



Inqorate GHHP Partnership Meeting 24 Minutes

Date: Thursday, 7 December 2023 **Time:** 1:00 – 3:00pm

Location: Leo Zussino Building 3/1.25, CQUniversity

Attendees:

Name	Position	Organisation
Mark Evans	Environment Superintendent	Rio Tinto Yarwun
Rachel Darcy	Manager Reef Partnerships	Office of the Great Barrier Reef and World Heritage
Ingrid England	Lead Environment Advisor	Shell QGC
Rebekah Hearn	Principal Ecologist	CQG Consulting
David Voss	Chief Executive Officer	Gladstone Industry Leaders Group
James Harris	Chair	Gladstone Air Quality Community Group
Darryl Branthwaite	Councillor	Gladstone Regional Council
Staff		
Iain Gordon	GHHP Chair	Gladstone Healthy Harbour Partnership
John Rolfe	Independent Science Panel Chair	GHHP Independent Science Panel
Hannah Russell	Project Officer	Gladstone Healthy Harbour Partnership
Kirsten McMahon	Research Officer	Gladstone Healthy Harbour Partnership
Proxies		
Nicole Flint	Principal Research Fellow	CQUniversity
Fiona Horner	(Acting) Environment Superintendent	Gladstone Ports Corporation
Ella Remana	Logistics and Business Analyst	WICET

Apologies:

Name	Position	Organisation
Elyse Riethmuller	Chief Executive Officer	Fitzroy Basin Association
Demi Blucher	Gladstone Manager	Gidarjil Development Corporation
Emma Jackson	Director, CMERC	CQUniversity
Alan Hayter	Environmental Lead	ConocoPhillips
Nataly Zelayandia	Social Performance Advisor	QGC Pty Limited
Ali Moore	Manager Environment and Conservation	Gladstone Regional Council
Megan Ellis	Environment Specialist	Gladstone Ports Corporation
Trent Attard	HSE Manager	WICET

Agenda Item 1 – Introduction

Meeting Started: 1:10pm

1.1 GHHP Welcome

Professor Iain Gordon, GHHP Independent Chair, welcomed all Partners attending in person and via Zoom for the GHHP Partnership meeting of December 2023.

1.2 Acknowledgement of Country

Iain acknowledged the traditional custodians of the land and their connection to land, sea, and community; the Bailai, Gurang, Gooreng Gooreng, and Taribelang Bunda peoples, and their Elders past, present, and emerging.

1.3 Apologies and Introductions

Hannah Russell provided the apologies of the meeting.

1.4 Partner Updates

The Office of the Great Barrier Reef and World Heritage – Rachel D’Arcy

A strategic workshop for the five Regional Report Card Partnerships was held in November in Brisbane. The workshop went well. OGBR&WH has been funding Traditional Owner water quality monitoring work undertaken by Gidarjil Development Corporation and is looking to expand by engaging with other Traditional Owner groups across Queensland. Building upon learnings taken by Gidarjil. All work undertaken is being reviewed and assessed by the Australian Institute of Marine Science to ensure data can be used by Regional Report Cards.

CQUniversity’s Coastal Marine Ecosystems Research Centre – Nicole Flint

Nicole joined the GHHP Partnership’s meeting as a proxy for Emma Jackson, who is currently attending a meeting in New Zealand. Within the Gladstone Harbour, CQUniversity’s CMERC undertakes a lot of monitoring work, such as water quality monitoring, mud crabs, and seagrass.

Gladstone Regional Council – Darryl Branthwaite

Darryl has been busy within Gladstone Regional Council and his business as a tour bus operator that aims to improve the knowledge base of visitors. Within the Gladstone Regional Council, there is a lot of work being undertaken behind the scenes, such as management of waste runoff. One example is the golf course in Boyne Island which is ensuring that the soils conform with standards. The Urban Water Stewardship Framework is at the forefront, encouraging wastewater management in Calliope, and road works undertaken with new materials to save water and reduce runoff.

Wiggins Island Coal Export Terminal – Ella Remana

Ella is the Logistics and Business Analyst for WICET and is acting as Proxy for Trent Attard. For WICET, environmental efforts and operations are operating as per normal, and adhering to established environmental protocols. The cleaning of sediment ponds has been conducted during the dry season.

Rio Tinto Yarwun – Mark Evans

Rio Tinto is assessing methods to meet greenhouse gas reduction targets. Natural gas is currently used to dry the alumina and Rio Tinto trailing a small-scale hydrogen plant to determine if hydrogen can replace natural gas.

CQG Consulting – Rebekah Hearn

Rebekah is a Principal Ecologist for CQG Consulting. The organisation is increasingly involved in hydrogen renewable projects and is working collaboratively to manage.

Gladstone Industry Leaders Group – David Voss

David is the Chief Executive Officer for the Gladstone Industry Leaders Group (GILG). GILG is a group of seven big industry members, all of whom are committed to renewable energy and clean outcomes. For example, Boyne Smelter Limited spent \$500million within the last eight years to update equipment and facilitate cleaner opportunities. All members have projects currently to promote clean renewable energy for the future.

Gladstone Air Quality Community Group – James Harris

The Gladstone Air Quality Community Group has two key focus areas. One regarding education about air quality and how its measured. The second focus is data collection and dissemination. There are 13 air monitoring across the Gladstone Region, with the group aiming to have 20 within the area. The group would like to place some monitors further away from Gladstone to act as a place for comparison. Further endeavours also include standalone solar powered Purple Air quality monitors.

Gladstone Healthy Harbour Partnership

Kirsten has been working on the 2023 Gladstone Harbour Report Card results, which were presented to the Partners later in the meeting. Hannah noted that GHHP has been busy with community engagement, including through the Gladstone Library, CQUniversity’s STEM events, and other community events.

Gladstone Ports Corporation

Fiona is the acting Environment Superintendent and joined the meeting as a proxy for Megan Ellis. GPC is undertaking several projects, a combination of many compliance obligations, social license to operate, and due diligence. Some actions are to understand potential impacts and how to manage harbour health. For example, the coral restoration project, living seawalls, the partnership with CQUniversity, mangrove rejuvenation, shorebird studies, seagrass monitoring, and Facing Island surveys.

1.5 Previous Partnership Meeting 23 Minutes to be ratified

The previous meeting minutes from Partnership Meeting 22 held 1 June 2023 were accepted as a true and accurate record. There were no actions from this meeting.

Moved: Iain Gordon

Second: Mark Evans

The action arising from the last meeting was the GHHP Project Officer and GHHP Governance Working Group were to meet to determine correlation between Partner category and Partner voluntary contributions. Hannah provided an update that the action item was in progress and several meetings had been had to discuss.

Agenda Item 2 – Items requiring Decision

2.1 Election of the GHHP Management Committee

Hannah, as GHHP Project Officer, listed the GHHP Partner Tiers and asked for nominations. Some nominations were received prior to the meeting and are as follows.

- Elyse Riethmuller, Fitzroy Basin Association
 - Alan Hayter, ConocoPhillips
 - Emma Jackson, CQUniversity
- Partner Tier Two**
Partner Tier Three
Research, Host

The GHHP Management Committee elected for a period of two years were:

Partner Tier One <i>Community and First Nations</i>	Demi Blucher, Gidarjil Development Corporation *
	James Harris, Gladstone Air Quality Community Group
Partner Tier Two <i>Natural Resource Management Small/Medium Companies</i>	Elyse Riethmuller, Fitzroy Basin Association
Partner Tier Three <i>Large Companies</i>	Alan Hayter, ConocoPhillips
	David Voss, Gladstone Industry Leaders Group
Partner Tier Four <i>Gladstone Ports Corporation</i>	Megan Ellis, Gladstone Ports Corporation *
Government Tier One <i>Gladstone Regional Council</i>	Darryl Branthwaite, Gladstone Regional Council
Government Tier Two and Three <i>Queensland State Government Australian Federal Government</i>	Rachel D’Arcy, Office of the Great Barrier Reef, and World Heritage
Research	Emma Jackson, CQUniversity
Host Organisation	Emma Jackson, CQUniversity

* Subject to acceptance

The GHHP Partners present endorsed the new Management Committee.

Iain thanked everyone elected to coming on to the Management Committee for 2024 and 2025.

2.2 2023 Gladstone Harbour Report Card Results

John noted that the Independent Science Panel runs the generation of the Report Card with the Research Officer, Kirsten McMahon, obtain the results and provide them to the Management Committee. The Management Committee accepts the results which are then presented to the Partners for approval. The generation of the Report Card is kept quite separate to the Partners to maintain independence.

The GHHP first began in 2013, with a pilot Report Card produced in 2014, and the first full Report Card produced in 2015. There have been minor changes throughout the years, with the full set of indicators reported upon for several years.

Different to many of the other regions, GHHP designs indicators on first principles and contracts to external organisations to fill gaps. Some indicators are not able to be assessed every year, owing to budget constraints.

Almost all Environmental health component indicators were assessed in 2023, except the mangrove indicator, which was last assessed in 2019, and the Health Assessment Index (HAI) which forms part of the fish condition indicator score, last assessed in 2021.

The Social and Cultural components were not assessed this year and results from previous years were carried over. The Indigenous Cultural Heritage indicator has not been assessed since 2018 and is currently undergoing a re-design. The Economic indicator was partially assessed in 2023, with the Recreational Values being replicated from 2022.

Some environmental conditions are reflective of rainfall and water flows in the harbour. Each year, rainfall is assessed relative to previous years. Some periods in the middle of 2022 had additional rainfall more than medians, but a relatively normal year.

Water and Sediment

The overall sediment quality scores very good in 2023, which was very similar to 2022 and 2021. The overall grade for water quality was good (B), the same as 2022, but decreased from the 2021 grade of (A). The most variation between zones were seen in the Physicochemical – turbidity and nutrient scores. Turbidity received a lower score than 2022 and declined a grade from (B) to (C). Overall nutrient scores were like the 2022 results. Metals are consistently very good across the board, except for a (B) grade for copper in Auckland Inlet.

Water quality is sampled four times per year by PCIMP. The scores are averaged over the year of assessment and then compared to the guideline value. Sediment is monitored once per year by PCIMP via a sediment grab at 53 sites within the 13 harbour zones. Metal and metalloids are assessed. Most zone scores were very good (A). There were some satisfactory (C) and good scores (B) for arsenic and nickel, which is like previous years and are naturally occurring with the harbour.

Trend analysis for the scores was undertaken. Nutrients received a similar score to 2022 but has a trend that is quite variable. Physicochemical trends stay around 0.70 or higher and received a slightly lower score the last two years because of higher turbidity. Dissolved metals receive very high scores consistently. Sediment quality has also been largely unchanged over the 10 years. Overall, Water and Sediment Quality remain consistently high.

Coral

In 2023, coral received an (E) grade of 0.14, which is the same as 2022, and is the sixth consecutive year. This may be a legacy of the floods in 2011 and 2013. Prior to those years of very high rainfall, corals were in quite good health in the harbour. There is a high abundance of macroalgae in the harbour, the reason for which is unclear. There could be a variety of reasons for macroalgae abundance, such as high nutrient levels, decreased fish pressure, or simply that the macroalgae is a resistant invader.

Juvenile density also received a very poor grade indicated a low abundance of juvenile corals. This may be a result of macroalgae smothering the corals or reducing the space available for young corals to take root.

Mark asked if sediment loads caused the deterioration in coral health during the 2011 and 2013 floods. John suggested that the sediment was a potential cause of coral deaths, paired with fresh water, causing a loss of oxygen and appropriate conditions.

Seagrass

Seagrass received a 0.58 (C) score in 2023, which is a decline from the 2022 score of 0.70 (B). Seven of 14 meadows were rated as being in good or very good condition in 2023. Historically, seagrass received low scores but recovered three years ago. There has been some decline across the harbour.

Seagrass is assessed in six zones. The largest seagrass meadow in Port Curtis, Pelican Banks (Meadow 43) is in poor condition after being rated satisfactory in 2021. Seagrass in the Western Basin and the Narrows remains in good condition. In the Western Basin and north to the Narrows, seagrass remained in good condition with five of the seven monitoring meadows in these zones in good or very good condition. This is the first-time seagrass in the Narrows has been in very good condition for consecutive years.

There were declines in seagrass biomass, area, and species composition in Rodds Bay, Inner Harbour and Mid Harbour. It was noted that there was evidence of high grazing pressure in Rodd's Bay. Overall, seagrass has been more stable in the northern part of the harbour, and most declines seen in the southern area. Kirsten noted that the monitoring occurred in November 2022 when there was a lot of additional river flow.

Trends over time indicate the while a slight decrease was received in 2023, the previous three years had good seagrass scores, and the indicator is still above the initial scores received during the first four years of monitoring (poor, D). Corals have received very similar results over the last five years. Mangroves has also been stable as it has hasn't been assessed since 2018 but will be reassessed in 2024. Overall, Habitats had a slight decrease, driven by the lower seagrass score.

Mud Crabs

Mud crabs is assessed by Nicole Flint's team. Overall, the harbour scored higher for the mud crab indicator in 2023 (0.51) than in 2022 (0.39) and was more like the 2021 score (0.48), resulting this year in a C grade. These results represent the seventh year of Mud crab sampling.

Abundance remains an issue, with an overall score of very poor (E). Similarly, sex ratio received a poor (C) score, suggested a lot of fishing pressure. This imbalance of males to females may indicate a compliance with the regulations of not taking females. High fishing pressure was evidenced particularly in the Narrows, Graham Creek, and Auckland Inlet. In 2011, there was a high prevalence of rust lesions found on mud crabs, whereas there are now very few crabs with the lesions.

Fish Health

The intensive fish health indicator is not assessed, but the fish condition index is completed every year. It is composed of two scores: visual fish condition and fish body condition.

For visual fish health, recreational fishers provide photographs of their fish, or provide the length and weight measures. Photographs are used for visual assessment. The lengths and weights are used to generate score for fish condition. The visual measures score highly, with hardly any issues coming through. Fish body condition doesn't score as well. For a healthy, well-scoring fish, the fish would be quite fat relative to a baseline index. Currently, scores are coming in very close to average, and performing similarly to the last two years.

Fish recruitment is assessed by Infish Australia, who catch juvenile fish using drop nets. The two fish species that are assessed are yellow bream and pikey bream. Fish Recruitment received a poor (D) grade in 2023, which is a decline from 2022 where it received a 0.57 (C).

Fish and Crabs Trends

Mud crabs received a (C) after five years of a poor (D) grade. Fish Recruitment is quite variable but has declined to a poor (D) after three consecutive years of a satisfactory (C). Fish Health has received a (B) for the last five years. Overall, Fish and Crabs has maintained a steady (C) grade for the past four years.

Environmental Health Trends

Water and Sediment Quality maintained a very good (A) grade from 2022. Increased rainfall and river outflow contributed to low turbidity and nutrient scores. Very good sediment grade for the ninth consecutive year.

Habitats remained at a poor (D) grade and had a decline in Seagrass grade (B to C). Corals were unchanged (E), and Mangroves were not assessed. Fish and Crabs maintained a satisfactory (C) grade overall, with Mud crabs improving grade (D to C) and Fish Recruitment declining (B to C).

Overall, Environmental received a grade of (C) 0.63. This is similar to the 2022 result of 0.64 (C). Environmental Health has hovered around a satisfactory (C) grade, except for two consecutive years of a good (B) grade in 2020 and 2021.

Economic

Economic health was assessed in 2022 and is made up of several components. Economic performance is a measure of how much money is coming into Gladstone through the harbour. The economic stimulus represents what the economic activity is in the town here. Economic value is the value of recreation.

Both economic performance and economic stimulus were updated for 2023, which had a slight decline in some assessments, such as shipping activity (from 0.90 to 0.86), commercial fishing (0.41 to 0.37), and employment (0.45 to 0.43). Employment is measured as a ratio of the unemployment rate compared to the state unemployment rate.

For trends, the Economic component has been stable over time. Economic stimulus has seen a decreased since it was first monitoring in 2015, owing mainly to 2015 being the height of the development boom in Curtis Island and the healthy resource sector at the time.

Social and Cultural

Both Social and Cultural were last assessed in 2022, and results used again in 2023. In 2024, the Indigenous Cultural Health indicator will be redesigned into a new indicator, potentially Traditional Owner Values. Social and Cultural indicators may be changed to Human Dimensions, which will be presented at the first 2024 Partners meeting.

Confidence Ratings

Sediment, Seagrass, Coral, Fish Recruitment, and Mud Crabs all received high confidence ratings owing majorly to consistent methods and monitoring. These are the same results as 2022. Water and Fish Health both received a moderate confidence rating, the same as 2022. Mangroves declined from a high rating in 2022 to a moderate rating in 2023, owing to the length of time since last monitored (2019).

Mark asked why water quality only received a moderate confidence rating, as the monitoring has been done over a long period of time. John noted that the Independent Science Panel debated this each year but determined that a quarterly monitoring regime may not pick up the variation occurring between monitoring.

Social received a high confidence rating as computer-assisted telephone interviews (CATI) regarded as reliable and repeatable developed exclusively for Gladstone Harbour. Economic also maintained a high level of confidence as the CATI survey is reliable, repeatable, and designed specifically for Gladstone Harbour. Finally, Cultural received a stable moderate rating as the Sense of Place methodology is well established but based on a single survey and last assessed in 2022. Indigenous cultural heritage was last assessed in 2018.

Questions

Darryl asked what the coral scores were benchmarked against. John provided that in 2006 to 2008, coral was assessed by GHD, and good data was collected. AIMS used the data and assumed that this would be the benchmark and would be 50% of total coral health. Therefore, coral data is compared to data prior to the floods, but assuming the data was halfway to where it could be.

Mark asked if the assumption that the data collected in 2006 to 2008 represented coral at 50% health, could ever be changed to representing coral at 75% health. That would impact the scores markedly. John noted that this was debated within the Independent Science Panel's last meeting. John will be contacting Angus Thompson at AIMS to confirm his confidence in the assumption.

David asked if some of the coral condition can be contributed to El Nino, La Nina, or other weather effects. John provided that generally coral bleaching isn't a problem in the Gladstone Harbour. The major concern is macroalgae growth, and there are some questions about why macroalgae thrive. This may be a result of turbidity/light issue. Another theory is that a combination of fine sediments and nutrients creates a flocculation that grows the nutrients and impedes the light.

Darryl commented that harbour activity may also be a contributing factor. John agreed that resuspension of sediments can occur, which is likely owing to the tides. John noted that Gladstone is not alone in its coral performance – other inshore sites in the southern Great Barrier Reef are also in poor condition, such as the mouth of the Fitzroy, and the Keppel Group. Further north, corals have improved quite dramatically, and it's not clear why they've improved so much in the northern part of the Great Barrier Reef and not in the southern part.

Darryl asked what a macroalgae is. John provided that a macroalgae is mostly seaweed. The coral restoration work by Gladstone Ports Corporation is undertaken some trials. One set of transects act as a control site. A second set of transects cleans off macroalgae and leaves room for coral to spawn naturally. Within a third transect the team is cleaning off the macroalgae and actively seeding with juvenile corals.

Nutrient Trend Analysis

As part of the Ten-Year Review, the science team has assessed trends in the data. In Partnership with PCIMP, PCIMP has provided ten-years of data for trend analysis. As a preliminary sharing of assessment, John presented trends for dissolved metals, Chlorophyll-*a*, NOX, Total Nitrogen, and Total Phosphorus.

The trend analysis shows declining concentrations in most of the indicators, indicating good trends. Future analyses on the data will include running regressions and comparing to temperature, water inflows, and rainfall. Data is from 53 sites across 13 harbour zones.

John noted that the Independent Science Panel would like to publish some of the trend data in 2024 so that it is on record for future. Dissolved Zinc, Manganese, and Aluminium all have significant downward trends in concentration. Dissolved Nickel, Cadmium, and Copper all have slight downwards trends, while Dissolved Arsenic and Lead are maintaining a stable concentration. Dissolved Copper received a high concentration in 2021, the reason for which is still unclear.

For nutrients, Chlorophyll-*a*, Total Nitrogen, and Total Phosphorus all have noticeable downwards trends. NOX, a subset of total nitrogen, is relatively stable. Chlorophyll-*a* is almost certainly driven by weather, through inflows into the harbour and possibly resuspension. The same factors may also impact phosphorus in the same way as it is very much lined with sediment.

Iain thanked John for his comprehensive report on the indicators. Iain noted that any development taken regarding indicators will be presented to the Partners in the mid-year Partners meeting.

Agenda Item 3 – Items for Consideration

3.1 Cause and Effect Relationships

Iain welcomed Luk Peeters and Kate Collins to the meeting. Luk and Kate are representatives of CSIRO and have been undertaking work regarding cause and effect relationships.

Luk provided that the information discussed would be about the work undertaken onshore and using golden networks for regional environmental impact assessments. The project was regarding geological and bioregional assessments. CSIRO was asked by the Australian federal government to look at potential impacts on the environment and water from unconventional gas developments in the Cooper Basin.

The result was a map of potential concern and low concern. Those are the areas where CSIRO said that there are potential impacts on the environment and water that need to be mitigated if development goes ahead. The methods to arriving at the result was the development of a causal network map. Most of these projects will start with a causal map which represents a system summary.

A causal map can provide systematic information as to how an activity can lead to an impact. It takes all the information and systematically spells it out in terms of cause and effect relationships, starting from the activities, going to stressors, things that can happen because of the other activities, and how they can affect processes in landscape, and ultimately how they can affect the important things in landscape, like the water holes of protected species.

As an example, activities that lead to invasive predators can be assessed, and how those predators such as foxes and cats, can affect important aspects of the environment such as agricultural productivity and wetland vegetation extent and condition. As the casual map is published on the GBA Explorer website, a person viewing the map can click on one of the boxes and read through a small fact sheet containing information and assessment of the risk. In some cases, CSIRO made numerical models to improve the assessment. Otherwise, it was an honest way of saying that there wasn't much information, and more research is needed on this specific causal relationship.

From the causal map, a table can be created that assess stressors and the extent to which each one can affect the end point. It's based on a five point scale, ranging from no pathway to potentially high concern. These are all the individual probable pathways that it can affect.

Iain thanked Luk and Kate for the presentation. He noted that the causal map is based around the idea of a conceptual model of the system and the interconnectedness and feedback that there are within the system.

Mark asked if the causal map had been used in decision making processes? Kate answered that there are discussions between industry and regulators, and the evidence that's being presented. The idea is to systematically represent cause and effects at a regional scale so that there is a common knowledge base.

Agenda Item 4 – General/Recurring Business

5.1 General Business

Ella – Trent asked about Management Committee nominations. Hannah provided that the GHHP Management Committee is elected for a period of two years. Each MC representative is responsible for communicating with the other organisations within their Partner Tiers and is therefore nominated and elected by the organisations within each Partner tier. For example, each December on every second year (2021, 2023, 2025), all Partners within Partner Tier 3 would discuss, nominate, and elect the MC representative. For Partner Tier 3, there are two MC representatives.

Iain noted that the 2023 Gladstone Harbour Report Card will be launched on 1 February 2024.

5.2 Next Meeting

Next meeting date: To be confirmed.

Meeting closed: 2:10pm