



Department of
Primary Industries

Clyde River Water Quality Report

Climate Smart Pilots

March 21, 2023

www.farmdecisiontech.net.au

Foreword

Funding

This work has been produced by the NSW Primary Industries Climate Change Research Strategy funded by the NSW Climate Change Fund.

NSW Department of Primary Industries Disclaimer

This is a research trial and pilot project, and you should not rely solely on the information or advice provided in these reports.

Feedback and Questions

Please provide feedback and questions to Harvey Bates

Email: harvey.bates@dpi.nsw.gov.au

Ph: 0447 359 557

Contents

| | | |
|----------|-----------------------------------|-----------|
| 1 | Salinity | 3 |
| 1.1 | Weekly | 3 |
| 1.2 | Fortnightly | 4 |
| 2 | Water Temperature | 6 |
| 2.1 | Weekly | 6 |
| 2.2 | Fortnightly | 7 |
| 2.3 | Historical | 9 |
| 3 | Precipitation | 12 |
| 3.1 | Weekly | 12 |
| 3.2 | Yearly | 13 |
| 4 | Flow Rate from Tributaries | 14 |
| 4.1 | Fortnightly | 14 |
| 4.2 | Yearly | 16 |

List of Figures

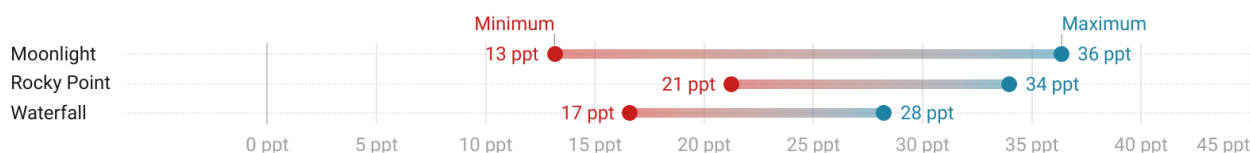
| | | |
|----|--|----|
| 1 | Weekly Minimum and Maximum Salinity | 3 |
| 2 | Average Weekly Salinity Table | 3 |
| 3 | Average Fortnightly Salinity Chart | 4 |
| 4 | Average Fortnightly Salinity Difference | 5 |
| 5 | Weekly Minimum and Maximum Temperature | 6 |
| 6 | Average Weekly Temperature Table | 6 |
| 7 | Average Fortnightly Temperature Chart | 7 |
| 8 | Average Fortnightly Temperature Difference | 8 |
| 9 | Historical Average Water Temperature | 9 |
| 10 | Historical Maximum Water Temperature | 10 |
| 11 | Historical Minimum Water Temperature | 11 |
| 12 | Daily Total Precipitation Budd Island | 12 |
| 13 | Yearly Cumulative Precipitation Budd Island | 13 |
| 14 | Fortnightly Discharge From Brooman Tributary | 14 |
| 15 | Fortnightly Discharge Rate Buckenbowra | 15 |
| 16 | Yearly Cumulative Discharge Rate Brooman | 16 |

1 Salinity

1.1 Weekly

Weekly Minimum and Maximum Salinity

These values represent the absolute minimum and maximum recorded values from Buoys within each harvest area.



Units represent parts per thousand (ppt). This is equivalent to both g/kg and g/L.

Source: FarmDecisionTECH • Created with Datawrapper

Figure 1: These values represent the highest and lowest salinity reading a buoy has recorded in each of the harvest areas in the past week.

7-Day Salinity Average Trend

Average daily salinity at each buoy throughout the Clyde River.

Waterfall Moonlight Rocky Point

Rocky Point

| | Thursday | Friday | Saturday | Sunday | Monday | Tuesday | Wednesday |
|-----------------|----------|----------|----------|----------|----------|----------|-----------|
| Rocky Point | | 21.9 ppt | 28.3 ppt | 29.9 ppt | 31.0 ppt | 31.3 ppt | 33.2 ppt |
| Waterfall Creek | 26.9 ppt | 26.7 ppt | 28.0 ppt | 28.7 ppt | 29.5 ppt | 29.7 ppt | 30.4 ppt |
| Angry Man Point | 9.5 ppt | 18.9 ppt | 25.7 ppt | 26.4 ppt | 27.1 ppt | 27.4 ppt | 29.0 ppt |
| Chinamans Point | 23.8 ppt | 24.4 ppt | 25.3 ppt | 25.8 ppt | 26.7 ppt | 26.9 ppt | 27.8 ppt |

Waterfall

| | Thursday | Friday | Saturday | Sunday | Monday | Tuesday | Wednesday |
|-------------------|----------|----------|----------|----------|----------|----------|-----------|
| Big Island West | 20.7 ppt | 21.8 ppt | 23.4 ppt | 23.9 ppt | 24.5 ppt | 24.5 ppt | 25.3 ppt |
| Double Bay | 20.3 ppt | 20.8 ppt | 22.7 ppt | 23.2 ppt | 23.5 ppt | 23.1 ppt | 24.0 ppt |
| Buckenbowra Creek | 22.1 ppt | 18.9 ppt | 19.7 ppt | 20.3 ppt | 21.1 ppt | 21.0 ppt | 22.3 ppt |

Moonlight

| | Thursday | Friday | Saturday | Sunday | Monday | Tuesday | Wednesday |
|-------------------|----------|----------|----------|----------|----------|----------|-----------|
| Snapper Point | 28.3 ppt | 29.3 ppt | 30.8 ppt | 31.5 ppt | 32.2 ppt | 32.5 ppt | 33.5 ppt |
| Moonlight | 14.9 ppt | 17.6 ppt | 29.7 ppt | 30.4 ppt | 30.9 ppt | 31.0 ppt | 31.9 ppt |
| Wray Street | 22.5 ppt | 20.8 ppt | 27.0 ppt | 29.0 ppt | 30.7 ppt | 31.1 ppt | 32.3 ppt |
| Budd Island North | 26.0 ppt | 12.7 ppt | 3.6 ppt | 5.3 ppt | 10.2 ppt | 17.9 ppt | 22.4 ppt |

Units represent parts per thousand (ppt). This is equivalent to both g/kg and g/L.

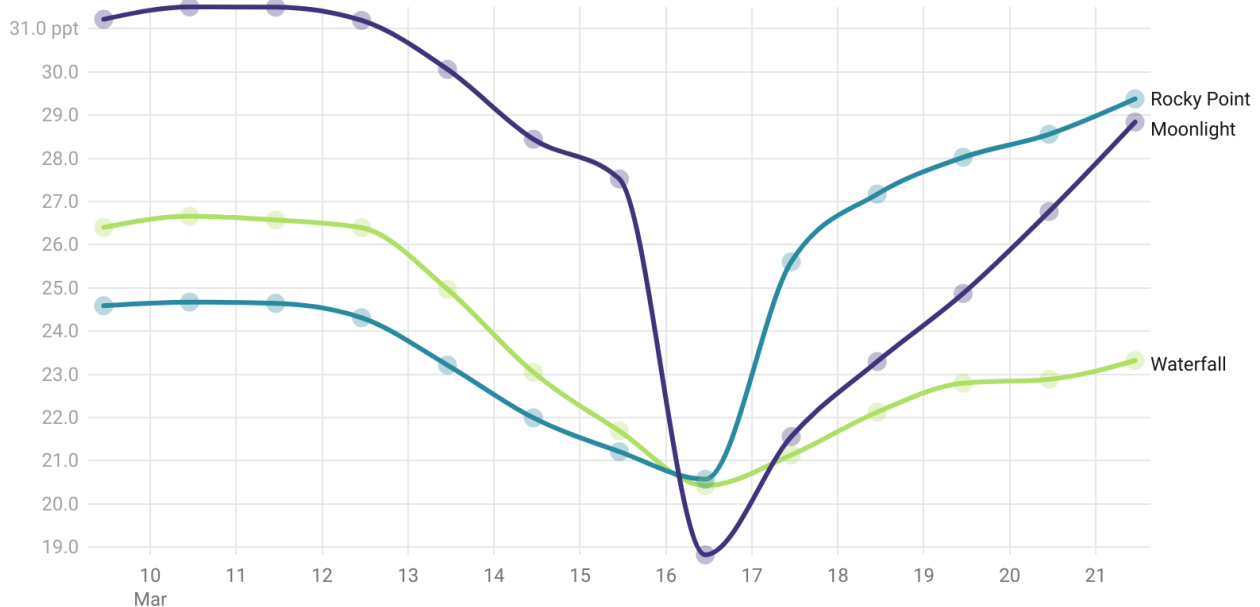
Source: FarmDecisionTECH • Created with Datawrapper

Figure 2: This figure represents the daily average salinity of each of the buoys contained within a harvest area. Its designed to reduce the impact of tides and provide the general trend of salinity over the past week for specific locations within harvest areas.

1.2 Fortnightly

Fortnightly Salinity Average Trend

12-hourly average salinity for each harvest area.



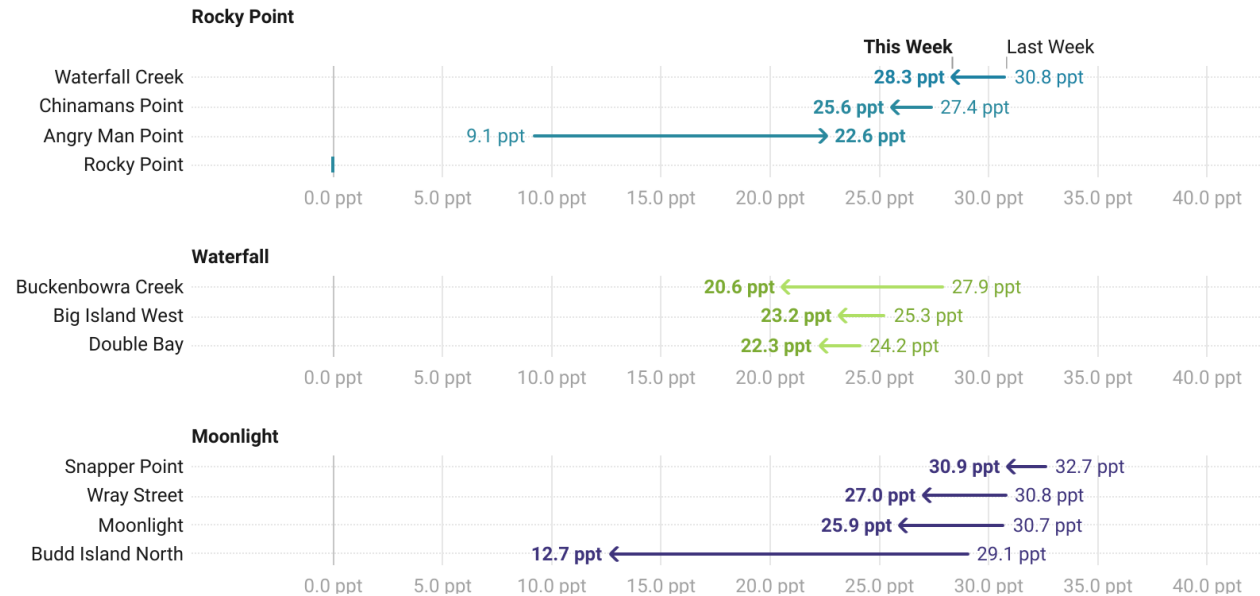
Units represent parts per thousand (ppt). This is equivalent to both g/kg and g/L.

Source: FarmDecisionTECH • Created with Datawrapper

Figure 3: This figure represents the daily average salinity of all buoys contained within a harvest area. Its designed to reduce the impact of tides and provide the general trend of salinity over the past week.

Fortnightly Average Salinity Trend

Comparison between this weeks average salinity and the average salinity last week. Left pointing arrow means salinity is decreasing, right pointing means salinity is increasing.



Units represent parts per thousand (ppt). This is equivalent to both g/kg and g/L.

Source: FarmDecisionTECH • Created with Datawrapper

Figure 4: This figure demonstrates the average difference in salinity for this week compared with the prior week. It displays a longer term, general trend to see if salinity is increasing, stabilising or decreasing.

2 Water Temperature

2.1 Weekly

Weekly Minimum and Maximum Water Temperature

These values represent the absolute minimum and maximum recorded values from Buoys within each harvest area.



Source: FarmDecisionTECH • Created with Datawrapper

Figure 5: These values represent the highest and lowest temperature reading a buoy has recorded in each of the harvest areas in the past week.

7-Day Temperature Average Trend

Average daily temperature at each buoy throughout the Clyde River.

Waterfall Moonlight Rocky Point

Rocky Point

| | Thursday | Friday | Saturday | Sunday | Monday | Tuesday | Wednesday |
|-----------------|----------|---------|----------|---------|---------|---------|-----------|
| Waterfall Creek | 24.1 °C | 23.8 °C | 23.9 °C | 24.5 °C | 24.2 °C | 23.5 °C | 22.9 °C |
| Chinamans Point | 24.2 °C | 23.9 °C | 24.0 °C | 24.3 °C | 24.1 °C | 23.6 °C | 23.4 °C |
| Angry Man Point | 24.4 °C | 23.8 °C | 24.0 °C | 24.3 °C | 24.1 °C | 23.6 °C | 23.3 °C |
| Rocky Point | 24.0 °C | 23.7 °C | 23.9 °C | 24.2 °C | 24.0 °C | 23.4 °C | 23.0 °C |

Waterfall

| | Thursday | Friday | Saturday | Sunday | Monday | Tuesday | Wednesday |
|-------------------|----------|---------|----------|---------|---------|---------|-----------|
| Double Bay | 24.6 °C | 24.0 °C | 24.0 °C | 24.4 °C | 24.4 °C | 24.0 °C | 23.9 °C |
| Big Island West | 24.3 °C | 23.9 °C | 24.0 °C | 24.4 °C | 24.3 °C | 23.8 °C | 23.7 °C |
| Buckenbowra Creek | 24.3 °C | 24.0 °C | 24.2 °C | 24.5 °C | 24.2 °C | 23.7 °C | 23.5 °C |

Moonlight

| | Thursday | Friday | Saturday | Sunday | Monday | Tuesday | Wednesday |
|-------------------|----------|---------|----------|---------|---------|---------|-----------|
| Snapper Point | 24.0 °C | 23.6 °C | 23.8 °C | 24.1 °C | 23.9 °C | 23.3 °C | 23.1 °C |
| Budd Island North | 23.9 °C | 23.5 °C | 23.7 °C | 24.1 °C | 23.8 °C | 23.3 °C | 22.9 °C |
| Moonlight | 23.8 °C | 23.4 °C | 23.6 °C | 23.9 °C | 23.8 °C | 23.2 °C | 22.8 °C |
| Wray Street | 23.7 °C | 23.5 °C | 23.6 °C | 23.9 °C | 23.7 °C | 23.2 °C | 22.9 °C |

Temperature is displayed in degrees Celsius (°C)

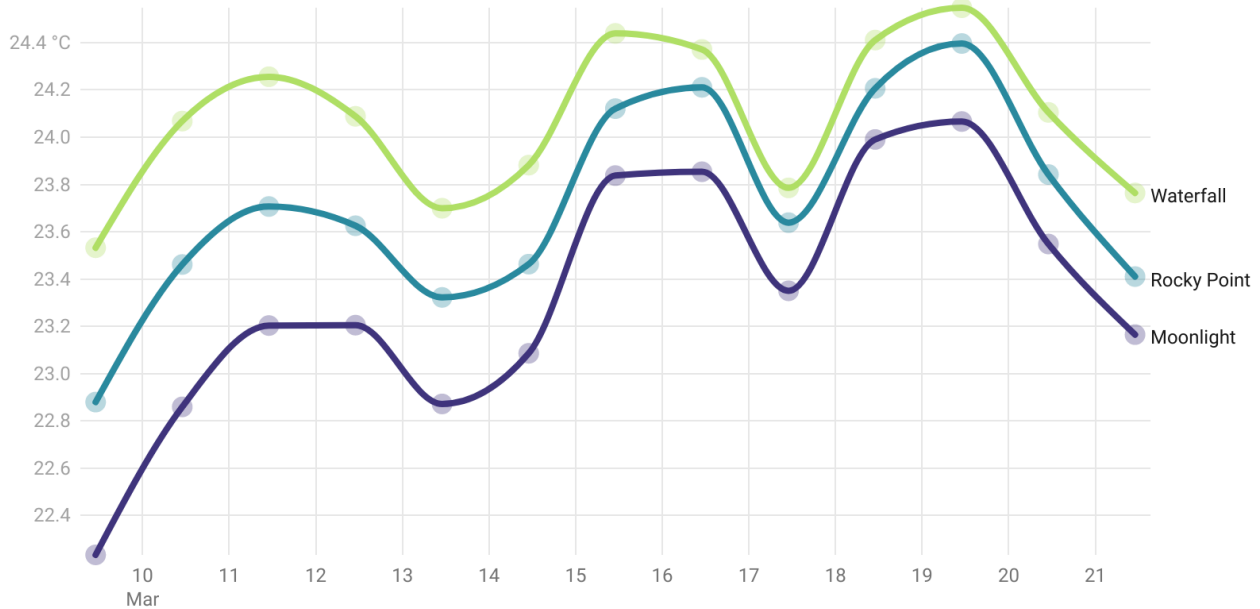
Source: FarmDecisionTECH • Created with Datawrapper

Figure 6: This figure represents the daily average temperature of each of the buoys contained within a harvest area. Its designed to reduce the impact of tides and provide the general trend of temperature over the past week for specific locations within harvest areas.

2.2 Fortnightly

Fortnightly Average Temperature Trend

12-hourly average temperature for each harvest area.



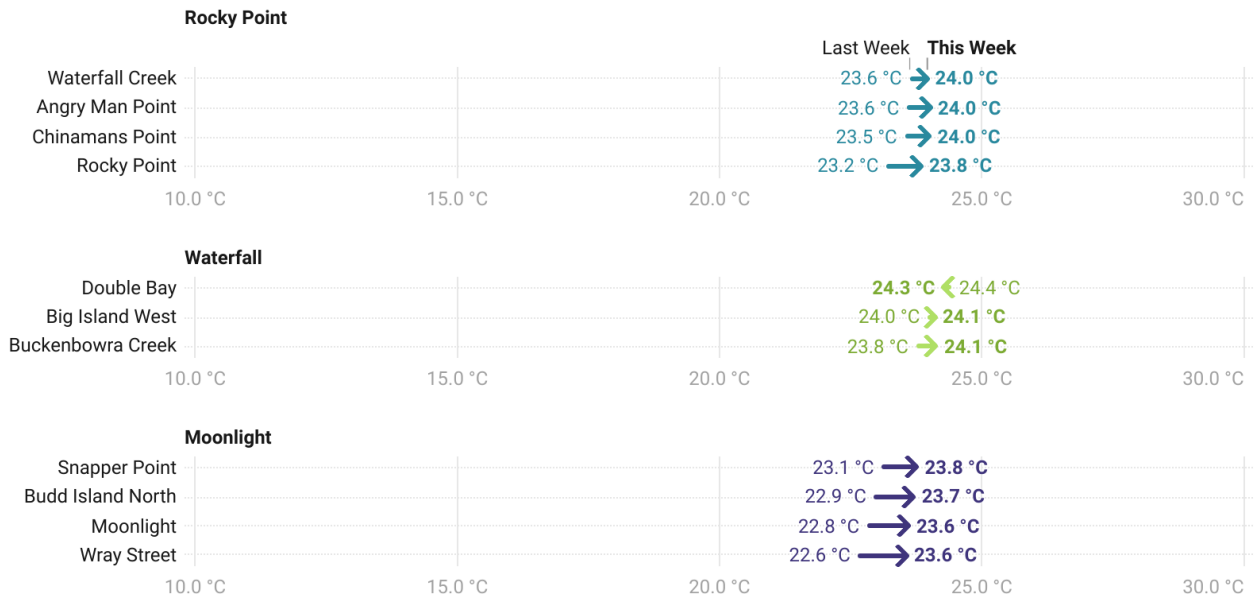
Temperature is displayed in degrees Celsius (°C).

Source: FarmDecisionTECH • Created with Datawrapper

Figure 7: This figure represents the daily average temperature of all buoys contained within a harvest area. Its designed to reduce the impact of tides and provide the general trend of temperature over the past week.

Fortnightly Average Temperature Trend

Comparison between this weeks average temperature and the average temperature last week.



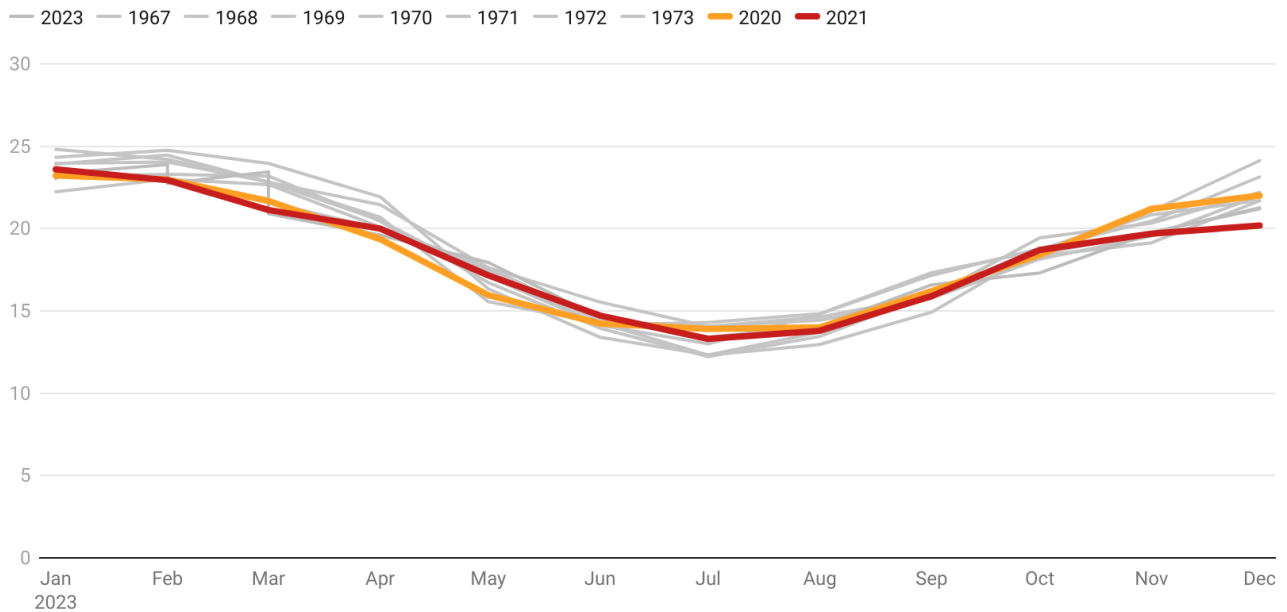
Temperature is displayed in degrees Celsius (°C)
Source: FarmDecisionTECH • Created with Datawrapper

Figure 8: This figure demonstrates the average difference in temperature for this week compared with the prior week. It displays a longer term, general trend to see if temperature is increasing, stabilising or decreasing.

2.3 Historical

Historical and Current Average Monthly Water Temperature

Monthly average water temperature from historical (1967-73) and recent (2020-22). Measured close to the Clyde River entrance.



Temperature is displayed in degrees Celsius (°C).

Source: FarmDecisionTECH • Created with Datawrapper

Figure 9: Monthly average water temperature from historical (1967-73) and recent (2020-22). Measured close to the Clyde River entrance.

Historical and Current Maximum Monthly Water Temperature

Monthly maximum water temperature from historical (1967-73) and recent (2020-22) years. Measured close to the Clyde River entrance.



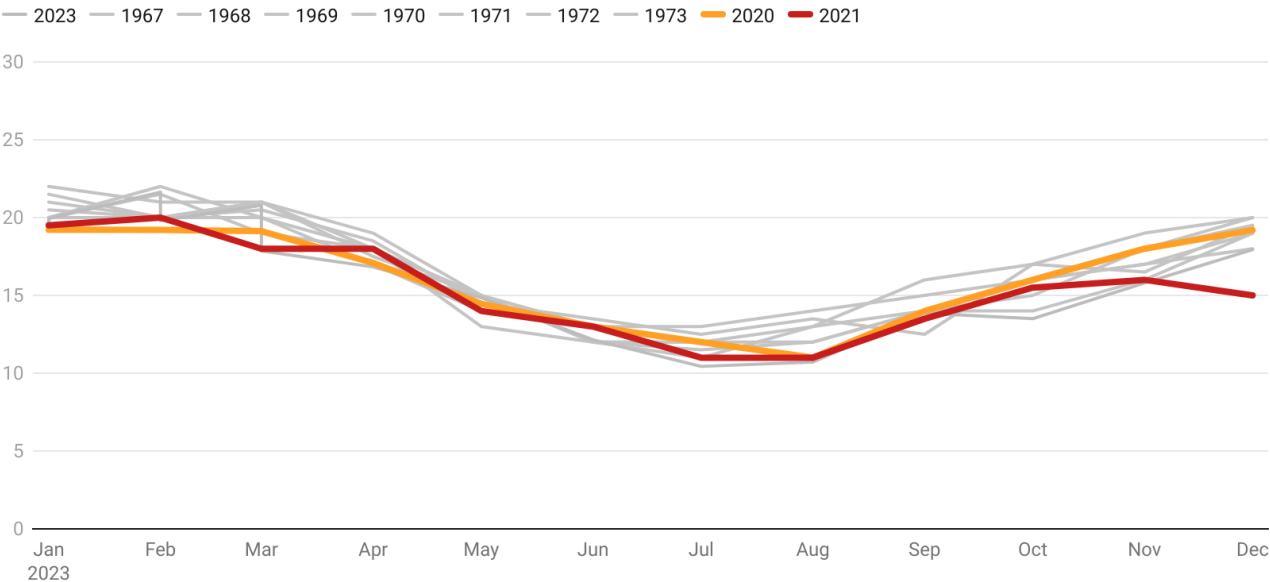
Temperature is displayed in degrees Celsius (°C).

Source: FarmDecisionTECH • Created with Datawrapper

Figure 10: Monthly maximum water temperature from historical (1967-73) and recent (2020-22). Measured close to the Clyde River entrance.

Historical and Current Minimum Monthly Water Temperature

Monthly minimum water temperature from historical (1967-73) and recent (2020-22) years. Measured close to the Clyde River entrance.



Temperature is displayed in degrees Celsius (°C).
Source: FarmDecisionTECH • Created with Datawrapper

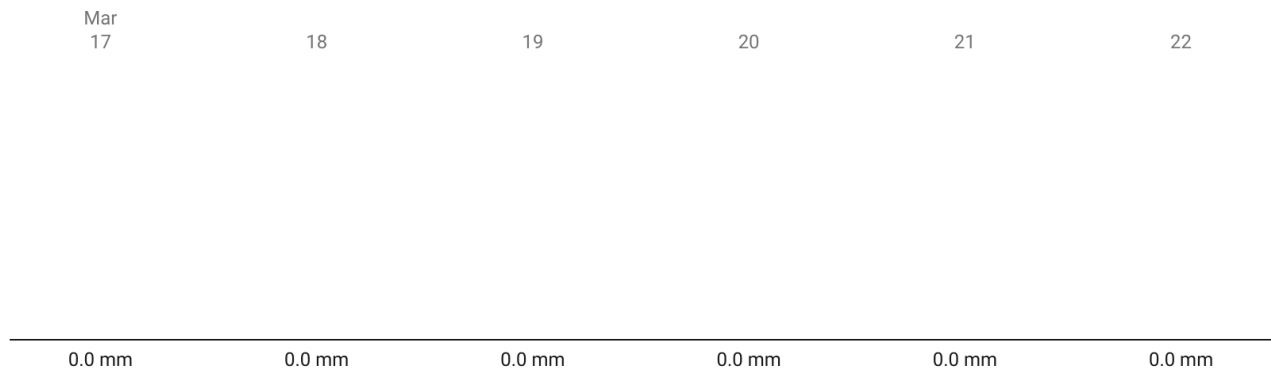
Figure 11: Monthly minimum water temperature from historical (1967-73) and recent (2020-22). Measured close to the Clyde River entrance.

3 Precipitation

3.1 Weekly

7-Day Clyde River Precipitation

Daily total precipitation. Weather station is located on Budd Island.



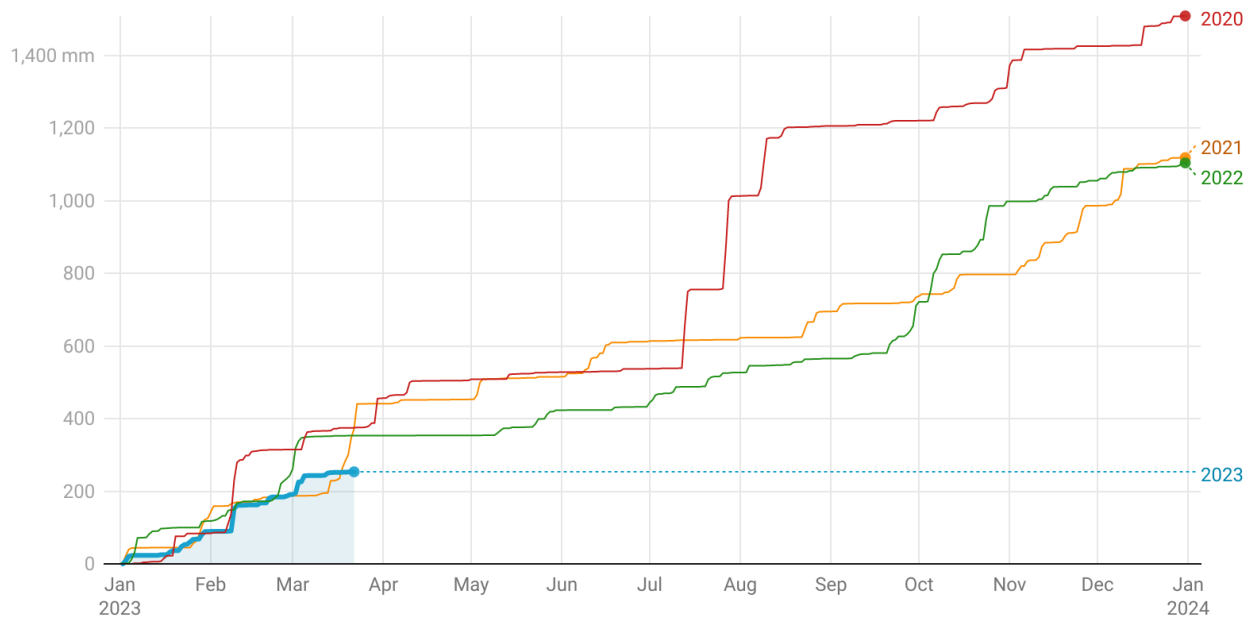
Precipitation is measured in millimeters (mm). 1 mm of rainfall is equal to 1 litre of water per meter squared.
Source: FarmDecisionTECH • Created with Datawrapper

Figure 12: Daily total precipitation at Budd Island for the past week.

3.2 Yearly

Year-to-Date Precipitation

Accumulation of rainfall since the start of the year. Other years are shown in reference to this year.



Rainfall is displayed in millimetres (mm).

Created with Datawrapper

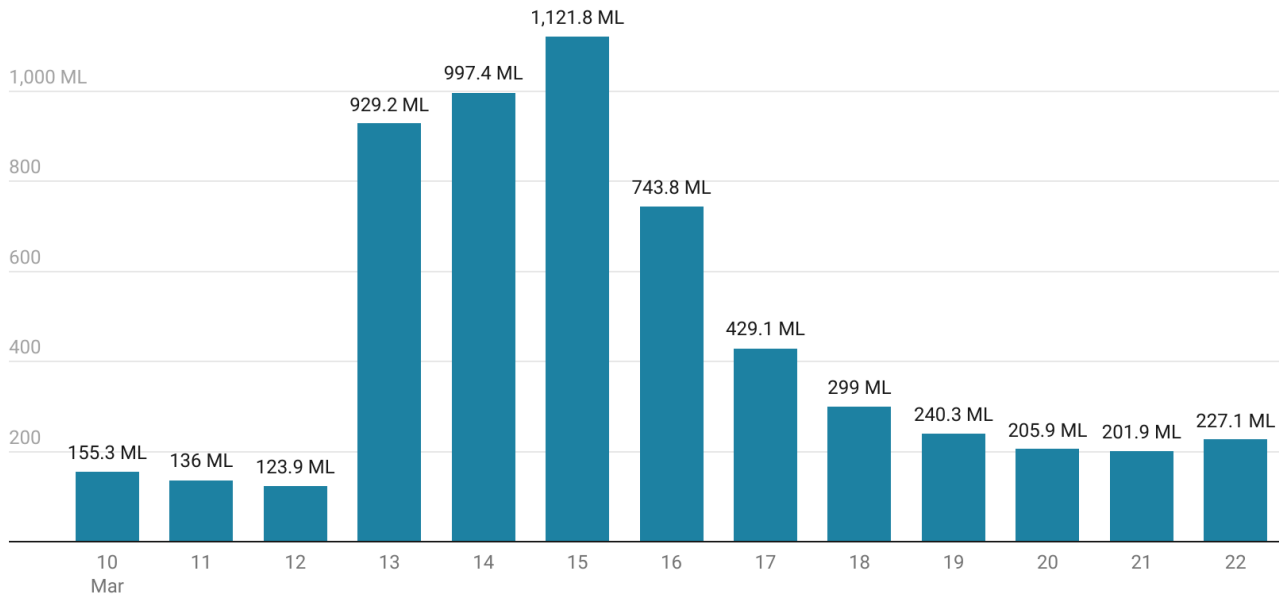
Figure 13: Compares this years total precipitation against previous years.

4 Flow Rate from Tributaries

4.1 Fortnightly

Brooman Tributary Fortnightly Discharge rate

Daily discharge rate totals for Brooman Tributary. This station is roughly 20 km North of the Clyde River.

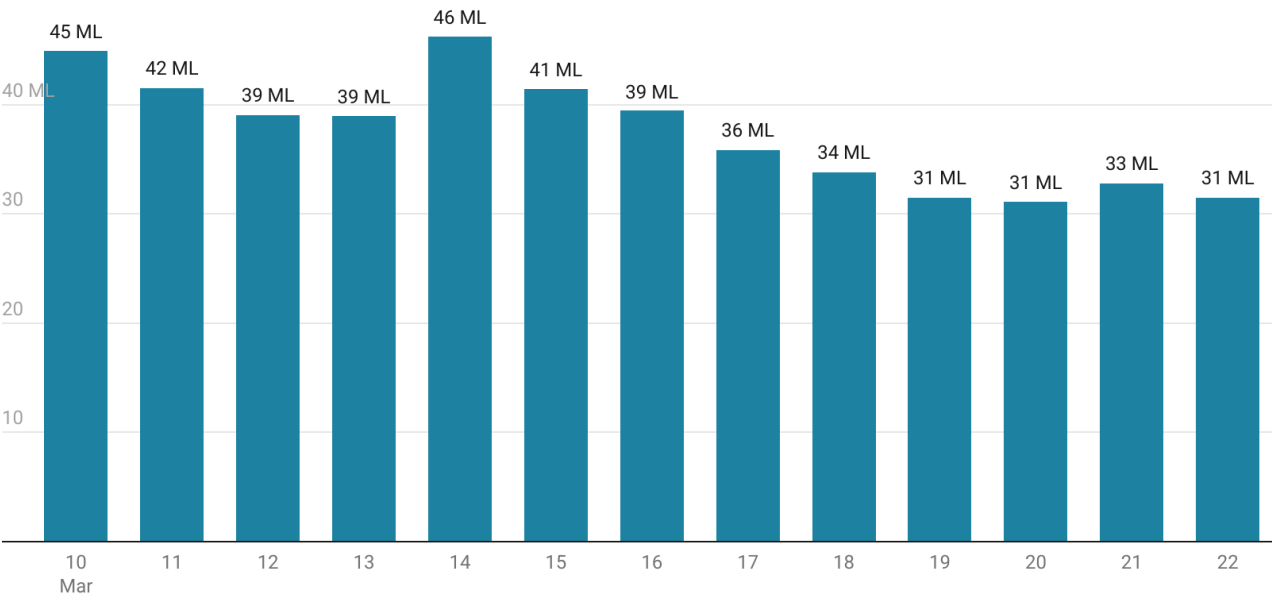


Values represent megalitres per day (ML/day). A mega litre is equal to 1 million litres. Data: © State of New South Wales through WaterNSW. Quality Codes: 140 = Current rating - may be subject to change, 145 = Telemetry system added point, 255 = Dataset not complete
Source: FarmDecisionTECH • Created with Datawrapper

Figure 14: Fortnightly (daily total) water discharge from Brooman.

Buckenbowra Tributary Fortnightly Discharge rate

Daily discharge rate totals for Buckenbowra Tributary. This station is roughly 8 km West of the Clyde River.



Values represent megalitres per day (ML/day). A mega litre is equal to 1 million litres. Quality Codes: 140 = Best available data, 145 = Data under review, 255 = Dataset not complete

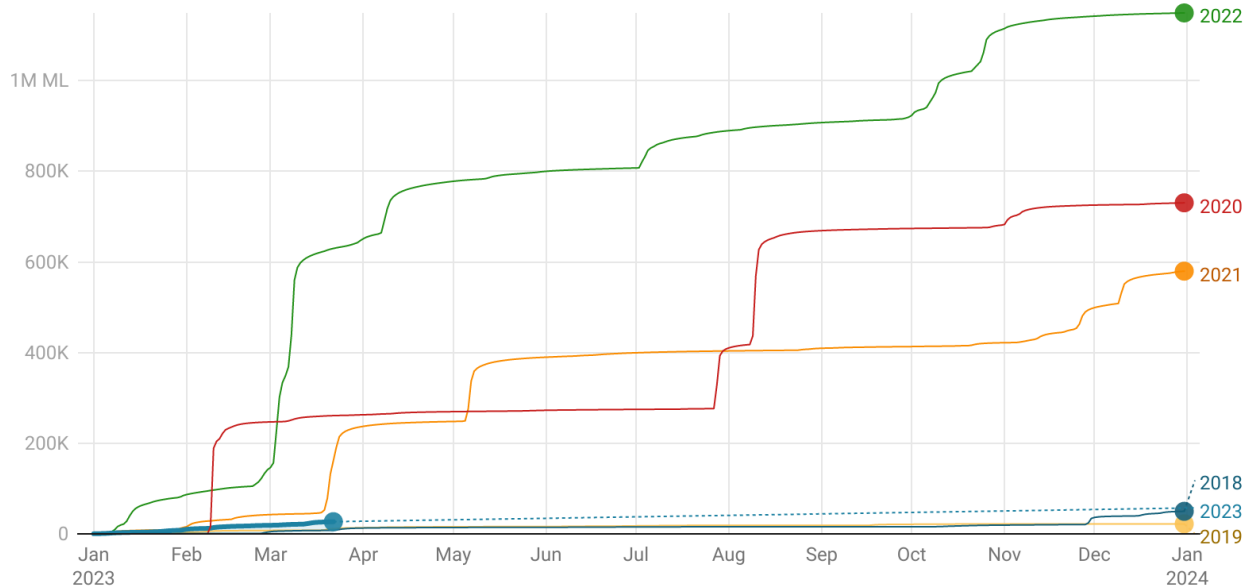
Chart: © State of New South Wales through WaterNSW • Created with Datawrapper

Figure 15: Fortnightly (daily total) water discharge from Buckenbowra.

4.2 Yearly

Cumulative Daily Discharge-Rate Brooman

Cumulative daily water flow for each year from Brooman into the Clyde River. Units represent mega litres (ML). One ML is equal to 1 million litres.



Data: © State of New South Wales through WaterNSW

Chart: FarmDecisionTECH • Created with Datawrapper

Figure 16: Compares this years total water discharge against previous years. Drought years (2018 and 2019) are shown for comparison.