

WESTERN PORT BEACH WATER QUALITY

SUMMER 2005-06

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SUMMARY

Western Port has many popular swimming beaches, particularly on Phillip Island and the western shores from Flinders to Somers.

During the summer of 2005-06, EPA Victoria commenced a project to gather more information on beach water quality in Western Port.

This project is part of the 'Better Bays and Waterways' water quality improvement plan for Port

Phillip and Western Port, which is supported with funding from the Commonwealth Government.

The project aims to gather a baseline of data to target further investigations and actions for improving water quality.

During the 2005-06 summer period, beach water quality in Western Port was good. These results are similar to historical monitoring in Western Port. This report details the initial results of the project.

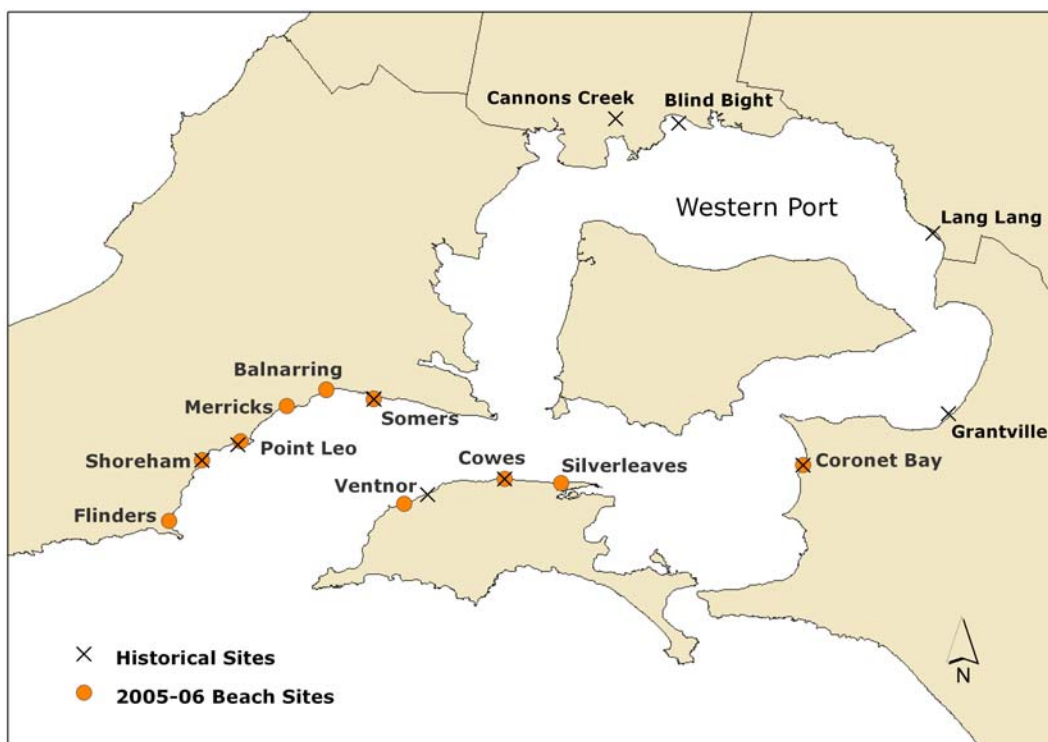


Figure 1: Map of beach sites monitored in Western Port in 2005-06 and historical sites

WHAT DID WE MONITOR?

EPA measures levels of enterococci bacteria to gauge whether the beaches are contaminated by faecal pollution. Enterococci is a group of bacteria found in the intestinal tract of warm-blooded animals. It is internationally recognised as the best indicator of recreational water quality in marine areas. The bacterial indicator *E.coli* was also monitored to allow comparison against historical data.

Further detail on beach sampling methodology is outlined in the EPA publication 1052, *Beach Report 2005–06*.

Water quality objectives

Beach water quality is assessed against the recreational water quality objectives as outlined in the *State Environment Protection Policy (Waters of Victoria) 2003*.

These are a median of 35 enterococci orgs/100mL and a 75th percentile of 150 enterococci orgs/100mL. The Policy also specifies a median objective for *E.coli* of 150 orgs/100mL.

WHERE DID WE MONITOR?

Ten popular swimming beaches were monitored in Western Port (see Figure 1). Three sites were monitored on Phillip Island, a popular holiday spot during summer. Six sites were located along the strip of sandy beaches from Flinders to Somers. One site at was also located on the eastern shore at Coronet Bay.



Figure 2: Shoreham beach, Western Port

All sites were located in the south of the bay because areas in the northern section are not as popular with swimmers due to the large intertidal mudflats.

The focus of Better Bays and Waterways is on the bays of Port Phillip and Western Port, so the surrounding ocean beaches were not monitored as part of this project. Water quality at surf beaches, such as Woolamai and Smiths Beach, is likely to be good due to extensive mixing with oceanic waters (see EPA publication 1054, *West coast beach and estuary water quality summer 2005–06*).

HOW WAS THE WATER?

The sites were monitored on a fortnightly basis from the end of November 2005 to the end of March 2006.

The results indicate that beach water quality in Western Port is good. Appendix 1 shows the monitoring results.

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All sites in Western Port met Policy objectives for the 2005–06 summer period (see Table 1 for enterococci levels and Appendix 2 for *E.coli* levels).

Table 1: Median and 75th percentile enterococci (orgs/100mL) results for Western Port beaches

BEACH	Median	75th percentile
Objective	35	150
Flinders	<10	<10
Shoreham	<10	<10
Point Leo SLSC	<10	<10
Merricks	10	25
Balnarring	10	10
Somers	<10	<10
Coronet Bay	<10	<10
Silverleaves	<10	10
Cowes	10	18
Ventnor	<10	10

The highest recorded level was 292 enterococci/100mL on 6 December at Flinders Beach. There was no recent rain and it is not clear what caused this result. Other results at Flinders were low.

Historical monitoring

In the past EPA has periodically monitored water quality in Western Port. EPA conducted monitoring during the summers of 1987 and 1992. Samples were analysed for *E.coli* bacteria, as this was formerly the recommended indicator for beach water quality.

Similarly to results collected this summer, the historical monitoring shows bacterial levels were mostly good (see Appendix 3). All beach sites in 1987 and 1992 met the *E.coli* Policy objective, except for Grantville.

There were two high records: one at Grantville on 6 February 1992 – which was possibly associated with rainfall – and at Cowes on 19 January 1987. Similar levels were not found in 2005–06. This summer there was no substantial rainfall during or immediately prior to sampling.

Site investigations

EPA has been conducting site inspections as part of sanitary surveys for Western Port monitoring sites. The surveys aim to assist EPA to identify sources of any contamination that may be affecting water quality and assess their significance.

The mostly dry weather during sampling this year means that any possible impact from stormwater inputs could not be assessed (see Appendix 1). Next summer sampling will target rainy days to gauge how stormwater affects beach water quality in Western Port and whether wet weather temporarily reduces water quality in Western Port, as it does in Port Phillip Bay.

CONCLUSIONS

During the 2005–06 summer, water quality at monitoring sites in Western Port was good. All sites met both of the Policy objectives for recreational water quality.

These results are similar to historical monitoring at beaches in Western Port in 1987 and 1992.

Next summer EPA, together with other agencies involved in marine and coastal management, will continue investigating water quality in Westernport as part of the Better Bays and Waterways program.

ACKNOWLEDGEMENTS

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- Life Saving Victoria.
- Department of Human Services.
- Melbourne Water.
- Mornington Peninsula Shire Council.
- Cardinia Shire Council.
- City of Casey.
- Bass Coast Shire Council.

FURTHER INFORMATION

EPA Information Centre

40 City Road, Southbank, Victoria 3006

GPO Box 4395QQ, Melbourne, Victoria 3001

Telephone (03) 9695 2700

Facsimile (03) 9695 2710

www.epa.vic.gov.au

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APPENDICES

APPENDIX 1: 2005–06 enterococci results (orgs/100mL)

BEACH	22/11/05	6/12/05	20/12/05	3/1/06	17/1/06	31/1/06	14/2/06	28/2/06	14/3/06	28/3/06
Flinders	<10	292	<10	<10	<10	<10	31	<10	<10	<10
Shoreham	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Point Leo SLSC	<10	<10	<10	<10	<10	<10	<10	<10	20	<10
Merricks	<10	10	10	30	<10	<10	52	<10	31	<10
Balnarring	<10	<10	20	63	<10	10	10	<10	10	10
Somers	<10	<10	20	<10	<10	<10	<10	<10	<10	<10
Coronet Bay	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Silverleaves	<10	10	<10	86	<10	10	<10	<10	<10	<10
Cowes	<10	<10	20	10	<10	<10	20	10	31	<10
Ventnor	<10	<10	<10	86	<10	10	<10	<10	20	<10

NB:

Blue ≤35 orgs/100mL	Green >35 to ≤150	Yellow >150
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Rainfall (mm) (from 9 am to 9 am on the previous day)

Cerberus	0	0	0	0.4	0.2	0	0	0	0	0
Rhyll	0	0	0	1.8	0	0	0.6	0	0.2	0

APPENDIX 2: 2005–06 *E.coli* Results (orgs/100mL) (Colilert analysis method)

BEACH	22/11/05	6/12/05	20/12/05	3/1/06	17/1/06	31/1/06	14/2/06	28/2/06	14/3/06	28/3/06	Median*
Flinders	10	471	<10	<10	63	<10	10	<10	<10	<10	<10
Shoreham	<10	20	<10	52	<10	41	<10	20	52	31	20
Point Leo SLSC	<10	<10	<10	<10	<10	<10	<10	<10	<10	10	<10
Merricks	20	41	<10	10	<10	<10	31	10	63	<10	10
Balnarring	<10	31	10	146	41	10	216	20	10	98	26
Somers	<10	31	<10	31	31	<10	<10	<10	<10	<10	<10
Coronet Bay	20	41	<10	<10	31	<10	<10	<10	10	<10	<10
Silverleaves	<10	10	<10	110	<10	10	<10	<10	52	<10	<10
Cowes	<10	<10	<10	31	41	10	74	86	203	10	21
Ventnor	<10	63	<10	135	<10	52	74	<10	<10	<10	<10

*The Policy specifies a median objective for *E.coli* of 150 orgs/100mL.

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APPENDIX 3: Historical *E.coli* (orgs/100mL) data (membrane filtration analysis method).

Summer 1987

BEACH	12/1/87	19/1/87	02/2/87	09/2/87	16/2/87	Median
Shoreham	6	12	38	2	52	12
Point Leo SLSC	1	10	10	10	10	10
Somers	10	4	280	1	4	4
Cowes	92	1200	30	30	10	30
Coronet Bay	10	6	14	1	6	6
Ventnor	1	10	30	180	10	10
Cannons Creek	4	180	70	10	20	20
Blind Bight	10	50	10	10	10	10
Grantville	10	70	10	10	30	10
Lang Lang	20	30	10	10	10	10

Rainfall (mm) (from 9 am to 9 am on the previous day)

Cerberus	0.4	0	0	0	0
Devil Bend	0	0	0	0	0
Ventnor	0	0	0	0	0

Summer 1992

BEACH	10/1/92	16/1/92	22/1/92	28/1/92	3/2/92	6/2/92	9/2/92	Median
Shoreham	16	0	74	54	12	-	5	14
Point Leo SLSC	-	10	-	4	14	10	210	10
Somers	16	50	34	35	4	-	8	25
Cowes	40	14	50	0	26	-	144	33
Coronet Bay	2	2	14	7	84	-	2	5
Ventnor	0	16	4	7	92	-	54	12
Cannons Creek	26	8	112	38	161	-	40	39
Blind Bight	-	240	26	6	16	92	170	59
Grantville	-	348	150	49	161	2500	18	156
Lang Lang	-	161	49	11	35	21	54	42

Rainfall (mm) (from 9 am to 9 am on the previous day)

Devil Bend	0.4	0.4	0	0	0	21.2	0
Ventnor	0	2.4	0.4	0.6	0	14	0