



SEAF

A WABSI AND WAMSI INITIATIVE

The Shared Environmental Analytics Facility (SEAF)

An initiative of
The Western Australian Biodiversity Science Institute (WABSI) and
the Western Australian Marine Science Institution (WAMSI)

Supported by the Australian Research Data Commons, government and industry partners



seaf.org.au



Built for trust. Designed for dependability.

A collaborative effort

50+

PARTNERS AND SUPPORTERS

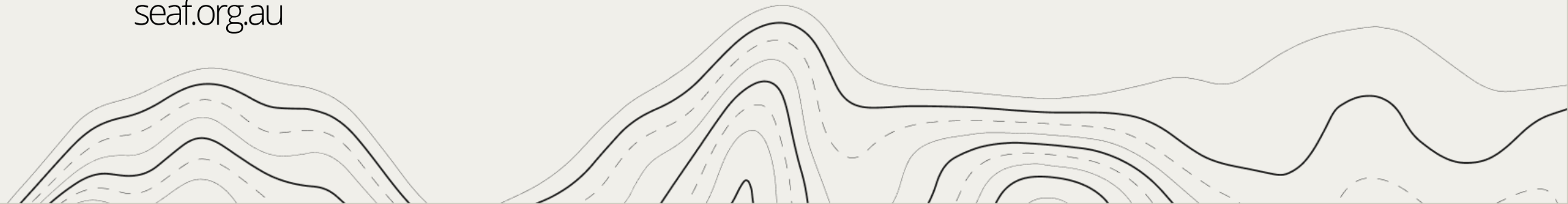
24+

DATA CONTRIBUTORS

4

REGIONS UTILISING SEAF

seaf.org.au



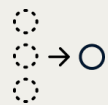
WA Pilots: Celebrating collaborative success



seaf.org.au



Translating knowledge and data analytics into timely information



Industry

SEAF reduces risk, cost and uncertainty in approval pathways



Government

SEAF connects data and insights to support consistent government action



Regulators

SEAF provides consistency, transparency and repeatability



Researchers & Communities

SEAF enables whole-of-region insight

seaf.org.au



SEAF Governance Framework

Progressing from concept to a working governance framework

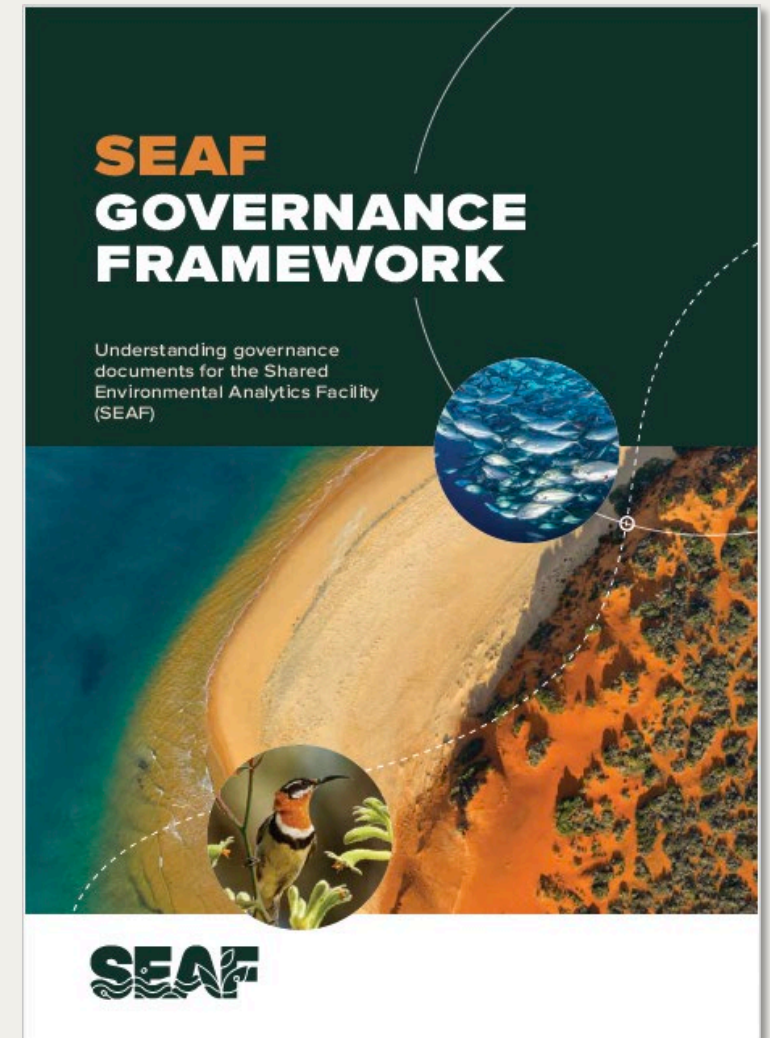
The SEAF Governance Framework establishes

- How organisations participate
- Roles, responsibilities and obligations
- How data access and use are controlled
- How governance decisions are made
- How participants, data, and outputs are managed over time

The Framework is technology-agnostic, scalable, and design for trusted multi-party data sharing without requiring transfer of data ownership.

Developed with input from ARDC and 1001 Lakes on dataspace governance and technical components.

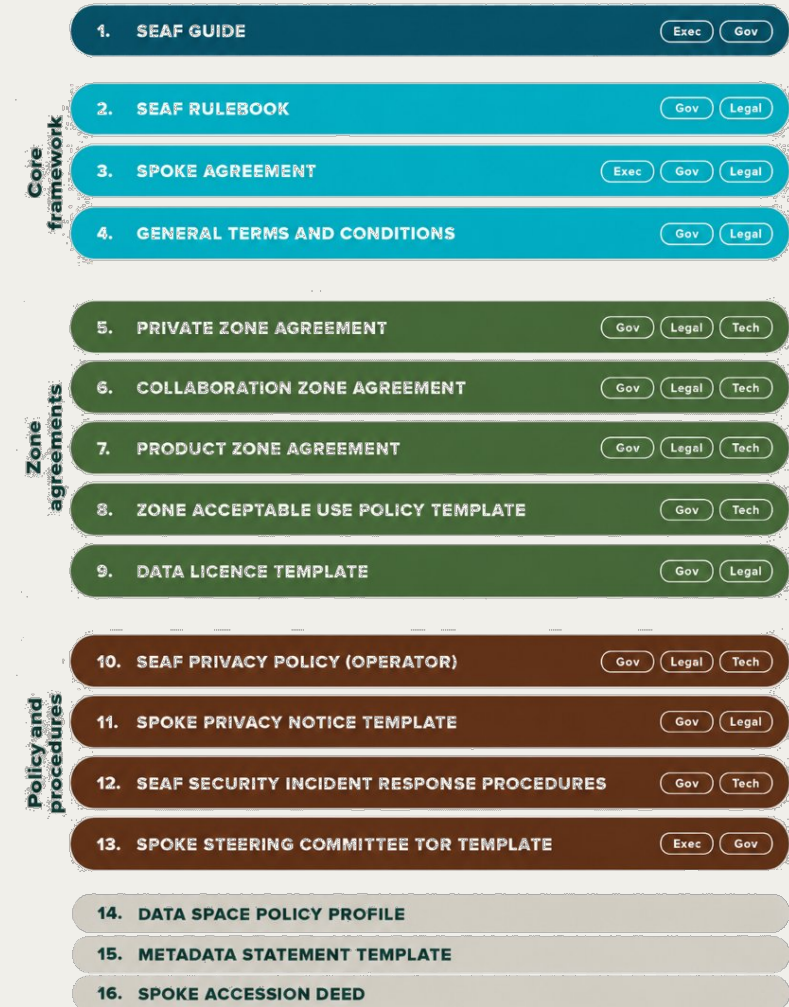
Currently undergoing legal and stakeholder review.



SEAF Governance Framework

Key Outcomes

- **Consistency:** Reusable agreement suite and rulebook structure across all SEAF participants.
- **Structure:** Dedicated Zone Agreements that define how data is used across Spokes, supported by Data Sharing and Access Agreements.
- **Clarity:** Defined separation between SEAF and Spoke governance, infrastructure operator, organisational and user roles.
- **Scalability:** Repeatable Spoke onboarding patterns ready for future environmental data collaborations.



SEAF Design: Multizonal, Trusted By Design

The Problem: Environmental data is locked away by IP and commercial risk, driving rework, inconsistency, and late surprises.

- **The inspiration**
Microsoft's health-sector model: Don't centralise sensitive data, zone the environment.
- **The design**
A multizonal platform: Contributor, analytics, collaboration, and publication zones, with governed movement between them.
- **The promise**
Trusted by design: Partners collaborate and contribute without surrendering IP or control.
- **The reach**
One trust model: Scaled through regional gateways in Cockburn Sound, the Pilbara and Darwin Harbour.

Boutique Science, Shared Foundations

Bridging the science teams and the engineers, SEAF translates each region's scientific requirements into the Zones we build.

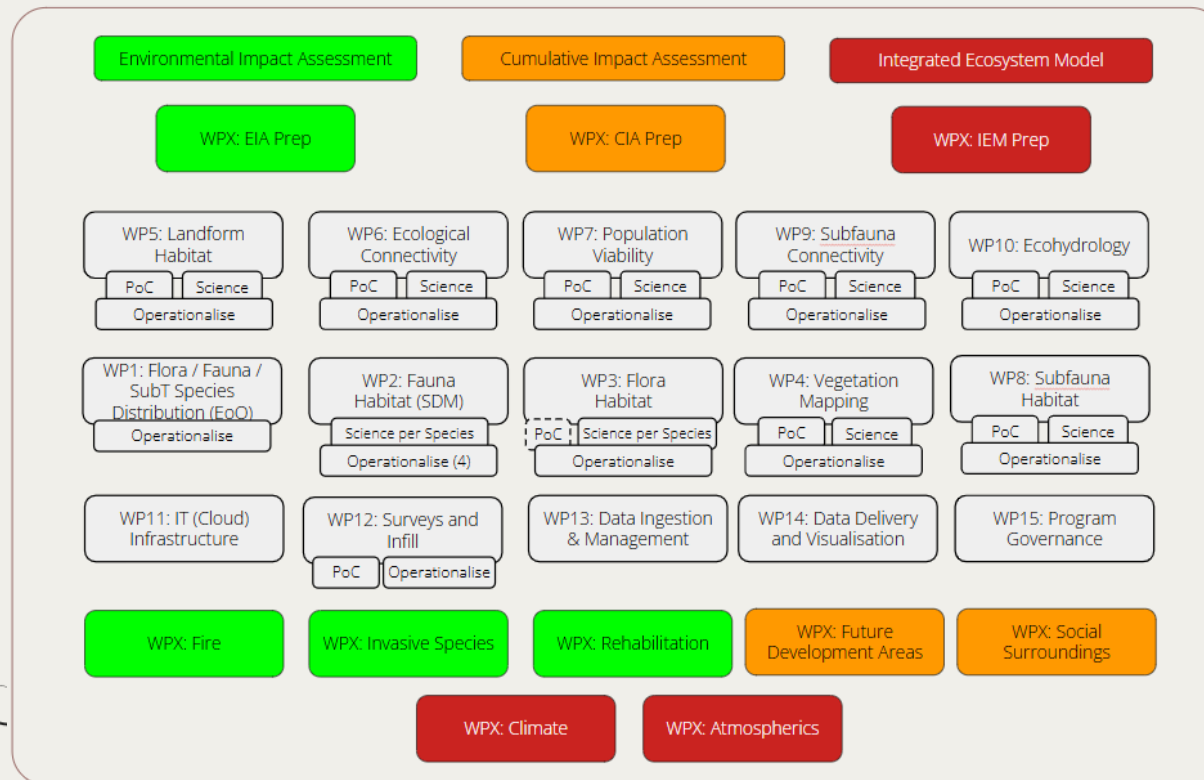
- **The reality:** Every scientific question is boutique. No two regions, no two models, no two datasets ask the platform for the same thing.
- **Find the crossover:** Invest deeply once, then re-use the pattern so the next region inherits the work instead of repeating it.
 - *2 weeks investigating and reporting on SQL dashboard design → 12-hour build for the Cockburn Sound dashboard.*
 - *1 week benchmarking and testing wave modelling in Cockburn Sound → 3-hour infrastructure deployment for Darwin.*
 - *Multi-month biodiversity build → under one week to stand up the backend for RERI.*

We are focused on operationalising the science that others create.

Proof of Concepts

Scientific Research

Operationalise



Private Zones (4)



Rio Tinto

BHP

MINERAL RESOURCES

Fortescue

Product Zones (4)



- Extent of Occurrence
- Species Distribution Models
- Species Hotspot
- Survey & Infill

Plus supporting functionality including data ingestion and data delivery.

Biodiversity SEAF Pibara Biodiversity Data Ingestion Products Data Delivery

Occurrence Data Ingestion

Before submitting the dataset, please ensure you have read and understood the [Data Terms & Conditions](#). These terms outline the responsibilities for data submission, management, and sharing, and require compliance with all relevant Data Sharing Agreements.

Each dataset submission must include a completed Dataset Metadata Statement. Please click the following link to download a copy of the template: [Download Dataset Metadata Statement template](#).

Upload Occurrence File *

Dataset Metadata Statement *

Data Ingestion History

Date Ingested	File Name	File Size	Ingestion Completed On	Ingested By	Status
May 5, 2026, 8:29 a.m.	DevTestDataset1.csv	2.8 MB	May 5, 2026, 8:36 a.m.	Jason Murray	Success
April 24, 2026, 9:16 a.m.	DemoDataset.csv	333.2 KB	April 24, 2026, 9:18 a.m.	Lindsay Puxley	Success
April 22, 2026, 8:20 p.m.	Blank_dataset.csv	217 bytes	April 22, 2026, 8:20 p.m.	Jason Murray	Success
April 22, 2026, 4:17 p.m.	DemoDataset.csv	333.4 KB	April 22, 2026, 4:19 p.m.	Jason Murray	Success

Biodiversity SEAF Pibara Biodiversity Data Ingestion Products Data Delivery

Extent of Occurrence

Species: Pseudomyrmex Myrmica Macrotermes Reticulitermes Termitomyces Reticulitermes Termitomyces

Completed At: May 5, 2026, 1:06 p.m.

Species Distribution Models

Species: Macrotermes Termitomyces Reticulitermes Termitomyces

Completed At: May 6, 2026, 5:16 p.m.

Date Range: Jan. 1, 2000 to May 6, 2026

Species Hotspot

Date Range: Jan. 1, 2000 to May 6, 2026 Jan. 1, 1900 to May 6, 2026 Jan. 1, 1900 to May 6, 2026

Completed At: May 5, 2026, 10:25 a.m.

Survey and Infill

Survey Year: 2000-2026 April 21, 2026, 12:37 p.m.

Completed At: April 15, 2026, 9:53 a.m.

Biodiversity SEAF Pibara Biodiversity Data Ingestion Products Data Delivery

Data Delivery

Outputs are retained in the system for 90 days from generation. After this period, they will be permanently deleted.

User	Product	Summary	Requested At	Status	Completed At	Downloads	Product Metadata Statement
Melanie Strong	Species Distribution Models	Species: Macrotermes gigas Model: Shaw et al. 2025 Use Fragment Data: Yes Date Range: Jan. 1, 2000 to May 6, 2026 External Sources: None	May 6, 2026, 5:08 p.m.	Completed	May 6, 2026, 5:16 p.m.	gptc vsi png	Download
Serge Le Breton	Species Distribution Models	Species: Reticulitermes aurantiaca Model: Shaw et al. 2025 Use Fragment Data: Yes Date Range: Jan. 1, 1900 to May 6, 2026 External Sources: None	May 6, 2026, 9:22 p.m.	Completed	May 6, 2026, 9:35 p.m.	gptc vsi png	Download
Melanie Strong	Species Distribution Models	Species: Reticulitermes aurantiaca Model: Shaw et al. 2025 Use Fragment Data: No External Sources: None	May 5, 2026, 2:53 p.m.	Completed	May 5, 2026, 2:56 p.m.	gptc vsi png	Download
Melanie Strong	Species Distribution Models	Species: Reticulitermes aurantiaca Model: Shaw et al. 2025 Use Fragment Data: Yes Date Range: Jan. 1, 2000 to May 5, 2026 External Sources: None	May 5, 2026, 1:17 p.m.	Completed	May 5, 2026, 1:30 p.m.	gptc vsi png	Download

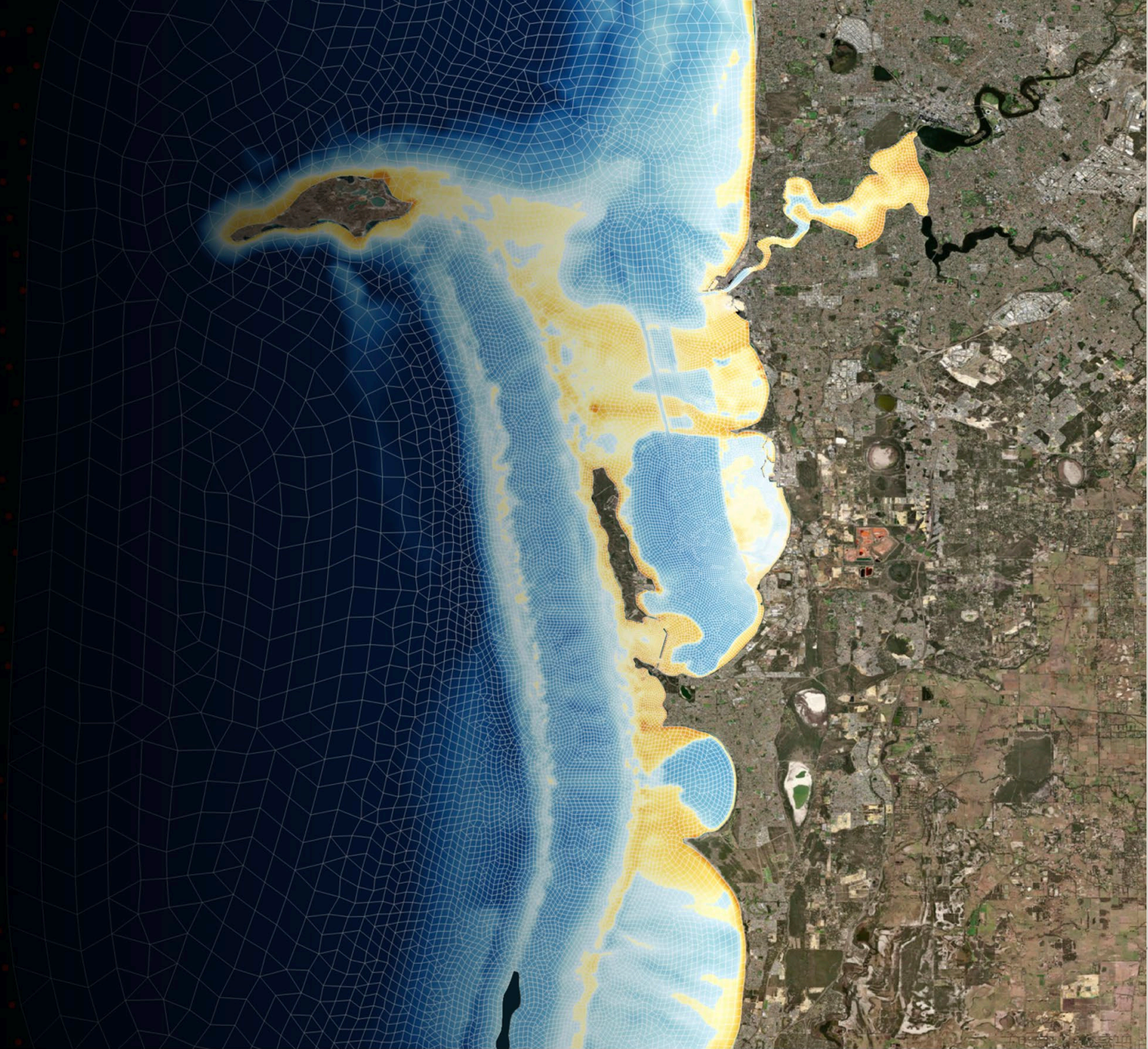


WESTERN AUSTRALIAN
MARINE SCIENCE
INSTITUTION

Better science **Better decisions**

A shared analytics approach for Cockburn Sound

Matthew Hipse





Traditional Owners



Regulator (State)



Regulator (Federal)

POLICY



SHARED ANALYTICS

OPERATIONS



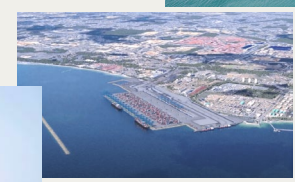
Desalination (Water supply)



WWTP (Wastewater)



Sand mining



New Port



Defense



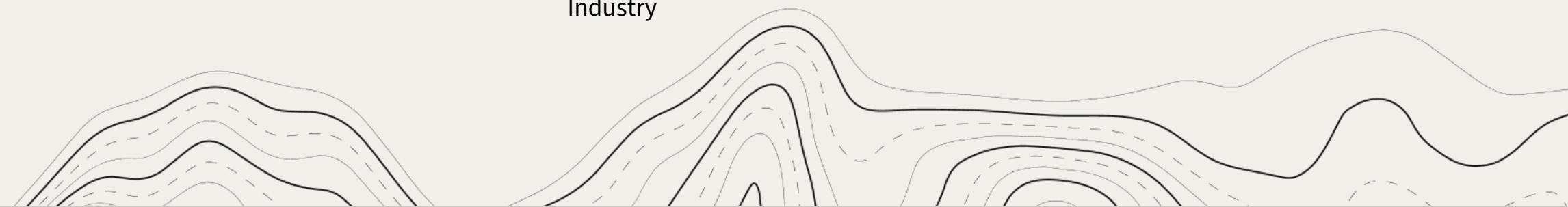
Industry



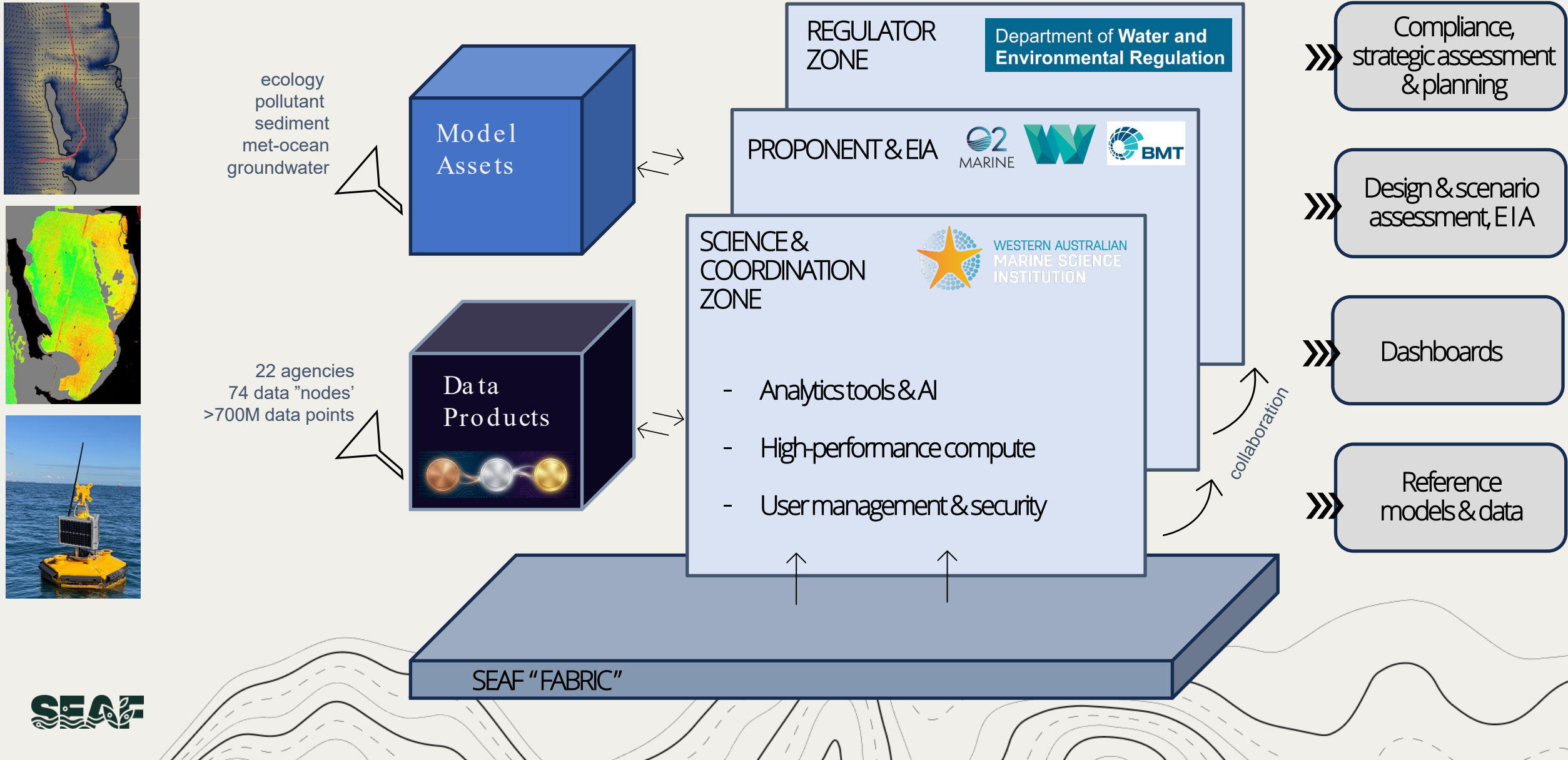
Commercial fishing



Recreational fishing & boating



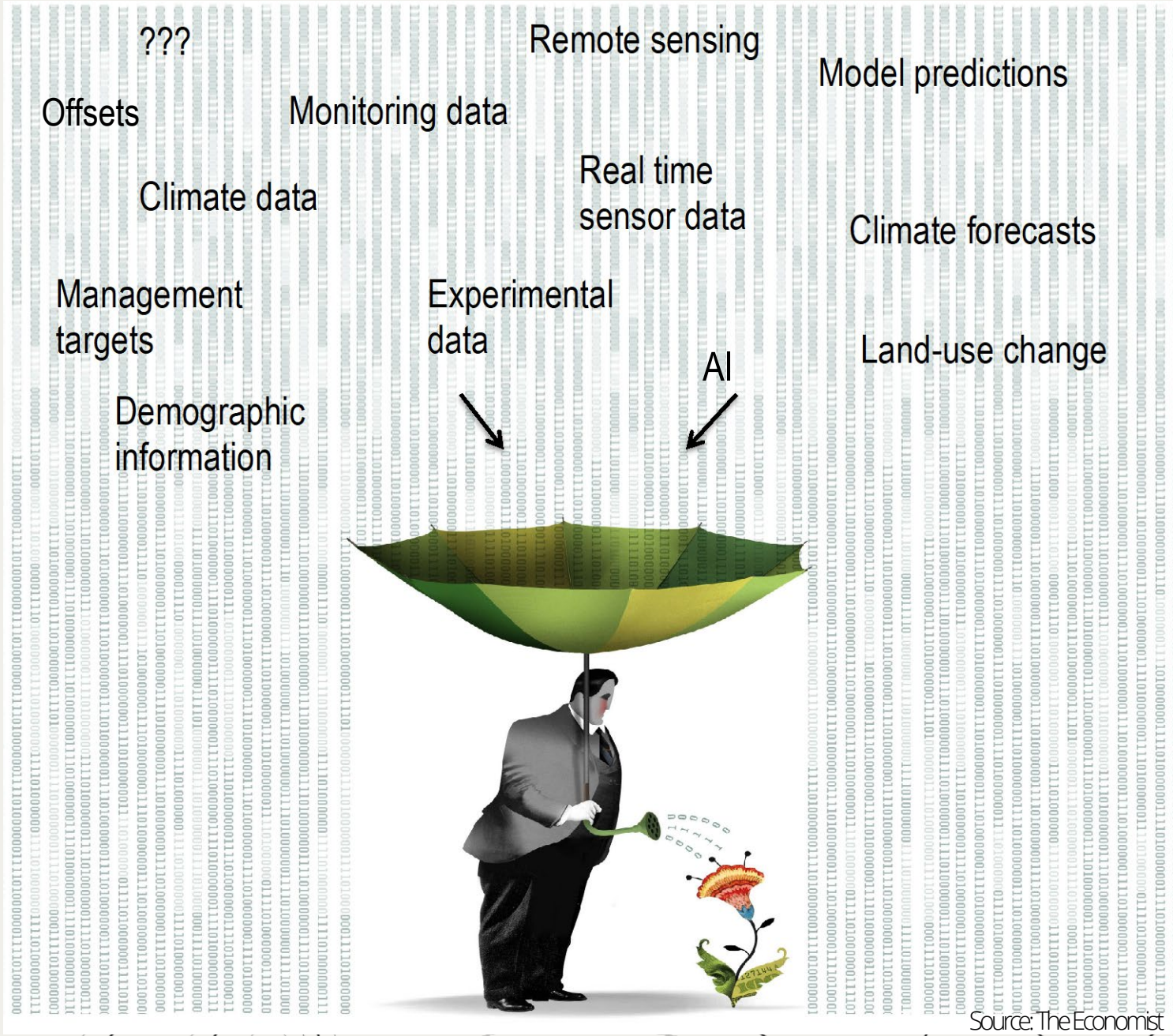
Putting the SEAF architecture to work for Cockburn Sound



Taming the data deluge !

Organising 'data chaos' to:

- * provide efficiency
- * develop shared tools
- * build a trusted home for knowledge





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