



## Monitoring Water Quality in Aquaculture Systems

### Project background

Over catch, the recruitment of unwanted oysters and other invertebrates (including barnacles, mussels and cunjevoi) onto farmed oysters, is a major burden to oyster production through reduction in oyster growth and costs associated with over catch removal.

Farmers most commonly use drying to reduce over catch which involves removing oysters from the water for several days and this aims to kill the over catch but allow larger farmed oysters to survive. Drying can pose risks to oyster health and over exposure in high temperatures can lead to oyster mortality or high stress and reduced growth.

Local oyster farmers have identified that optimising oyster drying regimes to reduce oyster stress will have significant benefits to oyster production by reducing oyster mortality, increasing growth and reducing labour costs.



### Monitoring and Network solution

In August 2020, Hunter Local Land Services established a sensor network in Wallis Lake as part of the Climate Ready Aquaculture project funded by the Australian Government's National Landcare Program. Supported by the MFR-NODE with LTE Cat M1/Cat NB1/EGPRS communications and local SD-Card logging, sensors installed included:

- THERM-SS for water temperature;
- THERM-EP with a Passive Radiation Shield for air temperature;
- AWQ-C4E for salinity and temperature;
- ATMOS-41 for microclimate monitoring

Sites were fix mounted upon existing farm infrastructure, a single moored installation was supported by the ICT Data Buoy.

Cloud based data storage and visualisation through the ICT Dataview Web platform now allows farmers to view conditions at the lease scale in real-time. Research by the University of Newcastle and DPI Fisheries aimed at understanding the link between environmental conditions and oyster health will assist oyster farmers to assess conditions in real-time and make accurate, site-specific decisions that reduce over catch while maintaining oyster health. Data from the sensor network will continue to be made freely available to oyster farmers and other stakeholders interested in estuary conditions.