The three-year WAMSI partnership is a collaboration with scientists, researchers and experts from across Western Australia, to deliver the science which will underpin a world class green port and environmental impact assessment:

It is the biggest component of Westport's Environment and Social Program.

Collecting seagrass fruit
Photo by A. Rossen

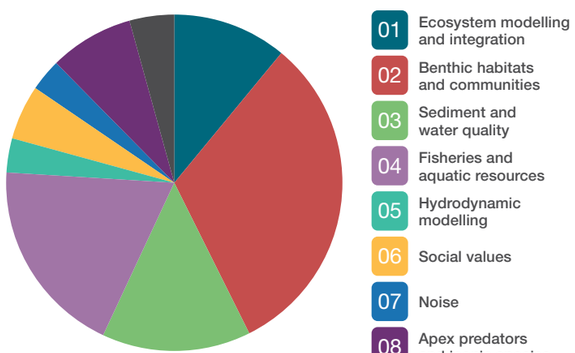
Science themes

Nine research themes were established through a series of 16 expert workshops involving scientists, key stakeholders and informed community representatives.

Across the themes are about 30 research projects, including a series of on-ground trials for restoring seagrass meadows and improving knowledge of the marine biodiversity, were established.

Comparative Funding

Science Program Themes



Distribution of the $13.5million WAMSI Westport Science Program funding

Ecosystem modelling and integration

An integrated ecosystem modelling framework for Cockburn Sound will help significantly improve our capacity to understand and manage the effect of multiple pressures on the marine environment.

A key component includes developing a model to simulate how water quality and benthic (seafloor) communities will respond under different development and restoration scenarios.

This will mean that cumulative impact assessments and decisions based on strong evidence can be made to ensure key ecological and social values are protected in the long term.

Benthic habitats and communities

This theme will improve understanding of key benthic communities and processes as well as test restoration and rehabilitation opportunities and initiatives.

Projects under this theme will, for example, look at how seagrasses are affected by different pressures, develop practical management thresholds and investigate how seagrass meadows can be strengthened to better cope with the changing climate.

Sediment and water quality

Baseline monitoring surveys of water and sediment quality will help understand existing pollutants and seasonal and spatial variations in environmental quality.

Projects will also focus on understanding contaminant and nutrient inputs from ground and surface water and recycling nutrients in this system.

Fisheries and aquatic resources

This theme will improve knowledge on the spatial and temporal distribution of fish and crustaceans, including popular target species, key forage prey species and zooplankton.

It will also complete work to better understand how various pressures can impact on different life stages and which seasons are the most critical.

This work will improve our capacity to develop appropriate construction and operation activity schedules and management thresholds to minimise long-term impacts.

Hydrodynamic modelling

Hydrodynamic modelling is required to understand how changes to Cockburn Sound's seabed will change flushing and circulation regimes.

The work under this theme will link the local model with The University of Western Australia's regional hydrodynamic model to strengthen the accuracy of outputs and collect metocean data for model calibration and validation.

This fully integrated model will then be used to run a series of scenarios to inform the new port's design process and a best-practice dredging plan and schedule.

Social values

Protecting what is important for the community and users of Cockburn Sound will ensure it can be enjoyed for generations to come.

Projects in this theme will identify what the community most values in the Cockburn Sound environment.

This research will inform port design and identify opportunities to create social benefits.

Noise

For the first time ever a baseline and future 'soundscape' for Cockburn Sound will be created to provide a picture of the current and future noise levels in the marine environment.

This theme will also investigate how sound spreads and the susceptibility of key species to the range of frequencies emitted by vessels and port operations.

This will help develop mitigation and avoidance strategies of underwater noise on marine species.

Apex predators and iconic species

This theme will address knowledge gaps relating to conservation-significant and iconic species in the Cockburn Sound area, such as little penguins, bottlenose dolphins, Australian sea lions and seahorses/pipefish.

It will investigate seasonal habitat use as well as diet composition to inform construction planning and the evaluation of options to avoid and mitigate impacts.

Coastal processes

By analysing historical data and on-ground measurements, projects in this theme will provide an insight into erosion and accumulation processes in Owen Anchorage and Cockburn Sound.

Aimed at protecting amenity, shoreline stability, marine ecosystems and shipping channel stability, it will also inform where dredge material may be placed to benefit areas such as beach nourishment, seagrass restoration or habitat creation.