fitzroy partnership for river health

The state of Freshwater Ecosystems in Fitzroy Basin

First Nations in the Fitzroy

This map is a stylised representation of First Nations who are actively registered as cultural heritage parties/bodies, Native Title Applicants and Registered Native Title Prescribed Body Corporates (RNTBC) within the Fitzroy region in July 2021.

This map and the names of First Nations were derived from National Native Title Tribunal (NNTT) datasets accessed in June 2021. Source: www.nntt.gov.au. Information herein is provided in good faith and while every effort has been made to verify the accuracy of the information contained, Fitzroy Partnership for River Health recommends that readers exercise caution with respect to its use.

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Overview

Who is FPRH?

Reporting on waterway health – BIG data

Communicating results

Facilitating collaboration

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10 YEARS OF 10TH REPORT CARD WATERWAY HEALTH REPORTING

2008
Floods. Mine site water releases contribute to short term water issues, including drinking water taste.

2008
Community concern, but no independent reporting measuring waterway health.

2009
Queensland Premier commissioned report identifying need for integrated monitoring partnership.

2010
Independent Science Panel established by a collective committed to independent waterway reporting.

2011
First GBR Report Card released providing information on marine zone health.

2012
Fitzroy Partnership for River Health formally established.

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2013
Pilot Fitzroy Basin ecosystem health waterway report card released, for 2010-11 year.

2014
Two catch-up report cards released, for 2011-12 and 2012-13.

2015
2013-14 Report card includes agricultural use and drinking water gradings.

2016
2014-15

2017
2015-16

2018
2016-17

2019
2017-18

2020
2018-19 Virtual Report Card launch due to Covid

2021
2019-20 Virtual Report Card launch

10 YEARS OF 10TH REPORT CARD

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We thank our partners for their commitment to a better water future for the Fitzroy Basin

Queensland Government

Australian Government

BHP

BMA
BHP Mitsubishi Alliance

Peabody

AngloAmerican

GLENCORE

fba
FITZROY BASIN ASSOCIATION

Santos

Australia Pacific LNG
Operated by origin

Jellinbah Resources

Coronado
STEEL STARTS HERE

Rockhampton Regional Council

Ensham
RESOURCES

COTTON AUSTRALIA

CQUniversity AUSTRALIA

QUEENSLAND resources COUNCIL

CQG Consulting

sunwater

NEW HOPE GROUP

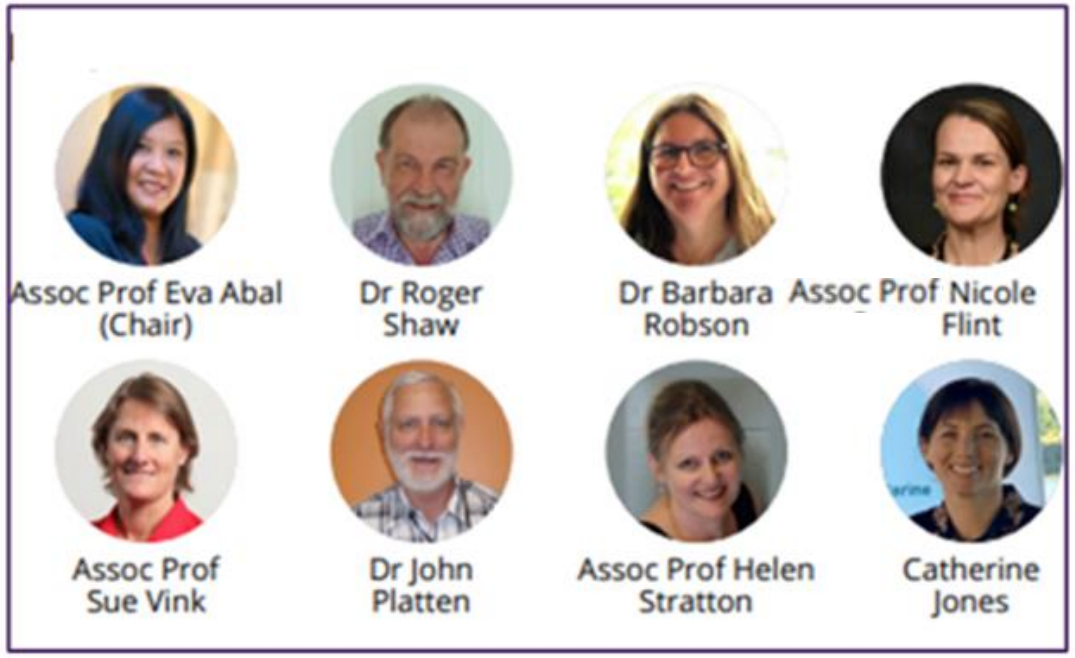
KESTREL COAL RESOURCES

stanmore

Central Highlands Regional Council

Reporting on waterway health

Ecosystem Health Index = BIG Data



Number of scores determined per catchment and per year (1 July - 30 June)

Zone	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020
Callide (FW)	66722	58452	55209	79926	115760	64823	99878	91585	87452	140356
Comet (FW)	28651	402929	26467	9682	13729	11900	16342	12417	76752	29082
Connors (FW)	11216	16944	7633	6801	7876	5562	8333	8734	83156	75376
Fitzroy (FW)	26317	32641	17613	21010	25651	18078	26611	26409	68321	59955
Lower Dawson (FW)	18662	20388	119445	12729	31828	12103	18691	13548	26761	45122
Lower Isaac (FW)	8804	8880	9031	13162	9227	8037	8832	8813	14319	21490
Mackenzie (FW)	26604	158455	432514	1062519	415246	209496	25047	215130	296724	397621
Nogoa (FW)	8607	8880	8303	5137	3948	7054	5998	5489	19547	14933
Theresa (FW)	43374	43674	41987	17446	15631	19710	18847	18683	32638	25215
Upper Dawson (FW)	13922	18365	19706	8366	27335	19048	17688	20039	53110	31720
Upper Isaac (FW)	86458	179960	32405	9176	3427	56859	3197	2294	33733	22395
Estuary	1372	1438	1259	1550	1802	919	1765	1907	518	453
Total	340709	951006	771572	1247504	671460	433589	251229	425048	793031	863718

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EHI – Report Card – Current Data sources

- DES Public Register – REMP
- Gladstone Ports – Gladstone Ports data
- DES – WaTERS
- DNRME – SWAN grabs
- DoR – Dee River
- DES – GBR estuary
- Infofish – barra recruitment data
- DES – GBR loads
- Sunwater – flow data
- Regional research/monitoring projects

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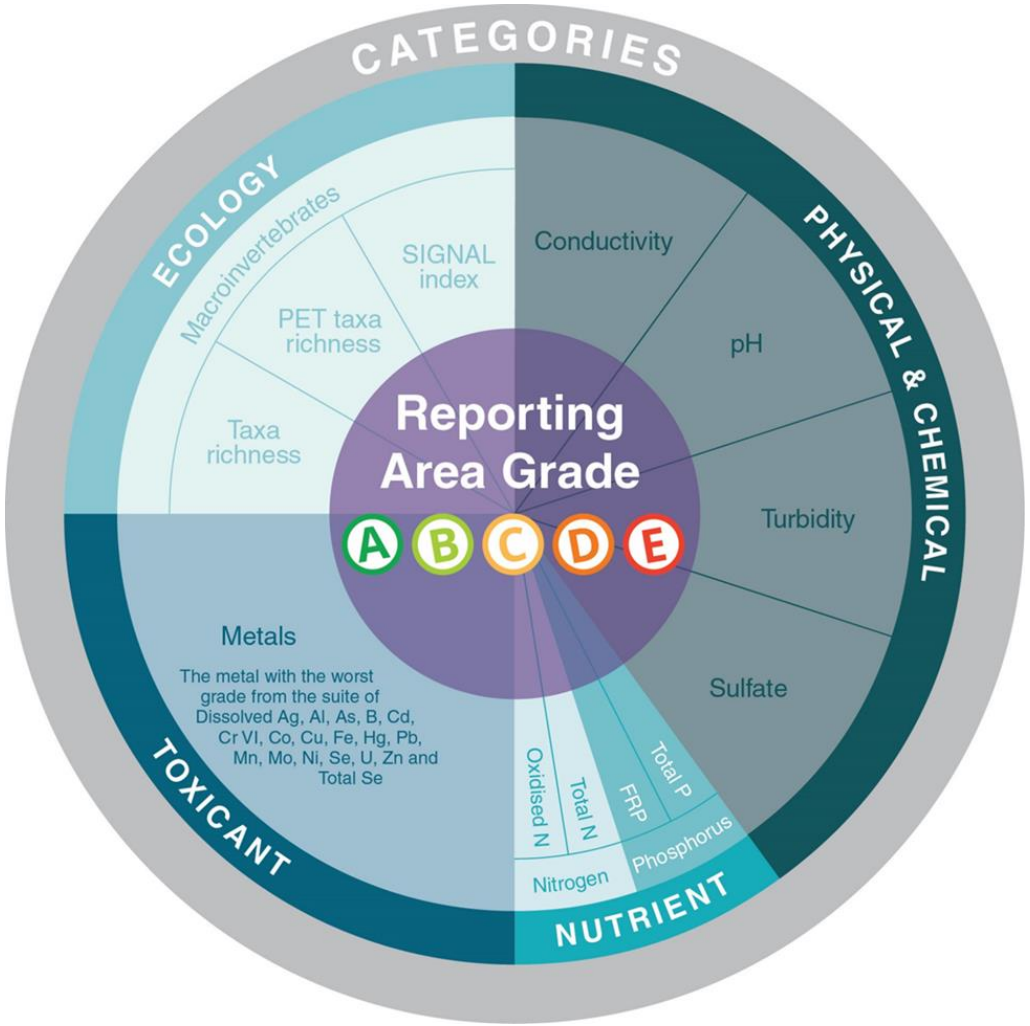
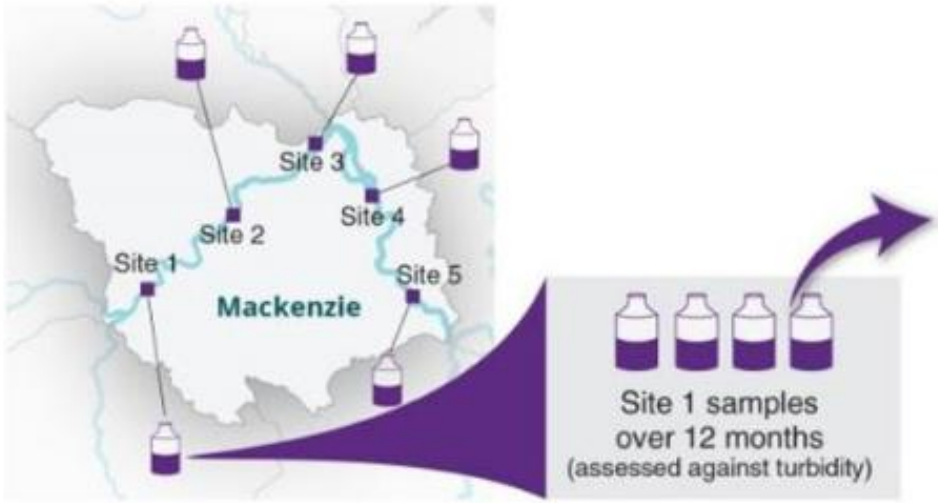
How is Ecosystem Health Index grade calculated?



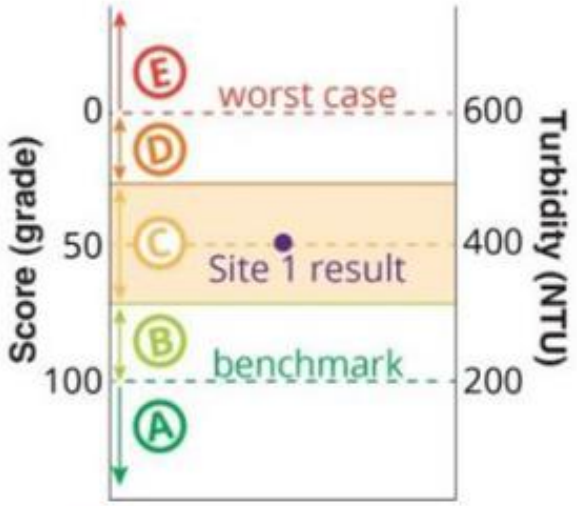
https://riverhealth.org.au/resources/grading-explained/freshwater-and-estuary/

How Monitoring Sites are scored

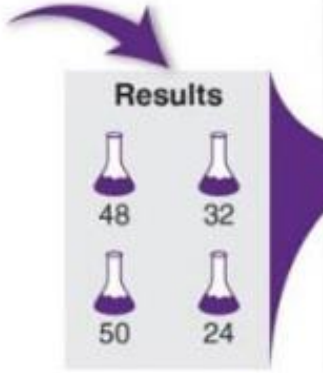


Each reporting area contains numerous sites where samples are collected throughout the year.

All results from these samples (collected at each site) are scored against each indicator



These scores are averaged by comparing the result to defined thresholds in healthy and unhealthy ecosystems.



Sample scores for each indicator are then averaged to determine an overall grade for each indicator for each site.

These grades are then averaged to determine an overall grade for each indicator for each reporting area.

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How the Basin is scored

An overall grade for each reporting area is determined by averaging the overall grades for each of the four ecosystem health categories.

The category grades are determined by averaging the overall grades for the indicators within each category. In freshwater catchments, the lowest toxicant indicator score is used instead of the average for that category.

Physical/ chemical | Nutrients | Toxicants | Ecology

Turbidity | Electrical conductivity | pH | Sulphate

Grades for each indicator are awarded by averaging scores for each monitoring site that falls within that reporting area.

Assessment Formula

If a sample result for an indicator is better than the benchmark, it scores 100 which is an A. If the sample result is worse than the worst case scenario (WCS) it scores a 0 which is an E. If a sample result is between the benchmark and the WCS, the score is calculated using the formula:

$$\text{Score} = 100 \times \left(1.0 - \left|\frac{(x - \text{Benchmark})}{(\text{WCS} - \text{Benchmark})}\right|\right)$$

Where: x = sample result for the indicator
Benchmark = water quality objective or guideline
WCS = worst case scenario

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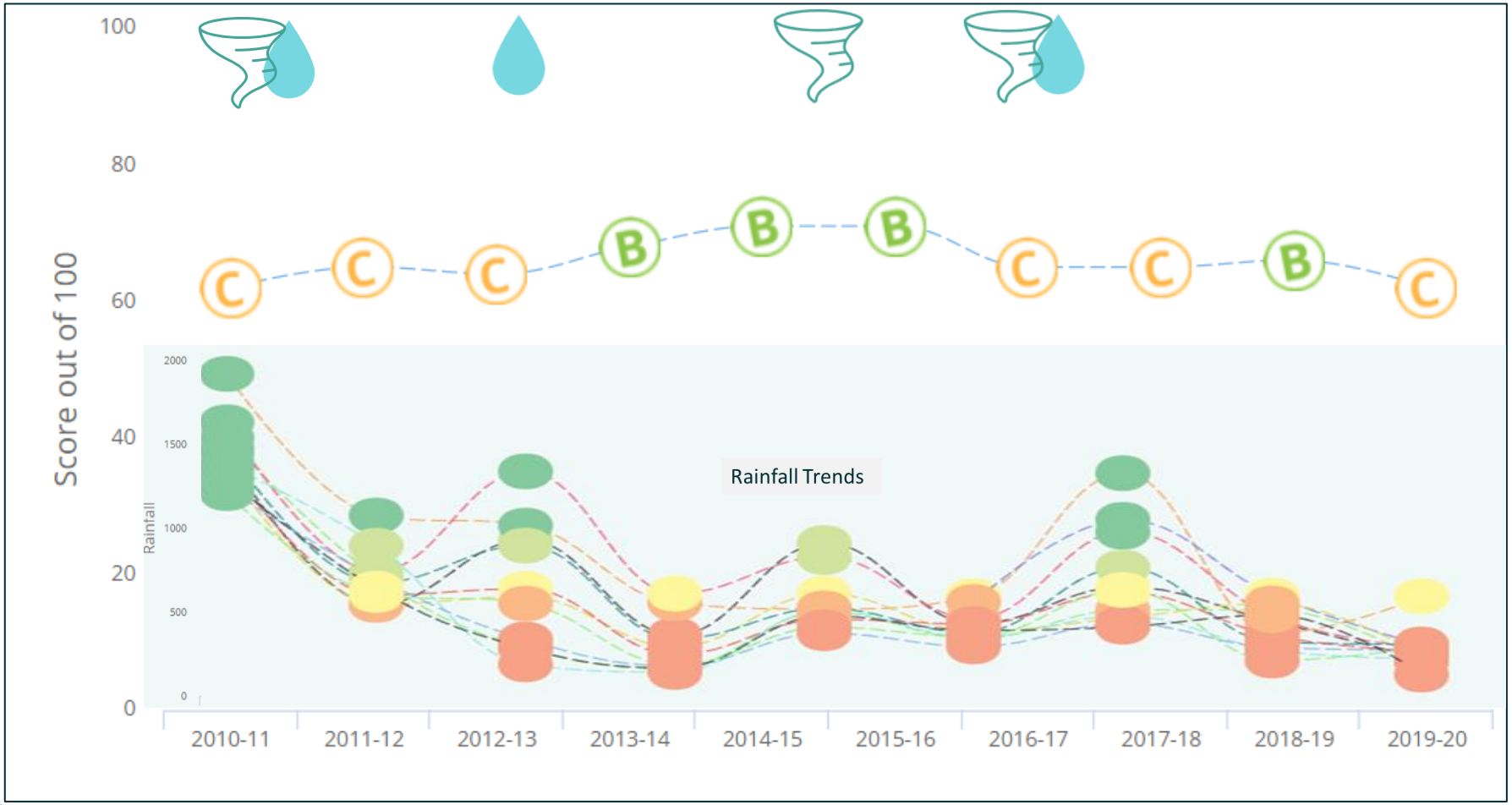
Want some results?



Cyclone

Flood

https://riverhealth.org.au/report_card/ehi/

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BIG Data!

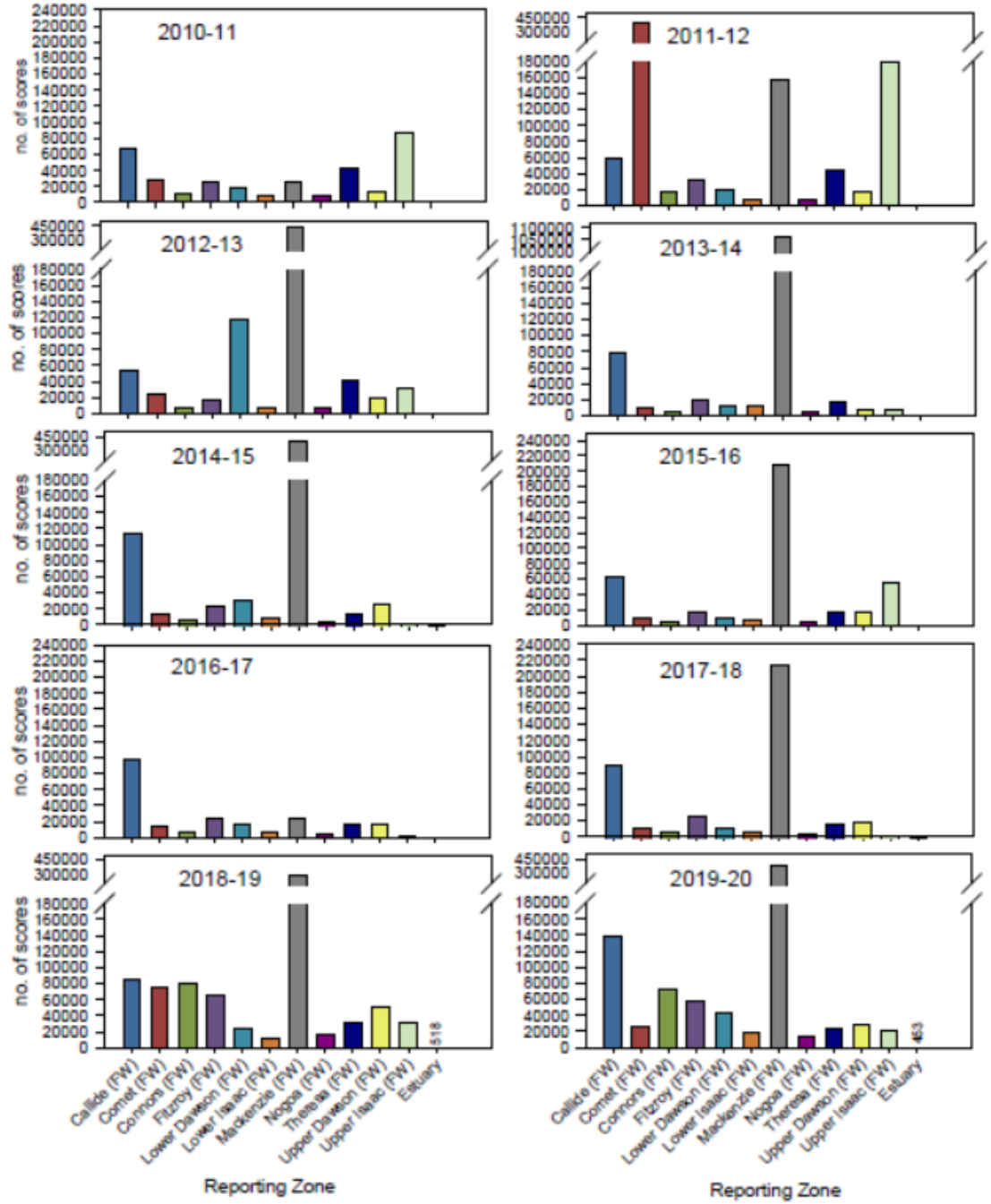

Figure 1 Number of scores calculated per reporting zone, per year

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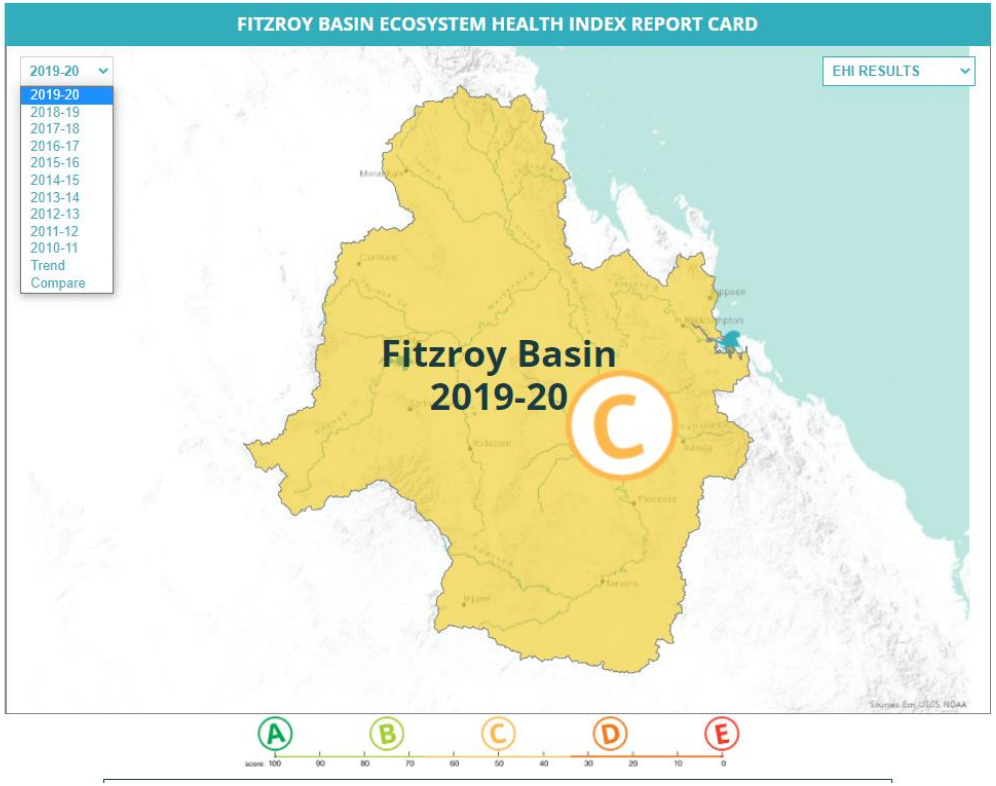

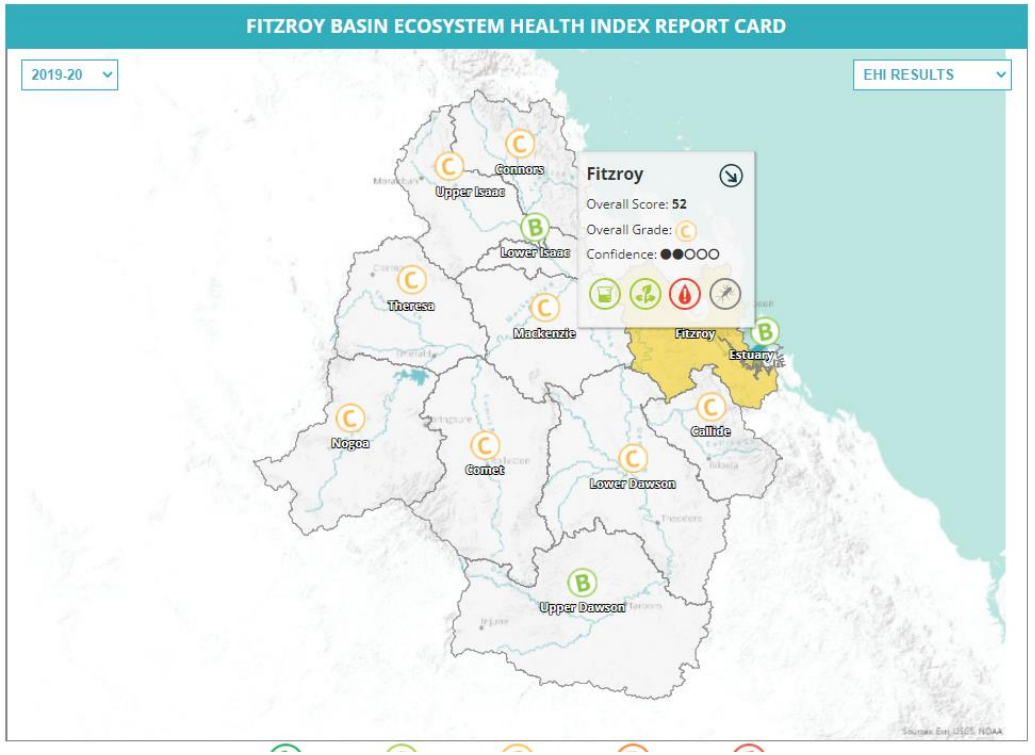

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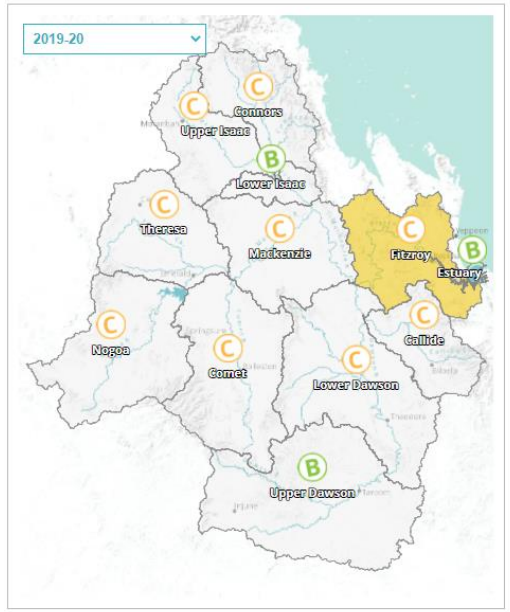
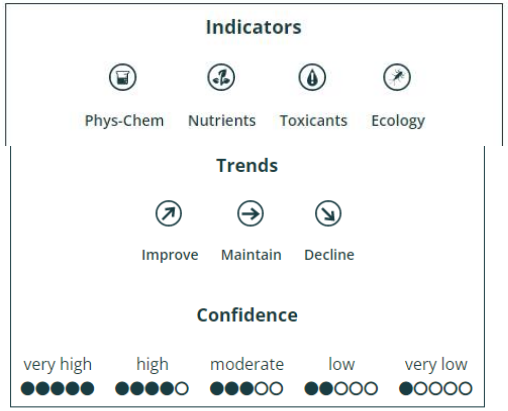
Fitzroy



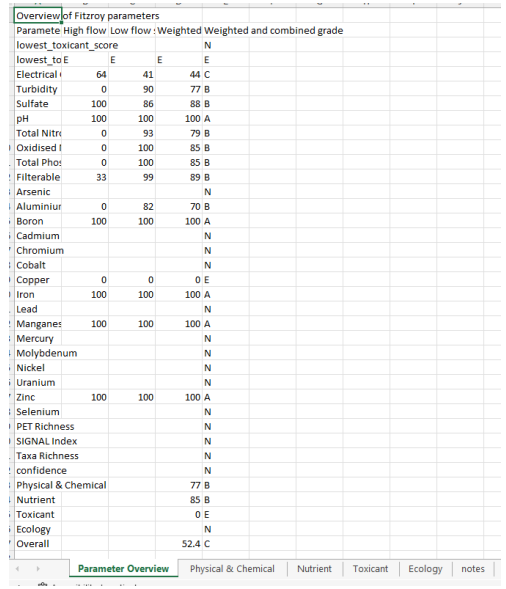


Overall, the ecosystem health index of monitored streams in the Fitzroy catchment was found to be in fair condition this period with:

- Mostly Excellent or Good results for physico-chemical indicators, except for Electrical Conductivity.
- Good results for nutrient indicators
- Mostly Excellent or Good results for toxicant indicators, except for Copper. No data available for Arsenic, Cadmium, Chromium, Cobalt, Lead, Mercury, Molybdenum, Nickel, Selenium or Uranium.

The assessment is based on 4 sites (59,955 samples) to determine the overall catchment grade.

Download Data



Overview of Fitzroy parameters				
Paramete	High flow	Low flow	Weighted	Weighted and combined grade
lowest_toxicant_score				N
lowest_to	E	E	E	E
Electrical	64	41	44	C
Turbidity	0	90	77	B
Sulfate	100	86	88	B
pH	100	100	100	A
Total Nitr	0	93	79	B
Oxidised	0	100	85	B
Total Phos	0	100	85	B
Filterable	33	99	89	B
Arsenic				N
Aluminiur	0	82	70	B
Boron	100	100	100	A
Cadmium				N
Chromium				N
Cobalt				N
Copper	0	0	0	E
Iron	100	100	100	A
Lead				N
Manganes	100	100	100	A
Mercury				N
Molybdenum				N
Nickel				N
Uranium				N
Zinc	100	100	100	A
Selenium				N
PET Richness				N
SIGNAL Index				N
Taxa Richness				N
confidence				N
Physical & Chemical			77	B
Nutrient			85	B
Toxicant			0	E
Ecology				N
Overall			52.4	C

Parameter Overview | Physical & Chemical | Nutrient | Toxicant | Ecology | notes

Guidance on exploring graphs and data

Please find the guide below to help you in exploring the results.

Categories

Along the top of the graph there are four ecosystem health index categories:

- physical/chemical,
- nutrients,
- toxicants
- ecology.

"'Toxicants' is a term used for chemical contaminants that have the potential to exert toxic effects at concentrations that might be encountered in the environment" (ANZECC and ARMCANZ, 2000).

Each category has at least one and usually several indicators, located on the left side (y-axis) of the graph. Click on these indicators to find out more about each of them, including:

- what is measured
- why it is important to measure them
- what a particular grade means for this indicator?

Grades

We apply a series of calculations to the data to determine an award grade for each waterway health indicator. Hover over the grade to find out the exact score for each indicator. Compare the grade to the legend at the bottom of the graph (x-axis) to quickly see how each indicator went. Click on the legend for more details about these grades and what they mean.

Facts about the Fitzroy River

The Fitzroy River catchment is located in the east of the Fitzroy Basin and begins at the junction of the Dawson and Mackenzie Rivers. The Fitzroy flows roughly northeast around Native Cat Ranges to Eden Bann weir, which is used as a water source for a major coal-fired power station. It then tracks southeast to the Fitzroy River Barrage, which acts as the town water supply for Rockhampton - the major population centre in the region with 60,000 residents. The barrage acts as a tidal barrier and separates the Fitzroy Catchment from the estuary.

Grazing dominates along with a small but significant amount of cropping lands. While the urban footprint for the Fitzroy catchment is small, it is the largest of any catchment in the basin.

Average annual rainfall is greater than 1000 mm on the Byfield and Berserker Ranges and then decreases to 700 mm in the west.

Datasheet

Need more detail? Delve into the data by downloading the workbook!

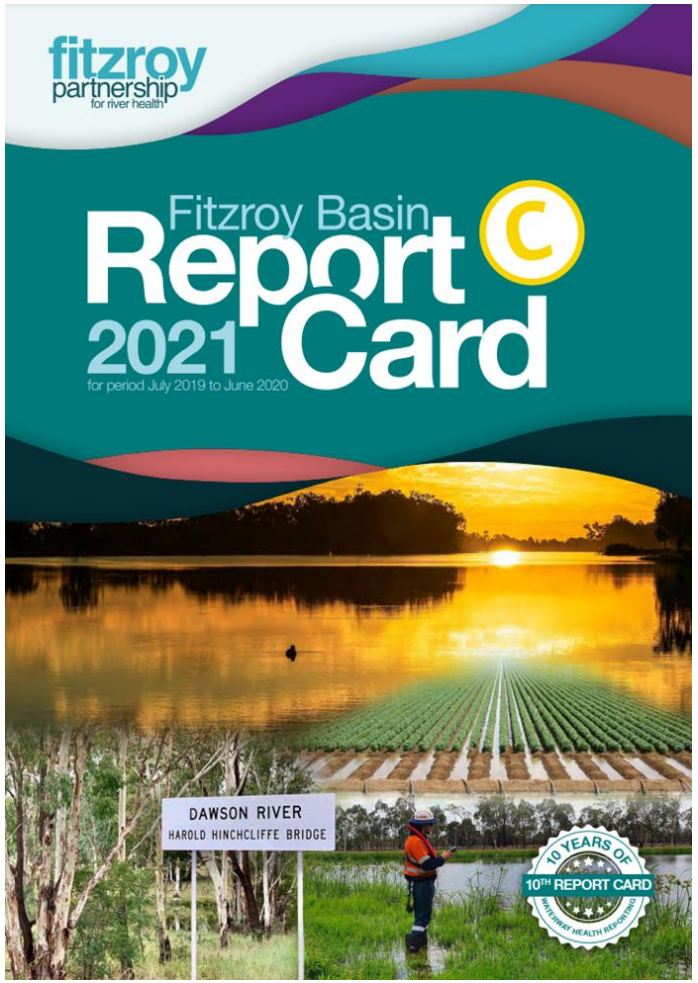
For each reporting area, there is a workbook available for each waterway health category. Select the category you are interested in, then click the workbook icon from the data box just below the legend.

Once you open the file, the first sheet is the summary results for the category. It provides summary results for each indicator for three flow conditions: flow weighted; low and high.

At the category level, the score (0 to 100) and corresponding grade (E to A) is provided for each indicator. In addition, the number of sites and number of samples used to prepare the results are provided. Going one step further, you can explore the results for each indicator by selecting the sheet with the corresponding indicator name. In these sheets you will find the summary results for each site. Once again this includes a score (0 to 100) and grade (E to A) along with the number of samples that went into this grade. To give you an idea of the range of results we have also provide the minimum sample score and maximum sample score. Each site has a site ID, which keeps maintains the privacy of data providers while maintaining a reference to the data stored on the partnership database.

You can visit the grading explained section of the website to get a more detailed explanation of the scoring system used.

Communicating results



Fitzroy Basin 2019-20 C

How do I interpret the report card information?

1. The Report Card summarises data for various indicators, which are illustrated by specific icons. Use the icons to determine which indicator is being measured.

Physical/ chemical · Nutrients · Toxicants · Ecology freshwater · Ecology estuarine

2. Check the colour of the icon associated with each catchment on the map to determine how that indicator scored.

A	B	C	D	E	N
100% Excellent	67-99% Good	33-67% Fair	0-33% Poor	0% Fail	No data

3. Does the Independent Science Panel consider the data to be representative? A higher confidence (5 dots) means all criteria are met.

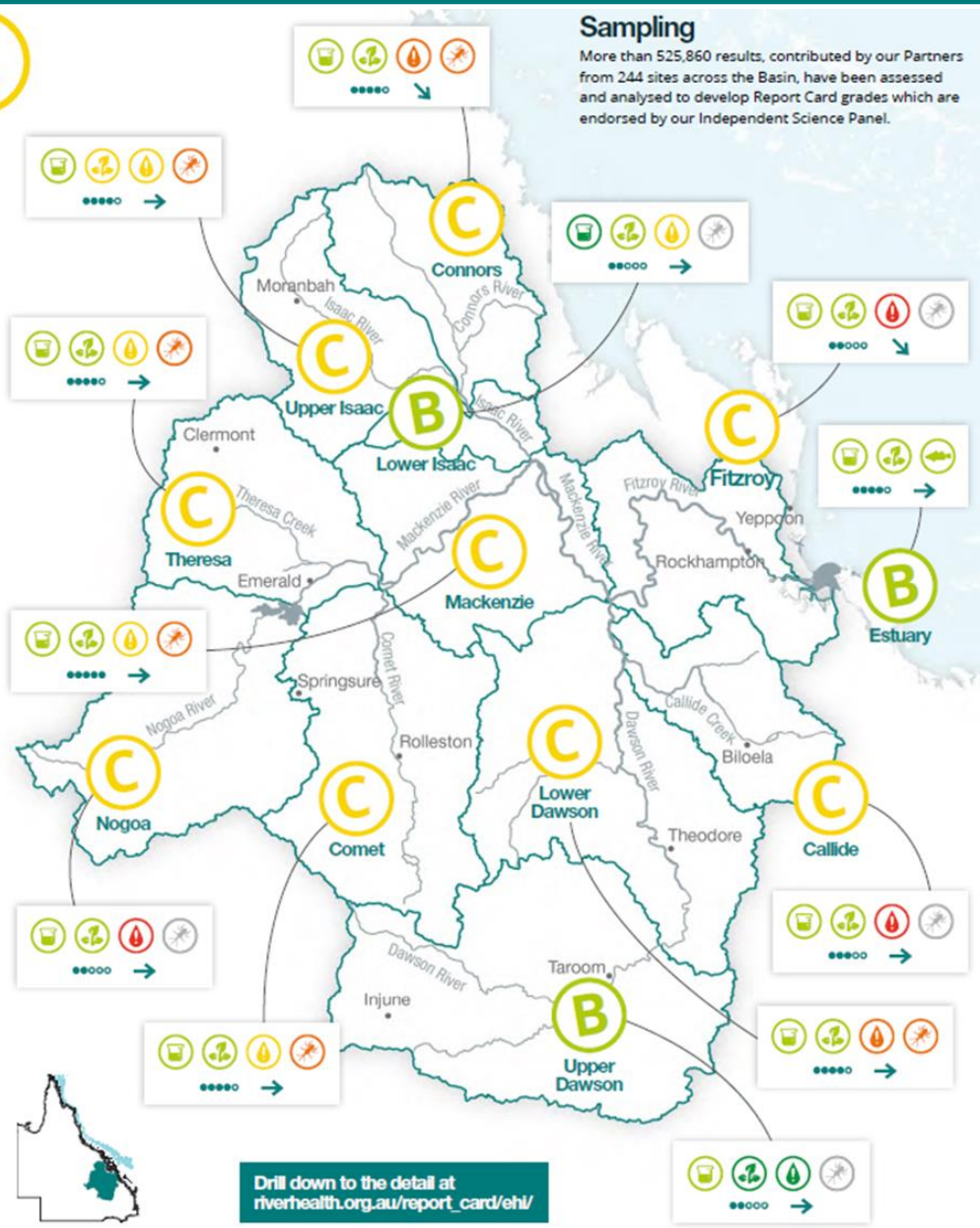
- ●●●●● Very high
- ●●●●○ High
- ●●●○○ Moderate
- ●●○○○ Low
- ●○○○○ Very low

4. How does the grade compare to last year? An arrow tells you whether the grade has gone up, down or stayed the same.

- ↗ Improved
- → Maintained
- ↘ Declined

Sampling

More than 525,860 results, contributed by our Partners from 244 sites across the Basin, have been assessed and analysed to develop Report Card grades which are endorsed by our Independent Science Panel.



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Communicating results

- Educational sessions (primary, high school and Uni)

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- Isaac Regional Council St Lawrence Wetlands Weekend, with Mackay Whitsundays Healthy Rivers to Reef
- Rockhampton Racecourse Community Markets
- Presentations at International River Symposium
- Central Qld Mine Rehabilitation Group
- Barra Bash

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- National Water Week
- World Water Day
- Rockhampton River Festival – Family Zone sponsor
- Fitzroy Integrated Science Forum
- Wet Tropics Water Forum
- Dry Tropics Water Forum
- Mackay Report Card Stewardship Launch
- Presentations to Partners (ZOOM)/Meetings

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Facilitating collaboration – raising the grade!

- Individuals
- Community
- Business
- Industry
- Agriculture
- Government

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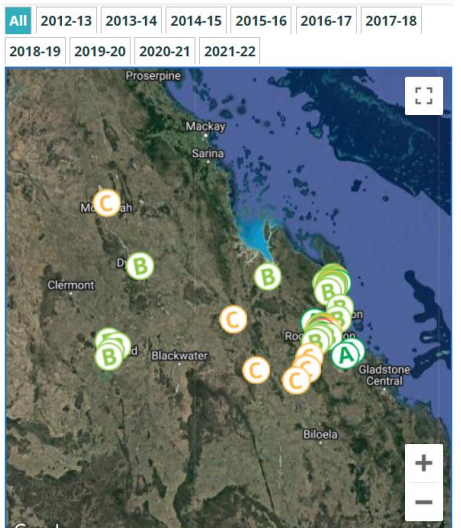
CITIZEN SCIENCE IN ACTION

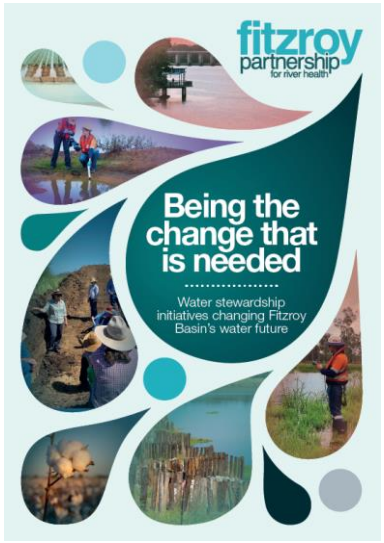
Get involved in local waterway monitoring!

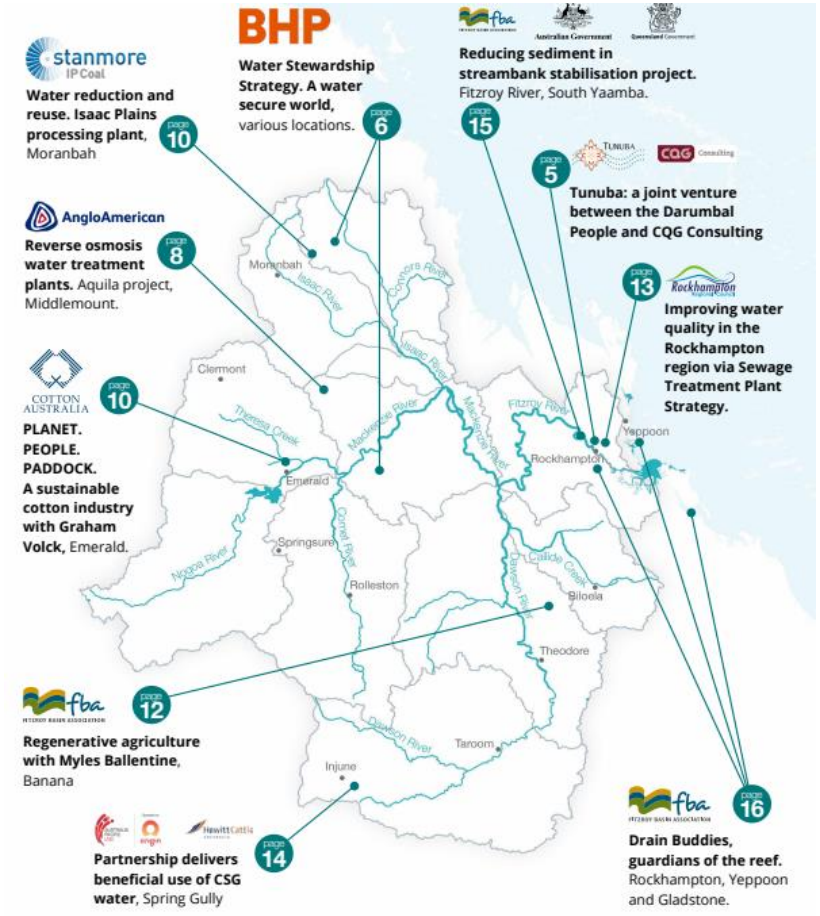
riverhealth.org.au/community



https://riverhealth.org.au/report_card/community/

Stewardship Reporting





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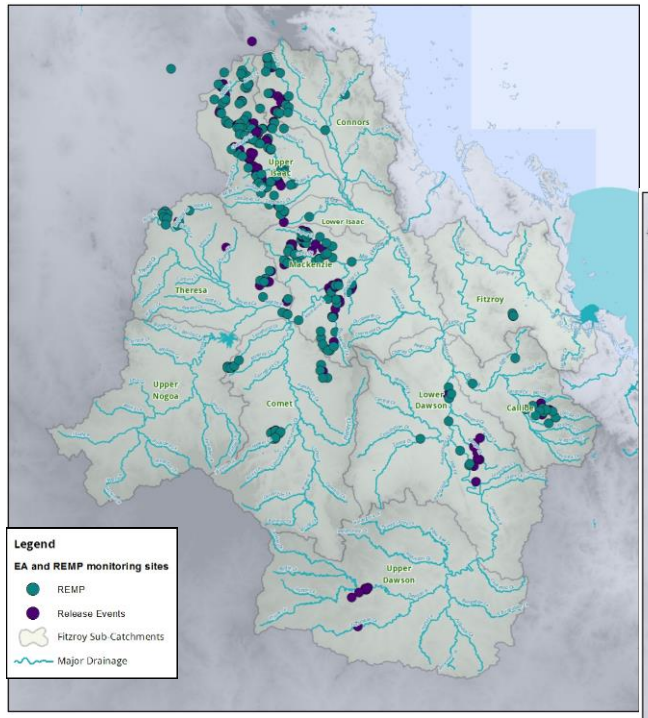
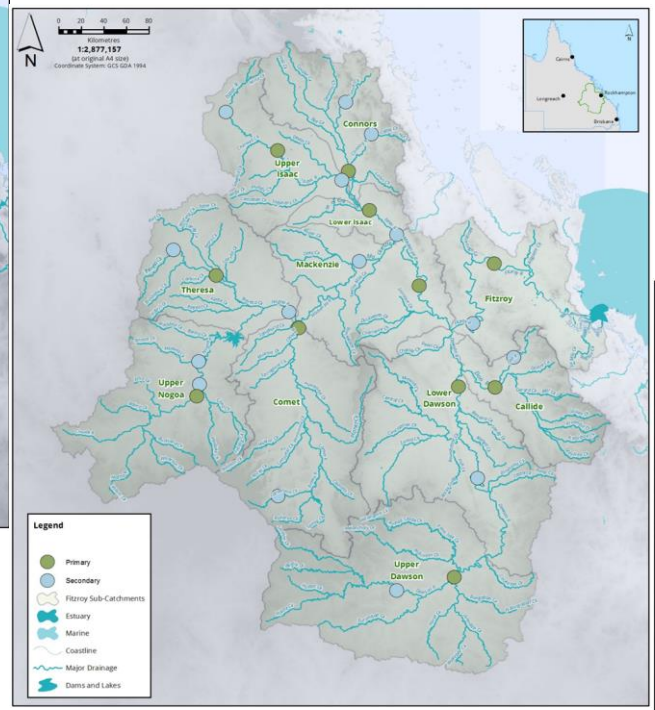
New region-wide monitoring program

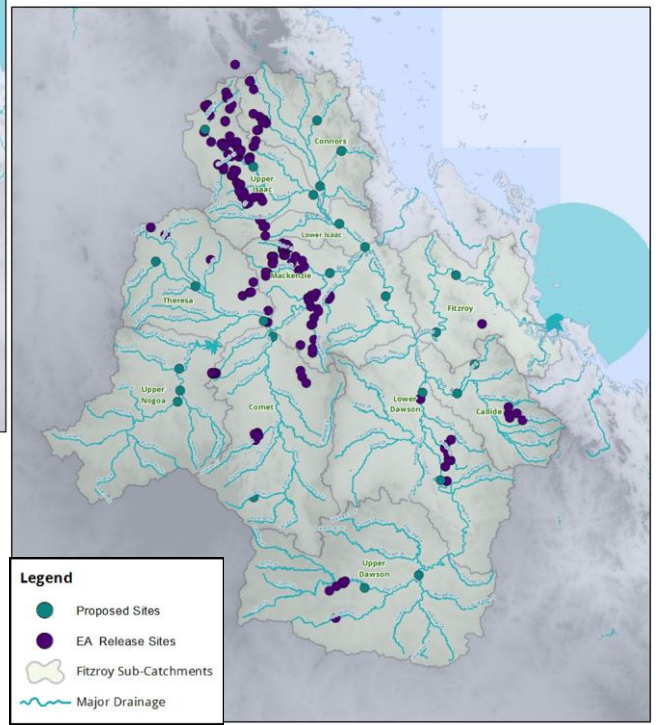
Existing regulated monitoring



Proposed Fitzroy RREMP Sites



RREMP Sites &
EA release point sites



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Community Engagement

- Citizen Science
- Attend events
- Educational tools
- Scholarships

Platform for Collaboration

- Support stewardship & management actions
- Shared ideas between Partners

Report on Waterway health

- Independent, trusted information
- Report Cards
- Inform policy & management

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10 YEARS OF 10TH REPORT CARD WATERWAY HEALTH REPORTING

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We thank our partners for their commitment to a better water future for the Fitzroy Basin

Queensland Government

Australian Government

BHP

BMA BHP Mitsubishi Alliance

Click to add text

Peabody

AngloAmerican

GLENCORE

fba FITZROY BASIN ASSOCIATION

Santos

Australia Pacific LNG Operated by origin

Jellinbah Resources

Coronado STEEL STARTS HERE

Rockhampton Regional Council

Ensham RESOURCES

COTTON AUSTRALIA

CQUniversity AUSTRALIA

QUEENSLAND resources COUNCIL

CQG Consulting

sunwater

NEW HOPE GROUP

KESTREL COAL RESOURCES

stanmore

Central Highlands Regional Council