2023

TASMANIAN SHELLFISH GROWER HANDBOOK

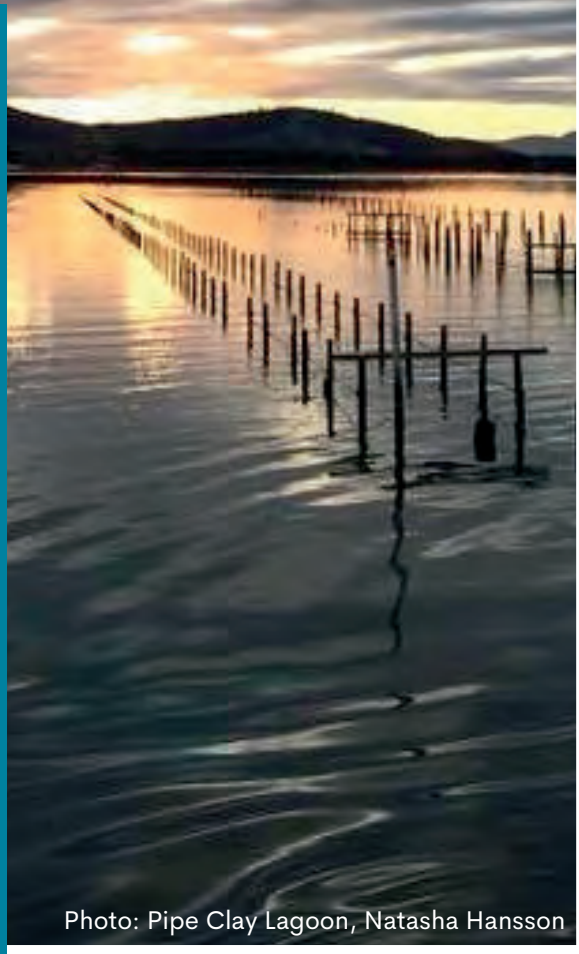


Photo: Pipe Clay Lagoon, Natasha Hansson

QUALITY TASMANIAN SHELLFISH

SHELLFISH MARKET ACCESS PROGRAM

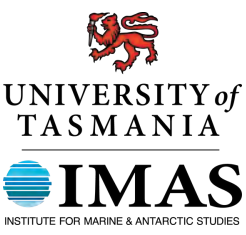
oysters TASMANIA

This document was prepared in partnership between NRE Tasmania's Shellfish Market Access Program (ShellMAP) the University of Tasmania's Institute for Marine and Antarctic Studies (IMAS), and Oysters Tasmania.

It is supported through funding from:
Federal Government, through the Tasmanian Smart Seafood Partnership Project – an initiative of NRM South and the Tasmanian Seafood Industry Council,

Tasmanian State Government, through grants administered by ShellMAP.

Thank you to the growers who have kindly allowed us to use their photos in this handbook.



The information in this handbook is current as of January 2023; updates and adjustments may be issued as an addendum as required.

Contents

Contacts

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Biosecurity Tasmania	Biosecurity.Tasmania@nre.tas.gov.au	03 6165 3777 1300 368 550
Emergency Animal Disease Hotline	animaldisease.enquiries@nre.tas.gov.au	1800 675 888
Animal Health Laboratory	specimenreception@nre.tas.gov.au	03 6777 2111
POMS Permits and Enquiries	POMSTas@nre.tas.gov.au	03 6165 3777
Public Health Laboratory	publichealth.lab@health.tas.gov.au	03 6166 1106
Analytical Services Tasmania	enquiries@ast.tas.gov.au	03 6165 3300
EPA pollution incident reporting	incidentresponse@epa.tas.gov.au	1800 005 171
Department of Health		1800 332 388
Marine and Safety Tasmania	admin@mast.tas.gov.au	1300 135 513
TasWater after hours reporting line		136 992
Tasmanian Seafood Industry Council	tsic@tsic.org.au	03 6224 2332
Rural Alive and Well	adminassist@rawtas.com.au	1800 729 827
NRM South	admin@nrmsouth.org.au	0447 266 527
NRM North	admin@nrmnorth.org.au	03 6333 7777
NRM Cradle Coast	admin@cradlecoast.com	03 6433 8400

Photo:Kurt McBain

Working together:

The ShellMAP Partnership Agreement


Photo: Abbie Muir

Five year Partnership Agreement between the Tasmanian Government, Oysters Tasmania, and Tasmanian Seafood Industry Council.

The broad aims of the Partnership are:

To foster a collaborative approach between industry and Department of Natural Resources and Environment Tasmania (NRE Tas) to support the development of the oyster and shellfish industries.

To provide opportunities for access to innovation, research and development through the Sustainable Marine Research Collaboration Agreement (SMRCA).

To provide a forum for discussion of issues and potential opportunities for the shellfish industry.

Oversighting of the Tasmanian Shellfish Market Access Program (ShellMAP) aimed at protecting public health and market access consistent with the Australian Shellfish Quality Assurance Program (ASQAP) and related instruments. Both the shellfish industry and the Tasmanian Government also acknowledge that delivering food safety and market access through ShellMAP in a risk-based manner can provide a means for industry to maximise its economic viability, growth and economic value.

The ShellMAP Management Committee

The ShellMAP Partnership Management Committee is comprised of three growers, and representatives from Oysters Tasmania, the Tasmanian Seafood Industry Council, and NRE Tas. It is led by an independent chair.

ShellMAP Management Committee Membership 2022-23

Ian Cartwright – Independent Chair

Dr Rachel Brown – ShellMAP Program Manager

Ian Dutton – Director of Marine Resources NRE Tas

Eric Brain – Manager Aquaculture Branch NRE Tas

Julian Harrington – Tasmanian Seafood Industry Council CEO

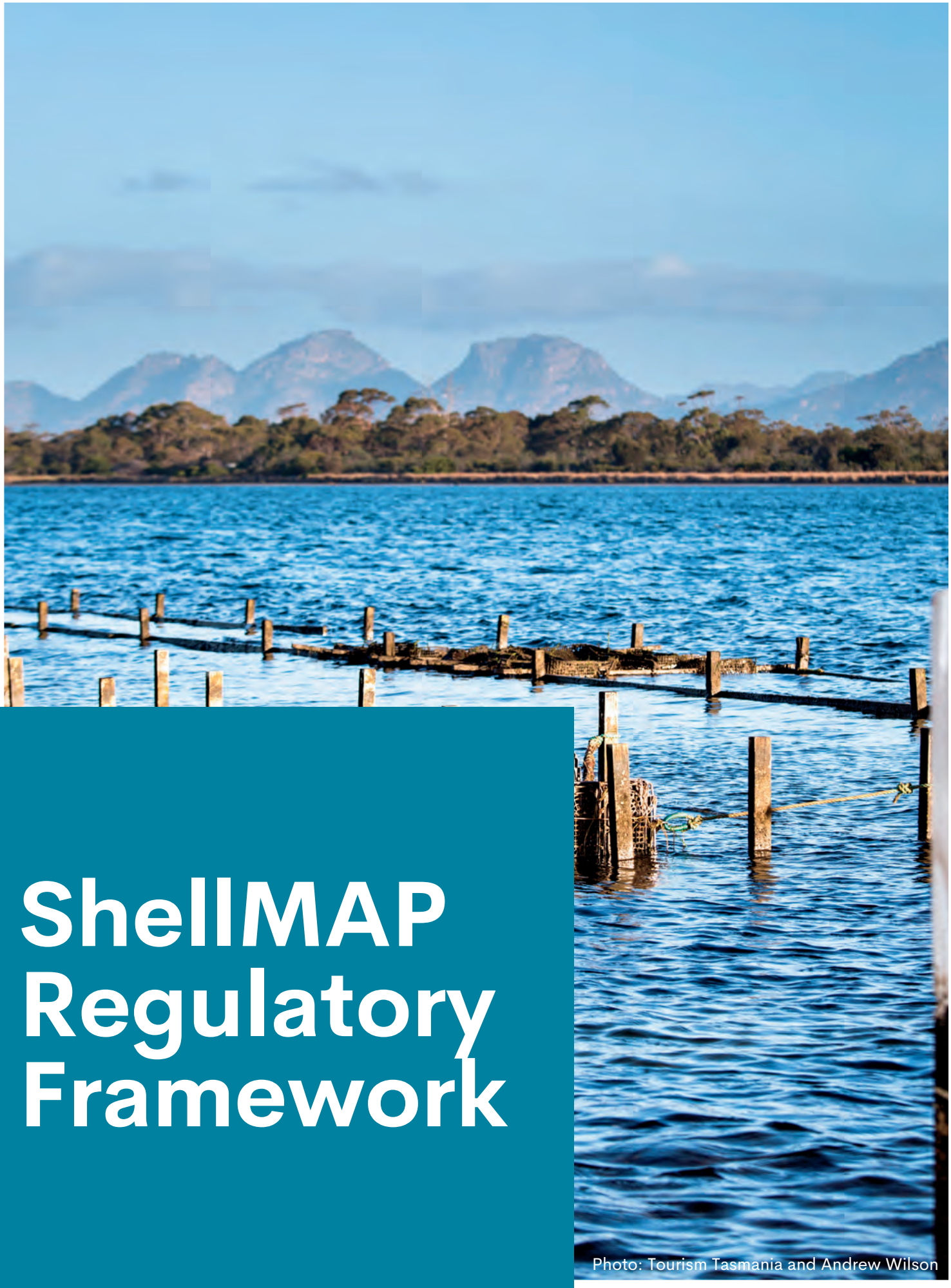
Duncan Spender – Oysters Tasmania CEO

Grower Representatives

Dan Roden – Tas Cleanwater Oysters

Hayden Dyke – Oyster Bay Oysters

Josh Poke – Tasmanian Oyster Company



ShellMAP Regulatory Framework

Photo: Tourism Tasmania and Andrew Wilson

Ensuring shellfish are safe to harvest

The Shellfish Market Access Program (ShellMAP) samples and monitors bays for potential microbial contamination, harmful algal blooms and other factors that impact the quality and safety of Tasmanian shellfish. Program oversight of domestic and export market access via ShellMAP provides consistency and reliability for the bivalve shellfish industry.

The ShellMAP Levy

The scientific monitoring and testing that ShellMAP undertakes to meet market access requirements is funded through the ShellMAP levy, which is paid by shellfish growers.

Why we need food safety regulation for safe harvest of Tasmanian shellfish

Shellfish are filter feeders and take in pollutants from surrounding waters, including bacteria, viruses and chemicals which may cause human illness. In addition, some species of shellfish are often consumed uncooked so there is no heat treatment of pathogens.

In Tasmania, we also need to monitor for harmful algal blooms (HABs) to ensure that no marine biotoxins are present in seafoods. Marine biotoxins can cause four types of human poisoning (For more detail refer to **Harvest Closure** section)

In summary, shellfish are higher risk foods if there are not appropriate harvest controls in place. Shellfish harvested from leases managed under ShellMAP have rigorous testing and monitoring and are much lower risk.

ShellMAP's team provide weekend coverage. If growers are waiting on meat tests or sending salinity results over the weekend, please contact the team by 5pm Friday to inform them of incoming results over the weekend.

Email: shellmap@nre.tas.gov.au
Ph: 03 6165 3771

What ShellMAP regulates:

ShellMAP is located within the Aquaculture Branch of Marine Resources Division, Department of Natural Resources and Environment Tasmania (NRE Tas).

ShellMAP's Authorised Officer scientists are appointed under the *Primary Produce Safety Act 2011*, with specific appointment to the *Seafood Regulations 2014*. ShellMAP's operations cover safe harvesting of regulated fish species which includes bivalve molluscs (oysters, mussels, periwinkles, cockles) and abalone.

ShellMAP is the Shellfish Control Authority (SCA) under the Australian Shellfish Quality Assurance Program (ASQAP) guidelines, which form the basis of the Export Standards 2004, which allows for export and international market access. ShellMAP is audited by the Federal Department of Agriculture to ensure scientific sampling, testing, data analysis and reporting meets Export Standards and ASQAP Guidelines.

What ShellMAP does not regulate:

ShellMAP does not regulate total allowable catch or harvest quantities for any seafood. Regulation of harvest quantities falls under the *Living Marine Resources Management Act 1995* and is administered by the Wild Fisheries Branch of Marine Resources, within NRE Tas.

ShellMAP does not regulate post-harvest handling of any seafood.

- Regulation of shore-based processing sheds and supply chains is administered by the Product Integrity Branch of Biosecurity Tasmania, within NRE Tas.
- The Department of Health administers the *Food Act 2003*.
- Human illnesses associated with consumption of shellfish are investigated by the Department of Health and any required actions are referred to the Product Integrity Branch or ShellMAP.
- The Product Integrity Branch oversees any required product recalls.

Spatial boundaries for regulation

Classification Notice

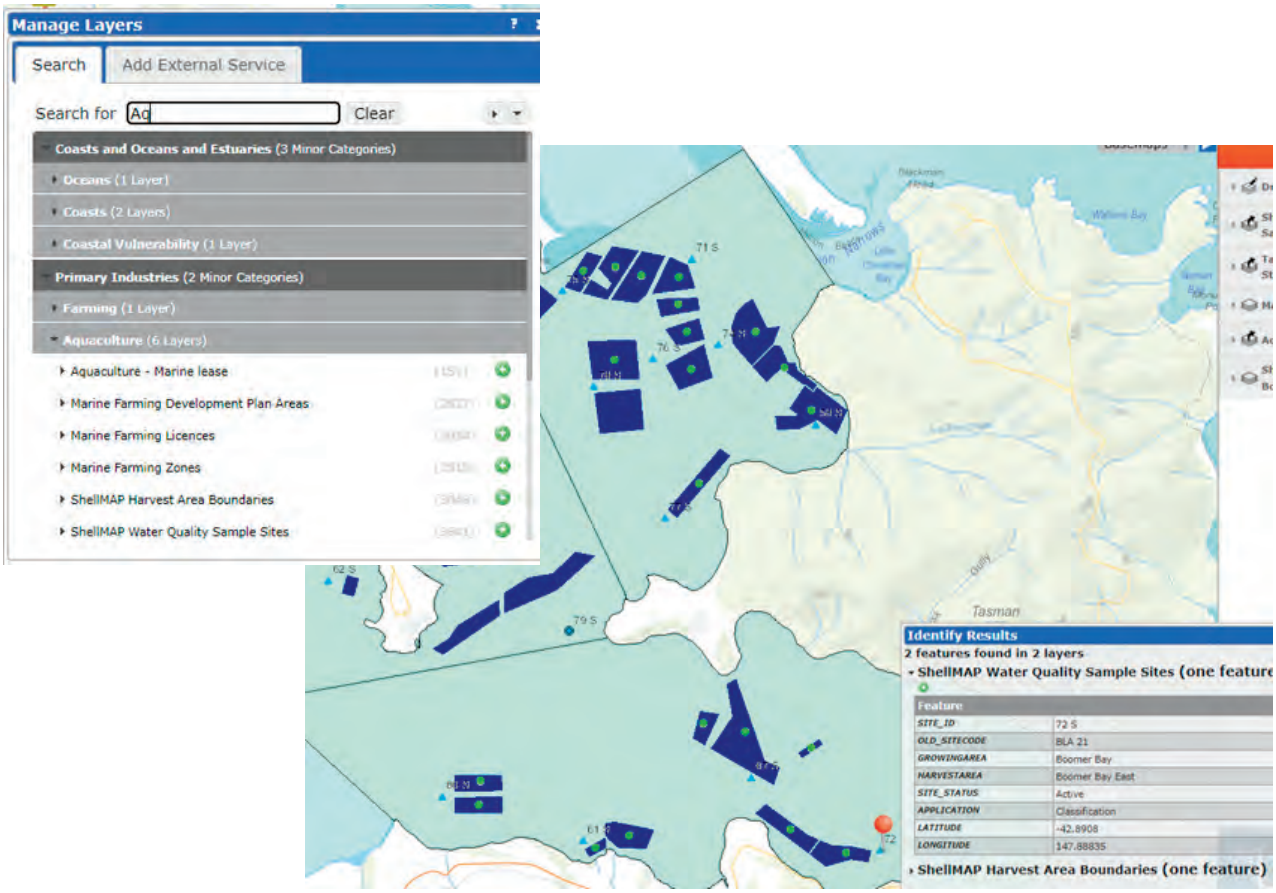
The Classification Notice is the legal document that describes the open/closed status of shellfish areas. It refers to growing areas and harvest areas (zones).

LISTmap Boundary Definitions for ShellMAP

LISTmap is the spatial reference for the boundaries of growing areas and harvest zones. LISTmap houses all the key spatial layers for ShellMAP including:

- Marine farming leases
- Marine farming licences
- ShellMAP harvest area boundaries
- ShellMAP water quality sample sites (including phytoplankton monitoring)

These are all located under the “Aquaculture" layer – see Boomer Bay example below:



Growing Areas

There are currently 30 ShellMAP growing areas classified or under classification. Within these Growing Areas there are 50 harvest areas/zones.

Map of Growing Areas across Local Council regions.

Management Plans

Growing Area Management Plan

Each growing area has a Management Plan, that is the regulatory document used for decisions on opening and closing growing areas. Management criteria are established using data collected and analysed according to ASQAP guidelines. Annual and triennial reviews ensure the data is current and fit for purpose.

Biotoxin Management Plan

The ShellMAP Biotoxin Management Plan outlines the biotoxin sampling, testing and reporting program to ensure shellfish can be safely harvested and to meet market access requirements. The Biotoxin Management Plan is approved by the Federal Department of Agriculture Fisheries and Forestry.

Sampling

Photo: Tasmanian Oyster Co.

ShellMAP sampling schedule

ShellMAP issues the annual sampling schedule in January each year.
This schedule sets out the dates that growers are to submit the following samples to Analytical Services Tasmania (AST) Laboratories.

Analysis	Sample	Sample location
Biotoxin testing	Shellfish meat – 1 dozen (chilled)	Representative of harvested stock
Phytoplankton counts	Water	ShellMAP algal sample site

Sampling frequency and dates for the current year can be found in **Appendix 1: Sampling Schedule.**
Phytoplankton sample sites can be viewed on LISTmap, using the ShellMAP Water Quality sample sites layer.
Please contact AST Phytoplankton lab for sampling supplies.
Please contact ShellMAP for phytoplankton sampling methodology.
Further detail around submitting samples for re-opening following biotoxin closure can be found in the **Reopening after harvest closure** section

Adverse Pollution Conditions Sampling

The Adverse Pollution Condition Sampling Strategy is used to establish and review harvest area classifications and establish temporary environmental closure triggers. Sampling for Adverse Pollution Conditions (APC) is typically targeted around rainfall events that may result in pollution.

These conditions can include:

- Significant rainfall events
- King tides and/or storm surges
- Seasonal fluctuations of wildlife populations (e.g. migratory birds)
- Festivals and/or events
- Change/failure in infrastructure

APC shellfish water samples are sent to the Public Health Laboratory and tested for number of thermotolerant coliforms and E.coli.
APC sampling is conducted by ShellMAP staff, approved contractors and individuals assessed as competent to conduct this activity by ShellMAP.

Sampling required by Biosecurity Tasmania

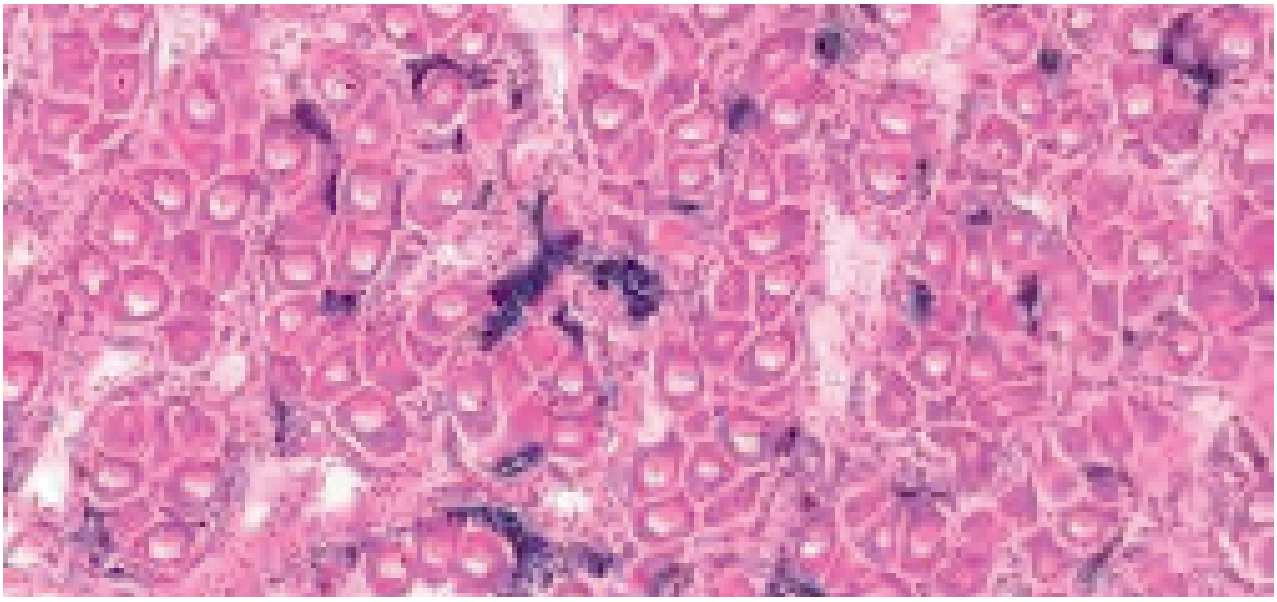
The Biosecurity Act 2019 introduces in Tasmania a legal obligation known as the General Biosecurity Duty – or GBD.

Under the **General Biosecurity Duty**, growers can be asked to submit samples to the Animal Health Laboratory in the event of elevated mortalities or disease.

Prompt reporting of elevated mortality or any disease events is essential and will assist in covering your obligations under the General Biosecurity Duty.

Call the Chief Veterinary Office, Regional Veterinary Officer or the Emergency Animal Disease Hotline on **1800 675 888.**

Animal Health Laboratory
Specimen Reception
165 Westbury Road,
PROSPECT, Tas, 7250
Phone: 6777 2111
Email: specimenreception@nre.tas.gov.au
Website: www.nre.tas.gov.au/AHLabs



Harvest Closures

Photo: Andrew Wilson, Tourism Tasmania

Closures: Environmental Triggers

Formal closure and opening of a harvest area is the responsibility of ShellMAP.

Growers and harvesters need to comply with Management Plan requirements and are encouraged to consult with ShellMAP when risk is elevated.

Environmental closure triggers

ShellMAP monitor the risks in harvest areas using Rainfall and River Flow data, in conjunction with sampling data (thermotolerant coliforms in shellfish waters and E.coli in shellfish meats).

ShellMAP check statewide environmental conditions daily at 10am, when BOM release their figures for rainfall for the 24hr period to 9am. It is at this time that most closures based on environmental conditions will occur.

Refer to Appendix for Environmental Closure Triggers by Growing Area.

The role of Adverse Pollution Conditions (APC) sampling

ShellMAP may use results from APC sampling to change the status of a harvest area. The critical limit for thermotolerant coliforms in ASQAP approved waters for shellfish growing areas is **14 CFU/100mL**. If this level is exceeded the applicable harvest area(s) may be closed.

Photo: Tasmanian Oyster Co.

Current harvest area status is published online at https://nre.tas.gov.au

Closures: Sewage Pollution

When there is pollution from sewage infrastructure into shellfish growing areas, and ShellMAP has assessed the risk as being significant, a mandatory 21 day harvest closure is enacted. The 21 days commences from the point the infrastructure stops discharging into the environment.

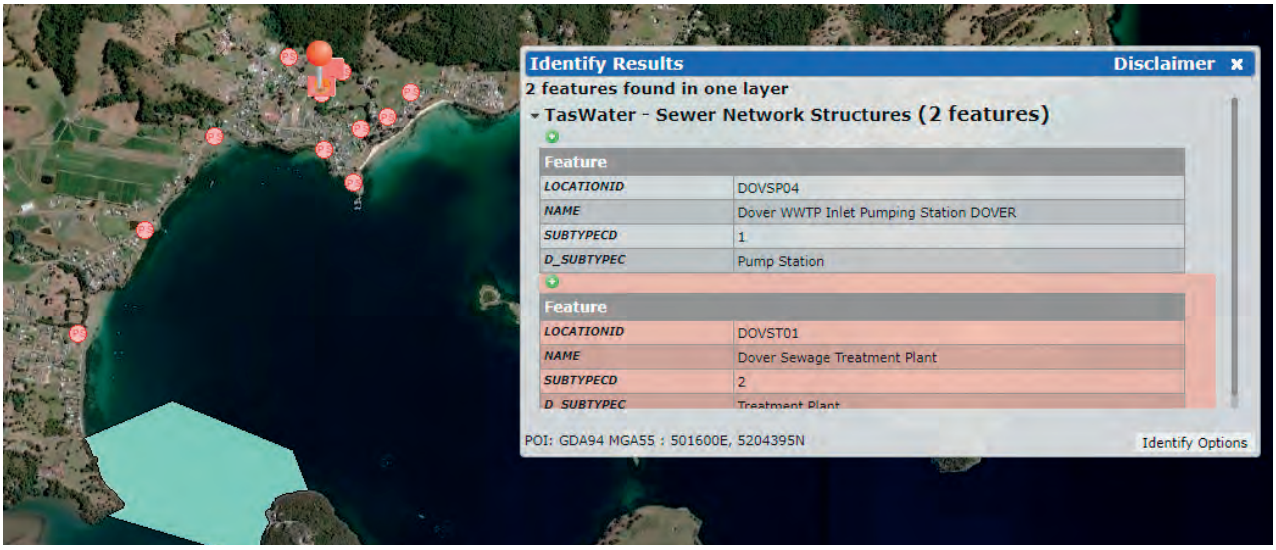
Sewage spills pose increased risk for presence of norovirus in shellfish growing areas. norovirus is retained in shellfish digestive tissues after bacterial indicators of faecal pollution can no longer be detected. As we cannot readily test for norovirus in shellfish meats, the mandatory 21 day closure is an appropriate means of managing risk. Freezing and refrigeration does not eliminate norovirus. Depuration is ineffective in eliminating norovirus from shellfish.

Pollution notifications

TasWater sends text message alerts for potential sewage pollution incidents. Sewage spill volumes and further information is provided by email from TasWater. Both growers and ShellMAP receive these notifications at the same time. ShellMAP provides grower contact details to TasWater for the purposes of these notifications so please ensure your correct contact details are maintained with ShellMAP.

TasWater has produced maps of sewerage infrastructure in catchments with shellfish zones. These can be requested from ShellMAP, or accessed on LISTmap, using the layer TasWater - Sewer Network Structures. To better understand potential risks we recommend growers familiarise themselves with TasWater network locations.

TasWater out of hours contact number 136 992.



Closures: Biotoxins

A shellfish zone must be closed for the harvesting of shellfish when toxins in shellfish are found to be above the levels prescribed in the Australia and New Zealand Food Standards Code.

- Biotoxin closures start from the time the relevant sample was taken from the harvest area
- If a growing area is approaching the biotoxin threshold, it is highly likely be identified in the weeks approaching threshold exceedance.
- If growers observe elevated levels of biotoxins in weekly samples (but not yet exceeding thresholds), they are encouraged to submit more frequent samples to manage risk. There is no additional cost for additional testing under the current ShellMAP levy structure
- AST method for biotoxin analysis has a 30% laboratory measurement uncertainty, so growers may wish to exercise caution when it comes to making decisions to harvest to account for a worst-case scenario.
- Biotoxins are not destroyed by the cooking process.

Types of toxins, poisoning, and symptoms

Paralytic Shellfish Poisoning (PSP) (Saxitoxins)

Mild PSP can cause tingling or numbness around the lips or in fingers and toes, sensations of floating or weightlessness, and gastrointestinal upset (nausea, vomiting, diarrhoea, abdominal pain). Severe PSP can result in functional weakness (impaired grip strength, staggering gait), difficulty breathing and signs of acute respiratory insufficiency such as lips turning blue. In extreme cases PSP can result in respiratory failure and death by asphyxiation.

Diarrhetic Shellfish Poisoning (DSP) (Okadaic Acid)

DSP can cause nausea, diarrhoea, vomiting, abdominal pain, and headache. These symptoms carry additional risk of dehydration, particularly in young children or the elderly.

Amnesic Shellfish Poisoning (ASP)(Domoic Acid)

Mild ASP can cause gastrointestinal upset (nausea, vomiting, diarrhoea, abdominal pain). Severe ASP can cause additional symptoms such as headache, seizures, involuntary, irregular muscle contractions, cognitive impairment and disorientation, anterograde amnesia (inability to lay down new memories following neurological damage), respiratory difficulty and coma. Four ASP fatalities were recorded during an outbreak in Canada in 1987, that was traced back to contaminated mussels.

The SafeFish website provides additional information and fact sheets around Food Safety and Biotoxins: https://safefish.com.au/reports/food-safety-fact-sheets

Re-opening following closures

Photo: Tasmanian Oyster Co.

Defining "time zero" for Re-Opening

Following an environmental closure, harvest areas must demonstrate that environmental conditions meet the requirements of their Harvest Area Risk Management Plan.

To manage potential risk from runoff, 48 hours of satisfactory salinity at low tide must be demonstrated. Satisfactory salinity is used as a proxy for shellfish filter feeding in clean water.

ShellMAP Definition:

The first sample collected once all environmental conditions meet the open status requirements of this management plan will begin the 48 hours.

Time 0 will only be accepted once the river flow is below trigger and rainfall has ceased or daily rainfall is **10% of seven day rainfall trigger or less**.

To manage potential risk from runoff, 48 hours of satisfactory salinity must be demonstrated, either measured by growers at low tide or by ShellMAP from a validated sensor site in the ShellPOINT network.

Scenarios for T-0: Hastings 7-day rainfall trigger 40mm (10% = 4mm)

Rainfall at Hastings	Rainfall in day 1 after event	T-0 status	Rainfall in day 2 after event	T-0 status	Rainfall in day 3 after event	T-0 status
45mm triggers exceedance of 7-day trigger	8mm	T-0 not started	3mm	T-0 starts	15mm	T-0 resets (>4mm)
	2mm	T-0 starts	6mm	T-0 resets (>4mm)	2mm	T-0 starts
	4.0mm	T-0 starts	3mm	T-24 reading	2mm	T-48 reading
	4.1mm	T-0 not started (>4mm)	2mm	T-0 starts	0mm	T-24 reading

Submitting samples for re-opening after environmental closures/pollution concerns

Salinities

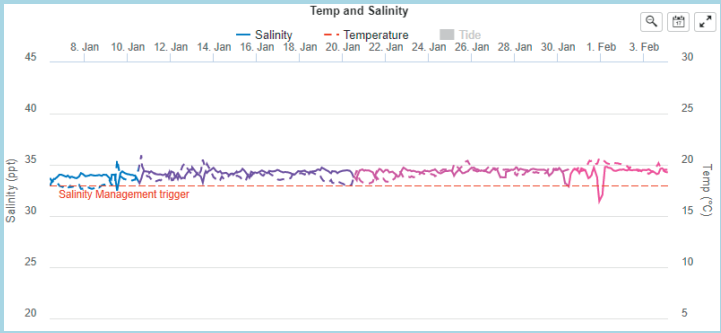
Salinities are generally used for re-opening after rainfall/river flow closures. Oysters Tasmania's Sensor Network rollout over 2022-23 will simplify this process as growers will be able to access live salinity data through ShellPOINT rather than relying on manual measurements. *ShellPOINT sensors will be used for re-opening salinity values once validation process is completed*.

Email the information as per the table below to shellmap@nre.tas.gov.au

#	Sampler	Time taken	Date taken	Source (Growing Area, Zone, Lease)	Tide	Salinity (ppt)
1 (T 0hrs)	*e.g. John Smith*	*8:55*	*15/06/2021*	*Big Bay, Zone B, Lease 10*	*Low*	*30*
2 (T 24hrs)						
3 (T 48hrs)						

A note on sensor calibration and ShellPOINT data:

ShellPOINT sensors are calibrated on a 90 day schedule. Salinity and temperature graphs are colour-coded to reflect time since calibration. Graph lines will turn to red as sensors near the point of being overdue for calibration.



Shellfish meats

Meat samples may be required for reopening after environmental closures for selected bays - **Refer to Appendix for Re-opening criteria for environmental closures**.

ShellMAP may also request additional meat samples if there are ongoing pollution concerns. ShellMAP recommends submitting five dozen unshucked oysters to the Public Health Laboratory.

The rationale for submitting 5 dozen is that the regulatory limit states one sample can be >2.3 CFU/g but none over 7 CFU/g (FSANZ Schedule 27). If only one dozen is submitted, it must test ≤2.3 CFU/g.

Submitting samples for re-opening after biotoxin closure

To reopen after a biotoxin closure, growers are required to submit two consecutive shellfish meat samples taken 1 week apart. Biotoxin results must be under the regulatory limit in both samples. Biotoxin re-openings start from the time the relevant sample was taken from the harvest area.

For biotoxin samples:
Submit one dozen chilled oysters from relevant harvest area to Analytical Services Tasmania (AST).

Samples must be submitted to AST lab by 10am Monday and/or 10am Wednesday for them to be processed the following day, otherwise they will be processed in the next cycle.

Biotoxin News contains all the shellfish biotoxin results for the week. Biotoxin News is emailed to all growers on Friday afternoons.

Full phytoplankton counts are done monthly, and results received that week are attached to Biotoxin News. Phytoplankton counts are done by phycologists looking down microscopes. There may be variation in turnaround times for results, depending on availability of specialist expertise.

Laboratory Contracts

Public Health Laboratory

Contact: Paul Grey
18 St Johns Ave,
New Town, Tasmania, 7008
Ph: (03) 6166 1106
Email: paul.grey@health.tas.gov.au
www.health.tas.gov.au/health-topics/environmental-health (Scan QR Code for link)

Analytical Services Tasmania

18 St Johns Ave,
New Town, Tasmania, 7008
Ph: (03) 6165 3300
Email: enquiries@ast.tas.gov.au
www.analyticalservices.tas.gov.au/ (Scan QR Code for direct link)

Post- Harvest Controls

Photo: Adam Gibson

Post-Harvest Regulation

Post harvest regulation currently sits under Biosecurity Tasmania's Primary Produce Safety Program (PPSP).

Primary Production and Processing (PPP) Standards are set by Food Standards Australia New Zealand (FSANZ) and incorporated into Chapter 4 of the *Australia New Zealand Food Standards Code (Food Standards Code)*. The legislative framework for enforcement of the PPP Standards in Tasmania is covered in the *Primary Produce Safety Act 2011*.

To be compliant with the regulation, all producers and processors must have a Food Safety Management Plan, and ensure that it is routinely audited by an accredited auditor.

This also covers compliance across the following areas:

- Harvest and Hold
- Vibrio Control Program
- Wet Storage.

Human illnesses associated with consumption of shellfish are investigated by Department of Health and any required actions referred to the Product Integrity Branch or ShellMAP.

The Product Integrity Branch oversees any required product recalls.

Seafood Safety Enquiries:
Karen Loone, Program Manager (Primary Produce Safety)
Biosecurity Tasmania
Phone: 03 6165 3248
Email:karen.loone@nre.tas.gov.au

Department of Health Enquiries:
Stewart Quinn, Manager Environmental Health
Department of Health
Phone: 03 6166 6690
Email: stewart.quinn@health.tas.gov.au

Vibrio Control Program

Selected growing areas have been identified as having elevated vibrio risk profile. Growers harvesting out of these zones must demonstrate compliance under PPSP's Vibrio Control Program (VCP).

- Big Bay – all zones
- Moulting Bay – all zones
- Great Swanport – all zones
- Pipe Clay Lagoon – all zones

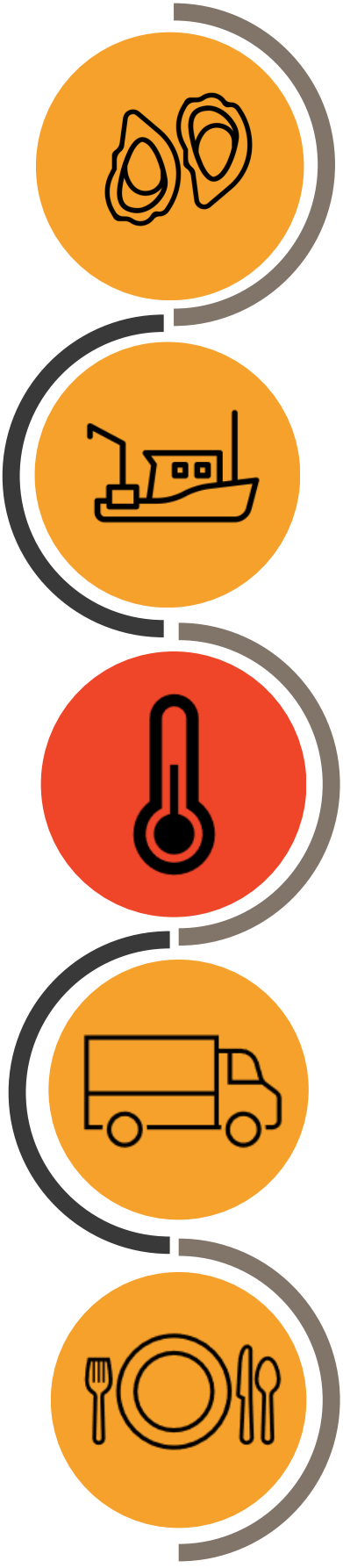
The VCP prescribes a series of harvesting controls; specifically air and water temperature, and time taken from harvest into the cool chain.

It is highly recommended that growers in other zones consider implementing a VCP, especially in warmer months to manage business risk.

If a vibrio outbreak is detected for shellfish harvested in any Tasmanian growing area, a closure can be enacted by PPSP, regardless of the VCP.

Photo: Stu Gibson

Vibrio parahaemolyticus risk management



- Hold oysters on lease for at least 2 tidal cycles after handling
- Move stock to deeper, cooler water for at least 7 days
- Relay to a lower risk area for at least 7 days

- Harvest early in morning in warmer months
- In intertidal areas harvest ASAP after oysters are exposed by tide
- Keep oysters cool on boat using shading, air circulation, or sprinkler systems

Get stock below 10°C ASAP after harvest

- Maintain cool chain to keep stock <10°C
- Make sure delivery is acknowledged on arrival and oysters are placed into refrigeration quickly
- Check temperature of stock on arrival

- Eat quickly after purchase or put in fridge/on ice
- Shucked oysters must be stored below 4°C
- For the elderly/immune compromised, cooking to over 65°C will kill *Vibrio parahaemolyticus*

Compliance

Permits, authorisations, and responsibilities as marine farmers

Photo: Tourism Tasmania, Andrew Wilson

Relaying and Receiving Shellfish

In 2022 ShellMAP streamlined paperwork for relay and receive authorisations so that authorisations cover requirements under different pieces of legislation.

When Relaying Authorisations are completed and signed by a ShellMAP Authorised Officer, growers do not need to do a relaying application every year or for every new relaying situation. Growers must maintain stock movement and traceability records (which they should be doing anyway!).

For more information contact the ShellMAP team

Level 3 Lands Building, 134 Macquarie Street
Hobart TAS 7000
Phone: 03 6165 3771
Email: shellmap@nre.tas.gov.au
Website: https://nre.tas.gov.au

Photo: Oysters Tasmania

POMS Movement Permits

For a grower to be able to move oysters from one oyster growing area, and place on a farm in another area, a POMS Movement Permit must be issued by Biosecurity Tasmania.

Under a permit, movements are allowed:

- within areas in the same risk category
- into another area where there is a higher POMS risk category

The table below contains the current list of growing areas within the 3 different categories of risk.

POMS free areas	Intermediate areas	Infected areas
Sea Elephant Bay (King Is)	Great Oyster Bay	Little Swanport
Montague	Great Swanport	Spring Bay
Duck Bay	Dunalley Bay	Boomer Bay
Big Bay	King George Sound	Pitt Water & Island Inlet
Port Sorell	Eaglehawk Bay	Pipe Clay Lagoon
Moulting Bay (Georges Bay)	Garfish Bay	Port Cygnet
	Little Norfolk Bay	
	Port Arthur	
	Fleurtys Point	
	Great Bay	
	Long Bay Reef	
	Little Taylors Bay	
	Cloudy Bay Lagoon	
	Port Esperance	
	Hastings Bay	
	Recherche Bay	

Biosecurity Tasmania - POMS Permits & Enquiries

13 St Johns Avenue

New Town TAS 7008

Phone: 03 6165 3777

Email: POMSTas@nre.tas.gov.au

https://nre.tas.gov.au/biosecurity-tasmania

Marine Farming - Information on the Rules, Regulations and Fees

Marine Leases and Licenses

Leases are granted by the Minister for Primary Industry and Water, under the provisions of the Marine Farming Planning Act 1995. Each lease sits within a zone and falls under a Marine Farming Development Plan. These plans contain management controls that define necessary measures to mitigate and manage any negative effects of marine farming. The plans also outline which species may be farmed within a zone.

No marine farming is permitted without a licence, with the exception of activities authorised by a permit. Licences are granted by the Minister, under the provisions of the Living Marine Resources Management Act 1995.

Lease and licence information can be found on the LISTmap website. Leaseholder information is not publicly available.

Industry Levies

There are three compulsory industry levies associated with shellfish licences:

- TSIC levy
- ShellMAP levy
- TORC levy

These levies fund industry development, regulatory and operational services. Growers may apply to vary a licence or lease area, to change conditions of their licence or to alter the lease boundaries within the zone.

Photo: Oysters Tasmania

Reporting

Production Figures

It is a marine farming licence condition that growers report quarterly production of cultured species sold to market.

Production figures should be reported to the Aquaculture Branch in a timely manner as set out in your marine farming licence. Production figures are used to report the scale and economic importance of the Tasmanian oyster industry, which can then be used to leverage new partnerships and development opportunities for growers.

Reporting on Mortality Issues

It is a marine farming licence condition that growers immediately notify the General Manager of Marine Resources and the Chief Veterinary Officer of NRE Tas of any significant illness, mortality or disease in the shellfish within the lease area. Quickly notifying these personnel allows for timely investigations and risk reduction work to be undertaken on the stock.

Refer to Sampling section for more information on sampling during mortality or disease events.

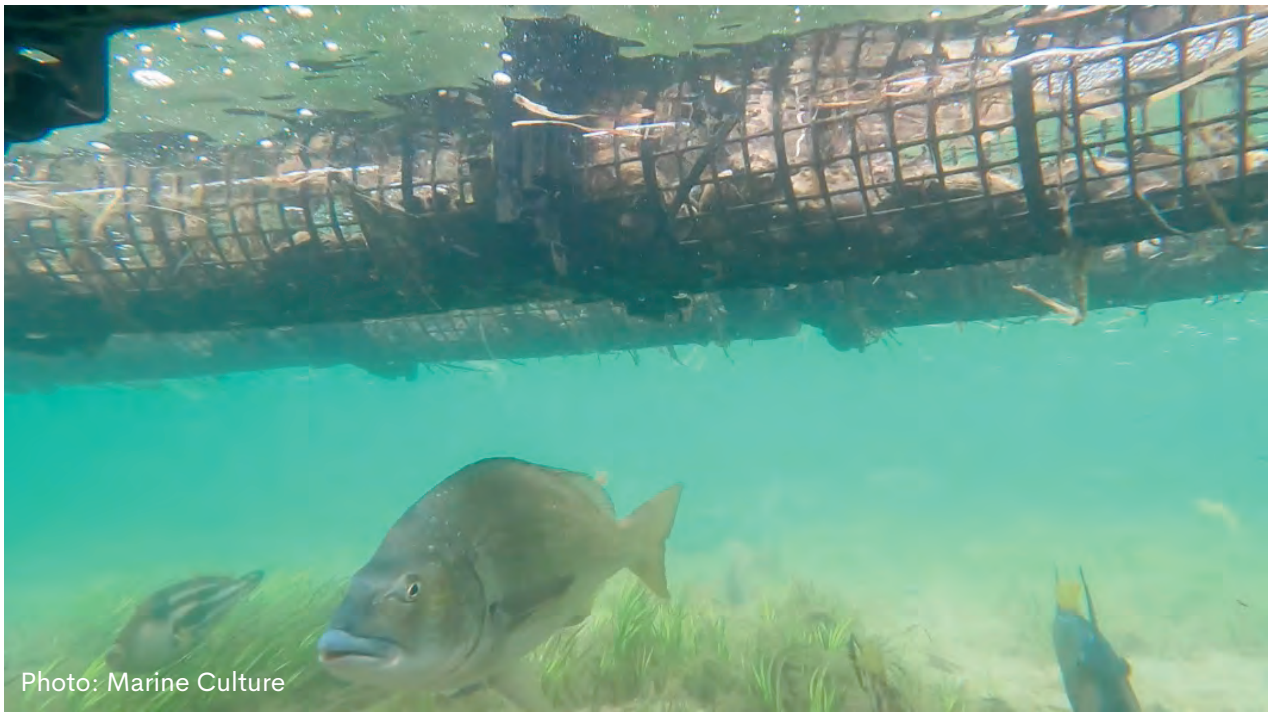


Photo: Marine Culture

Lease Marking and Gear Requirements

Tasmanian Government

Lease holders are required to mark their marine farming lease areas in accordance with IALA buoyage systems for mariners.

The marking requirements are determined by Marine and Safety Tasmania (MAST) in conjunction with the Aquaculture Branch.

Lease markers need to be maintained by the lease holders in a serviceable condition. Routine maintenance should include activities such as:

- painting markers,
- checking lights
- repairing any damage to the navigational mark (such as special type "X")
- maintaining mooring lines
- ensuring the navigational marker is in the correct position

When conducting major works on navigational markers or any changes to your approved lease area, advice should be sought from NRE Tas and MAST, as a Notice to Mariners may be required before beginning and upon completion of your work.

Marine farming equipment must be contained within the lease area and **must be black to grey in colour**, unless otherwise authorised in the marine farming licence. The equipment needs to be maintained in a serviceable condition clear of the seabed. Growers should conduct routine maintenance on all marine farming equipment to prevent equipment becoming dilapidated and to mitigate equipment loss.

If you're unsure about the marking requirements for your lease, contact the Aquaculture Branch.

Photo: Oysters Tasmania

Marine Farming Debris

Tasmanian Government

Marine farming debris is any marine farming equipment located in State waters outside of a marine farming lease area, including foreshores, without authorisation. Examples of marine farming debris include oyster baskets, buoys, pipes and ropes that have come adrift from marine farming operations.

If you see marine farming debris that poses a navigational hazard, immediately contact MAST on 0418 145 439 and request a Notice to Mariners. See the Notice to Mariners section below for more information.

The Aquaculture Branch is responsible for managing reports of marine farming debris from members of the public and other stakeholders. Reports of marine debris will be investigated by the Branch's compliance team.

If marine debris is identified as a significant issue on your lease area, you may be required to clearly mark all marine farming equipment on the lease area and provide an equipment register.

For more information or to report marine farming debris to the Aquaculture Branch

email: mfops@nre.tas.gov.au
visit the NRE Tas website

Photo: Natasha Hansson

Notice to Mariners (NtM)

A NtM can be issued by contacting MAST, noting the Aquaculture Branch can provide assistance with this process. A NtM should be issued for any issue that poses a hazard to other waterway users such as:

- Missing or broken lease and navigational markers
- Conducting major works on navigational markers
- Missing rafts or pontoons
- Missing farming equipment

The NtM notifies other waterway users of the hazard, reducing the likelihood of any potential incidents with the public. A NtM will also reduce a farm's exposure and liability if an incident occurs. Below image is of Miri – vessel of the AB.

To issue a Notice to Mariners

Visit the MAST website
https://mast.tas.gov.au

Call MAST on 0418 145 439.

Photo: Will Hansen

Compliance and Inspection Program

The Aquaculture Branch Operations Team conduct on water inspections to assess lease holder compliance with Marine Farming Development Plan (MFDP) management controls, lease conditions, license conditions, permit conditions; and associated legislation regulating marine farming operations in state waters.

The Aquaculture Branch utilises a risk-based approach to plan its inspection effort, which allows targeted inspections of sites deemed medium and high-risk based on previous compliance history.

Intertidal Oyster lease inspections are generally conducted during low tides to allow officers the best opportunity to identify any potential issues. When conducting shellfish lease inspections, authorised officers assess:

- Corner mark compliance
- Equipment within lease area
- Species authorisation
- Condition of equipment
- Biofouling status
- Shellfish containers
- Marine debris

The lease inspections are conducted on the vessel "Miri" and/or from the shore. The vessel "Miri" is a blue 3.9 m RHIB that is used to conduct both sub-tidal and intertidal lease inspections. Farmers should feel free to come and talk to the team if they see them on the water.

Photo: Will Hansen

Resources

Photo: Ian Dutton

Sensor Network

Oysters Tasmania and ShellMAP's flagship Partnership Project

This project will deliver:

- High resolution local salinity, temperature, and tide data
- Reduced reliance on growers for water sampling for re-opening

Further microbial sampling in conjunction with IMAS modelling expertise will refine salinity models for basis of harvest closures where applicable.

Please note that salinity measurements will not be used to re-open after closures until calibration process has been completed - please contact Oysters Tasmania to discuss in more detail.

OT commit to not seek Grower funding prior to 31st March 2024. We aim to embed the system into food safety management practices in the first 18 months, and demonstrate with cost/benefit that the estimated annual upkeep cost per monitoring site is worthwhile investment.

ShellPOINT

The online data portal ShellPOINT is the output of $200K grant funding from NRM South and the Tasmanian Seafood Industry Council's Tasmanian Smart Seafood Partnership Project (TSSP).

ShellPOINT is where all the sensor network data is displayed and becomes valuable information for grower operations.

Each of the sensor monitoring sites has its own individual Dashboard. On the dashboards you can find:

- Live salinity, temperature, and tide data
- ShellMAP Classification status and harvest closure triggers
- Local Rainfall data
- River Flow data
- Biotoxin testing
- Phytoplankton testing - HABs as well as full algal counts

ShellPOINT for Education

Our partnership with the TSSP promotes a focus on education and training. Project outputs will include grower training material at both Certificate III and Certificate IV level to build the capacity of the industry to interpret sensor data.

A key element of this partnership is providing access to real-time data for education providers and research institutes to help understand the science behind marine farming and support better decision making into the future.

By providing ShellPOINT as an educational resource, we hope to engage the next generation of farmers, scientists and policy makers on the environmental issues that are important to our industry.

How to use ShellPOINT on your phone

ShellPOINT is a fantastic resource to get a snapshot of your growing area's environmental conditions on your smart phone. Refer to the instruction below for easy navigation for when you are on-farm, away from a computer.

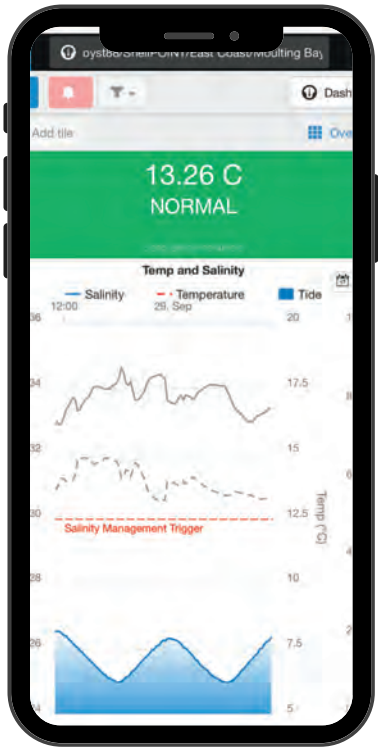
1. Start by going to the ShellPOINT homepage shellpoint.eagle.io/login (Scan QR Code)

2. Select the Folder icon on the top left to bring up the list of sensor sites

3. Using the drop down menu - locate the relevant growing area and sensor site (in this example we have used Moulting Bay Zone 6)

4. Select the Dashboard icon

5. Select the folder icon once more to bring up the Dashboard display



The dashboard display contains a summary of current environmental conditions and alerts, as well as a graph showing the past 24 hours of data

The date range on the graph can be expanded or customised using the calendar icon on the top right.

Shorebird breeding areas

LISTMAP LAYER

USING THE LISTMAP LAYER

1. Visit **maps.thelist.tas.gov.au**
2. Click **Layers**
3. Click **Add layer**
4. Search **Bird breeding**
5. Click ⊕ to add layer to map

Bird breeding season:
1 September to 31 March

For advice on access, responding to injured birds, or other queries, contact tasmania@birdlife.org.au and/or eric.woehler@gmail.com

Marine farming operators requiring access to collect specific pieces of marine debris should seek advice from BirdLife Tasmania through either of the above email addresses.

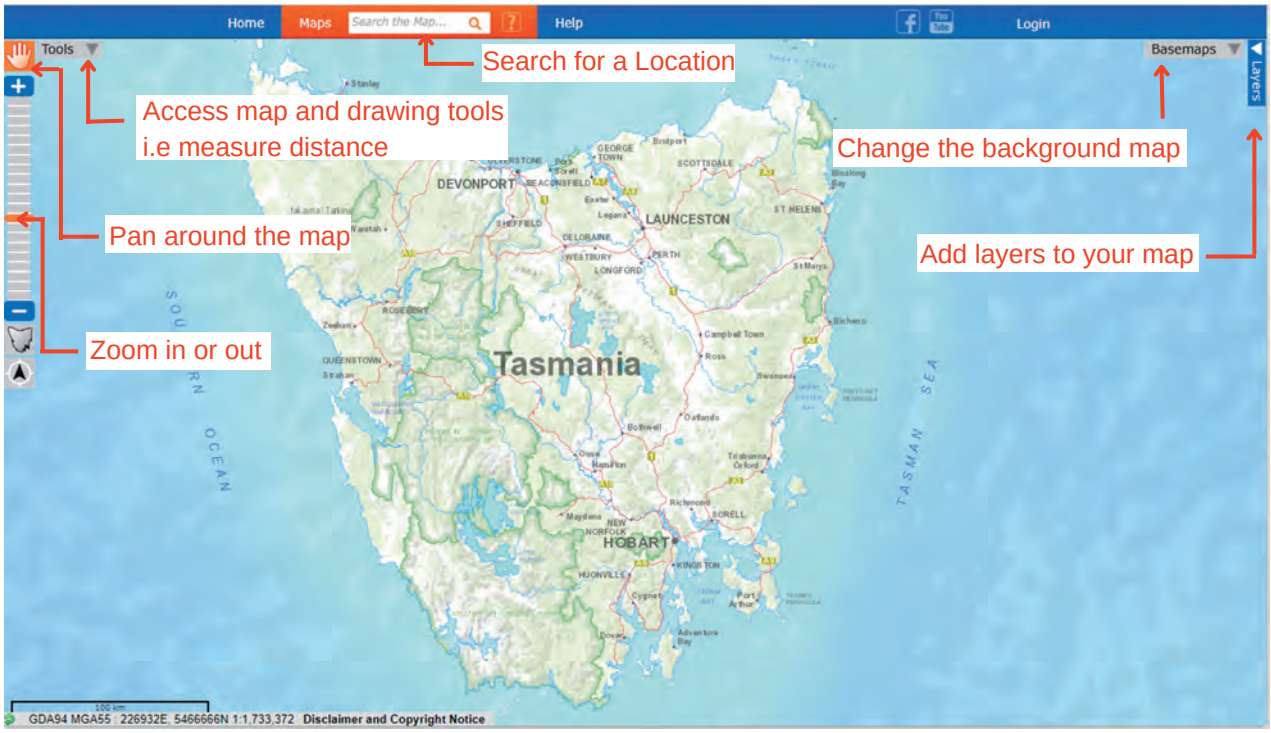
Tasmanian Government | NRM South | birdlife TASMANIA | Tasmanian Oyster Co. | TSIC Tasmanian Seafood Industry Council | Australian Government

The Bird breeding habitat and access recommendations LISTmap layer is a collaborative project between Natural Resources and Environment Tasmania's Aquaculture Branch, BirdLife Tasmania, NRM South and the Tasmanian Seafood Industry Council through the Tasmanian Smart Seafood Partnership project, and the Tasmanian Oyster Company.

LISTmap

LISTmap stands for Land Information System Tasmania. It is provided by the Tasmanian Government as a publicly available resource. LISTmap can be accessed at https://maps.thelist.tas.gov.au (Scan the QR Code for direct link)

LISTmap navigation



LISTmap layers

LISTmap contains a wide range of spatial data and links to regulatory documentation. Some layers that are directly relevant to oyster growers include:

Category	Sub-category	Layer
Primary Industries	Aquaculture	Aquaculture - Marine lease
Primary Industries	Aquaculture	Marine Farming licenses
Primary Industries	Aquaculture	ShellMAP Harvest Area Boundaries
Primary Industries	Aquaculture	ShellMAP Water Quality Sample Sites
Infrastructure and Utilities	Water and Sewer	TasWater - Sewer Network Structures
Climate and Environment	Environment	EPA Regulated Premises
Plants and Animals	Species	Bird breeding habitat and access recommendations

Research, Development and Extension

Photo: Kurt McBain

Research, Development and Extension

Oysters Tasmania Research, Development, and Extension Committee

The Oysters Tasmania RDE Committee's purpose is to identify, prioritise, drive, communicate, and gather feedback on research, development, and extension activities that support sustainable profits for current Tasmanian bivalve farmers.

Oysters Tasmania provides input into research priorities across various forums and funding bodies, including:
FRDC via Oysters Australia Industry Partnership (IPA)
SMRCA via the Shellfish Research Advisory Group (Shellfish RAG)

Oysters Tasmania staff also seek out and apply for additional funding and grant opportunities to get industry-focused projects work funded.

The Committee have a standing invitation for any Oysters Tasmania members who wish to join a quarterly meeting, provide research priorities, or pitch project ideas.

RDE Committee contact:
Frances Huddlestone (Industry Development Officer)
Email: frances@oysterstasmania.org
Phone: 0417 075 760

Photo: Natasha Hansson

Research services to ShellMAP

NRE Tas provided a grant to the SMRCA (IMAS) to develop a research project/s to address shellfish industryneeds.

The grant covers a total of $405k, with expenditure and projects to be completed by 1 June 2025.

The objective for this funding was to assist the partners of ShellMAP to investigate cost effective risk management optionsacross a majorfood safety risk and/or other matters affecting or contributing to the development of industry value and production through the provision of underpinning research. Five projectplans were agreedon.

1. Review of ASQAAC guidance for wet storage and depuration.
Lead: Dr. Alison Turnbull
Time Frame: August 2022 (Completed)
Review changes have been incorporated into version 6 of the ASQAP Manual, issued 2022 and available on SafeFish website.

2. Options for managing microbiological risks from wastewater on shellfish growing areas in Dunalley/Blackman Bay
Lead: Dr Carlos Campos
Time Frame: May 2022 (Completed)

Options report provided a review of the sewage spill dilution model, and provided a platform for further sewage field investigation work in the future.

3. Assessment of sewage spills in the Huon and D'Entrecasteaux Channel area
Lead: Dr. Scott Hadley
Collaborators: Dr. Alison Turnbull and Edward Forbes
Time frame: Sewage dispersal study completed by March 2023, potential pollution source study by June 2023.

The information gathered from the sewage dispersal study and potential pollution source study can be post processed to provide a risk-based assessment of the interaction between oyster leases and sources of contamination within the region.

4. Socio-economic analysis for biotoxin management in Tasmania

Lead: Dr. Steven Rust

Collaborators: Dr. Alison Turnbull, Lizy Spanou

Time frame: January 2022 - May 2023

HAB Socio-economic Study Objectives:

1. Understand the net benefit to key stakeholder groups (using an appropriate scale for each group) from the current approach to HABs and seafood safety management.
2. Establish industry and Government priorities for an integrated approach to HABs and seafood safety management in Tasmania.
3. Identify the potential benefits and costs for key stakeholder groups for moving to an integrated approach based on Objectives 1 and 2.
4. Understand the scale and distribution of resources required for effective management of marine biotoxin risk and response.
5. Understand the future benefits of research that flow from taking an integrated approach.

5. Research associated with the roll out of environmental sensors in oyster growing areas to inform faecal contamination risk management

Team: Dr Alison Turnbull, Dr Scott Hadley, Claire Hedges, Dr Rachel Brown, Edward Forbes, James Valentine, Frances Palmer, Duncan Spender, Frances Huddlestone

Time frame: September 2022 - June 2025

The sensor network is an exciting development for industry, that will give farmers advanced warning of food safety related harvest closures, potential for reduced closure times, and increased transparency of decision making between industry and regulators.

Through this project we will determine how microbial levels change during rainfall events and how this can be monitored in real-time using the sensor data. Microbial source tracking will deliver a deeper level of insight by identifying sources of contamination, paving the way for remediation. Sensors will be placed in spatially diverse locations within estuaries, capturing important information on hydrology and hydrodynamics giving a more informed basis for decision making.

Grower Handbook Appendices

2023

- 2023 Contacts
- Biotoxin sampling schedule
- Phytoplankton sampling schedule
- Environmental closure triggers
- Biotoxin closure triggers
- Re-opening criteria for environmental closures
- Export Approved growing areas

Photo: Tourism Tasmania and Andrew Wilson

oysters TASMANIA

QUALITY TASMANIAN SHELLFISH

SHELLFISH MARKET ACCESS PROGRAM

2023 Contacts

Oysters Tasmania			
Duncan Spender	Chief Executive Officer	ceo@oysterstasmania.org	0401 065 131
Frances Huddlestone	Industry Development Officer	frances@oysterstasmania.org	0417 075 760

NRE Tasmania – ShellMAP			
Rachel Brown	Program Manager	rachel.brown@nre.tas.gov.au	0457 034 297
Edward Forbes	Scientific Officer	edward.forbes@nre.tas.gov.au	0429 026 482
Fran Palmer	Scientific Officer	frances.palmer@nre.tas.gov.au	0428 557 523
James Valentine	Graduate Aquaculture Officer	james.valentine@nre.tas.gov.au	0477 387 268
ShellMAP team and general enquiries		shellmap@nre.tas.gov.au	03 6165 3771

NRE Tasmania – Aquaculture Branch			
Eric Brain	Branch Manager	eric.brain@nre.tas.gov.au	03 6165 3120
Aquaculture Operations (including marine debris reporting)		mfops@nre.tas.gov.au	03 6165 3110

Biosecurity Tasmania			
Karen Loone	PPS Program Manager	karen.loone@nre.tas.gov.au	03 6165 3248
Philippa Sims	Aquaculture Vet	phillipa.sims@nre.tas.gov.au	0429 401 994
Emergency Animal Disease Hotline		animaldisease.enquiries@nre.tas.gov.au	1800 675 888
Animal Health Laboratory		specimenreception@nre.tas.gov.au	03 6777 2111
POMS Permits and Enquiries		POMSTas@nre.tas.gov.au	03 6165 3777

Department of Health			
Stewart Quinn	Manager Environmental Health	stewart.quinn@health.tas.gov.au	03 6166 6690

Public Health Laboratory			
Paul Grey	Microbiologist in charge	paul.grey@health.tas.gov.au	03 6166 1106

Analytical Services Tasmania			
Damien Norman	Manager	damien.norman@ast.tas.gov.au	03 6165 3300
Tim Jordan	Biotoxin Facility Manager	tim.jordan@ast.tas.gov.au	03 6165 3314
Stephanie Fulton	Phytoplankton Analysis	stephanie.fulton@ast.tas.gov.au	03 6165 3300

TasWater			
Mark Harrison	Key Account Manager	mark.harrison@taswater.com.au	0448 554 543
TasWater after hours reporting line			136 992

2023 Biotoxin Sampling

The majority of Tasmanian growing areas located on the East Coast and South east of the state are categorised as medium or high risk, and therefore are on a weekly sampling schedule.

Growers must submit Biotoxin samples to AST Lab by 10am Monday and 10am Wednesday so they can be processed with the routine weekly samples and be included in Thursday reporting.

Sampling Frequency	Growing areas included
Weekly	Moulting Bay Great Swanport Great Oyster Bay Little Swanport Spring Bay Boomer Bay Dunalley Bay Norfolk Bay Pitt Water Island Inlet Pipe Clay Lagoon Great Bay Fleurtys Point Birchs Bay Little Taylors Bay Cloudy Bay Lagoon Port Esperance Hastings Bay Recherche Bay
Fortnightly	Gardners Bay
Monthly	Sea Elephant River Montagu Duck Bay Port Sorell

2023 Biotoxin Sampling Schedule

December	January	January	January	January	January	February	February	February
26/12/2022	**2/01/2023**	**9/01/2023**	**16/01/2023**	**23/01/2023**	**30/01/2023**	**6/02/2023**	**13/02/2023**	**20/02/2023**
Weekly: East Coast & South East	Weekly: East Coast & South East	Weekly: East Coast & South East	Weekly: East Coast & South East	Weekly: East Coast & South East	Weekly: East Coast & South East	Weekly: East Coast & South East	Weekly: East Coast & South East	Weekly: East Coast & South East
Fortnightly: Gardners Bay		Fortnightly: Gardners Bay		Fortnightly: Gardners Bay		Fortnightly: Gardners Bay		Fortnightly: Gardners Bay
Monthly: North-West				Monthly: North-West				Monthly: North-West

March	March	March	March	March	April	April	April	April
27/02/2023	**6/03/2023**	**13/03/2023**	**20/03/2023**	**27/03/2023**	**3/04/2023**	**10/04/2023**	**17/04/2023**	**24/04/2023**
Weekly: East Coast & South East	Weekly: East Coast & South East	Weekly: East Coast & South East	Weekly: East Coast & South East	Weekly: East Coast & South East	Weekly: East Coast & South East	Weekly: East Coast & South East	Weekly: East Coast & South East	Weekly: East Coast & South East
	Fortnightly: Gardners Bay		Fortnightly: Gardners Bay		Fortnightly: Gardners Bay		Fortnightly: Gardners Bay	
			Monthly: North-West				Monthly: North-West	

May	May	May	May	May	June	June	June	June
1/05/2023	**8/05/2023**	**15/05/2023**	**22/05/2023**	**29/05/2023**	**5/06/2023**	**12/06/2023**	**19/06/2023**	**26/06/2023**
Weekly: East Coast & South East	Weekly: East Coast & South East	Weekly: East Coast & South East	Weekly: East Coast & South East	Weekly: East Coast & South East	Weekly: East Coast & South East	Weekly: East Coast & South East	Weekly: East Coast & South East	Weekly: East Coast & South East
Fortnightly: Gardners Bay		Fortnightly: Gardners Bay		Fortnightly: Gardners Bay		Fortnightly: Gardners Bay		Fortnightly: Gardners Bay
		Monthly: North-West				Monthly: North-West		

July	July	July	July	July	August	August	August	August
3/07/2023	**10/07/2023**	**17/07/2023**	**24/07/2023**	**31/07/2023**	**7/08/2023**	**14/08/2023**	**21/08/2023**	**28/08/2023**
Weekly: East Coast & South East	Weekly: East Coast & South East	Weekly: East Coast & South East	Weekly: East Coast & South East	Weekly: East Coast & South East	Weekly: East Coast & South East	Weekly: East Coast & South East	Weekly: East Coast & South East	Weekly: East Coast & South East
	Fortnightly: Gardners Bay		Fortnightly: Gardners Bay		Fortnightly: Gardners Bay		Fortnightly: Gardners Bay	
	Monthly: North-West				Monthly: North-West			

September	September	September	September	October	October	October	October	October
4/09/2023	**11/09/2023**	**18/09/2023**	**25/09/2023**	**2/10/2023**	**9/10/2023**	**16/10/2023**	**23/10/2023**	**30/10/2023**
Weekly: East Coast & South East	Weekly: East Coast & South East	Weekly: East Coast & South East	Weekly: East Coast & South East	Weekly: East Coast & South East	Weekly: East Coast & South East	Weekly: East Coast & South East	Weekly: East Coast & South East	Weekly: East Coast & South East
Fortnightly: Gardners Bay		Fortnightly: Gardners Bay		Fortnightly: Gardners Bay		Fortnightly: Gardners Bay		Fortnightly: Gardners Bay
Monthly: North-West				Monthly: North-West				Monthly: North-West

November	November	November	November	December	December	December	December
6/11/2023	**13/11/2023**	**20/11/2023**	**27/11/2023**	**4/12/2023**	**11/12/2023**	**18/12/2023**	**25/12/2023**
Weekly: East Coast & South East	Weekly: East Coast & South East	Weekly: East Coast & South East	Weekly: East Coast & South East	Weekly: East Coast & South East	Weekly: East Coast & South East	Weekly: East Coast & South East	Weekly: East Coast & South East
	Fortnightly: Gardners Bay		Fortnightly: Gardners Bay		Fortnightly: Gardners Bay		Fortnightly: Gardners Bay
			Monthly: North-West				Monthly: North-West

Sample Schedule set December 2022. ShellMAP maintain the right to make changes to this schedule reflective of changing conditions or risk profile. In the event of changes all efforts will be made to communicate information to growers promptly.

2023 Phytoplankton Sampling

Monthly sampling of shellfish waters for phytoplankton counts is rotated so that different growing areas are sending in samples on different weeks. That way the laboratory workload can be managed. Groups have been colour coded on the schedule on the following pages:

Phytoplankton sampling schedule group	Growing areas included
East Coast & Tasman Peninsula	Moulting Bay Great Swanport Great Oyster Bay Little Swanport Spring Bay Boomer Bay Dunalley Bay Norfolk Bay
South East	Pitt Water Island Inlet Pipe Clay Lagoon Great Bay Fleurtys Point Birchs Bay Little Taylors Bay Cloudy Bay Lagoon Port Esperance Hastings Bay
North West, Recherche, Gardners Bay	Sea Elephant River Montagu Duck Bay Port Sorell Recherche Bay Gardners Bay

2023 Phytoplankton Sampling Schedule

December	January	January	January	January	January	February	February	February
26/12/2022	**2/01/2023**	**9/01/2023**	**16/01/2023**	**23/01/2023**	**30/01/2023**	**6/02/2023**	**13/02/2023**	**20/02/2023**
NW, Recherche, Gardners	East Coast & Peninsula	South-East		NW, Recherche, Gardners	East Coast & Peninsula	South-East		NW, Recherche, Gardners

March	March	March	March	March	April	April	April	April
27/02/2023	**6/03/2023**	**13/03/2023**	**20/03/2023**	**27/03/2023**	**3/04/2023**	**10/04/2023**	**17/04/2023**	**24/04/2023**
East Coast & Peninsula	South-East		NW, Recherche, Gardners	East Coast & Peninsula	South-East		NW, Recherche, Gardners	East Coast & Peninsula

May	May	May	May	May	June	June	June	June
1/05/2023	**8/05/2023**	**15/05/2023**	**22/05/2023**	**29/05/2023**	**5/06/2023**	**12/06/2023**	**19/06/2023**	**26/06/2023**
South-East		NW, Recherche, Gardners	East Coast & Peninsula	South-East		NW, Recherche, Gardners	East Coast & Peninsula	South-East

July	July	July	July	July	August	August	August	August
3/07/2023	**10/07/2023**	**17/07/2023**	**24/07/2023**	**31/07/2023**	**7/08/2023**	**14/08/2023**	**21/08/2023**	**28/08/2023**
	NW, Recherche, Gardners	East Coast & Peninsula	South-East		NW, Recherche, Gardners	East Coast & Peninsula	South-East	

September	September	September	September	October	October	October	October	October
4/09/2023	**11/09/2023**	**18/09/2023**	**25/09/2023**	**2/10/2023**	**9/10/2023**	**16/10/2023**	**23/10/2023**	**30/10/2023**
NW, Recherche, Gardners	East Coast & Peninsula	South-East		NW, Recherche, Gardners	East Coast & Peninsula	South-East		NW, Recherche, Gardners

November	November	November	November	December	December	December	December
6/11/2023	**13/11/2023**	**20/11/2023**	**27/11/2023**	**4/12/2023**	**11/12/2023**	**18/12/2023**	**25/12/2023**
East Coast & Peninsula	South-East		NW, Recherche, Gardners	East Coast & Peninsula	South-East		NW, Recherche, Gardners

Sample Schedule set December 2022. ShellMAP maintain the right to make changes to this schedule reflective of changing conditions or risk profile. In the event of changes all efforts will be made to communicate information to growers promptly.

Harvest Closures: Environmental Triggers

North West

Growing Area Closure	Management	River/Rainfall station	Trigger
Sea Elephant River	Rainfall	Naracoopa	20mm in 7-Days
Montagu	Rainfall	Smithton	40mm in 7-Days
	Riverflow	Montagu River	0.8 cumecs
Big Bay	Rainfall	Smithton	45mm in 7-Days
	Riverflow	Montagu River	3.5 cumecs
Duck Bay	Rainfall	Smithton	40mm in 7-Days
	Riverflow	Duck River	5.5 cumecs
Kemps Bay	Rainfall	Smithton	25mm in 7-Days
Port Sorell	Rainfall	Devonport	40mm in 7-Days
	Riverflow	Rubicon River	2 cumecs

East Coast

Growing Area Closure	Management	River/Rainfall station	Trigger
Moulting Bay Zone 1	Rainfall	St Helens	40mm in 7-Days
	Riverflow	George River	12 cumecs
Moulting Bay Zone 2	Rainfall	St Helens	40mm in 7-Days
	Riverflow	George River	8 cumecs
Moulting Bay Zone 4	Rainfall	St Helens	35mm in 7-Days
	Riverflow	George River	8 cumecs
Moulting Bay Zone 5	Rainfall	St Helens	35mm in 7-Days
	Riverflow	Riverflow	12 cumecs
Moulting Bay Zone 6A	Rainfall	St Helens	40mm in 7-Days
	Riverflow	George River	20 cumecs
Moulting Bay Zone GB1	Rainfall	St Helens	35mm in 7-Days
	Riverflow	George River	8 cumecs
Moulting Bay Zone GB2	Rainfall	St Helens	40mm in 7-Days
	Rainfall	Pyengana	70mm in 7-Days
	Riverflow	George River	12 cumecs
Great Swanport	Rainfall	Swansea	55mm in 7-Days
	Riverflow	Apsley River	3 cumecs
	Riverflow	Swan River	5 cumecs
Great Oyster Bay	Rainfall	Swansea	80mm in 7-Days
	Riverflow	Apsley River	35 cumecs
	Riverflow	Swan River	75 cumecs
Little Swanport	Rainfall	Lisdillon	40mm in 7-Days
Spring Bay	Rainfall	Orford	80mm in 2-Days
	Rainfall	Orford	150mm in 7-Days
	Riverflow	Prosser River	130 cumecs

Closure Triggers are current as at January 2023 and subject to change. Current triggers are available in the current management plan as issued by ShellMAP.

South East

Growing Area Closure	Management	River/Rainfall station	Trigger
Boomer Bay	Rainfall	Dunalley	35mm in 3-Days
	Rainfall	Dunalley	60mm in 7-Days
Dunalley Zone A	Rainfall	Dunalley	60mm in 7-Days
Dunalley Zone B	Rainfall	Dunalley	85mm in 7-Days
	Riverflow	Carlton River	25 cumecs
Eaglehawk Bay, King George Sound	Rainfall	Eaglehawk	85mm in 7-Days
Garfish Bay/Dart Island	Rainfall	Eaglehawk	100mm in 7-Days
	Riverflow	Allans Creek	2.3 cumecs
Pitt Water Zone 1	Rainfall	Hobart Airport	45mm in 7-Days
	Riverflow	Coal River	4 cumecs
Pitt Water Zone 2 and 3	Rainfall	Hobart Airport	40mm in 7-Days
	Riverflow	Coal River	4 cumecs
Pipeclay Lagoon	Rainfall	Hobart Airport	17mm in 1-Day
	Rainfall	Hobart Airport	50mm in 7-Days

Channel

Growing Area Closure	Management	River/Rainfall station	Trigger
Great Bay - Intertidal North	Rainfall	Woodbridge	20mm in 2-Days
	Rainfall	Woodbridge	50mm in 7-Days
	Riverflow	Huon River	500 cumecs check salinity
Great Bay - Intertidal South and Subtidal	Rainfall	Woodbridge	70mm in 7-Days
	Riverflow	Huon River	700 cumecs check salinity
Little Taylors Bay	Rainfall	Cape Bruny	45mm in 3-Days
	Rainfall	Cape Bruny	100mm in 7-Days
	Riverflow	Huon River	1000 cumecs check salinity
Cloudy Bay Lagoon	Rainfall	Cape Bruny	55mm in 7-Days
Fleurtys Point	Rainfall	Woodbridge	100mm in 7-Days
	Riverflow	Huon River	1000 cumecs check salinity
Port Esperance	Rainfall	Dover	60mm in 7-Days
	Riverflow	Esperance River	10 cumecs
Hastings Bay	Rainfall	Dover	20mm in 7-Days check salinity
	Rainfall	Dover	40mm in 7-Days
	Rainfall	Hastings Chalet	20mm in 7-Days check salinity
	Rainfall	Southport	20mm in 7-Days
Recherche Bay	Rainfall	Cape Bruny	25mm in 7-Days

Closure Triggers are current as at January 2023 and subject to change. Current triggers are available in the current management plan as issued by ShellMAP.

Harvest Closures: Biotoxin Triggers

A shellfish zone must be closed for the harvesting of shellfish when toxins in shellfish are found to be above the levels prescribed in the Australia and New Zealand Food Standards Code. Biotoxin closures (and re-openings) start from the time the relevant sample was taken from the harvest area.

AST method for Biotoxin analysis has a 30% margin of error, so growers may wish to exercise caution when it comes to making decisions to harvest to account for a worst-case scenario.

Toxin Group	Closure trigger level	-30% error margin
Paralytic Shellfish Toxin (Saxitoxin equivalent)	>0.8 mg/kg	>0.56 mg/kg
Amnesic Shellfish Toxin (Domoic Acid equivalent)	>20 mg/kg	>14 mg/kg
Diarrhetic Shellfish Toxin (Okadaic Acid equivalent)	>0.2 mg/kg	>0.14 mg/kg

ShellMAP uses monthly phytoplankton sampling as an indicator for potential biotoxin risk. The table below lists the cells/L levels that require actions to be taken:

Phytoplankton Species	Type of Toxin	Alert Level - cells/L		
		AST to contact ShellMAP	ShellMAP to contact growers	ShellMAP initiate closure pending meat test results
Alexandrium catenella	PST	100	200	500
Alexandrium minutum	PST	100	200	500
Alexandrium tamarense	PST	100	200	500
Alexandrium ostenfeldii	PST	100	200	500
Gymnodinium catenatum	PST	200	1000 mussel (2000 other)	5000
Dinophysis acuminata	DST	200	1000	
Dinophysis acuta	DST	200	1000	
Dinophysis caudata	DST	500	1000	
Dinophysis fortii	DST	200	1000	
Prorocentrum lima	DST	500	1000	
Pseudo-nitzschia seriata group	AST	50000	50000	500000
Pseudo-nitzschia delicatissima group	AST	100000	500000	
Karenia brevis	NST	500	1000	5000
Karenia/Karlodinium/Gymnodinium gr.	NST	100000	250000	300000

Re-Opening Criteria: Environmental Closures

North West and East Coast

Harvest Area	Reopening Criteria
Sea Elephant River	Meat test ≤2.3 CFU/g
Montagu	Meat test ≤2.3 CFU/g
Big Bay Zones B and D	Salinity ≥33.5 ppt
Big Bay Zones C and E	Salinity ≥32.5 ppt
Duck Bay	Salinity ≥32.5 ppt
Kemps Bay	Meat test ≤2.3 CFU/g
Port Sorell	Salinity ≥31 ppt
Moulting Bay Zone 1	Salinity ≥30 ppt
Moulting Bay Zone 2	Salinity ≥31 ppt
Moulting Bay Zone 4	Salinity ≥30 ppt
Moulting Bay Zone 5	Salinity ≥30 ppt
Moulting Bay Zone 6A	Salinity ≥30 ppt
Great Swanport East	Salinity ≥21 ppt
Great Swanport West	Salinity ≥26 ppt
Great Oyster Bay	Salinity ≥32.5 ppt
Little Swanport 6A/B	Salinity ≥27 ppt
Little Swanport 6C	Salinity ≥26 ppt
Spring Bay	Meat test ≤2.3 CFU/g Salinity ≥34 ppt

Re-opening criteria are current as at January 2023 and subject to change. Current criteria are available in the current management plan as issued by ShellMAP.

Re-Opening Criteria: Environmental Closures

South East and Channel

Growing Area	Reopening Criteria
Boomer Bay and Little Boomer Bay	Salinity ≥33 ppt
Boomer Bay East	Salinity ≥31 ppt
Dunalley Bay Zone A	Salinity ≥32 ppt
Dunalley Bay Zone B	Salinity ≥33 ppt
King George Sound	Meat test ≤2.3 CFU/g Salinity ≥32.5 ppt
Eaglehawk Bay	Salinity ≥33 ppt
Garfish Bay/Dart Island	Salinity ≥33 ppt
Little Norfolk Bay	No direct harvest
Pitt Water Zone 1	Salinity ≥30 ppt
Pitt Water Zone 2	Salinity ≥27 ppt
Pitt Water Zone 3	Salinity ≥29 ppt
Island Inlet	No direct harvest
Pipe Clay Lagoon (all)	Salinity ≥31 ppt
Great Bay Intertidal North	Salinity ≥32 ppt
Great Bay Intertidal South and Subtidal	Salinity ≥31 ppt
Fleurtys Point	Salinity ≥30 ppt
Little Taylors Bay	Salinity ≥31 ppt
Cloudy Bay Lagoon	Salinity ≥31 ppt
Gardners Bay	No direct harvest/salinity ≥23 ppt
Port Esperance	Salinity ≥25 ppt
Hastings Bay	Salinity ≥25 ppt
Recherché Bay	Salinity ≥25 ppt

Re-opening criteria are current as at January 2023 and subject to change. Current criteria are available in the current management plan as issued by ShellMAP.

Export approved growing areas

The listed harvesting areas may provide bivalve molluscs for export (except to the United States of America or where Australia does not have market access). On the condition they are in the 'open' status at the time of harvesting according to the relevant State Shellfish Control Authorities.

North West	East Coast	South East	Channel
Big Bay Duck Bay Kemps Bay Port Sorell	Moulting Bay Great Swanport West Great Swanport East Great Oyster Bay Little Swanport Little Swanport Zone 6C	Boomer Bay Little Boomer Bay Boomer Bay East Dunalley Bay Eaglehawk Bay Garfish Bay/Dart Is Pitt Water Island Inlet Zone 4 Island Inlet Zone 5 Pipe Clay Lagoon	Great Bay Great Bay subtidal Little Taylors Bay Cloudy Bay Lagoon Fleurtys Point Port Esperance Hastings Bay

Bivalve mollusc harvesting areas approved to source shellfish for export to the EU.

The listed harvesting areas may provide bivalve molluscs for export to the EU on the condition they are in the 'open' status at the time of harvesting according to the relevant State Shellfish Control Authority.

East Coast	South East
Moulting Bay	Pitt Water

List adopted from the Australian Government Department of Agriculture, Water, and Environment.

This list is referenced in Item 1 of subsection 2-4 (1) of the Export Control (Fish and Fish Products) Rules 2021 (Fish Rules) and prepared in accordance with the definition of the Harvesting Areas (Shellfish for Export) List in section 1-6 of the Fish Rules.