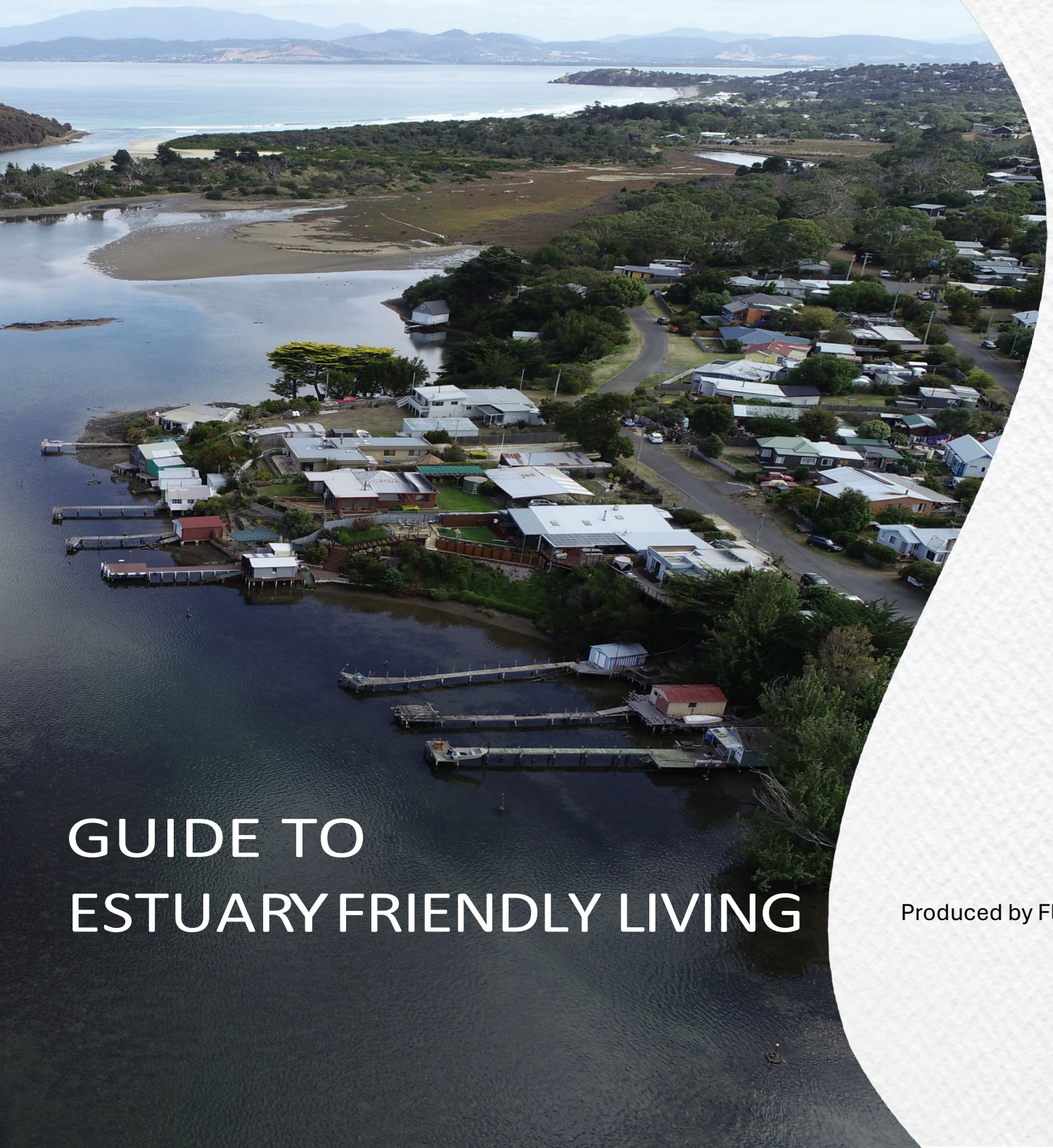
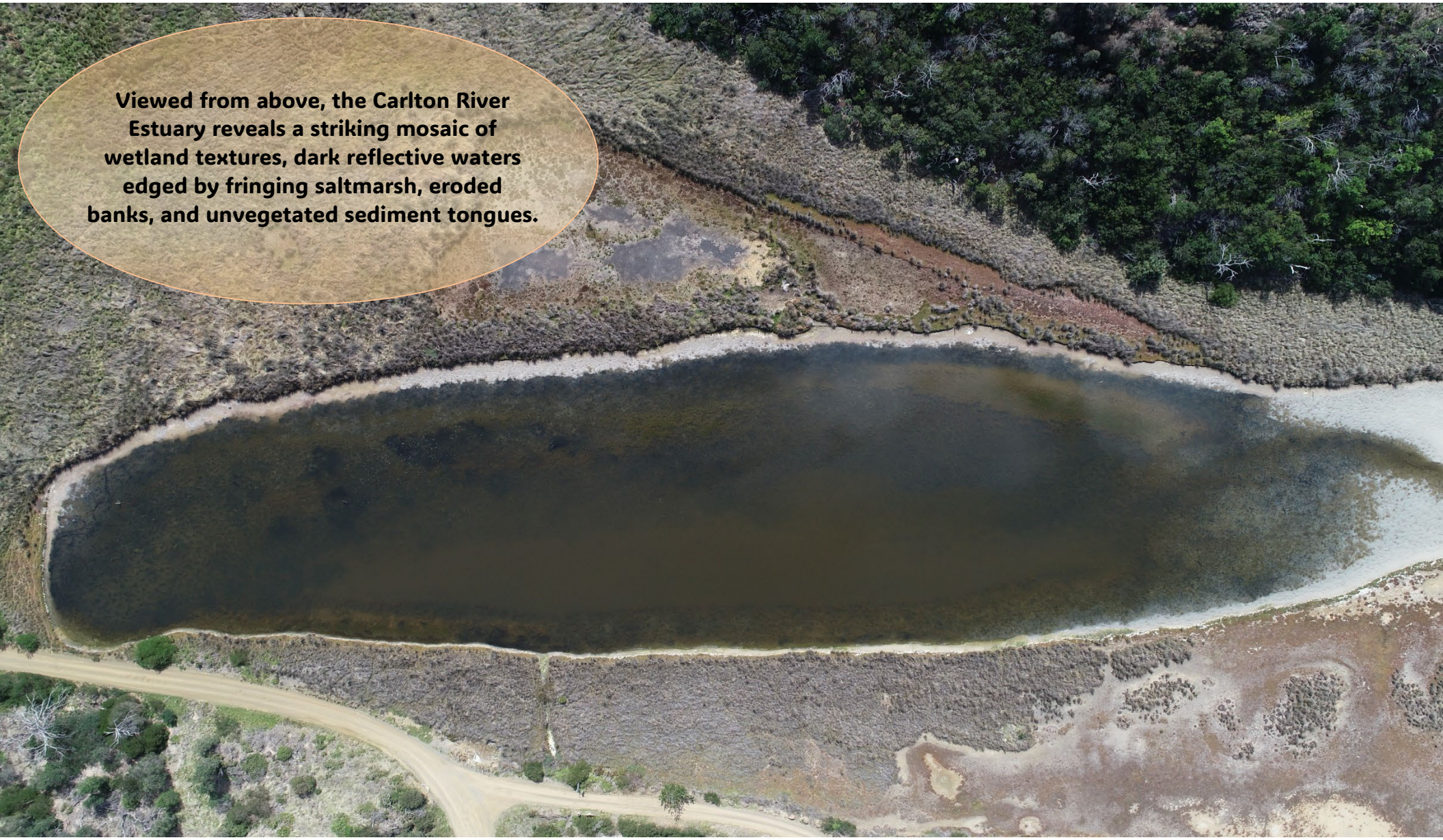


GUIDE TO ESTUARY FRIENDLY LIVING

SORELL COUNCIL 1862

flüssig Engineers

Produced by Flussig Engineers for Sorell Council 2025


Viewed from above, the Carlton River Estuary reveals a striking mosaic of wetland textures, dark reflective waters edged by fringing saltmarsh, eroded banks, and unvegetated sediment tongues.

WHAT IS AN ESTUARY?

Estuaries are places where freshwater from the land mixes with saltwater from the sea. Some, like the Carlton River Estuary, are shaped by a single major river; others are fed by countless creeks and drains. Some estuaries are nestled in winding channels behind dunes; others open directly into wide coastal bays like Frederick Henry Bay near Carlton Bluff.

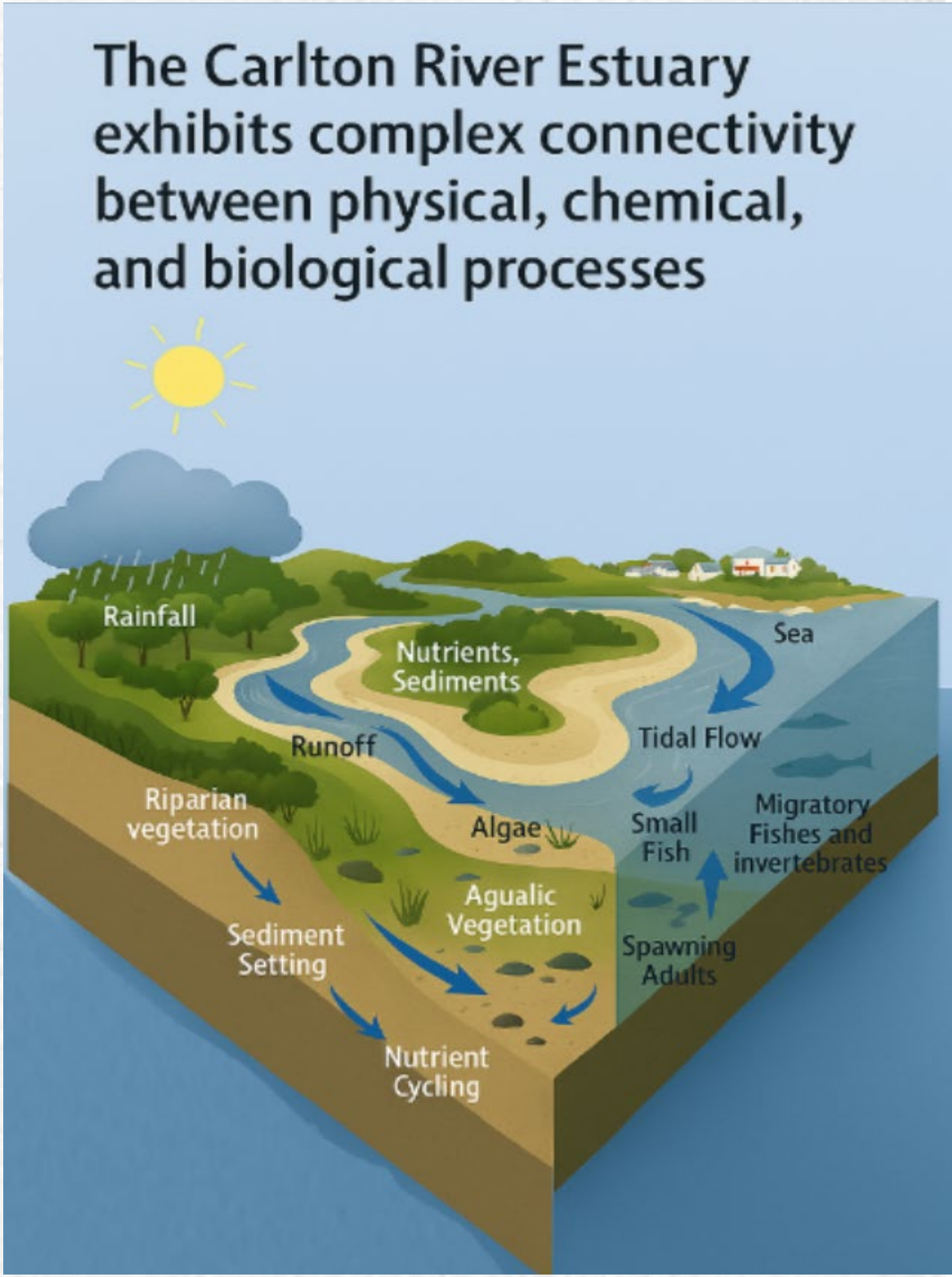
Estuaries rank among the most productive ecosystems on Earth—on par with tropical rainforests. They can be over 20 times more efficient at turning sunlight and nutrients into plant biomass than the open ocean, and several times more efficient than farming. The Carlton River Estuary supports thriving saltmarsh, seagrass, and riparian communities that stabilise banks and filter pollution. It also sustains incredible biodiversity, from Southern Bell Frogs and seagrass-dwelling fish to thousands of migratory birds that depend on its food-rich mudflats.

WHAT'S IN AN ESTUARY?

Although Tasmania's estuaries come in many shapes and sizes, all of them share some environmental features. For instance, when walking near Carlton River or its wetlands, you'll likely notice several of the following:

- Freshwater inputs from rivers, drains, and creeks
- Coastal dunes that shelter estuarine mouths
- Open water
- Seagrass beds
- Tidal channels
- Saltmarsh and riparian vegetation
- Submerged aquatic plants
- Exposed mudflats
- High biological diversity; fish, birds, frogs, and invertebrates

A typical estuary like Carlton River displays strong connections between its main physical features, chemical cycles, and biological activity.



ESTUARY-FRIENDLY LIVING

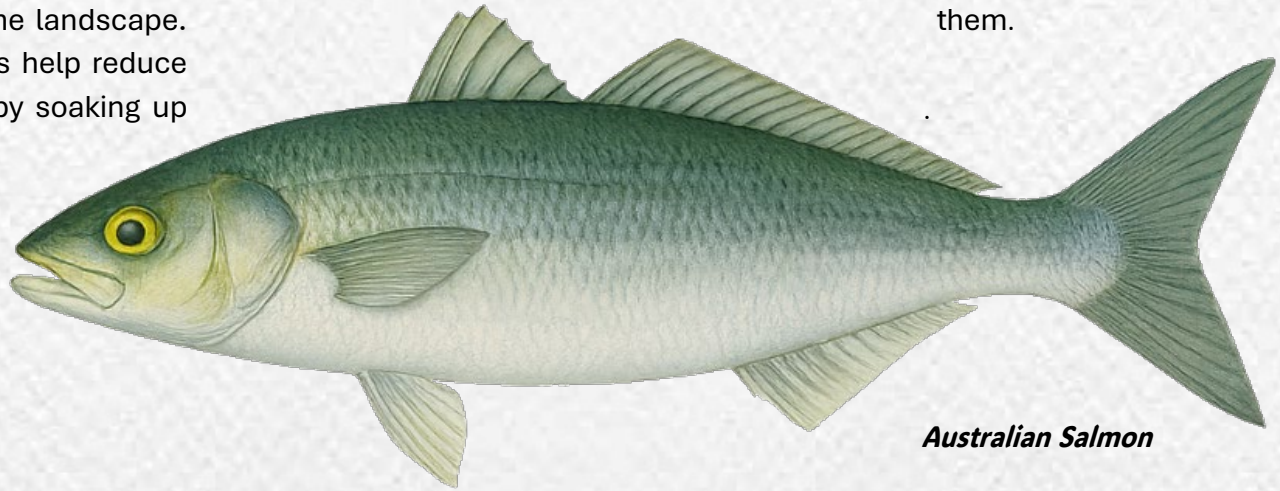
Prime habitat for fish and wildlife. Prime real estate for people. Estuaries are essential to both nature and community wellbeing. And no matter where you live in southern Tasmania, you're never far from an estuary you can either protect — or unintentionally harm — depending on your actions.

The intricate system of tidal creeks, saltmarshes, and wetlands in the Carlton River Estuary delivers enormous environmental and social value. These estuarine zones are hotspots for biodiversity, home to species like Black Bream, seagrass, and migratory shorebirds. They're also special places to walk, paddle, birdwatch, or simply enjoy the landscape. Just as importantly, estuaries help reduce the risk of coastal flooding by soaking up stormwater and buffering against erosion. In short, they're living natural assets.

But despite all they offer, estuaries like Carlton River are under growing stress from human activity. Urban expansion, earthworks, vegetation clearing, storm-water runoff, septic leakage, boating impacts, and water pollution are placing pressure on the system. Scientists and land managers now better understand how these pressures affect water quality, habitat, and species health — and there's increasing agreement that estuaries must be actively protected.

This booklet is a place to begin. Whether you live in Carlton, Primrose Sands, Dodges Ferry, or elsewhere along the east coast, you're connected to the estuary. By learning more, you can better appreciate, protect, and possibly help restore this unique ecosystem. We offer practical, action-oriented suggestions for individuals, households, and communities — from simple behaviour changes to broader local initiatives.

While this resource can't provide every solution, it's a useful starting point for anyone who wants to better understand their role in the future of Tasmania's estuaries — and join the effort to care for them.



Australian Salmon

IMPACTS TO THE CARLTON RIVER ESTUARY

Although the benefits of estuaries continue to be vitally important to the economic and ecological health of Tasmania, the past 60 years have not been kind to these remarkable areas. Unfortunately, much of the damage has resulted from ignorance of the impacts our activities have on estuaries. As a result, Tasmania's estuaries are being severely damaged by:

Changes in freshwater drainage. Fresh water can disrupt estuarine balance if delivered in the wrong volume or season. Many estuaries are now starved of natural baseflows or receive runoff too rapidly from rainfall. One major impact that humans have on estuaries occurs when they increase the extent of "impermeable surfaces," which are things like roads, driveways and buildings that do not allow water to percolate into the soil. Instead, they carry water quickly off into drainage systems. The result is that when it rains, estuaries in locations with considerable development receive a rapid slug of water, instead of water being delivered more gradually and over a longer period of time.

Habitat loss. Much of the original habitat found in estuaries has been destroyed to make room for cities, highways, harbors and marina facilities, coastal communities and all the other features of modern life.

Pollution. Oil, waste, and poorly maintained septic systems all contribute pollutants to the estuary. There is growing concern about household chemicals, cleaning agents, and micro-pollutants entering via stormwater or wastewater systems.

Nutrient over-enrichment. Fertilisers, grass clippings, animal waste, and effluent contribute excess nutrients that fuel algae blooms. These blooms reduce oxygen, suffocate aquatic life, and destabalise the natural balance of estuarine ecosystems.

Chemicals. Pesticides, fertilisers, detergents, oils, and other substances from human activity are washed into the estuary during rain. This runoff reduces water quality and clarity. As mentioned earlier, the spread of impermeable surfaces, roads, roofs, and hardstand areas, means pollutants are delivered rapidly to the estuary whenever it rains.

Construction. Earthworks, subdivisions and track construction have altered drainage and increased erosion. Many estuaries, including the Carlton River, are filling with sediment that washes in from surrounding hills and roads, smothering aquatic vegetation and altering habitat.

Litter. People produce large volumes of rubbish, and unfortunately, some of it ends up in estuaries. Not only is litter unsightly, it degrades water quality and can injure or kill fish, birds, and marine animals through entanglement or ingestion.

Pests. Non-native species, including fish, aquatic plants, and invertebrates, sometimes enter estuaries via illegal dumping or contaminated boats. These invaders can outcompete native species, degrade habitats, or disrupt the food web.

Climate Change. Tasmanian estuaries are vulnerable to climate change. Rising sea levels are altering wetland zones, increasing salinity, and weakening soil structure.

Saltmarsh and riparian plants may erode away or drown. In some cases, vegetation can move inland, but roads, seawalls, and buildings often block this retreat. Soil degradation from increased salt content causes some wetland areas to collapse into open water.

At both state and national levels, sea-level rise is becoming one of the greatest long-term threats to the survival of estuarine ecosystem.

Our estuaries are degraded by development, pollution, nutrients, changing climate, and other human impacts

ACTIVELY HELP TO PROTECT AN ESTUARY

What can Tasmanian residents and visitors do to protect our estuaries?
The first step is awareness — to understand that no matter where you live in Tasmania, your choices can affect estuary health. Once you know this, there are many simple things you can do to live in an "estuary-friendly" way, and to inspire your friends and neighbours to do the same. The next few pages offer some practical suggestions.

You can make a difference in protecting the Carlton River Estuary through small actions like picking up litter, or by joining larger community-based projects. Here are a few ways to get involved. For more inspiration, visit the **Derwent Estuary Program** or **NRM South** websites.

Each year, events like **Clean Up Australia Day** bring together thousands of volunteers to remove rubbish from beaches, estuaries, and wetlands. To get involved, visit **www.cleanup.org.au** or check with your local council for events near Carlton or Primrose
Sands.
Practice low-impact recreation by following "**Leave No Trace**" principles when walking, boating, or fishing in estuarine areas. The aim is to take only photos and leave only footprints.

Join your local **Landcare** or **Coastcare** group or visit **www.nrmsouth.org.au** to learn about environmental volunteering opportunities in the Carlton River region. Activities include planting, weed removal, and shoreline restoration.

Write a letter: One of the most powerful ways to support estuary protection is to write to your **local council** or **Member of Parliament**. Learn who represents you and share your concerns about estuarine health and resilience.

Many of Tasmania's best-preserved estuarine environments are part of the **State Reserve** system or managed through **NRM** partnerships. Visit places like the **Carlton River Estuary, Pipe Clay Lagoon,** or nearby **Pitt Water–Orielton Lagoon RAMSAR** site to better understand these systems and their value

Never follow, feed, or disturb native shorebirds, fish, frogs, or marine mammals such as dolphins or seals. **Observing from a distance** helps protect animals and their habitat.

Never release unwanted pets or aquarium species into the wild. This is illegal and can severely disrupt native habitats and food webs.

THINK BEFORE POURING

There are many ways we can harm estuaries, but some of the most serious damage happens through the drains in our homes. Whether your drain connects to sewer, stormwater, or a septic system, what you pour down could eventually reach the estuary — harming plants, animals, and water quality.

Here's how to reduce that risk:

Read the label. Products with ingredients like lye, phenols, petroleum solvents, or trichlorobenzenes can seriously damage aquatic environments. Avoid these and choose eco-friendly alternatives instead. Never dispose of them down the drain.

More generally, **avoid pouring things** like ammonia, bleach, oven cleaners, polish, or floor wax into household drains. These substances can be toxic even in small amounts. Collect and dispose of them safely at a designated household hazardous waste drop-off.

Dispose of paint, thinners, and brush cleaners responsibly. Never pour these materials down the drain or onto the ground — they contain chemicals that can pollute estuaries like Carlton River. Instead, take them to your local council's hazardous waste drop-off or collection event. If disposing of paint cans in general waste, make sure the paint inside is completely dried — use air-drying or mix with sawdust or kitty litter.

Common household products can seriously harm estuary plants, fish, and wildlife, even in small amounts.

Reuse solvents where possible. Turpentine or brush cleaners can be strained through a cloth to remove solids and reused. Always store in clearly labelled containers, tightly sealed and kept away from heat or flames.

Avoid pouring unknown household products down the drain. Old or unlabelled items like cleaners, garden sprays, or degreasers should never enter plumbing or waterways. Keep them stored in a safe place until your council hosts a chemical waste collection day. Contact your local waste authority for dates and instructions.

Dispose of old medications properly. Never flush or bin expired or unused prescription drugs. Trace chemicals can pass through treatment systems and harm estuarine life. Most Tasmanian pharmacies are part of the **Return Unwanted Medicines (RUM) Project** — a free and safe program to dispose of medications through your local chemist.

Remember that regardless of where you live in Tasmania, whether it be directly on an estuary or tens of miles from the coast, water draining off your land can make its way to rivers and ultimately the estuaries and ocean. **The guidelines above apply to us all.**

Everyone plays a part in keeping our waterways clean, regardless of how far from the ocean you live

PRACTICE ESTUARY-SAFE YARD CARE

Tasmanians are passionate home gardeners, with many taking pride in their lawns, veggie beds, and native gardens. In the past, it was commonly believed that using more fertiliser and pesticide led to greener lawns and healthier plants. Today, we know this isn't true — and that with simple best-practice techniques, you can maintain a thriving garden while reducing the use of harmful chemicals that may damage nearby waterways and estuaries like the Carlton River.

Here are some easy tips:

Practice and encourage sensible yard maintenance. Programs such as NRM South's sustainable gardening initiatives are designed to help reduce fertiliser and pesticide runoff into local waterways, including creeks, rivers, and estuaries like Carlton River.

Choose the right plants for your location in Tasmania. They require minimal fertiliser and watering because they are suited to the local soil types and seasonal climate.

Use mulch around plants. It's visually appealing, helps reduce runoff from your garden, lowers evaporation, and retains soil moisture. By using natural leaf litter, bark chips, or garden prunings as mulch, you also reduce green waste going to landfill.

If you use fertilisers or pesticides, follow the label instructions closely and apply only the recommended amounts. Overuse can encourage weeds, attract pests, waste money, and harm nearby creeks and estuaries like Carlton River when washed away by rain.

Use slow-release (granular) fertilisers instead of liquid types, which often wash out of the soil during rain. Slow-release fertilisers provide longer-lasting nutrients for your plants, reduce runoff into waterways, and save you money over time. If you hire a gardening or lawn care service, ask them to use slow-release products — and if they won't, consider switching to one that will.

Find environmentally safe alternatives to pesticides. Ask your local nursery, garden centre, or council's NRM officer for advice, or visit www.nrmsouth.org.au for sustainable gardening resources

Apply fertiliser according to best practice guidelines for sustainable gardening. Follow local advice to avoid overuse and minimise runoff into nearby waterways and estuaries.

Wherever possible use bricks, gravel, permeable pavers, or other porous materials when building patios or paths. These allow rainwater to soak into the ground, helping recharge groundwater and reducing the volume of runoff entering the stormwater system. Impermeable surfaces like concrete driveways increase the speed and volume of polluted water flowing into drains and estuaries.

Use automatic sprinklers wisely. Fit a soil moisture sensor and water your lawn only when needed. Check local council or TasWater guidelines for the right timing and frequency.

Adjust sprinklers to prevent runoff. Don't allow watering systems to spray over driveways, footpaths, or hardstand areas.

Protect saltmarsh and riparian vegetation. If you're fortunate enough to have native estuarine vegetation on or near your property, avoid disturbing or removing it. These plants protect banks, filter runoff, and provide vital habitat. Check with your council before undertaking any pruning or removal.

Handle pool chemicals carefully. Pool chlorine and other chemicals can harm estuarine life. Take excess chemicals and empty containers to a hazardous waste drop-off. Never place them in household recycling.

Drain swimming pools with care. Do not add chlorine for several days before draining to allow levels to drop. Drain water onto grass or mulch where it can soak in slowly, never into streets, drains, or creeks.

Dispose of pet waste properly. Pet droppings left on paths or grass can wash into waterways during rain, contributing nutrients, bacteria, and viruses. Place waste in the bin or bury it at least 15–20 cm deep and away from water bodies

Keep household products, chemicals and waste where they're intended – don't let them enter the estuary

COMBINE CAR AND PROPERTY CARE WITH ESTUARY CARE

When it comes to estuary protection, every car is a potential source of pollution. A single engine holds enough oil to create a slick over several acres of water. In Tasmania, oil, antifreeze, and other vehicle chemicals can easily reach estuaries via drains, especially if care isn't taken during maintenance or cleaning.

Here are some ways to help.

Be aware of car-related pollutants. Motor oil, fuel, brake fluid, degreasers, battery acid, and radiator treatments are all harmful to estuarine ecosystems. Choose non-toxic products where possible and store chemicals safely.

Collect and recycle used fluids. Take old oil, antifreeze, and other automotive liquids to a garage or hazardous waste drop-off point. Clean spills promptly — antifreeze is especially toxic to pets and wildlife. Use kitty litter to absorb fresh oil spills and dispose of the litter safely.

Wash your car with care. Use only non-phosphate, biodegradable detergents. If possible, wash your car on the lawn so water is absorbed by the soil, not flushed down the stormwater drain. Alternatively, wash your car in a commercial carwash where water is recycled and contained on site.

Maintain your car regularly. Keep up to date with regular maintenance on your vehicle to prevent oil and other fluid leaks from dripping onto driveways and carports. If you notice any leaks from your engine between services, place a drip tray under the source of the leak while parked.

REFERENCES

FOR MORE INFORMATION ABOUT ESTUARIES AND COASTS

Online Publications

Robert R. Christian. 2009. "The Value of Healthy Estuaries." American Institute of Biological Sciences. www.actionbioscience.org/environment/christian.html?print
An accessible overview of estuarine ecology, ecosystem services, and useful references for educators and the general public.

Heather G. Edgar et al. 2021. "Understanding Nutrient Impacts in Tasmanian Estuaries." NESP Marine and Coastal Hub. **www.nesp.org.au**
Explores how excess nutrients affect estuary health in Australia, with particular focus on seagrass, food webs, and restoration.

Key Organizations and Their Websites

NRM South — www.nrmsouth.org.au
Regional information for southern Tasmania, including estuary and coastal habitat programs, sustainable land practices, and volunteer opportunities.

Derwent Estuary Program — www.derwentestuary.org.au
Details on estuarine health monitoring, catchment management, water quality, and community science around the Derwent and surrounding coastal systems.

EPA Tasmania — www.epa.tas.gov.au
Provides information on waterway protection, stormwater management, and pollution control relevant to estuarine environments.

Landcare Tasmania — www.landcaretas.org.au
Resources for joining community efforts to care for estuaries, saltmarshes, rivers, and catchments.

Australian Marine Debris Initiative — www.tangaroablue.org
Nationwide data and resources for tracking and reducing coastal pollution.

Australian Government Department of Climate Change, Energy, the Environment and Water — www.dcceew.gov.au
Includes resources on estuarine adaptation to climate change and tools for reducing your environmental footprint.

CSIRO Coastal and Marine Science — www.csiro.au
Educational tools and research insights on estuary science and marine ecosystems, suitable for students and teachers.

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