



WESTERN AUSTRALIAN
MARINE SCIENCE
INSTITUTION

WAMSI WESTPORT MARINE SCIENCE PROGRAM

The WAMSI Westport Marine Science Program is a major collaborative science investigation into the marine environment of Cockburn Sound, the location of WA's future terminal.

This three-year science program will help inform a sustainable port design and ensure a robust environmental impact assessment process based on independent and objective science.

Research findings will fill important knowledge gaps about Cockburn Sound and provide stakeholders and the community access to new information needed to manage this environment into the future.

About The Partnership

The Westport Program is the State Government's long-term program to investigate, plan and build a future port in Kwinana with integrated road and rail transport networks.

Westport has partnered with WAMSI to deliver the \$13.5 million science program. The research outcomes will help Westport make considered, science-based decisions as design progresses, and inform effective, long-term mitigation strategies so that ecosystem health is maintained for future generations.

Science Projects

The Science Program is one of the largest and most comprehensive programs into Cockburn Sound's marine environment and WAMSI and its partners will deliver an extensive collection of science projects delivered by Western Australian scientists.

The research spans nine key themes and involves 31 research projects, including a series of on-ground trials for restoring seagrass meadows and improving knowledge of the marine biodiversity in Cockburn Sound.

The program will draw on numerous local experts from physical, biological and social sciences disciplines to understand more about this unique coastal ecosystem.

\$13.5M 
Research Partnership 

 More than
100 Researchers

 **31 projects**
across nine themes 

More information about the Science Program is available at

www.wamsi.org.au/research/programs/wamsi-westport-marine-science-program

More information about Westport is available at

www.westport.wa.gov.au

Enquiries about the Science Program can be made to info@wamsi.org.au

WAMSI Westport Marine Science Program - Research Themes and Projects

Theme

Objective

Projects



Ecosystem modelling

Develop an ecosystem model to understand how water quality and habitats may change under various possible future scenarios.

- 1.1** Integrated ecosystem model platform.
- 1.2** Pathway to productivity: Development of a water quality response model for Cockburn Sound.
- 1.3** Characterise the trophic structure, ecosystem attributes and functioning of Cockburn Sound, using conceptual, qualitative, and quantitative ecosystem models.



Benthic habitats and communities

Improve our understanding of benthic communities and processes, with a focus on seagrass rehabilitation and restoration.

- 2.1** Benthic habitat mapping.
- 2.2** Pressure-response relationships, building resilience and future proofing seagrass meadows.
- 2.3** Seagrass restoration program.
- 2.4** Benthic communities in soft-sediment and hard substrates (baseline data, pressure-response relationships of key biota for Environmental Impact Assessment (EIA), and mitigation strategies for artificial reefs.



Water and sediment quality

Develop a comprehensive environmental baseline and understand contaminants, nutrient sources and recycling.

- 3.1** Water and sediment quality monitoring.
- 3.2** Processes governing nutrient and contaminant cycling in Cockburn Sound.
- 3.3** Elements of the groundwater/surface water flux into Cockburn Sound.



Fisheries and aquatic resources

Understand seasonal movements of key species, the habitats they seek out and the food they rely on.

- 4.1** Snapper connectivity and evaluation of juvenile stocking.
 - 4.2.1** Spatial distribution and temporal variability in life stages of key fish species in Cockburn Sound.
 - 4.2.2** Zooplankton in Cockburn Sound.
 - 4.2.1** Trophic pathways and food web structure.
- 4.2** Investigating effects of climate change on biota in Cockburn Sound.
- 4.3** Effects of total suspended solids on key fish species.
- 4.4** Investigating effect of port development on invasive species risks to Cockburn Sound.



Theme

Objective

Projects



Hydrodynamic modelling

Understand how water quality and circulation in Cockburn Sound may change due to Westport and climate change.

- 5.1** Hydrodynamic modelling.
- 5.2** Wave modelling.



Social

Identify and understand the community values connected to Cockburn Sound.

- 6.1** Community values for changes in environmental conditions.
- 6.2** Opportunities and impacts for recreational fishing from the Westport development.
- 6.3** Recreation, amenity and aesthetic values.
- 6.4** Benefit-cost framework for environmental port design features.



Noise

Develop current and future underwater 'soundscapes' of Cockburn Sound to understand, and manage, the potential effects of underwater noise.

- 7.1** Baseline soundscape, sound sources and transmission.
- 7.2** Hearing sensitivity of Australian sea lions, little penguins, and fish.
- 7.3** Behavioural response of fish to noise.



Apex predators and iconic species

Improve our understanding of the distribution and seasonal movements of conservation-significant and iconic species, the habitats they seek out and the food sources they rely on.

- 8.1** Determining the diet, causes of mortality, foraging habitat and home range of little penguins using Cockburn Sound.
- 8.2** Investigate the abundance, movement, habitat use and diet of Australian sea lions in the Perth Metropolitan area.
- 8.3** Spatio-temporal distribution of key habitat-uses and key prey species for Indo-Pacific bottlenose dolphins in Owen Anchorage and Cockburn Sound, including a fine-scale understanding of the use of the habitats in the Kwinana Shelf.
- 8.4** Spatio-temporal distribution of syngnathids (e.g., seahorses) in Cockburn Sound.



Coastal processes

To better understand patterns and drivers of sediment transport and the processes of beach accretion and erosion in Cockburn Sound and Owen Anchorage.

- 9.1** Coastal processes and sediment movement in Cockburn Sound and Owen Anchorage.