b>Silverstrand</b>	Good	53 %	44 %	0 %	3 %
<b>Trio</b>	Good	97 %	3 %	0 %	0 %

Note: Figures may not add up to 100% due to roundings

## Annual ranking and weekly grading summary - Tsuen Wan District beaches

Beach	Annual Ranking	Percentage of Weekly Gradings			
		Grade 1	Grade 2	Grade 3	Grade 4
<b>Anglers'</b>	Fair	11 %	42 %	39 %	8 %
<b>Approach</b>	Fair	0 %	86 %	14 %	0 %
<b>Casam</b>	Fair	8 %	69 %	22 %	0 %
<b>Gemini *</b>	Fair	8 %	56 %	31 %	6 %
<b>Hoi Mei Wan</b>	Fair	8 %	78 %	14 %	0 %
<b>Lido</b>	Fair	14 %	64 %	22 %	0 %
<b>Ting Kau</b>	Fair	0 %	65 %	32 %	3 %
<b>Ma Wan Tung Wan</b>	Fair	16 %	58 %	21 %	5 %

Note: Figures may not add up to 100% due to roundings

\* Beaches not open for swimming (no lifeguard service)

### Annual ranking and weekly grading summary - Tuen Mun District beaches

Beach	Annual Ranking	Percentage of Weekly Gradings			
		Grade 1	Grade 2	Grade 3	Grade 4
<b>Butterfly</b>	Fair	25 %	67 %	6 %	3 %
<b>Cafeteria New</b>	Good	49 %	51 %	0 %	0 %
<b>Cafeteria Old</b>	Fair	40 %	60 %	0 %	0 %
<b>Castle Peak</b>	Fair	9 %	69 %	23 %	0 %
<b>Golden</b>	Good	57 %	43 %	0 %	0 %
<b>Kadoorie</b>	Fair	33 %	64 %	0 %	3 %

Note: Figures may not add up to 100% due to roundings

### Annual ranking and weekly grading summary - Islands District beaches

Beach	Annual Ranking	Percentage of Weekly Gradings			
		Grade 1	Grade 2	Grade 3	Grade 4
<b>Cheung Chau Tung Wan</b>	Good	100 %	0 %	0 %	0 %
<b>Hung Shing Yeh</b>	Good	100 %	0 %	0 %	0 %
<b>Kwun Yam</b>	Good	94 %	3 %	0 %	3 %
<b>Lo So Shing</b>	Good	100 %	0 %	0 %	0 %
<b>Lower Cheung Sha</b>	Good	97 %	3 %	0 %	0 %
<b>Pui O</b>	Good	66 %	34 %	0 %	0 %
<b>Silver Mine Bay*</b>	Fair	0 %	94 %	6 %	0 %
<b>Tong Fuk</b>	Good	100 %	0 %	0 %	0 %
<b>Upper Cheung Sha</b>	Good	100 %	0 %	0 %	0 %

Note: Figures may not add up to 100% due to roundings

\* Reopened on 18 July 2018 after completion of improvement works



### Annual beach rankings of gazetted beaches from 1986 to 2018

Year	Number of Beaches in Each Rank				Total
	Good	Fair	Poor	Very Poor	
1986	9	20	7	3	39
1987	5	21	9	5	40
1988	7	19	7	7	40
1989	13	18	7	2	40
1990	14	19	5	2	40
1991	17	14	7	2	40
1992	16	14	7	3	40
1993	15	12	10	3	40
1994	13	14	11	2	40
1995	14	10	13	4	41
1996	13	14	10	4	41
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
2011	31	10	0	0	41
2012	23	18	0	0	41
2013	24	17	0	0	41
2014	23	18	0	0	41
2015	25	16	0	0	41
2016	18	23	0	0	41
2017	23	18	0	0	41
2018	26	15	0	0	41

Note: Two beaches degazetted in 1995 were excluded from all the statistics above

## Comparison of annual beach ranking of gazetted beaches in 1986 and 2018

Year	WQO Compliant		WQO Non-compliant	
	Good	Fair	Poor	Very Poor
<b>1986</b>	23.1% (9)	51.3% (20)	17.9% (7)	7.7% (3)
<b>2018</b>	63.4% (26)	36.6% (15)	0% (0)	0% (0)

( ) No. of beaches

Note: Two beaches degazetted in 1995 were excluded from all the statistics above

### Annual geometric mean *E. coli* levels of gazetted beaches by district, 1997 - 2018

Year	Southern	Sai Kung	Tsuen Wan	Tuen Mun	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
2011	7	5	25	34	7
2012	11	10	50	47	8
2013	12	15	85	54	11
2014	12	13	76	44	12
2015	14	8	70	45	10
2016	17	18	57	66	16
2017	9	11	51	46	12
2018	8	10	97	31	8

Note: Annual geometric mean *E.coli* levels calculated based on all the data collected between March and October

Annual geometric mean *E. coli* levels (1997 - 2018)

Beach																						
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
<b>Southern District</b>																						
Big Wave Bay	179	114	77	98	106	23	33	26	101	50	17	31	46	149	17	31	21	40	21	78	36	34
Chung Hom Kok	22	40	14	8	15	13	14	9	13	10	9	13	14	9	5	5	8	13	13	6	6	4
Deep Water Bay	55	46	14	16	18	9	9	7	8	7	7	9	12	9	6	9	11	14	19	24	14	11
Hairpin	44	72	17	18	10	6	7	7	13*	11*	19*	10*	12*	33*	6*	9*	14*	12*	8*	17*	5*	8*
Middle Bay	40	16	11	11	8	9	14	12	20	18	9	11	12	12	6	15	14	13	13	20	14	9
Repulse Bay	23	11	8	9	13	9	12	4	8	12	7	14	11	7	6	7	10	11	14	10	5	4
Rocky Bay	399*	223*	72*	80*	118*	43*	28*	19*	30*	33*	17*	15*	13*	50*	23*	30*	22*	16*	35*	47*	18*	29*
Shek O	102	70	32	29	31	13	11	16	19	24	18	22	11	19	11	16	15	18	29	26	16	19
South Bay	17	6	4	7	5	5	11	9	7	7	5	5	4	4	4	5	4	5	9	5	3	2
St. Stephen's	40	26	11	6	7	5	9	4	12	11	6	9	6	4	4	4	10	5	6	7	4	4
Stanley Main	72	24	13	12	9	8	6	5	7	10	9	10	13	20	6	34	19	9	20	23	8	11
Turtle Cove	40	14	12	11	15	8	4	5	8	7	5	5	5	8	4	6	6	8	5	11	5	3
<b>Sai Kung District</b>																						
Clear Water Bay First	62	41	11	16	28	28	17	9	16	20	14	11	15	10	7	8	24	15	14	31	20	19
Clear Water Bay Second	66	44	12	26	22	14	21	10	19	13	9	19	27	13	5	18	15	18	17	32	16	13
Hap Mun Bay	3	2	2	2	1	2	4	3	4	4	3	5	3	3	2	2	7	4	2	4	3	3
Kiu Tsui	5	4	4	5	5	4	5	17	14	11	6	13	16	13	9	10	13	11	6	10	5	8
Silverstrand	148	99	32	61	100	133	97	74	67	30	33	35	51	28	18	30	39	40	18	63	56	24
Trio	30	21	17	10	12	6	10	2	6	5	2	12	5	6	2	9	8	10	4	13	7	7
<b>Tsuen Wan District</b>																						
Anglers'	691*	502*	442*	326*	621*	1169*	693*	619*	895*	772*	496*	510*	276*	134*	27*	69*	133	130	77	76	45	143
Approach	1009*	435*	387*	316*	411*	696*	762*	470*	663*	599*	352*	251*	208*	124*	59	83	106	121	143	78	114	92
Casam	609	239	231	209	233	741	702*	594*	716*	426*	305*	289*	144*	102*	21	50	71	63	52	42	43	94
Gemini	458	399	350	258	323	1155	875*	1102*	1042*	853*	566*	481*	410*	137*	19*	40*	135*	110*	56*	40*	39*	120*
Hoi Mei Wan	471	280	109	177	199	547	442*	287*	641*	308*	286*	271*	130*	87*	23	51	86	58	90	65	63	92
Lido	600	262	231	181	269	683	734*	523*	782*	459*	280*	296*	178*	87*	21	32	53	57	52	39	34	76
Ma Wan Tung Wan	110	92	51	39	133	201	159	101	132	171	78	53	60	17	10	24	41	31	20	32	29	74
Ting Kau	1583*	1045*	515*	593*	739*	742*	831*	412*	512*	469*	405*	258*	145*	141*	58*	88*	107*	89	151	140	75	101
<b>Tuen Mun District</b>																						
Butterfly	259	121	44	61	74	60	74	55	55	94	84	56	49	30	41	42	71	38	98	131	81	39
Cafeteria New	309	100	60	51	104	62	80	54	70	120	68	48	38	31	27	47	50	31	30	38	31	18
Cafeteria Old	435	138	58	57	125	74	76	61	81	150	67	45	46	34	29	48	39	45	41	70	50	30
Castle Peak	332*	199*	57*	58*	105*	58*	64*	80*	90	139	64	47	35	63	49	48	78	91	71	106	65	70
Golden Beach	352	98	44	50	87	66	84	46	62	117	87	63	42	37	26	62	45	39	31	45	37	22
Kadoorie	290	130	109	68	120	114	160	98	117	118	101	87	48	45	37	40	52	37	29	48	31	28
<b>Islands District</b>																						
Cheung Chau Tung Wan	24	19	11	12	16	17	11	12	14	37	21	15	17	12	6	13	10	14	19	9	18	9
Hung Shing Yeh	5	3	3	5	6	2	5	4	4	4	6	4	6	4	3	4	4	5	4	6	5	4
Kwun Yam	32	21	6	10	11	9	7	5	10	13	9	10	9	8	5	5	9	8	12	12	9	8
Lo So Shing	3	2	4	2	5	2	3	2	3	4	3	5	7	3	3	4	5	5	4	6	6	4
Lower Cheung Sha	85	23	10	12	22	10	14	7	12	11	12	20	13	11	9	10	17	21	17	47	19	9
Pui O	36	16	10	10	17	10	15	9	10	16	30	24	12	14	13	22	51	60	24	29	34	19
Silver Mine Bay	481	123	39	50	67	42	50	14	34	52	22	43	45	31	28	38	39	51	59	119	141*	36
Tong Fuk	14	10	4	5	6	4	3	4	5	5	4	10	5	5	4	4	7	4	4	9	3	4
Upper Cheung Sha	8	3	2	3	5	3	3	3	3	4	4	7	5	4	3	4	4	5	3	7	3	4

Note:

\* Beach not open for swimming that year

## 2018 Beach visitor number

Beach	Daily Average		Peak Day	Peak Month	Total
	Weekdays	Weekends & Public Holidays			
<b>Southern District</b>					
Big Wave Bay	312	1026	2500	18680	107760
Chung Hom Kok	110	618	2200	10580	54390
Deep Water Bay	877	5170	17000	106150	449200
Hairpin	127	251	400	6670	33250
Middle Bay	145	276	450	6510	37260
Repulse Bay	11603	13860	32000	408050	2453370
Rocky Bay	---	---	---	---	---
Shek O	2521	7308	25000	195900	808100
South Bay	92	430	900	9400	39910
St. Stephen's	244	419	800	13800	59700
Stanley Main	617	2900	17400	68980	268880
Turtle Cove	56	435	1400	7920	35400
<b>Sai Kung District</b>					
Clear Water Bay First	149	667	1920	15460	62835
Clear Water Bay Second	2395	4460	22000	202000	608780
Hap Mun Bay	338	1347	5300	41100	129470
Kiu Tsui	507	818	1910	35000	118170
Silverstrand	131	689	4240	17480	61720
Trio	170	601	2600	15170	61050
<b>Tsuen Wan District</b>					
Anglers'	480	1707	3520	36410	174090
Approach	142	562	890	9500	55070
Casam	105	183	360	4990	25810
Gemini	82	178	360	5050	22420
Hoi Mei Wan	20	56	190	1130	6270
Lido	35	138	670	3340	13540
Ma Wan Tung Wan	375	830	1720	21240	103750
Ting Kau	131	335	1190	7300	39150
<b>Tuen Mun District</b>					
Butterfly	791	1456	2100	36350	199950
Cafeteria New	979	1780	3600	66550	246020
Cafeteria Old	1011	1434	1990	40900	228290
Castle Peak	512	1072	1820	22780	137775
Golden	1950	4691	7600	105600	563450
Kadoorie	665	830	1400	31050	142950
<b>Islands District</b>					
Cheung Chau Tung Wan	489	2320	4100	46000	214480
Hung Shing Yeh	646	962	2600	39970	148830
Kwun Yam	192	602	1200	14700	64510
Lo So Shing	175	309	480	9410	43340
Lower Cheung Sha	367	1403	2500	31500	139300
Pui O	1190	2925	8050	88180	347830
Silver Mine Bay	419	1037	2650	16615	35635
Tong Fuk	336	627	2000	26500	85440
Upper Cheung Sha	520	786	1600	29330	120450

Note: Information provided by the Leisure and Cultural Services Department

**Physicochemical water quality data for gazetted beaches, 2018**

Beach Name	pH	Salinity (psu) <sup>1</sup>	Turbidity (NTU) <sup>2</sup>	Temperature (°C)	Dissolved Oxygen (mg/L) (% Saturation)	
<b>Southern District</b>						
Big Wave Bay Beach	8.26 (8.04 - 8.43)	30.1 (20.7 - 33.9)	4.06 (1.04 - 13.10)	26.3 (17.5 - 30.2)	6.8 (5.6 - 8.6)	99 (81 - 111)
Chung Hom Kok Beach	8.30 (8.13 - 8.61)	30.5 (26.1 - 33.7)	3.15 (0.80 - 8.16)	26.8 (18.7 - 32.4)	6.6 (5.3 - 8.1)	97 (81 - 126)
Deep Water Bay Beach	8.26 (8.02 - 8.58)	29.5 (22.5 - 33.6)	3.91 (0.77 - 16.60)	27.1 (19.4 - 32.3)	7.0 (5.3 - 9.9)	101 (72 - 130)
Hairpin Beach *	8.29 (8.19 - 8.50)	30.5 (26.1 - 33.7)	1.74 (0.64 - 4.86)	27.0 (18.2 - 32.8)	6.8 (5.3 - 8.8)	101 (83 - 122)
Middle Bay Beach	8.29 (8.11 - 8.51)	29.9 (23.4 - 33.6)	4.36 (0.78 - 10.40)	26.7 (18.7 - 31.7)	6.7 (5.1 - 9.1)	97 (80 - 130)
Repulse Bay Beach	8.30 (8.13 - 8.63)	30.6 (25.8 - 33.7)	4.24 (1.16 - 23.30)	26.7 (18.3 - 32.2)	6.8 (5.3 - 8.6)	98 (79 - 125)
Rocky Bay Beach *	8.22 (8.02 - 8.36)	30.7 (22.3 - 33.5)	3.46 (1.05 - 13.40)	26.0 (17.5 - 31.3)	6.6 (5.3 - 9.1)	95 (81 - 113)
Shek O Beach	8.28 (8.15 - 8.49)	31.2 (26.1 - 33.8)	3.95 (1.02 - 10.40)	26.2 (17.5 - 31.2)	6.7 (5.7 - 8.7)	97 (85 - 117)
South Bay Beach	8.29 (8.11 - 8.61)	30.5 (25.7 - 33.6)	2.79 (0.52 - 7.62)	26.7 (18.5 - 32.2)	6.6 (5.3 - 8.8)	96 (79 - 129)
St. Stephen's Beach	8.27 (8.08 - 8.56)	30.5 (25.3 - 33.7)	2.44 (0.83 - 4.33)	26.8 (18.3 - 32.2)	6.7 (5.3 - 8.3)	97 (80 - 129)
Stanley Main Beach	8.30 (8.17 - 8.61)	30.1 (24.6 - 33.8)	3.34 (1.16 - 14.50)	27.0 (18.4 - 32.0)	6.9 (5.8 - 8.4)	101 (90 - 126)
Turtle Cove Beach	8.31 (8.18 - 8.64)	30.2 (22.7 - 33.8)	3.99 (1.02 - 11.80)	27.0 (18.2 - 33.1)	6.9 (5.6 - 9.3)	101 (83 - 130)
<b>Sai Kung District</b>						
Clear Water Bay First Beach	8.32 (8.22 - 8.45)	30.3 (22.7 - 33.5)	5.54 (0.87 - 17.20)	27.2 (18.6 - 32.3)	6.7 (5.2 - 8.0)	97 (78 - 117)
Clear Water Bay Second Beach	8.31 (8.15 - 8.44)	31.1 (25.9 - 33.9)	6.22 (1.54 - 17.40)	27.4 (19.6 - 32.4)	6.5 (5.0 - 7.9)	94 (75 - 110)
Hap Mun Bay Beach	8.30 (8.19 - 8.46)	31.6 (27.6 - 33.9)	3.41 (0.69 - 13.40)	27.3 (18.9 - 31.1)	6.7 (5.5 - 8.4)	99 (84 - 130)
Kiu Tsui Beach	8.27 (7.94 - 8.44)	31.2 (25.5 - 33.9)	3.11 (0.52 - 17.90)	27.3 (19.3 - 31.8)	6.6 (5.2 - 8.6)	98 (83 - 130)
Silverstrand Beach	8.32 (8.17 - 8.45)	30.1 (23.9 - 33.1)	5.10 (0.81 - 26.90)	27.0 (19.4 - 31.3)	6.5 (4.1 - 8.5)	94 (60 - 114)
Trio Beach	8.26 (8.08 - 8.40)	30.0 (22.4 - 33.7)	3.31 (0.79 - 17.60)	27.6 (19.6 - 31.9)	6.5 (5.1 - 8.6)	97 (79 - 126)
<b>Tsuen Wan District</b>						
Anglers' Beach	8.13 (7.94 - 8.30)	27.7 (14.3 - 32.1)	4.68 (1.25 - 14.10)	26.5 (18.3 - 31.4)	6.5 (5.0 - 9.8)	93 (69 - 130)
Approach Beach	8.15 (7.92 - 8.37)	27.3 (18.1 - 31.7)	5.05 (1.86 - 19.80)	26.4 (19.0 - 30.8)	6.5 (4.9 - 8.6)	93 (69 - 114)
Casam Beach	8.15 (7.96 - 8.29)	27.8 (19.5 - 31.9)	3.67 (1.61 - 7.65)	26.4 (19.0 - 31.2)	6.5 (5.3 - 8.0)	93 (67 - 115)
Gemini Beaches *	8.11 (7.91 - 8.30)	28.1 (14.9 - 32.1)	3.86 (1.13 - 11.30)	26.4 (18.3 - 30.6)	6.5 (5.2 - 8.0)	92 (78 - 105)
Hoi Mei Wan Beach	8.12 (7.94 - 8.34)	27.5 (19.1 - 31.9)	3.16 (0.95 - 10.30)	26.5 (19.5 - 30.0)	6.3 (4.8 - 8.0)	91 (73 - 118)
Lido Beach	8.13 (7.95 - 8.32)	27.8 (19.3 - 31.7)	4.14 (1.21 - 13.60)	26.5 (18.8 - 31.0)	6.4 (5.2 - 7.8)	91 (72 - 112)
Ma Wan Tung Wan Beach	8.12 (7.94 - 8.28)	28.9 (22.4 - 32.3)	6.93 (2.31 - 30.50)	26.4 (18.3 - 30.1)	6.5 (5.1 - 10.0)	94 (75 - 120)
Ting Kau Beach	8.15 (7.93 - 8.32)	27.0 (18.3 - 31.7)	3.87 (1.59 - 13.90)	26.5 (18.7 - 30.8)	6.4 (5.0 - 7.8)	92 (65 - 108)
<b>Tuen Mun District</b>						
Butterfly Beach	8.13 (7.90 - 8.40)	25.1 (14.5 - 31.2)	6.22 (1.53 - 12.50)	27.5 (20.4 - 31.4)	6.4 (5.0 - 8.2)	93 (74 - 109)
Cafeteria New Beach	8.13 (7.99 - 8.32)	24.6 (12.7 - 31.2)	6.79 (2.63 - 17.40)	27.3 (19.7 - 31.1)	6.5 (4.9 - 7.9)	92 (75 - 108)
Cafeteria Old Beach	8.12 (7.97 - 8.36)	24.5 (12.5 - 31.2)	7.09 (2.02 - 18.90)	27.2 (19.7 - 31.2)	6.5 (4.7 - 8.0)	92 (70 - 108)
Castle Peak Beach	8.12 (7.69 - 8.49)	23.7 (10.6 - 31.2)	5.49 (3.07 - 14.10)	27.6 (20.3 - 31.1)	6.8 (4.7 - 8.8)	99 (70 - 129)
Golden Beach	8.12 (7.95 - 8.29)	24.7 (12.5 - 31.2)	7.50 (3.47 - 16.90)	27.3 (19.5 - 30.7)	6.5 (4.8 - 8.6)	93 (73 - 115)
Kadoorie Beach	8.13 (7.95 - 8.40)	24.1 (12.9 - 31.3)	5.68 (2.52 - 11.50)	27.4 (19.9 - 31.6)	6.5 (4.9 - 8.1)	93 (73 - 109)

**Islands District**

Cheung Chau Tung Wan Beach	8.20 ( 8.03 - 8.38 )	29.2 ( 25.1 - 32.2 )	3.53 ( 1.28 - 7.83 )	26.8 ( 18.6 - 31.4 )	6.8 ( 5.0 - 8.6 )	97 ( 76 - 129 )
Hung Shing Yeh Beach	8.24 ( 8.10 - 8.49 )	29.5 ( 19.1 - 33.6 )	6.07 ( 1.31 - 18.50 )	26.8 ( 18.5 - 31.8 )	6.8 ( 5.3 - 9.8 )	97 ( 79 - 111 )
Kwun Yam Beach	8.20 ( 7.99 - 8.49 )	28.6 ( 23.8 - 32.0 )	3.06 ( 1.36 - 8.52 )	26.6 ( 18.1 - 31.3 )	7.0 ( 5.0 - 9.6 )	100 ( 76 - 130 )
Lo So Shing Beach	8.27 ( 8.12 - 8.42 )	29.8 ( 23.9 - 33.7 )	4.73 ( 1.33 - 29.50 )	27.0 ( 18.4 - 31.8 )	6.8 ( 5.9 - 8.9 )	99 ( 80 - 126 )
Lower Cheung Sha Beach	8.30 ( 8.10 - 8.65 )	28.6 ( 20.4 - 32.6 )	11.25 ( 2.06 - 34.40 )	27.7 ( 19.5 - 33.8 )	6.6 ( 5.6 - 7.9 )	95 ( 84 - 103 )
Pui O Beach	8.29 ( 8.11 - 8.50 )	28.2 ( 19.5 - 32.4 )	14.54 ( 4.21 - 54.90 )	28.4 ( 20.1 - 34.5 )	6.6 ( 5.5 - 7.5 )	97 ( 81 - 109 )
Silver Mine Bay Beach	8.19 ( 8.03 - 8.53 )	25.6 ( 13.2 - 31.9 )	9.92 ( 2.76 - 56.90 )	28.2 ( 20.2 - 34.9 )	6.8 ( 4.3 - 8.8 )	97 ( 79 - 127 )
Tong Fuk Beach	8.29 ( 8.12 - 8.61 )	29.0 ( 20.2 - 32.6 )	9.25 ( 1.35 - 32.30 )	27.6 ( 19.5 - 33.4 )	6.4 ( 5.4 - 7.6 )	96 ( 85 - 102 )
Upper Cheung Sha Beach	8.29 ( 8.15 - 8.64 )	28.8 ( 16.7 - 32.7 )	8.42 ( 1.43 - 23.60 )	27.6 ( 19.7 - 32.9 )	6.6 ( 5.0 - 7.8 )	97 ( 85 - 108 )

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

Footnote:

1. Practical Salinity Unit
2. Nephelometric Turbidity Unit

\*Beaches not open for swimming (no lifeguard service)