

Southern Beaches Recreational Water Quality Annual Report 2025-2026

Prepared By :

Greg Robertson

in accordance with the Public Health Act 1997 and Recreational Water Quality Guidelines - August 2007

(03) 6269 0000
sorell.council@sorell.tas.gov.au
www.sorell.tas.gov.au



Figure 1 Overview of sampling locations in Sorell Council area. More detailed maps provided in Appendix 1

"Sorell Council pays their respects to the traditional and original owners of this land the Mumirimina people, to pay respect to those that have passed before us and to acknowledge today's Tasmanian Aboriginal community who are custodians of this land".

CONTENTS

A NATURAL RECREATIONAL WATER BODIES 4

A-1 NAME AND LOCATION OF NATURAL WATER BODY AND PURPOSE. 4

Table 1 Sorell Council's Location and recreational purpose for the water body use. All sites are primary contact sites.

***Primary contact** refers to activities where people have direct and substantial contact with the water, particularly where the body is immersed and there is a reasonable possibility of swallowing water.*

*R**ecreational Water Quality RWQ Season** = December through to March (Swimming Season).*

A-2 DATE AND TYPE OF SAMPLING UNDERTAKEN AND RESULTS 5

A-3 BEACH SAMPLING -TESTS AND ANALYSES PERFORMED 5

A-3.i MICROBIOLOGICAL TESTING 5

A-3.ii SANITARY SURVEY 5

Table 2 Sanitary survey of all beaches

A-4 RESULTS AND DISCUSSION OF SAMPLING ANALYSIS 7

Table 3 Pearson's r correlation for 2025-2026 summer sampling season

Table 4 list of number of swimming sites from the last five RWQ seasons triggering a retest under the Tasmanian Recreational Water Quality Guidelines by exceeding enterococci >140 MPN 100mL^{-1} (DOH, 2007)

Figure 2 New installed RWQ sign at the Southern end Primrose Beach (Shop).

SANITARY SURVEYS 6

Sanitary surveys were completed at the start of the RWQ swimming season at each site.

Table 5. 95th Hazen percentile figures from previous 5yrs 2021 - 2026

Table 6 Recreational Beaches monitored by Sorell Council. Red denotes Poor quality (>500MPN100mL/1), amber Denotes moderate quality (200-500MPN 100mL-1) and green denotes good water quality (<200MPN 100mL-1).

A-5 SWIMMING BEACH CLASSIFICATION FOR START OF 2025-2026 SWIMMING SEASON (Dec-April). 11

Table 7 Sorell Council Beach classifications based on 2025-2026 summer sampling season.

A-6 NATURAL WATER BODY DISCUSSION ON POTENTIAL SOURCES OF POLLUTION 12

Figure 3 Pollution Sources affecting water bodies

A-7 RECENT ADVANCEMENTS AND SUCCESSFUL PROJECTS WORKING TO MAINTAIN AND IMPROVE RECREATIONAL WATER QUALITY SITES. 13

A-8 NATURAL WATER BODY CONCLUSIONS/RECOMMENDATIONS 13

A-9 REFERENCES 14

GUIDELINES 14

LEGISLATION 14

APPENDICES 15

APPENDIX 1 – COLOUR ATLAS RECREATIONAL WATER SAMPLING SITES 15

Figure 3 Connellys Marsh showing flood extent and stormwater infrastructure

Figure 4 Primrose Sands Beach. Existing and two new sample points and showing flood extent and stormwater infrastructure

Figure 5 Park Beach Carlton showing flood extent and stormwater infrastructure

Figure 6 Red Ochre Beach South showing flood extent and stormwater infrastructure

Figure 7 Red Ochre Beach North showing flood extent and stormwater infrastructure

Figure 8 Tiger Head Beach @ 7th Ave showing flood extent and stormwater infrastructure

Figure 9 McKinly St Beach sewer in red; stormwater in green, flood risk and waterway shown

APPENDIX 2 – SUMMARY OF RECREATIONAL WATER BODY SAMPLING RESULTS 2025-2026 19

Table 8 data results from 2025-2026 summer season. Red denotes a failed water result, amber some contamination and pink minor reading

Table 9 Additional Primrose sample point (Shop end of beach)

APPENDIX 3 - RAINFALL DATA 21

Table 10 Rainfall data taken from Sorell Abattoir's rain gauge manually read by a volunteer Weather Observer. BOM has not quality controlled this rain gauge

APPENDIX 4 - GUIDELINE VALUES FOR MICROBIAL QUALITY OF RECREATIONAL WATERS 22

APPENDIX 5 - CLASSIFICATION MATRIX FOR FAECAL POLLUTION OF RECREATIONAL WATER ENVIRONMENTS. 23

APPENDIX 6 - TASMANIAN RECREATIONAL WATER QUALITY GUIDELINES 24

A Natural Recreation Water Bodies

A -1 NAME AND LOCATION OF NATURAL WATER BODY AND PURPOSE.

Recreational water sampling undertaken by Sorell Council focuses on the broader Southern Beaches area between Connelly's Beach and Midway Point shown in Figure 1. Appendix 1 provides greater detail of all seven sampling locations. The Environmental health Team sample beaches that are considered primary contact beaches with additional secondary contact such as fishing, boating and diving occurring at all sites. Primrose Beach is habitat for the Red Spotted Hand fish currently listed as critically endangered adding greater emphasis on monitoring the recreational water body for human induced pollutants. An additional two sites have been added at Primrose Sands Beach due to the higher than usual bacterial loads recorded over the summer. Investigations have been undertaken by Sorell Council EHO's to attempt to identify sources of contamination. Monitoring results from seepage and groundwater suggests that seepage discharging onto the beach contains contaminants likely associated with septic tank systems in the Carlton Bluff area. The results are consistent with a broader impact, rather than associated with one or several nearby septic tank systems close to the beach.

Red Ochre Beach North and South along with Tiger Head Beach are points where the ocean water is channeled and concentrated into Barilla Bay and Orielton Lagoon, both world renowned RAMSAR wetlands and home to oyster farming activities attached to a worldwide export industry. This highlights the importance of monitoring the recreational water bodies along this coastline due to the multi-faceted layers of public health safety and the unique world class environmental values.

Table 1 Sorell Council's Location and recreational purpose for water body use. All sites are primary contact sites.

Name and location of water body	**Recreational Purpose for water body use**
Connellys Marsh Knights Road	Swimming, Boating, Fishing, Snorkelling
Primrose Sands Beach: Petrel St. Boat Ramp	Swimming, Boating, Fishing, Snorkelling
Primrose Sands Beach: Middle section (NEW)	Swimming, fishing, diving
Primrose Sands Beach: Southern end (Shop) (NEW)	Swimming, fishing, diving
Park Beach: Park Beach Road Dodges Ferry	Swimming, Surfing, Fishing
Red Ochre South: Parnella Road Dodges Ferry	Swimming, Boating, Fishing
Red Ochre North: Tiger Head Rd Dodges Ferry	Swimming; Boating, Fishing, Environmental Values
Tigerhead Beach: Seventh Ave Dodges Ferry	Swimming, Boating, Fishing
McKinly Street Beach Access Midway Point	Swimming, Boating, Fishing
Blue Lagoon	Secondary contact point (stormwater collection point)

A -2
DATE AND TYPE OF SAMPLING UNDERTAKEN AND RESULTS

Beaches and pools microbiological sampling were conducted in accordance with AS/NZS 5667, Water Quality -Sampling. Samples are collected in sterile containers provided by the Public Health Laboratory. Grab samples were used to collect water from a depth of approximately 300mm below the surface in water 600-1000mm deep. Aseptic techniques were used to avoid sample contamination.

The Compliance Officer collected water samples. Greg Robertson conducted sanitary surveys at the start of the summer sampling period and noted any changes throughout the season shown in table 5. Sanitary surveys were conducted by Environmental Health Officers randomly throughout the summer season in and around Primrose Beach Boat Ramp.

Weekly samples were collected, in accordance with the *Public Health Act 1997* and *Tasmanian Water Quality Guidelines* during the four-month summer period from 1 December 2025 until 31 March 2026 as detailed. No sampling was undertaken over the Christmas-New Year period. Samples were stored and transported under refrigeration (iced esky) to the Laboratory, arriving within three hours of collection.

A -3
BEACH SAMPLING -TESTS AND ANALYSES PERFORMED

A -3.i MICROBIOLOGICAL TESTING

Samples were tested for Enterococci (Faecal streptococci); results obtained were presumptive unless a presumptive result indicated an exceedance of the 140 organisms/100mL. Risk classifications are based on Table 5.10 of the NH&MRC Guidelines for Recreational Water and Tasmanian Recreational Water Quality Guidelines 2007.

A -3.ii SANITARY SURVEY

In the context of recreational water quality, a sanitary survey is a systematic investigation of a beach, river, estuary or other recreational waterway to identify and assess actual and potential sources of faecal contamination that could affect water quality and public health.

Sanitary surveys show the influences that each Beach has in relation to tidal influence, housing density, stormwater infrastructure, geomorphology and land use (i.e. agriculture, grazing, cropping, residential, land clearing). Table 2 refers to the sanitary surveys performed at the start of each sampling season (December). The Southern Beaches sanitary surveys are performed annually to determine if any changes/influences/causative effects can be identified that may affect water quality of the recreational beach.

Variables to consider during the sampling season are wind, tides, temperature, population, stormwater outlets, concentration of onsite waste management systems, rainfall, animals and wildlife, intensive land clearing and agriculture.

Urban expansion and increasing medium-density development near waterways can result in greater areas of impervious surfaces and fragmentation of native vegetation. These factors, among others, may contribute to changes in water quality within the Southern Beaches area.



Table 2 Sanitary survey of all beaches

Location	Sanitary Survey Risk	Risk
Connellys Marsh Beach	Minimum of 10 Boatsheds, yacht moorings, onsite wastewater management systems (OSWMS) on nearby properties, river at southern end of beach running through heavily grazed farms with livestock grazing within the riparian zone and river proper.	**Moderate-high (trending towards low risk)
Primrose Sands Beach	Potential failing OSWMS above western end of the beach, active landslip along the foredune of Carlton Bluff Road, vehicle movement on beach (prohibited activity), concentrated ground water seepage and old stormwater infrastructure.	Moderate -poor
Primrose Sands Beach Shop	OSWMS above dune area Onsite Waste management systems, carpark, dogs, stormwater outfall.	Good (first season)
Park Beach Carlton	High density OSWMS large dune system for protection against seepage, toilet block nearest to sample site. High energy beach	Low
Red Ochre South Beach	Stormwater outfalls: birdlife habitat protected area Spectacle Head, boatsheds, gravelly beach, higher density housing with OSWMS, greater threat of nutrient enrichment from OSWMS	High
Red Ochre North Beach	Bird life, OSWMS, medium density housing Spectacle Head a known rookery for shorebirds. Blue lagoon in the back of the dune and playground.	Moderate
Tiger Head Beach (Seventh Ave)	Large Stormwater outfalls, unsewered area, high density residential with Onsite waste management systems.	High
McKinly St Midway Point	Large stormwater outfalls onto beach, Orielton Lagoon RAMSAR wetland protected area. Highest density urbanisation with increased gross litter being washed into waterway. Hard surface land clearing. History of sewerage failure from pump station situated above the beach.	High
Blue Lagoon	Secondary contact point monitoring for stormwater quality	High

***Moderate also known as fair*

A -4
RESULTS AND DISCUSSION OF SAMPLING ANALYSIS

Rainfall data collected from the Sorell abattoirs rain gauge located at Ingham's Processing factory. The following table (table 3) shows the relationship between water quality results and rainfall during the 2025-2026 season using the Pearson's r correlation. The 2023-2024 summer sampling period showed four beaches had some relationship between rainfall and enterococci results, while the 2024-2025 and 2025-2026 seasons did not show any correlations. This suggests that there are still catchment issues to be addressed. Only 115.7mm of rain fell during the monitoring period, below the summer average.

Appendix 8 provides The Tasmanian climate summary for summer 2025-26.

Table 3 Pearson's r correlation for 2025-2026 summer sampling season

Name and location of water body	Pearson r Correlation result.
Connellys Marsh Knights Road	-0.27 weak
Primrose Sands Beach: Petrel Street	*0.14 negligible*
Park Beach: Park Beach Road Dodges Ferry	*-0.14 negligible*
Red Ochre South: Parnella Road Dodges Ferry	*0.183 negligible*
Red Ochre North: Tiger head Rd Dodges Ferry	*-0.21 weak*
Tigerhead Beach: Seventh Ave Dodges Ferry	*0.142 negligible*
McKinly St Beach Access Midway Point	*0.066 negligible*

Pearson's r Correlation

This year Sorell Council have included analysis using the number of exceedances beyond the prescribed trigger level of 140mpn 100ml-1 set by the Tasmanian Recreational Water Guidelines 2007. This aids in determining whether other activities within the catchment may be contributing to water quality.

Table 4 list of number of swimming sites from the last five RWQ seasons triggering a retest under the Tasmanian Recreational Water Quality Guidelines by exceeding enterococci >140 MPN 100mL^{-1} (DOH, 2007)

RWQ Season	Number of exceedances
2019-20	1
2020-21	1
2021-22	4
2022-23	4
2023-24	5
2024-25	14
2025-26	5

Compared to last season the number of exceedances was three times lower. One site being Primrose Sands Boat Ramp exceeded the trigger level twice, compared to nine times last season. Showing an improvement in water quality.

However, the results provide further evidence of the need for Council to continue informing and educating the Southern Beaches community about the importance of regular maintenance of onsite wastewater management systems. Where appropriate, upgrading systems to secondary treatment may also be necessary to address pollution at its source and reduce the risk of contaminants entering local waterways and the broader environment.

Table 5 uses a rolling five-year dataset for determining the 95th Hazen percentile (nonparametric). As determined by NHMRC and Tasmanian Recreational Water Quality Guidelines. A different method was used to calculate the 95th percentile for Primrose Beach, that being the 'Enterotester' from WA Health Department, this calculates a 'standardized' 95th percentile (parametric) that is more appropriate for smaller data sets with several very high readings which tend to 'skew' results.

Statistical analysis performed on the water quality of the sites showed four of the seven beaches slightly improved, two were stable, and one declined. Primrose Beach (Boat Ramp) declined but remained 'fair' water quality. However, the Primrose Beach (shop end) was 'good' water quality. The reduction in for the Boat Ramp end of the Beach was due to the 95th Hazen Percentile being determined over a five-year rolling data set. The results for 2025/26 were better than in 2024/25 but were worse than in 2020/21 which were included in the 5-year calculation period last year. In addition, in 2025/26 calculations included 're-samples' (taken when a routine sample doesn't comply with 'trigger' values) in the data. The very high result in 2024/25 of over 15000 was 'smoothed out' using the 'Enterotester' calculator.

The new site (Primrose Beach shop end) has an additional recreational water quality alert sign at the southern end of Primrose Beach (figure 2) indicating that the water quality in this area.

Figure 2 New installed RWQ sign at the Southern end Primrose Beach (Shop).





Table 5. 95th Hazen percentile figures from previous 5yrs 2021 - 2026

Site	Connellys Beach	Primrose Sands	Park Beach	Red Ochre South	Red Ochre North	Tiger Head Beach	McKinly Beach
Percentile	95	95	95	95	95	95	95
Minimum data points needed	10	10	10	10	10	10	10
Number data points you have	98	107	98	99	97	98	100
Data minimum	10	10	10	10	10	10	10
Data maximum	187	15531	146	2924	187	529	2247
Hazen result	54.2	430***	32.5	100.3	106.4	96.2	272.15
***TRWQG category**	A	D	A	A	A	A	C
****NHMRC category**	B	D	A	B	B	B	C
**Tasmanian Recreational Water Quality Guidelines 2007*							
*** National Health and Medical Research Council (NHMRC) 2006 to be used with classification matrix for faecal pollution of recreational w*							
**** Calculated using the EnteroTester standardised 95th percentile*							

Table 6 represents the variation from the 2024-2025 season. Six sites were stable with minimal changes in water quality except for Primrose Sands Beach (Boat Ramp) declining. The shop end of Primrose Beach had good water quality as it is less affected by seepage than the Boat ramp end.

Table 6 Recreational Beaches monitored by Sorell Council. Red denotes Poor quality (>500MPN100mL/1), amber Denotes moderate quality (200-500MPN 100mL-1) and green denotes good water quality (<200MPN 100mL-1).

	Beaches/River	Status 2024-2025 based upon 5-year 95th Hazen percentile for Enterococci	Trend based upon 5-year 95th Hazen percentile for Enterococci
1	Connellys Marsh	Good B	Declining water quality from 41 (2019-2024) to 80 (2020-2025) and 52.2 in 2025-2026
2	Primrose Sands (Boat Ramp)	Fair (C)	Declining water quality from 63 (2019-2024) to 367 (2020-2025) and 430* in 2025-2026
3	Park Beach	Good A	Slight decline in water quality from 20 (2019-2024) to 33 (2020-2025) and 32.5 in 2025/2026
4	Red Ochre South	Good B	Stable water quality from 72.7 (2019-2024) to 80 (2020-2025) and100.3 in 2025/2026.
5	Red Ochre North	Good B	Water quality improvement from 140.3 (2019-2024) to 110 (2020-2025) and 106.4 in 2025/2026.
6	Tigerhead Beach	Good B	Stable water quality from 78.95 (2019-2024) to 77.5 (2020-2025) and 96.15 in 2025/2026.
7	McKinly Beach	Moderate C (fair)	Stable water quality from 294.35 (2019-2024) to 285.75 (2020-2025) and 272.15 in 2025/2026.

- *In 2025/26 95th percentile calculated used standardized method (EntroTester) not Hazen.*



A -5
SWIMMING BEACH CLASSIFICATION FOR START OF 2025-2026 SWIMMING SEASON (Dec-April).

The water quality classification for Recreational Beaches is based on Table 5.13 – Classification matrix for faecal pollution in recreational water environments taken from the NHMRC – Guidelines for Managing Risks in Recreational Water. The Sorell Environmental Health Officer uses the Tasmanian Recreational Water Guidelines (green column) classification for the 2025-2026 summer season.

Sorell Council continue to provide immediate action when failed recreational water quality samples occur during the summer season. This is done by Sorell Council's Facebook page and by flipping signs at the affected beach alerting public to not swim during times of poor water quality. Sorell Council continues to recommend not swimming for two to three days after rainfall events to ensure the safety of bathers at recreational water monitoring sites.

Table 7 Sorell Council Beach classifications based on 2025-2026 summer sampling season. New sites omitted until one samples have been collected for a full season.

Location	**Sanitary survey risk**	**Water quality category based on 95% hazen percentile - 5year indicator organisms results**	**Combined Category NHRMRC**	**Tasmanian Rec Water Guidelines classification**
Connellys Beach	Moderate-high	B	Fair	Good
Primrose Beach	Moderate	C	Poor	Moderate (Fair)
Park Beach	Low	A	Very Good	Good
Red Ochre Beach (South)	High	B	Fair	Good
Red Ochre Beach (North) aka Blue Lagoon	Moderate-High	B	Good	Good
Tigerhead Beach (Seventh Ave)	High	B	Fair	Good
McKinly St, Midway Point	High	C	Poor	Moderate (Fair)

Changes to classification status this season. Primrose Beach Boat Ramp.

A -6
NATURAL WATER BODY DISCUSSION ON POTENTIAL SOURCES OF POLLUTION

The catchment areas of each of the Southern beaches sampling sites (excluding McKinly St, which is serviced by reticulated sewerage) contain significant numbers of septic tanks and other on-site wastewater management systems. Some of which suffer varying levels of malfunction during periods of wet weather. Stormwater systems or creeks may convey pollutants discharged from on-site wastewater management systems to beach areas. Stormwater outfalls discharge in the vicinity of each of the recreational sampling sites, except for Park Beach. Figure 3 shows multiple factors that influence the quality of our recreational Water quality.

Dodges Ferry Lagoons. TasWater commissioned a Dodges Ferry Sewerage Technical Due Diligence Report in 2018. The report investigated the status of the lagoons. This included the potential impacts from the 25yo sewage lagoon system to environment and public health. One finding concluded that a 'relatively high' risk of seepage within the underlying aquifers can potentially cause groundwater contamination and therefore increase the risk of pathogen contamination in nearby recreational waters. Increased nitrification has been recorded in nearby groundwater testing. A development application has been approved for the Dodges Ferry School re-development which involves a new wastewater treatment plant to replace the lagoons. Works on the treatment plan are expected to start in 2027.

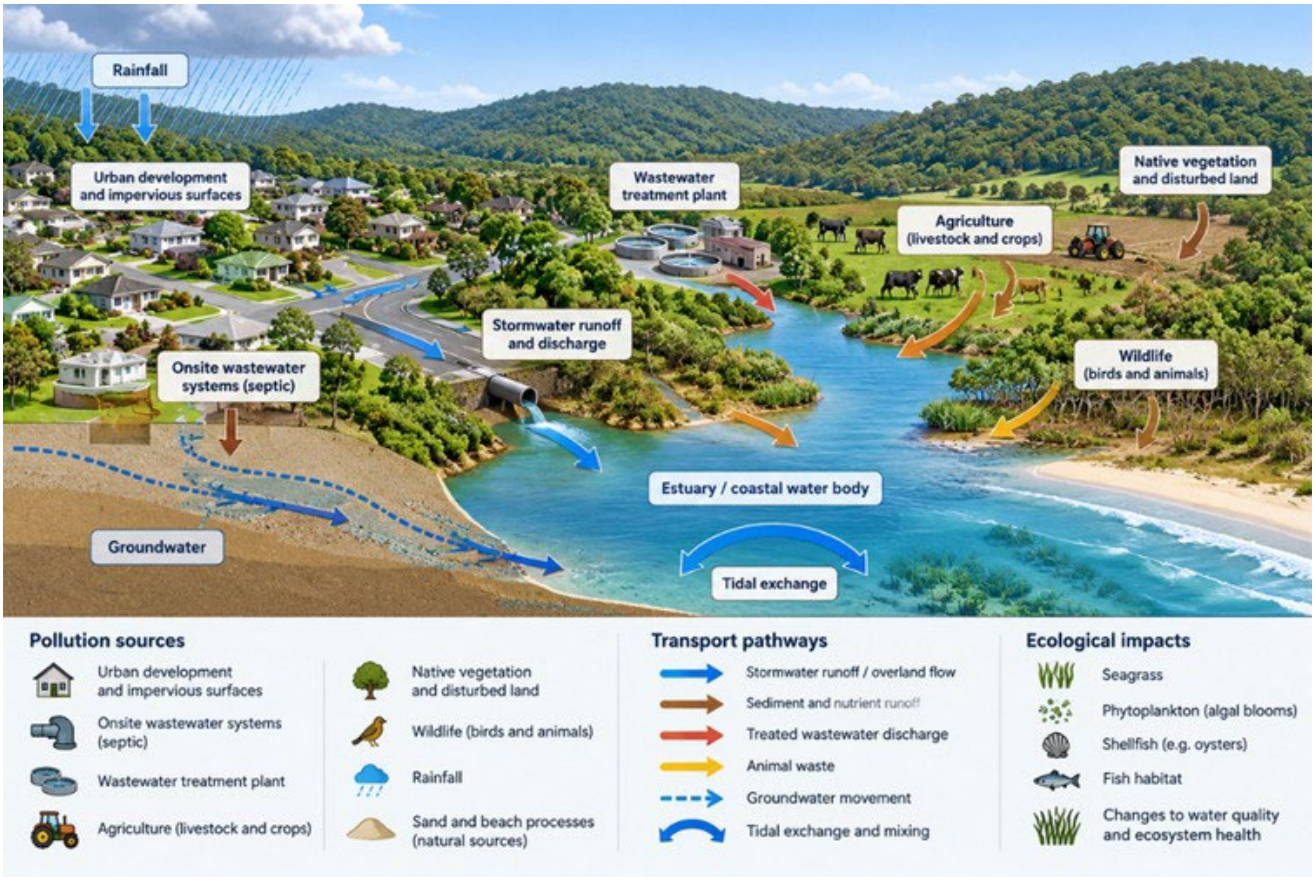


Figure 3 Pollution Sources affecting water bodies source;

A -7
RECENT ADVANCEMENTS AND SUCCESSFUL PROJECTS WORKING TO MAINTAIN AND IMPROVE RECREATIONAL WATER QUALITY SITES.

Onsite Waste Management systems continue to play a significant role in recreational water quality due to the abundance and increased urbanisation of the Southern Beaches. The growing popularity of the Southern Beaches results in increased development, particularly residential dwellings. This has seen haphazard land clearing, replacement of pervious natural landforms for impervious hard surfaces, increased population, and higher visitation within the area.

The introduction of the Southern beach On-site wastewater and Stormwater Management Specific area plan has provided Council with a means to assess proposed onsite wastewater management systems. Secondary water treatment via aerated waste treatment systems and raised sand filter beds aids in improving the wastewater quality prior to entering the landscape. Both treatments provide nutrient reduction through evapotransipiration and uptake of excess nutrients through planting and filtered sand beds.

Sorell Council has engaged specialist wastewater experts to provide a contemporary wholistic plan for the Southern Beaches onsite wastewater management. Which includes recommendations on changes to the Specific area plan, inspection and management of existing onsite wastewater management systems and education of homeowners and wastewater designers.

The Coastal and Estuarine Risk Mitigation Program (CERMP) – Protecting our Coastline. The Natural Resource Management Officer Dibas Pantas along with the stormwater engineer upgraded a number of high-priority stormwater outfall in Dodges Ferry and Primrose Sands which will improve water quality.

TasWater. In addition, recent upgrades in storage capacity of the TasWater owned Midway Point Sewerage network included Mc Kinley St SPS and Reynolds rd. SPS new storage. The Mc Kinley Street beach remained stable at Fair.

TasWater have improved their sewerage infrastructure maintenance program, cleaning of pipe work to reduce blockages and overflows. It is hoped that the improved network and maintenance will reduce the amount of raw sewage overflows during rainfall events and the site will benefit with improved water quality.The Tasman Highway sewage pump station upgrade is still in progress at the time of the report being written.

A -8
NATURAL WATER BODY CONCLUSIONS/RECOMMENDATIONS

Five sites are categorized as ‘good’ according to the Tasmanian Recreational Water Guidelines with McKinly Beaches classified and Primrose Beach (Boat Ramp end) as ‘moderate’ (Fair).The 2025-2026 recreational water quality remained stable overall with little changes shown in the sanitary surveys conducted. Micro bacteriological sampling results showed lower contamination than the previous year.

Council is currently undertaking an investigation into the feasibility of collected and treating seepage and groundwater discharging onto Primrose Beach near the boat ramp. This work is expected to be completed in March 2027 for Council to consider water quality improvement works for the 2027/28 financial year. Diverting seepage from the beach is an important measure Council can take to reduce pollution impacts. Unfortunately, TasWater has advised that a sewerage scheme is not likely in the foreseeable future.

Major stormwater pipes should never be channeled directly to oceans unless a series of treatment ponds, and filtering systems have been implemented upstream prior to discharge. Onsite wastewater must be treated while remaining within property boundaries. This would create an uncontaminated clean environment for a safer and healthier future for the Southern Beaches residents, visitors and the unique fauna and flora.

A -9
REFERENCES

1. Australian/New Zealand Standard 5667.1:1998. Water Quality – Sampling. Part 1: Guideline on the design of sampling programs, sampling techniques and the preservation and handling of samples.
2. Enterococci in the Environment Muruleedhara N. Byappanahalli, Meredith B. Nevers, Asja Korajkic, Zachery R. Staley, and Valerie J. Harwood Americian Society of Microbiology and Molecular Biology Reviews December 2012 Vol 76. Downloaded from https://mmbr.asm.org/content/mmbr/76/4/685.full.pdf
3. Generation of Enterococci Bacteria in a Coastal Saltwater Marsh and Its Impact on Surf Zone Water
4. Quality - S. B. G R A N T, Et Al University of California VOL. 35, NO. 12, 2001 / ENVIRONMENTAL SCIENCE & TECHNOLOGY – American Chemical Society 2001
5. New South Wales Environmental Protection Agency, 1997, State of the Environment Report, chapter 3. On-line at: www.epa.nsw.gov.au
6. World Health Organisation, 2003, Guidelines for safe recreational water environments - Volume 1 – Coastal and Fresh Waters, World Health Organisation, Geneva.
7. Strategic Plan for Managing Southern Beaches Wastewater – Sorell Council (Jan 2006)
8. Bureau of Meteorology (BOM) 'Climate Data Online' website accessed June 2025
9. GHD, 2018. Dodges Ferry Sewerage Technical Due Diligence Report. A joint initiative by TasWater and Sorell Council
10. Derwent Estuary recreational Water Quality Program Annual Report (2024-2025) Draft.
11. Natural Resource Management South; https://nrmsouth.org.au/project/rivers-to-ramsar/
12. Sorell Council Website, https://www.sorell.tas.gov.au/coastal-and-estuarine-risk-mitigation-program-cermp-protecting-our-coastline/#accordion-item-0-1
13. Government of Western Australia, Department of Health Enterotester enterococci 95th percentile calculator, 2011.

Guidelines

The Tasmanian Recreational Water Quality Guidelines 2007

National Health and Medical Research Council (NHMRC) "Guidelines for Managing Risks in Recreational Waters 2006

Australian Guidelines for Urban Stormwater Management (historical guidelines) https://www.waterquality.gov.au/guidelines/urban-stormwater.

Microbial Quality of Recreational Water Guidance Notes- Western Australia Department of Health and the University of Western Australia.

Legislation

Public Health Act 1997

APPENDICES

APPENDIX 1 - COLOUR ATLAS RECREATIONAL WATER SAMPLING SITES

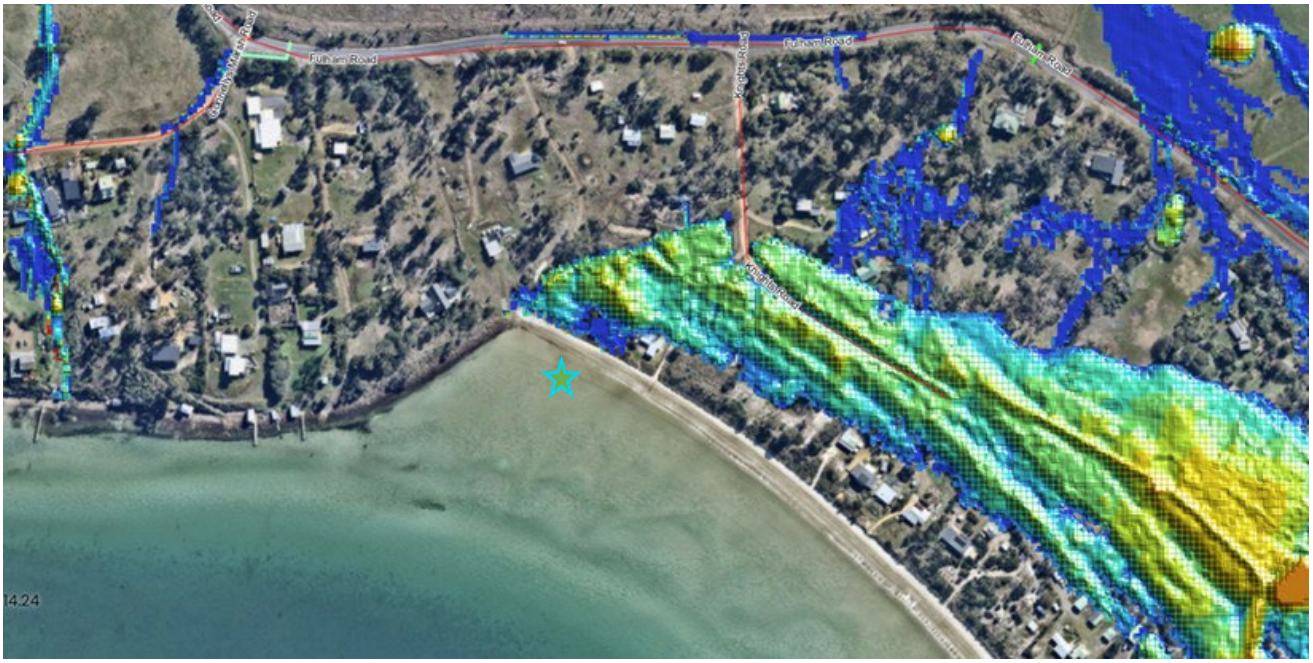


Figure 3 Connellys Marsh showing flood extent and stormwater infrastructure

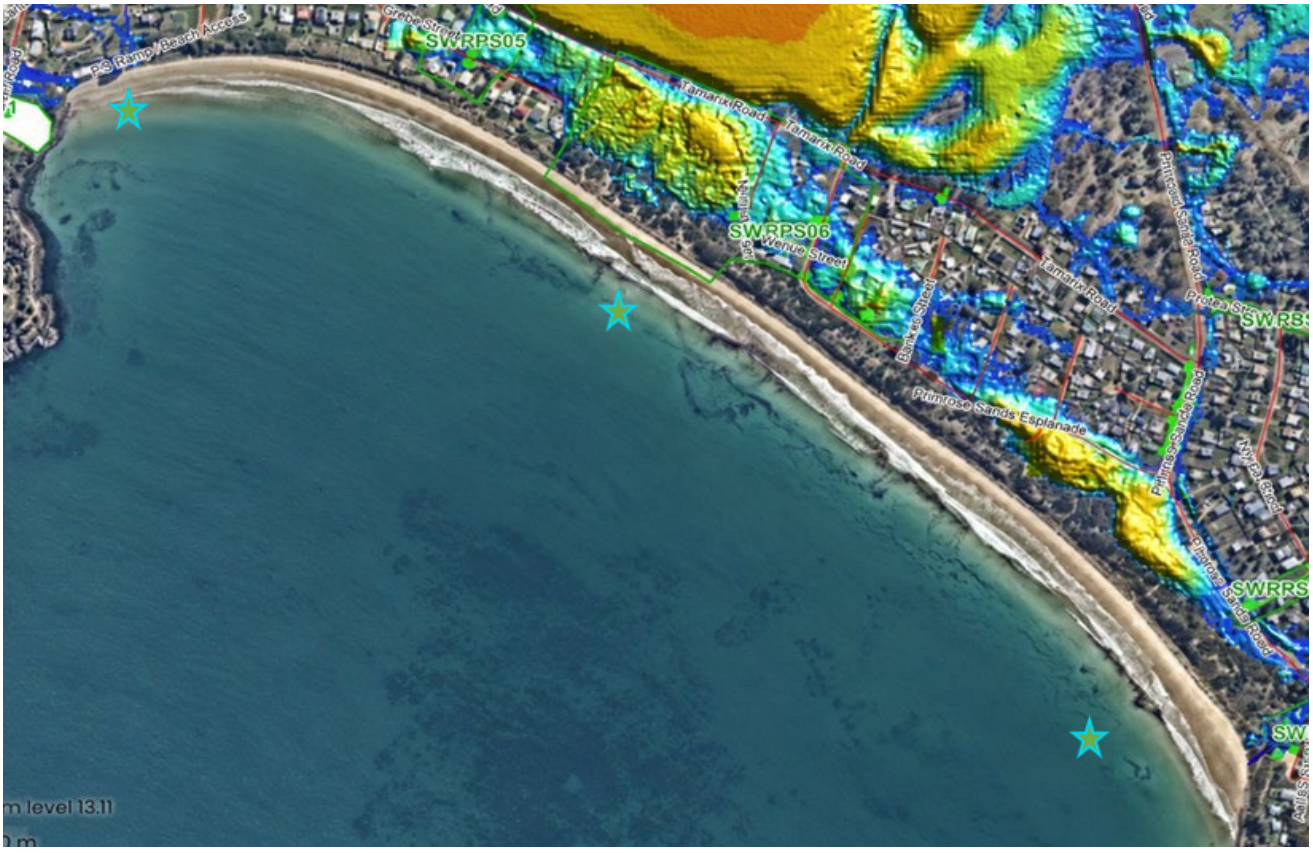


Figure 4 Primrose Sands Beach. Existing and two new sample points and showing flood extent and stormwater infrastructure



Figure 5 Park Beach Carlton showing flood extent and stormwater infrastructure



Figure 6 Red Ochre Beach South showing flood extent and stormwater infrastructure

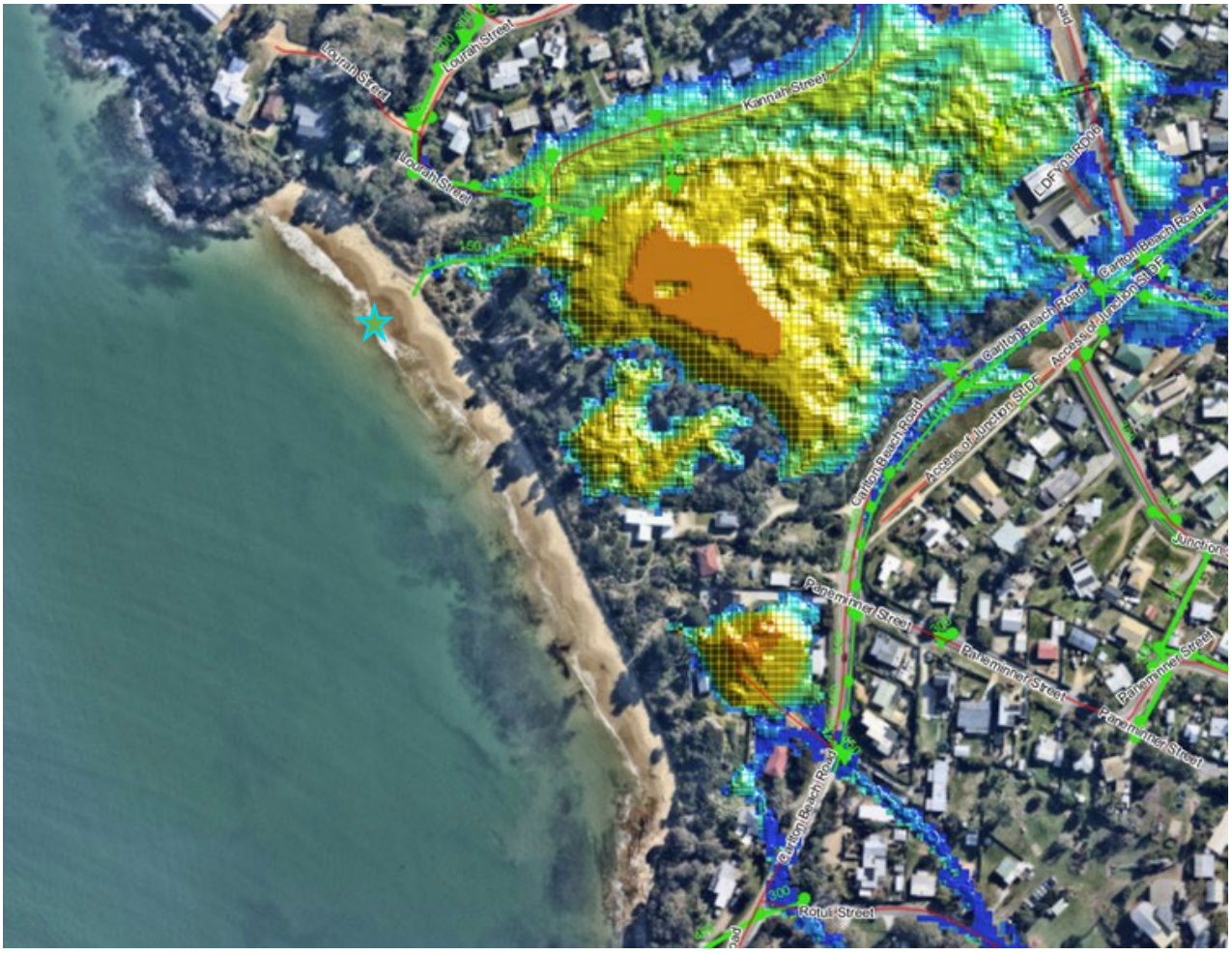


Figure 7 Red Ochre Beach North showing flood extent and stormwater infrastructure

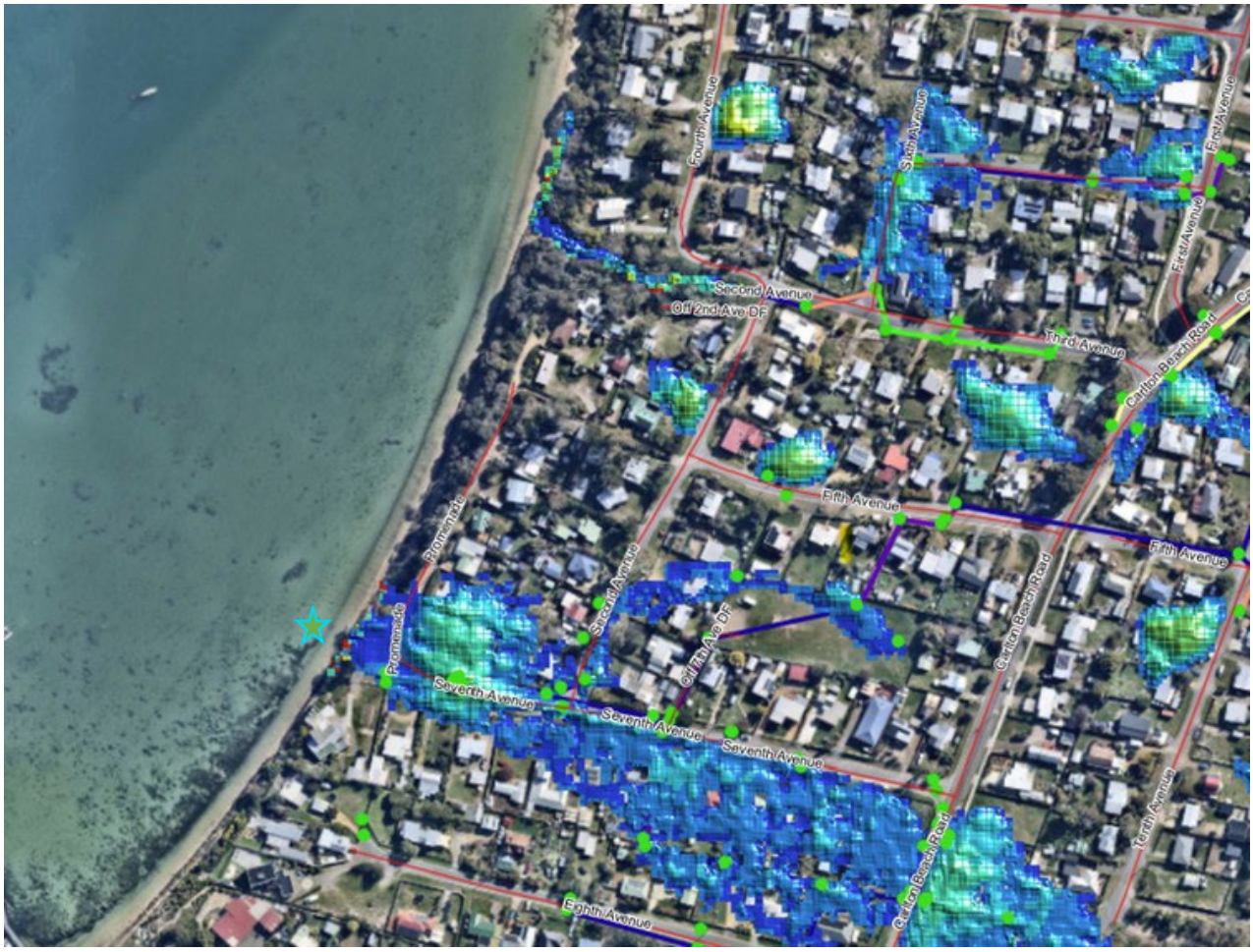


Figure 8 Tiger Head Beach 7th Ave showing flood extent and stormwater infrastructure



Figure 9 McKinly St Beach sewer in red; stormwater in green, flood risk and waterway shown

APPENDIX 2 - SUMMARY OF RECREATIONAL WATER BODY SAMPLING RESULTS 2025-2026

Table 8 data results from 2025-2026 summer season. Red denotes a failed water result, amber some contamination and pink minor reading.

2024-2025 sample Date	Connellys Beach	Primrose Beach Boat Ramp Petrel St	Park Beach Carlton	Red Ochre - South Dodges Ferry	Red Ochre - North-Dodges Ferry	Tigerhead - Seventh Avenue Dodges Ferry	McKinley St Midway Point
02/12/2025	10	85	10	10	10	10	10
08/12/2025	10	20	10	481	10	20	10
10/12/2025				10			
16/12/2025	10	10	10	10	10	10	10
22/12/2025	10	31	10	10	10	108	41
06/01/2026	10	134	20	41	10	52	10
12/01/2026	10	10	10	10	10	10	10
20/01/2026	10	10	10	10	10	10	10
27/01/2026	10	41	20	10	10	10	10
03/02/2026	10	10	10	10	10	10	52
10/02/2026	10	10	41	10	10	10	10
17/02/2026	10	63	10	10	10	10	10
24/02/2026	10	10	10	10	10	10	10
02/03/2026	10	10	31	10	10	75	97
11/03/2026	10	780	10	10	10	20	10
16/03/2026	120	20	10	41	31	74	10
18/03/2026		10					
24/03/2026	10	565	10	10	10	158	10
26/03/2026		86	86				

Table 9 Additional Primrose sample points middle beach and Shop end of beach

2025-2026 sample date	Primrose Sands Beach South (Shop end)
02/12/2025	10
08/12/2025	189
10/12/2025	10
16/12/2025	85
22/12/2025	10
06/01/2026	10
12/01/2026	10
20/01/2026	10
27/01/2026	10
03/02/2026	10
10/02/2026	20
17/02/2026	10
24/02/2026	10
02/03/2026	10
11/03/2026	10
16/03/2026	52
24/03/2026	10
26/03/2026	10

APPENDIX 3 - RAINFALL DATA

Table 10 Rainfall data taken from Sorell Abattoir's rain gauge manually read by a volunteer Weather Observer. BOM has not quality controlled this rain gauge. 72 hour cumulative Rainfall measurements preceding the sample day.

2025-2026	Total Rainfall(mm) for preceding 3 days Taken from Sorell Abbatoirs.
02/12/2025	7.8
08/12/2025	4
10/12/2025	4
16/12/2025	2
22/12/2025	1
06/01/2026	0.2
12/01/2026	3.6
20/01/2026	0.3
27/01/2026	0
03/02/2026	0
10/02/2026	1.4
17/02/2026	0
24/02/2026	3.8
02/03/2026	2.6
11/03/2026	0
16/03/2026	0
18/03/2026	0
24/03/2026	5.2
26/03/2026	20.5

APPENDIX 4 - GUIDELINE VALUES FOR MICROBIAL QUALITY OF RECREATIONAL WATERS

For marine waters, only faecal streptococci (Enterococci) showed a dose-response relationship for both gastrointestinal illness and Acute Febrile Respiratory Infection (AFRI). A recent reanalysis of this data using a range of contemporary statistical tools has confirmed that the relationships originally reported are robust to alternative statistical approaches.

The cut-off or bounding values (40, 200, and 500) are expressed in terms of the 95th percentile of numbers of faecal streptococci per 100 mL, and represent readily understood levels of risk, based on the exposure conditions of the key studies.

For the purpose of water-quality monitoring, the terms 'faecal streptococci', 'intestinal Enterococci' and 'Enterococci' are considered to be synonymous. Exposure to recreational waters with these measured indicators refers to body contact that is likely to involve head immersion, such as swimming, surfing, white-water canoeing, scuba diving and dinghy-boat sailing.

95th Percentile value of intestinal Enterococci / 100ml (rounded Values)	**Basis of derivation**	**Estimated risk per exposure**
≤ 40 A	This range is below the NOAEL in most epidemiological studies.	<1% GI illness risk <0.3% AFRI risk The upper 95th percentile value of 40/100ml relates to an average probability of less than one case of gastroenteritis in every 100 exposures. The AFRI burden would be negligible.
41-200 B	The 200/100 ml value is above the threshold of illness transmission reported in most epidemiological studies that have attempted to define a NOAEL or LOAEL for GI illness	1-5% GI illness risk 0.3-1.9% AFRI risk The upper 95th percentile value of 200/100 ml relates to an average probability of one case of gastroenteritis in 20 exposures. The AFRI illness rate at this upper value would be less than 19 per 1000 exposures, or less than approximately 1 in 50 exposures.
201-500 C	This range represents a substantial elevation in the probability of all adverse health outcomes for which dose-response data are available.	5-10% GI illness risk 1.9-3.9% AFRI risk This range of 95th percentiles represents a probability of 1 in 10 to 1 in 20 of gastroenteritis for a single exposure. Exposures in this category also suggest a risk of AFRI in the range of 19-39 per 1000 exposures, or a range of approximately 1 in 50 to 1 in 25 exposures.
>500 D	Above this level, there may be a significant risk of high levels of minor illness transmissions.	>10% GI illness risk >3.9% AFRI risk There is a greater than 10% chance of gastroenteritis per single exposure. The AFRI illness rate at the 95th percentile point of >500/100ml would be greater than 39 per 1000 exposures, or greater than approximately 1 in 25 exposures.

Notes:

1. Abbreviations used: A-D are the corresponding microbial water quality assessment categories used as part of the classification procedure; AFRI = acute febrile respiratory illness; GI = gastrointestinal; LOAEL = lowest-observed-adverse-effect level; NOAEL = no-observed-adverse-effect level.

2. The "exposure" in the key studies was a minimum of 10 minutes of swimming involving three head immersions. It is envisaged that this is equivalent to many immersion activities of similar duration, but it may underestimate risk for longer periods of water contact or for activities involving higher risks of water ingestion (see also note 8)

3. The "estimated risk" refers to the excess risk of illness (relative to a group of non-bathers) among a group of bathers who have been exposed to faecally contaminate recreational water under conditions similar to those in the key studies.

4. The functional form used in the dose-response curve assumes no further illness outside the range of data (i.e., at concentrations above 158 intestinal enterococci/100ml). Thus, the estimates of illness rate reported above this value are likely to be underestimates of the actual disease incidence attributable to recreational water exposure.

5. The estimated risks were derived from sewage-impacted marine waters. Different sources of pollution and more or less aggressive environments may modify the risks.

6. This table may not relate to children, the elderly or the immunocompromised, who could have lower immunity and might require a greater degree of protection. There are presently no adequate data with which to quantify this, and no correction factors are therefore applied.

7. Epidemiological data on fresh waters or exposures other than swimming (e.g., high-exposure activities such as surfing, dinghy boat sailing or white-water canoeing) are currently inadequate to present a parallel analysis for defined risks. Thus, a single series of microbial values is proposed, for all recreational uses of water, because insufficient evidence exists at present to do otherwise. However, it is recommended that the length and frequency of exposure encountered by special interest groups (such as bodysurfers, board riders, windsurfers, sub-aqua divers, canoeists and dinghy sailors) be taken into account.

8. Where disinfection is used to reduce the density of index organisms in effluent and discharges, the presumed relationship between intestinal Enterococci (as an index of faecal contamination) and pathogen presence may be altered. This alteration is, at present, poorly understood. In water receiving such effluents and discharges, intestinal Enterococci counts may not provide an accurate estimate of the risk of suffering from gastrointestinal symptoms or AFRI.

9. Risk attributable to exposure to recreational water is calculated after the method given by Wyer et al. (1999), in which a log 10 standard deviation of 0.8103 for faecal streptococci was assumed. If the true standard deviation for a Beach is less than 0.8103, then reliance on this approach would tend to overestimate the health risk for people above the threshold level, and vice versa.

Note that the values presented in this table do not take account of health outcomes other than gastroenteritis and AFRI. Where other outcomes are of public health concern, then the risks should also be assessed and appropriate action taken.

10. Guideline values should be applied to water used recreationally and at the times of recreational use. This implies care in the design of monitoring programs to ensure that representative samples are obtained.

Page 70-71, Guidelines for Safe Recreational Water Environments – Vol 1 – Coastal and Fresh Waters – World Health Organisation, Geneva, 2003.

APPENDIX 5 - CLASSIFICATION MATRIX FOR FAECAL POLLUTION OF RECREATIONAL WATER ENVIRONMENTS

Table 5.13 Classification matrix for faecal pollution of recreational water environments*

		Microbial water quality assessment category (95th percentiles — intestinal enterococci/100 mL)				Exceptional circumstances[c]
		A ≤ 40	B 41–200	C 201–500	D > 500	
Sanitary inspection category (Susceptibility to faecal influence)	Very low	Very good	Very good	Follow up[b]	Follow up[b]	ACTION
	Low	Very good	Good	Follow up[b]	Follow up[b]	
	Moderate	Good[a]	Good	Poor	Poor	
	High	Good[a]	Fair[a]	Poor	Very poor	
	Very high	Follow up[a]	Fair[a]	Poor	Very poor	
	Exceptional circumstances[c]	ACTION				

a Indicates possible discontinuous/sporadic contamination (often driven by results such as rainfall). This is most commonly associated with the presence of sewage – contaminated stormwater. These results should be investigated further, and initial follow-up should include verification of the sanitary inspection category and ensuring that samples recorded include 'event' periods. Confirm analytical results, review possible analytical errors.

b Implies nonsewage sources of faecal indicators (eg livestock), which need to be verified.

c Exceptional circumstances are known periods of higher risk such as during an outbreak involving a human or other pathogen that may be waterborne (eg avian botulism — where outbreaks of avian botulism occur, swimming or other aquatic recreational activities should not be permitted), or the rupture of a sewer in a recreational water catchment area etc. Under such circumstances the classification matrix may not fairly represent risk/safety.

* In certain circumstances there may be a risk of transmission of pathogens associated with more severe health effects through recreational water use. The human health risk depends greatly on specific (often local) circumstances. Public health authorities should be engaged in the identification and interpretation of such conditions.

Figure 10 NH&MRC Guidelines for Managing Risks in Recreational Water

APPENDIX 6 - TASMANIAN RECREATIONAL WATER QUALITY GUIDELINES

The Tasmanian Recreational Water Quality Guidelines, (the "Tasmanian Guidelines") adopted, by reference, the National Health and Medical Research Council (NHMRC) "Guidelines for Managing Risks in Recreational Waters 2006", (the "new NHMRC Guidelines"); provide a range of guideline values in respect of Enterococci sample statistics, which should be considered in combination with sanitary survey results, in assessing the suitability of recreational water bodies for primary contact recreation.

Whilst monitoring for Enterococci or Thermotolerant Coliforms is considered to provide evidence of faecal contamination in a water body; it does not provide anything more than an indication of the likely presence of viral contamination. Enteric viruses such as Hepatitis A, Norovirus, and Adenovirus may be present in wastewater and are all capable of causing illness in humans, often requiring very low infective doses to actually cause infection. These viruses represent the most likely risk to public health from primary contact recreation in water contaminated by wastewater effluents, even when the more easily detectable bacteria, such as Enterococci or Thermotolerant Coliforms are only detected at levels which are unlikely to result in direct bacterial infections.

This is especially significant where such recreational waters are known to be impacted by point sources of urban wastewater from unsewered areas and consequent high risk of human faecal contamination. To summarise, where otherwise low levels of faecal contamination are detected, there may well be a significant risk of transmission of viral infections, especially if the source of this faecal contamination is thought or known to be of human origin, rather than, for example, from native wildlife such as shore birds.

The NHMRC Guidelines are based in part upon a World Health Organisation publication (WHO, 2003, Guidelines for Safe Recreational Water Environments – Vol 1 – Coastal and Fresh Waters, Geneva) which provide an A to D risk management classification, based on 95th Percentile figures derived from monitoring program results. The classifications are based on the actual observed risk of developing illness such as Gastro Intestinal Illness (GI illness) and/or Acute Febrile Respiratory Infection (AFRI) after primary contact recreation in waters contaminated with a given range of Enterococcus bacteria of human faecal origin. This risk management classification is adopted by both the NHMRC and Tasmanian Guidelines. The NHMRC Guidelines provide in principle for a risk-based approach to recreational water quality classification, linking the decision making process to sanitary survey results combined with microbiological surveys, however neither the NHMRC Guidelines nor the Tasmanian Guidelines provide a clear and objective means of achieving this. The Tasmanian guidelines classify waters in the B category as "Good" despite studies elsewhere which demonstrate significant risks of infection in swimmers using waters in this category.

Cat. A – 95th Percentile <40 orgs/100mL equates to <1% GI illness risk & =<0.3% AFRI risk

Cat. B – 95th Percentile 41-200 orgs/100mL, equates to 1-5% GI illness risk & 0.35-3.95% AFRI risk

Cat. C – 95th Percentile of 201-500 orgs/100mL, equates to 5-10% GI illness risk & 1.9-3.9% AFRI risk

Cat. D – 95th Percentile of >500 orgs/100mL equates to >10%% GI illness risk & >3.9% AFRI risk.

The Tas Guidelines combine Categories A and B (i.e. 0-40 and 41-200) into a single "Good" Water Quality Indicator, with Category C described as "Moderate" and Category D as "Poor". They also provide for a requirement to resample within 48 hours of a sample returning a result greater than 140 Enterococci per 100mL and to "close" Beaches where two consecutive water results exceed 280. The NHMRC Guidelines by contrast define waters in both the C and D Categories as "Poor".

47 Cole Street, Sorell TAS 7172
PO Box 126, Sorell TAS 7172
P: 6269 0000
E: sorell.council@sorell.tas.gov.au
www.sorell.tas.gov.au