

Live Plankton Analysis System (LPAS)

OTAQ's Live Plankton Analysis System (LPAS) automatically identifies phytoplankton around marine aquaculture sites that could potentially result in Harmful Algae Blooms (HABs) and impact fish health and welfare. By providing critical and timely information, LPAS enables operators to make early and informed decisions on site-specific mitigation strategies and actions.

LPAS employs deep-learning AI technology developed with Blue Lion Labs to analyse images of the water samples for species of phytoplankton that are known to be of concern. It immediately sends the results to OTAQ's local analysis software program and user interface.

Using the data from the AI Model, the local analysis software program and user interface generates on-site alerts for staff based on user-defined parameters, alerting on the presence of specific species that are of concern, as well as alerting when acceptable levels of concentration of any algal group of interest are exceeded. Clear visual warnings let site operators know if there is an issue, allowing review of more detailed data if required.

Results data collected by LPAS can be automatically stored locally and in the OTAQ Cloud for presentation and analysis. Direct connection of LPAS into customer databases can be organised if desired.

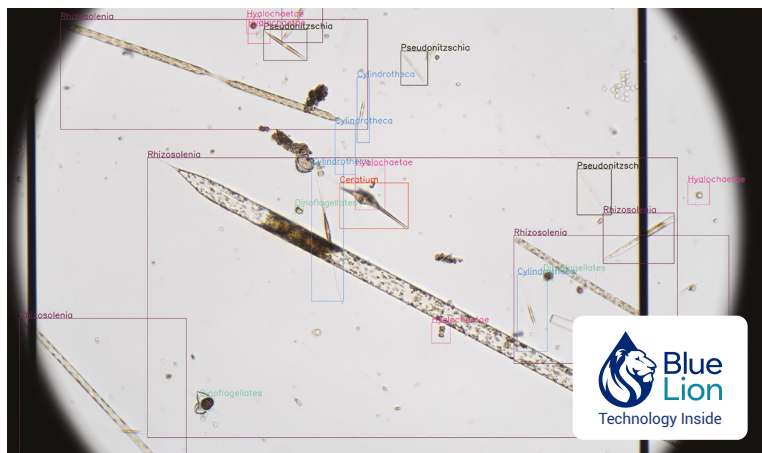
KEY BENEFITS

- Harmful phytoplankton identified and quantified
- On site system enables increased testing frequency and consistency
- HAB alerts automatically generated as soon as species of concern detected or user-defined allowable concentration thresholds are exceeded
- All data is metadata tagged and stored securely in Cloud for long-term analysis
- Direct information feed to customer database if preferred
- Integration with OTAQ's water quality monitoring system available
- System versions available with or without internet connection
- Valuable image capture and identification tools enabling the use of LPAS as a central phytoplankton data collection system, with or without the AI Model

Components	Application
AI Model	Aquaculture
Imaging System / Hardware	Regional water quality monitoring programmes
Analysis Software	Lakes and waterways
Local User Interface	
Cloud Database	
Biology and AI Support Services	

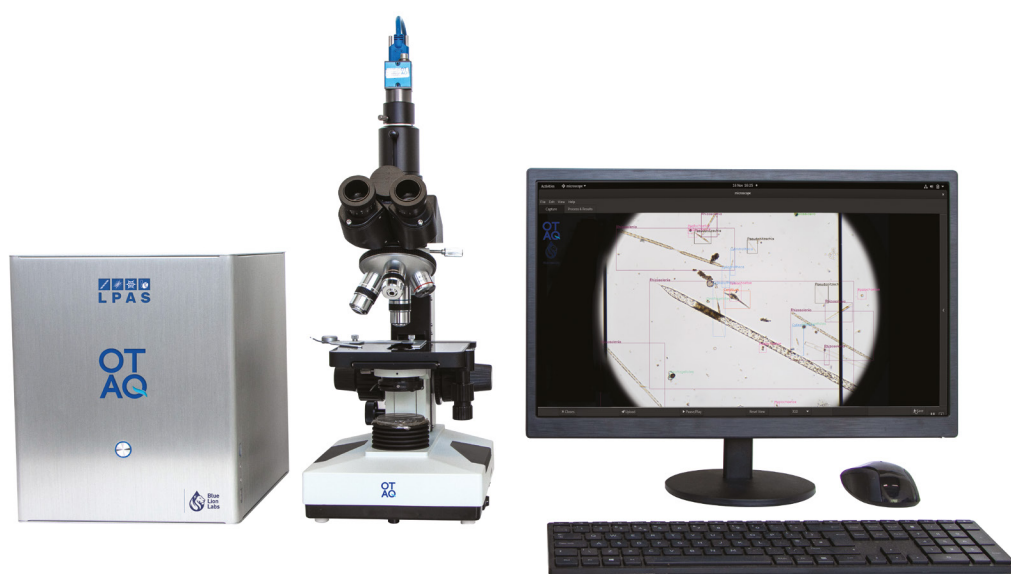
AI MODEL

The AI Model detects specified phytoplankton organisms with a confidence level greater than 80% and provides concentration of each. Working with industry-based microbiologists and academia, lists of phytoplankton organisms of most concern have been identified per region.



IMAGING SYSTEM

COMPONENT	SPECIFICATION
Microscope	x10 optics
Camera	20 Mega-Pixel Digital Camera
LPAS Computer	Bespoke specification installed with AI Engine, Analysis Software and User Interface



SOFTWARE + CLOUD

Analysis Software

- Immediate and automatic logging of images and AI results
- Images metadata tagged to record time and location of reading
- Current and historical results presented to enable tracking of previous events and trends
- Customisable alert thresholds, enabling each user to set their own alert thresholds based on the concentrations of particular algal groups and whether an acceptable level has been exceeded
- All data can be exported to CSV file

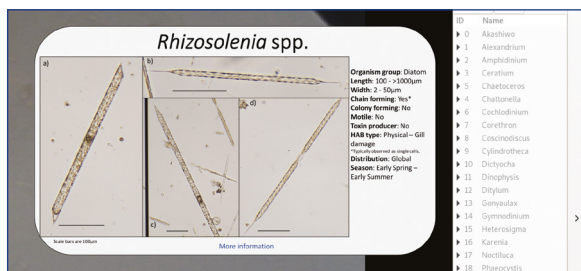
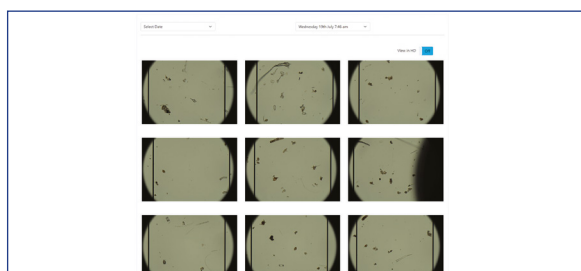
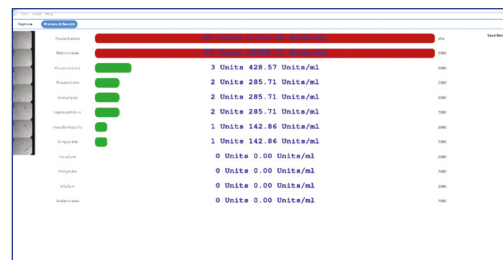


Image Capture & User I.D. Guide

- Valuable in-built image capture and identification tools enable the use of LPAS as a central phytoplankton data collection system
- High resolution images are recorded and clearly presented for review with the ability to further zoom into areas of interest as needed
- Integrated phytoplankton identification guide assists the operator with the identification of all phytoplankton, even genera/subgenera/species not currently in the AI Model
- Interactive measurement tool assists in the manual identification and sizing of phytoplankton

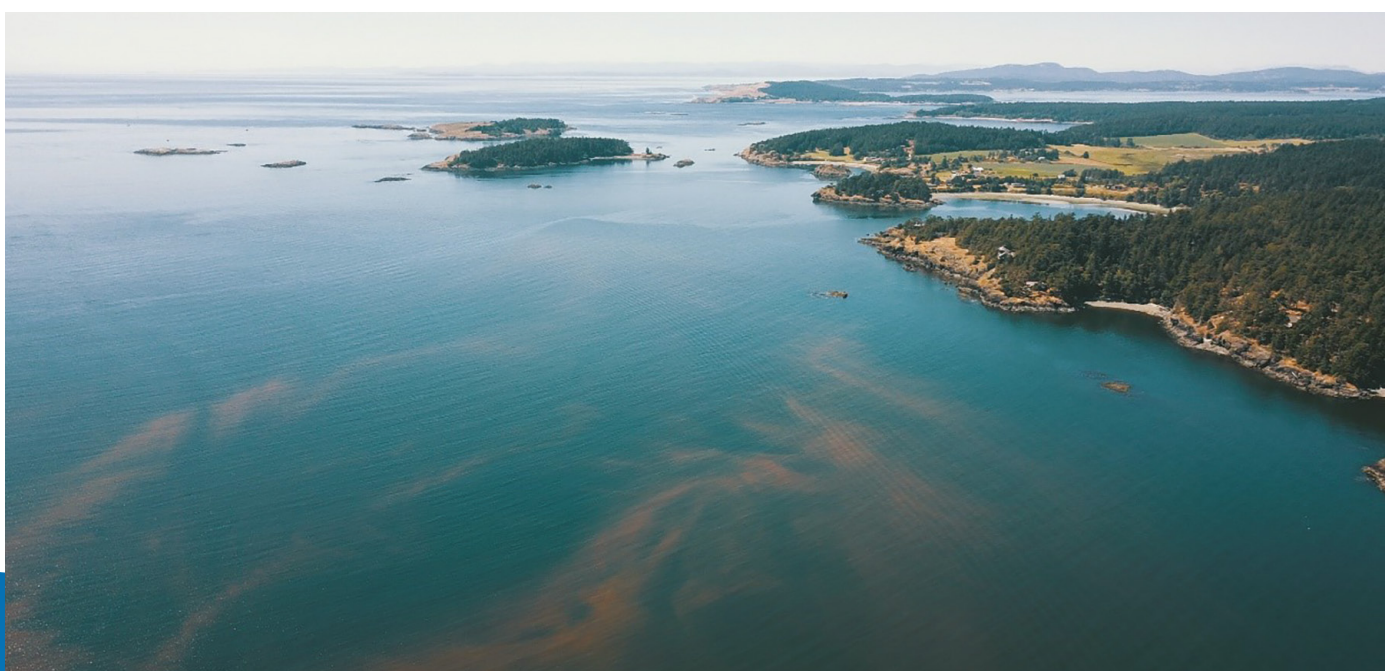
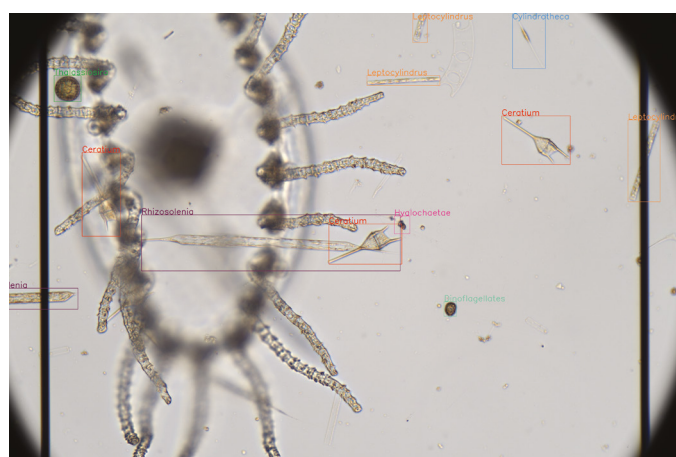
Secure Local & Cloud Data Storage

- Collected data and images securely stored both locally and in the Cloud
- Hierarchical cloud access structure enables multi-site viewing for centralised roles such as Fish Welfare and Area Managers

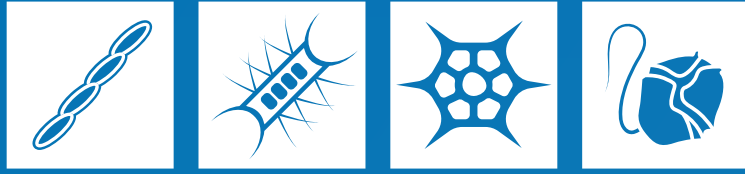


SERVICES

INSTALLATION AND TRAINING	TRAINING AND USER MANUALS PROVIDED
AI Engine and Software updates	Automatic updates to latest versions via Cloud or USB transfer
Biology support team	Regular quality reviews of uploaded images and support with customer specific queries



OT
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LPAS

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Analysis System

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