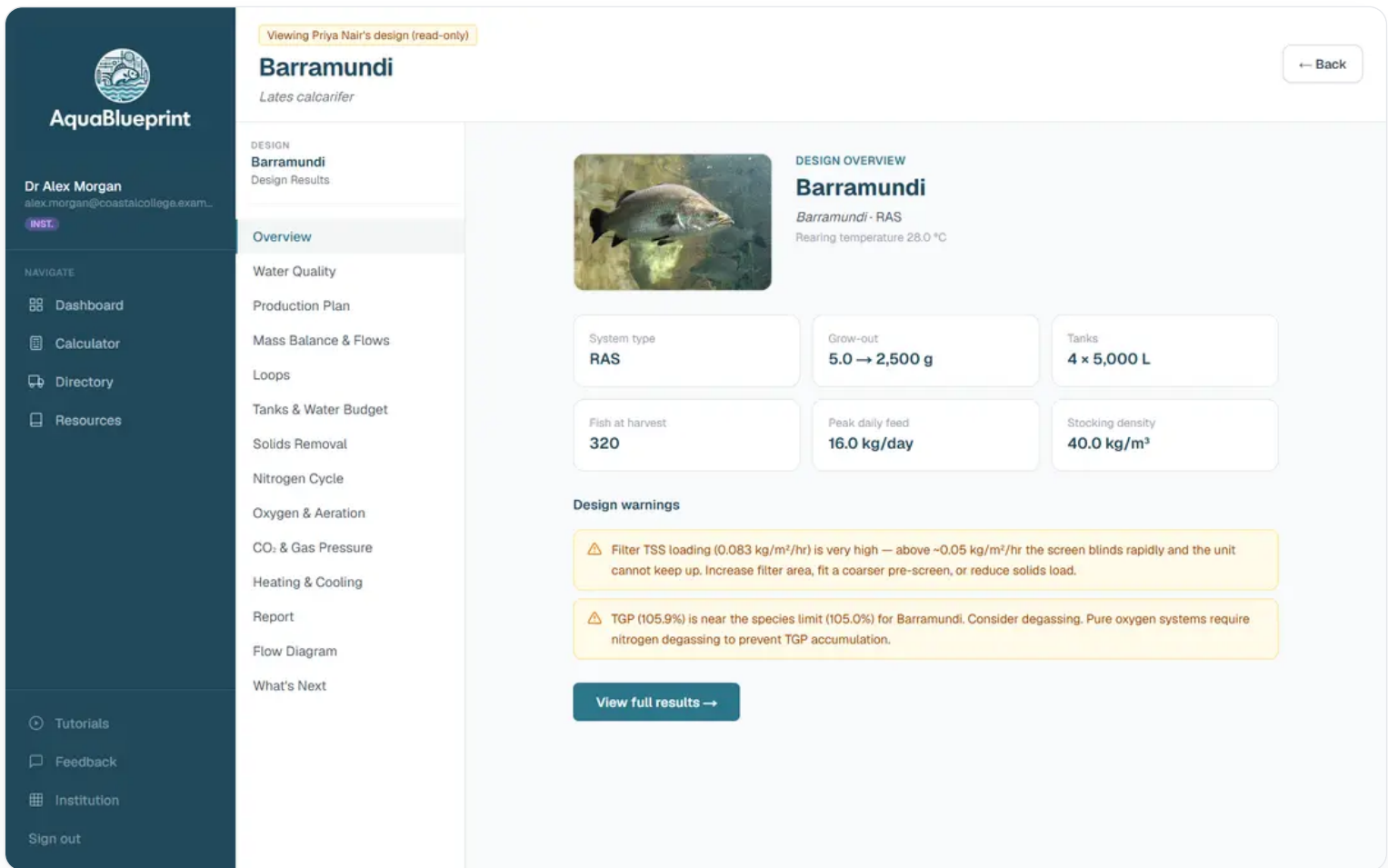


AQUABLUEPRINT FOR INSTITUTIONS

Students design a complete aquaculture system, and see every calculation behind it

AquaBlueprint is a web-based design platform for recirculating aquaculture systems. For universities, TAFEs and polytechnics, training providers and secondary schools, it turns system design from a static worked example into something students can build, break and fix for themselves. This page shows what they and their teachers see, without anyone needing to sign up first.



The screenshot displays the AquaBlueprint web interface. On the left is a dark blue sidebar with the AquaBlueprint logo and user information for Dr Alex Morgan. Below this is a 'NAVIGATE' section with icons for Dashboard, Calculator, Directory, and Resources. The main content area is titled 'Viewing Priya Nair's design (read-only)' and features a 'Barramundi' design for 'Lates calcarifer'. A 'DESIGN OVERVIEW' section includes a fish image and key parameters: System type (RAS), Grow-out (5.0 → 2,500 g), Tanks (4 × 5,000 L), Fish at harvest (320), Peak daily feed (16.0 kg/day), and Stocking density (40.0 kg/m³). A 'DESIGN' menu on the left lists various design aspects like Water Quality, Production Plan, Mass Balance & Flows, Loops, Tanks & Water Budget, Solids Removal, Nitrogen Cycle, Oxygen & Aeration, CO₂ & Gas Pressure, Heating & Cooling, Report, Flow Diagram, and What's Next. At the bottom, 'Design warnings' are shown in yellow boxes, indicating high filter TSS loading and TGP levels near the species limit. A 'View full results →' button is at the bottom right.

A lecturer's read-only view of a student's barramundi design. All names and data in these screenshots are fictional.

WHY IT HELPS

System design is hard to teach from a spreadsheet

The interesting part of aquaculture system design is how everything depends on everything else. Species sets the water quality limits. Feed drives oxygen demand, ammonia and solids. Those set the flows, and the flows size the biofilter, the pumps and the degassing. Students usually meet this as a worked example on a slide, or as a spreadsheet that takes longer to debug than to learn from.

AquaBlueprint applies a mass balance approach using published, widely taught formulas, and lays the working out section by section. A student can raise stocking density and watch the consequences travel through the whole system in seconds. That is the conversation most teachers want to be having in class.

WHAT STUDENTS DO

From a species to a sized system

Every step of the design wizard feeds the next, so the final numbers are derived from the student's own species, water and production target.

1

Choose a species and a site

More than 25 finfish and crustacean species, each with growth parameters and water quality limits drawn from published literature. The site location flags which species are permitted in that jurisdiction.

2

Set a production target

Stocking and harvest weights, stocking density, tank numbers and feeding. The 13-step wizard walks through water quality, solids, biofiltration, oxygen, degassing and temperature control in a logical order.

3

Read the results, then test them

Mass balance, oxygen demand, CO₂, TAN and nitrate, biofilter sizing, flow rates and pump duties. Change one input and see what moves. Design warnings explain what is out of range and why.



AquaBlueprint

Dr Alex Morgan
alex.morgan@coastalcollege.exam...
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DESIGN
Barramundi

- 1 Species
- 2 Water Quality
- 3 Design Approach
- 4 System Design
- 5 Production
- 6 Oxygen & Aeration
- 7 Solids Removal
- 8 Degassing
- 9 Biofiltration
- 10 Denitrification
- 11 Sterilisation
- 12 Heating & Cooling
- 13 Review

Step 1 of 13

Species Selection

Set your site location, then select your organism type and target species. Water quality parameters will be auto-filled from the species database.

Site location *

Australia Queensland

Organism Type

Finfish Crustacean Bivalve / Mollusc (Coming Soon) Abalone / Gastropod (Coming Soon)

Seaweed (Coming Soon) Sea cucumber / Urchin (Coming Soon)

Species

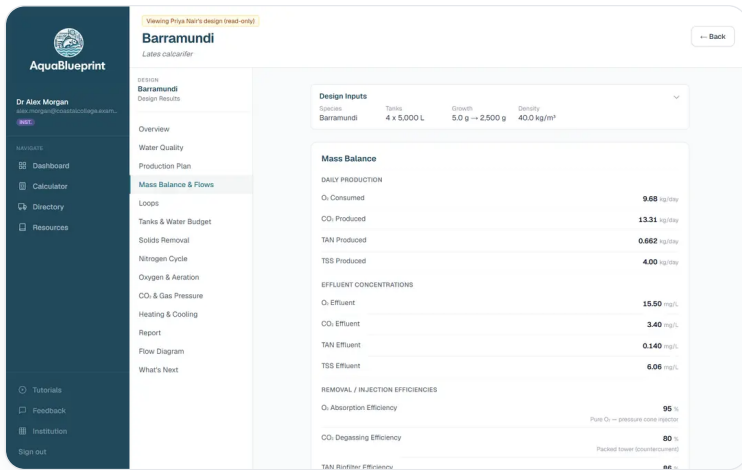
GENERIC TEMPLATES (ENTER YOUR OWN VALUES)

Freshwater finfish Generic freshwater species TEMPLATE	Marine finfish Generic marine species TEMPLATE
---	---

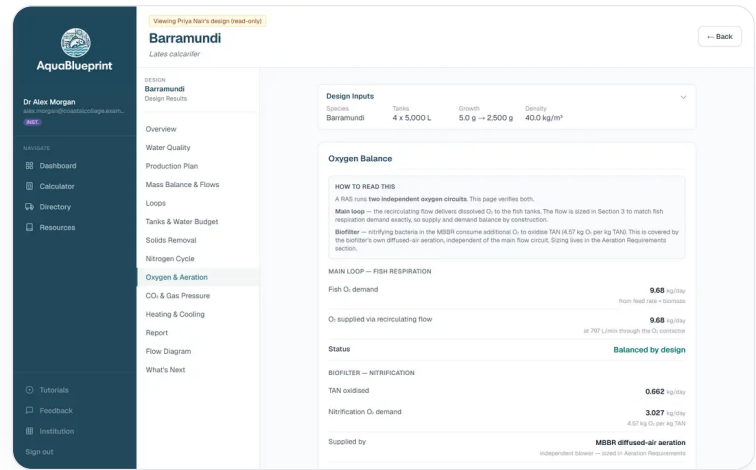
PRE-FILLED SPECIES

Atlantic salmon <i>Salmo salar</i> FINFISH	Australian bass <i>Macquaria novemaculeata</i> FINFISH PERMITTED	Barramundi <i>Lates calcarifer</i> FINFISH PERMITTED	Channel catfish <i>Ictalurus punctatus</i> FINFISH NOT PERMITTED
Chinook / King salmon <i>Oncorhynchus tshawytscha</i> FINFISH	Common carp <i>Cyprinus carpio</i> FINFISH NOT PERMITTED	European seabass <i>Dicentrarchus labrax</i> FINFISH NOT PERMITTED	Gilthead seabream <i>Sparus aurata</i> FINFISH NOT PERMITTED
Golden perch <i>Macquaria ambigua</i> FINFISH PERMITTED	Grass carp <i>Ctenopharyngodon idella</i> FINFISH NOT PERMITTED	Japanese amberjack / Buri <i>Seriola quinqueradiata</i> FINFISH NOT PERMITTED	Mangrove red snapper <i>Lutjanus argentimaculatus</i> FINFISH

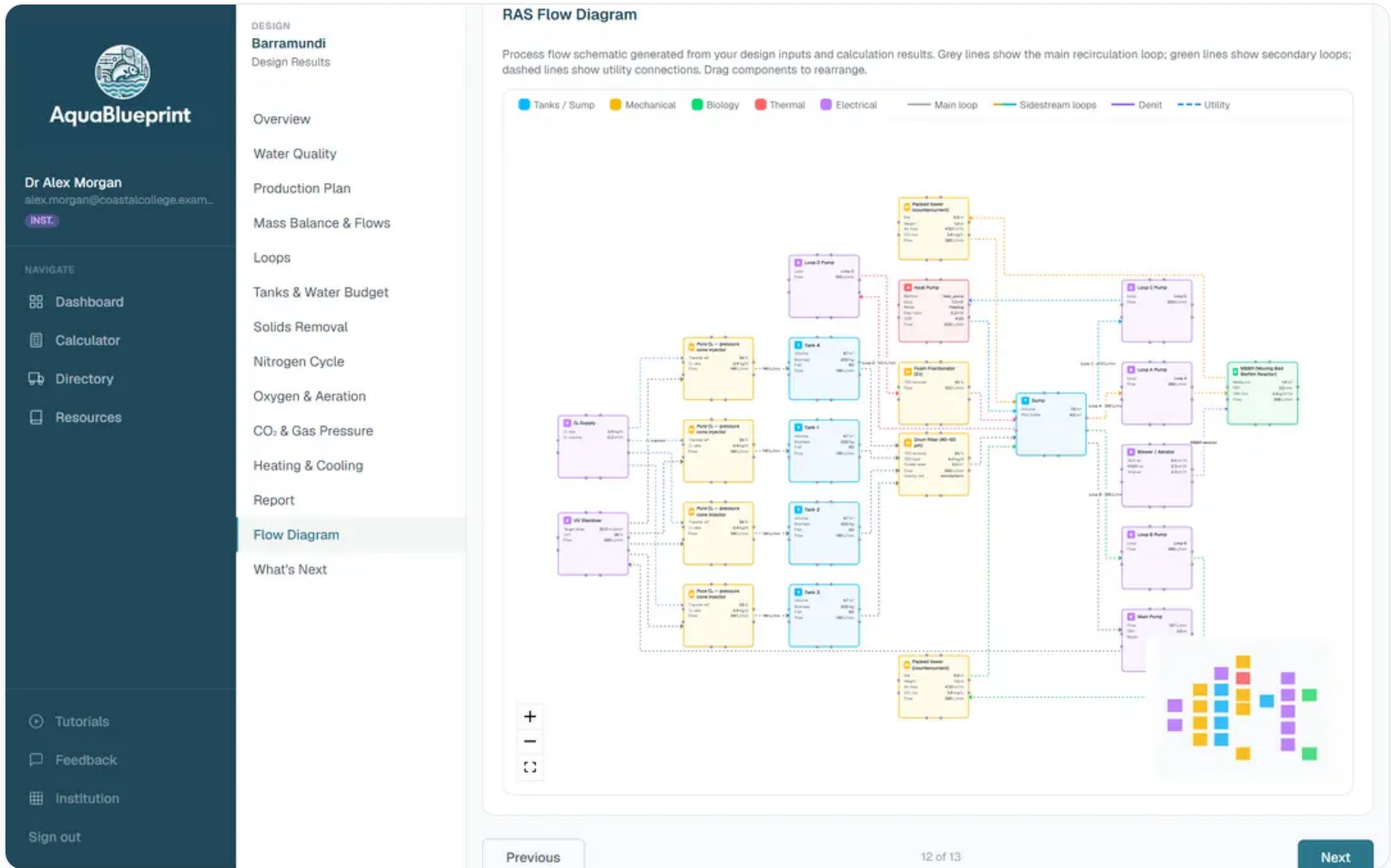
Step 1 of 13: species selection. Species are flagged as permitted or not permitted for the chosen site location.



Mass balance and flows: what the fish produce each day, and what each treatment step has to remove.



Oxygen and aeration, with a short 'how to read this' note at the top of each results section.



A process flow diagram is generated from each design, with the calculated flows and equipment duties on every component.

BEYOND THE FIRST DESIGN

Compare scenarios, size the pumps, write it up

Designs live inside projects, and each project has tools that pick up where the wizard leaves off.



Dr Alex Morgan

alex.morgan@coastalcollege.edu.au

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-- All projects

AQU201 worked example: barramundi RAS

Coastal College - Queensland, Australia

Teaching example used in lectures

Scenario comparison

Save comparison | Export HTML | -- Back to designs

PARAMETER	Baseline: 50 t/yr (Barramundi)	Scenario B: higher stocking density (Barramundi)
DESIGN		
Species	Barramundi	Barramundi
System type	RAS	RAS
Design type	full	full
Number of tanks	4	4
Tank volume (total)	20 m³	20 m³
PRODUCTION		
Stocking density	40 kg/m³	40 kg/m³
Growth period to harvest	315.2 days	315.2 days
Target FCR	1.5	1.5
Peak daily feed	16 kg/day	16 kg/day
Annual feed	21 t/yr	21 t/yr
Harvest biomass	800 kg	800 kg
WATER TREATMENT		
O₂ demand	9.7 kg/day	9.7 kg/day
TAN load	0.7 kg/day	0.7 kg/day

Scenario comparison

Two or three designs side by side, parameter by parameter. A natural fit for “change one thing and explain the difference” assignments.



Dr Alex Morgan

alex.morgan@coastalcollege.edu.au

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No closed or-loop units on this pump. Upper vessel (MBAH, degassed) are treated as a rise on the pipe run.

Head breakdown

RUN	SIZE	FLOW / RUN	VELOCITY	PIPE	FITTINGS	ENTRY / EXIT	RISE
Suction (pump to pump)	DN50	100 L/min	0.76 m/s	0.04 m	0.02 m	0.01 m	0.00 m
Loop D discharge (pump to components and return)	DN40	100 L/min	1.21 m/s	0.55 m	0.35 m	0.08 m	3.50 m
Static 3.50 + friction 0.58 + fittings 0.37 + entry/exit 0.09 + equipment 0.00 + margin 0.10							= 4.65 m TDH
Hydraulic 0.08 kW → shaft 0.10 kW → input 0.12 kW → motor 0.37 kW (x2 installed, duty + standby)							

Results

Recalculate | Save to project

PUMP	ARRANGEMENT	FLOW (L/MIN)	TDH (M)	PEAK VELOCITY (M/S)	INPUT AT DUTY (KW)	MOTOR (KW)
Main recirculation pump	Duty + standby (x2)	585	3.9	115	0.81	0.75
Loop A pump	Duty + standby (x2)	398	4.0	125	0.43	0.55
Loop B pump	Duty only	398	4.0	125	0.43	0.55
Loop C pump	Duty + standby (x2)	200	4.3	0.90	0.23	0.37
Loop D pump	Duty + standby (x2)	100	4.6	1.21	0.12	0.37
9 pumps installed					1.81	4.53

► Method and assumptions

Design led only - total dynamic head estimate from the pipe schedule you entered. Confirm the duty point against the chosen pump's curve and TDPH before ordering.

Hydraulic modeller

Lay out the pipe runs and fittings for each pump and get friction losses, total dynamic head and motor size, with the head breakdown shown line by line.



Dr Alex Morgan

alex.morgan@coastalcollege.edu.au

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AquaBlueprint, print preview | Barramundi | For a clean PDF, switch off headers and footers in the print dialog.

Back to Results | Print / Save PDF



RAS Design Report

Barramundi (Lates calcitrifer)

19 September 2026

4 x 5,000 L Tanks

315.20 days Culture Duration

800.00 kg Peak Biomass

Design Warnings

• Filter TSS loading (0.083 kg/m²/hr) is very high — above ~0.05 kg/m²/hr the screen blinds rapidly and the unit cannot keep up. Increase filter area, fit a coarser pre-screen, or reduce solids load.

• TGP (105.9%) is near the species limit (105.0%) for Barramundi. Consider degassing. Pure oxygen systems require nitrogen degassing to prevent TGP accumulation.

1. Design Parameters

SPECIES & WATER QUALITY	
Species	Barramundi
Life Stage	Marine
Temperature	28.00 °C
pH	8.00
Min DO	4.00 mg/L
Min O₂ Saturation	110.00 %

Design report summary

A print-ready summary of inputs, results and warnings that students can save as a PDF and submit with their written work.

Also included

- ✓ Financial analysis: revenue, energy, consumables, labour, CAPEX and multi-year feasibility
- ✓ IMTA and polyculture designer (beta)
- ✓ [Tutorials](#) with walkthrough videos and explainers that cite published sources
- ✓ A [resources library](#) of hatchery manuals, scientific papers and guides

In development: equipment selection with a bill of materials, and bivalve and seaweed calculators.

FOR TEACHING STAFF

The institution dashboard

An institutional plan adds a management layer for the people running the course. One primary administrator, as many co-administrators as you need, and a seat for every student.



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Dr Alex Morgan

alex.morgan@coastalcollege.exam...

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Institution

Coastal College

Seats

10 / 30

Contract

284d left

Dashboard

Overview

Students

Courses

Templates

Invites

Settings

Welcome, Dr Alex Morgan

You're the primary administrator of Coastal College.

10 / 30

Student seats

20 available

11

Active members

2027-06-30

Contract end

284d remaining

3

Pending invites

Quick actions

Invite students

View student accounts

Institution settings

About this dashboard

- Invite students by email — they'll receive a link to create their AquaBlueprint account.
- Each active student counts as one seat. Administrators do not consume seats.
- You can view (read-only) any student's saved designs from the Students tab — useful for assessment.
- Removing a student preserves their designs but moves them to the Free plan.

The overview: seats in use, active members, contract dates and pending invites.

Seat management

A set number of student seats per contract. Administrators don't consume seats, and seats can be reassigned between intakes.

Courses

Group students by unit, block or intake. Each course has its own student list and its own set of design templates.

Design templates

Publish a starting design for a class. Each student gets an editable copy in their own account, and the original is never changed.

View student designs

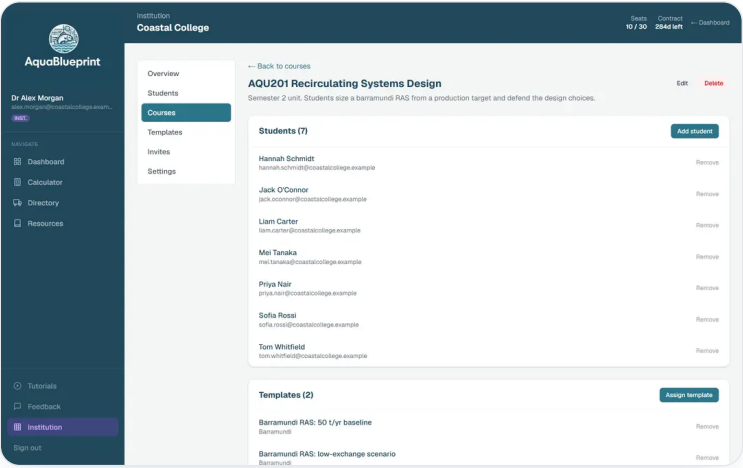
Open any student's saved design, read-only, with every input and result exactly as they left it. Useful for marking and for feedback in class.

Single and bulk invites

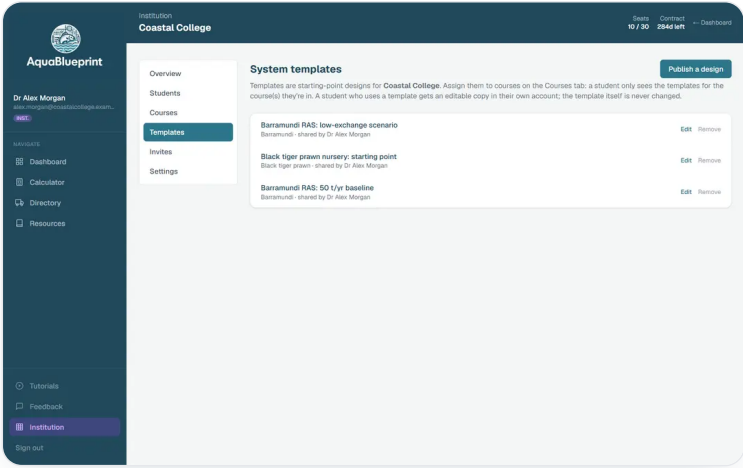
Paste a class list and invite everyone at once. An invite can carry the course, so a student lands in the right course with its templates on first login.

Co-administrators

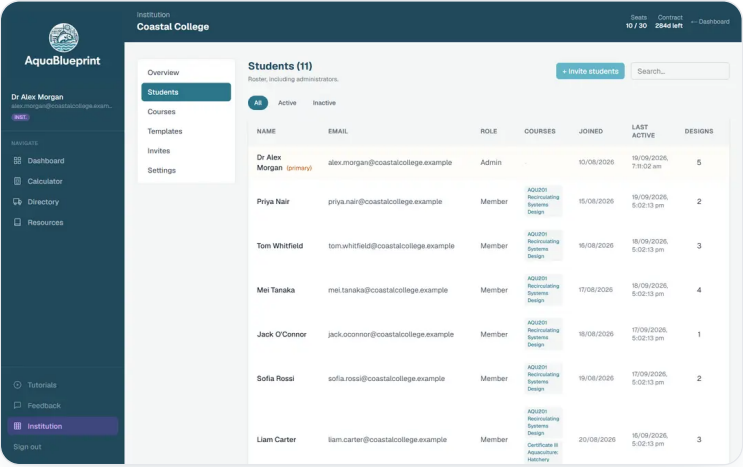
Promote teaching staff to share administration, and transfer the primary administrator role when staff change.



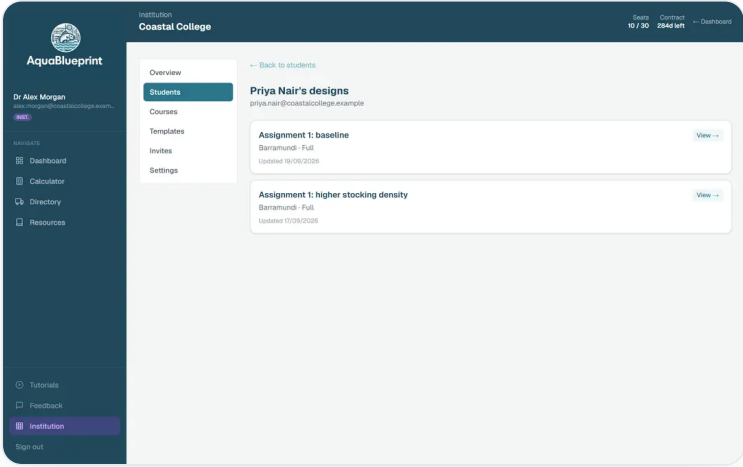
A course, with its students and the templates they can see.



Templates: starting designs published by teaching staff.



The roster: who has joined, which courses they're in, when they were last active and how many designs they've saved.



One student's saved designs. Each opens read-only with the full results.

IN THE CURRICULUM

Four ways it gets used

A single practical session

Students load a template, change stocking density or feed rate, and explain what happened to oxygen demand and biofilter size. Two hours, no spreadsheet setup.

A semester design project

Each student or group takes a species and a production target through to a complete design, then defends the choices. The comparison tool puts scenarios side by side.

A capstone or feasibility study

Designs carry through to pump sizing in the hydraulic modeller and to a CAPEX and OPEX picture in the financial analysis tool, with a printable design report summary to submit.

Short courses and industry training

Give trainees a worked system to explore before they meet the real one. Seats can be issued for the length of a block and reassigned afterwards.

RIGOUR

Nothing is a black box

The sizing formulas are published and widely used across the industry, the same ones taught from the standard texts. Species parameters come from the literature and can be overridden when a student has better data.

Defaults are labelled as defaults. When a result is out of range, the platform says so and says why.

AquaBlueprint was created by LoTech Aquaculture Pty Ltd, an Australian aquaculture design consultancy, and is supported by ongoing AquaBlueprint research and development.

AquaBlueprint produces a design report summary as a design aid for learning and early-stage planning. It isn't professional advice, and a design should be reviewed by a suitably qualified person before anything is built.

LICENSING

What an institutional plan includes

- ✓ Full platform access for every seat, including the complete species library
- ✓ The institution dashboard: seats, courses, templates, invites and student design view
- ✓ No advertising for staff or students
- ✓ Invoice billing to the institution, by year, semester or one-off block
- ✓ Pricing tailored to your cohort size and programme
- ✓ Direct support from the people who build the platform

Getting started

- 1 Tell us roughly how many students, which courses and when they run.
- 2 We agree seats and term, and set up your institution with you as primary administrator.
- 3 You create your courses, publish any templates, and paste in the class list to send invites.
- 4 Students accept the invite, create their account and start designing.



AquaBlueprint

Dr Alex Morgan
alex.morgan@coastalcollege.exam...
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Institution
Coastal College

Seats 10 / 30 Contract 284d left [← Dashboard](#)

Overview

Students

Courses

Templates

Invites

Settings

Invites

20 seats remaining

[+ Invite](#) [Bulk invite](#)

Pending (3)

EMAIL	ROLE	COURSE	SENT	EXPIRES	ACTIONS
chloe.nguyen@coastalcollege.example	Member	AQU201 Recirculating Systems Design	17/09/2026	01/10/2026	Resend Revoke
r.patel@coastalcollege.example	Member	AQU201 Recirculating Systems Design	17/09/2026	01/10/2026	Resend Revoke
sam.duffy@coastalcollege.example	Member	-	17/09/2026	01/10/2026	Resend Revoke

Expired (0)
No expired invites.

Accepted (0)
No accepted invites yet.

Invites: pending, expired and accepted, with the course each student will join.

QUESTIONS

Common questions

Do students need to install anything?

No. AquaBlueprint runs in a current web browser on a laptop or desktop. Students create an account from an emailed invite link.

What do students keep when the contract or their enrolment ends?

Their designs stay in their own account. Removing a student from the institution moves them to the Free plan and preserves their saved work.

Can teaching staff see student work?

Institution administrators can open any member's saved designs in read-only mode. They can't edit a student's design. AquaBlueprint doesn't include assignment submission or grading; it sits alongside your learning management system rather than replacing it.

Which system types are covered?

Recirculating aquaculture systems for finfish and crustaceans are the core of the platform. An integrated multi-trophic (IMTA) designer is available in beta. Bivalve and seaweed calculators are on the roadmap and aren't available yet.

What personal information is collected from students?

Account details (a name and an email address) and the designs they save. Our privacy policy has the full detail, and a security and privacy summary is available on request to support your vendor review.

How is it priced?

By the number of seats and the contract term, invoiced to the institution. Tell us about your cohort and programme and we'll send a quote.

See it with your own course in mind

Send us a line about your programme and we'll reply within two business days with a quote or a recorded walkthrough built around your course.

info@aquablueprint.com.au +61 438 850 930