



MACKAY-WHITSUNDAY HEALTHY RIVERS TO REEF PARTNERSHIP

Partners Forum Report (20th and 21st March 2018)
Ocean International Hotel, Mackay (facilitated by Rachel Eberhard)



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FORUM AGENDA

DAY 1

- **Session 1: What needs to be done and why (10 am – 12:30 pm)**
 - Welcome and introductions
 - Judith Wake* – conceptual model update presentation
 - Mark Baird* – Whitsunday WQ project/e-Reef simulations for inshore Whitsundays
 - Emma Carlos* – information for prioritisation (Reef 2050 WQIP, Mackay Whitsunday Isaac WQIP, 2016 report card, actions from WQIPs)
- **Session 2: Are we on track or needing to do more? (1:15 pm – 2:45 pm)**
 - Emma Carlos* – Sub-catchment example 1: Mackay City
 - Rachel and groups – sub-catchment examples 2 and 3: Myrtle Creek and Sandy Creek
 - Review of results
- **Session 3: Reflection/way forwards**
- **Session 4: Reef Restoration presentation**

DAY 2

- **Session 5: Summary of Day 1**
- **Session 6: Role of the Partnership**
 - Rachel – group exercise re role of Partnership/ feedback to wider group and ideas for progression
- **Session 7: Priority projects to improve the report card**
 - Charlie Morgan* – Outline of projects 1 – 19, opportunities for collaboration

Refer to Appendix A for Forum attendees

* = Presentation available on the HR2RP website - You can log in here

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HEALTHY RIVERS TO
REEF PARTNERSHIP
MACKAY-WHITSUNDAY

EXECUTIVE SUMMARY

Day 1 kicked off with presentations from Judith Wake (CQU and Chair of the Partnership's Technical Working Group) and Mark Baird (CSIRO). Judith reported on work to update the conceptual framework underpinning the report card to incorporate ecosystem services.

Mark reported early results from the joint AIMS/CSIRO Whitsunday water quality project. These suggest that the turbidity issues being reported by local tourism operators and our report card monitoring programs is being caused by a layer of very fine sediment (a "fluffy" layer) that is likely being transported into the marine zone by the Proserpine and O'Connell River systems. These fluffy particles are very small and sink much more slowly, contributing to longer residence times in the marine environment compared to heavier sediments.

Emma Carlos from the Partnership team then presented work to prioritise pollutants, basins and sub-catchments using a range of information including the new Reef 2050 Water Quality Improvement Plan (WQIP) and the Mackay Whitsunday Isaac WQIP.

Key priority pollutants and basins have been identified as follows:

Pollutants:

1. Pesticides
2. Dissolved Inorganic Nitrogen
3. Sediment
4. Particulate nutrients

Basins

1. Plane (Rocky Dam, Alligator, Sandy)
2. Pioneer (Pioneer, Mackay City)
3. O'Connell (Blackrock, Murray)
4. Proserpine (Myrtle, Lethebrook)
5. Don

It was emphasised that maintaining current water quality (i.e. 0% pollutant load reduction targets) was also important and should be considered when assessing changes in existing land use.

For the Mackay City sub-catchment, the management prioritisation group activity identified the following key points:

- Stormwater and waterway/marine debris were identified as important issues in this sub-catchment.
- Progress towards achieving targets set for pesticides is much too slow, partially due to a lack of extension.
- More support is needed for landholders including the provision of 'alternatives' in the case of agricultural land use change.
- Further collaboration is needed between the multiple stakeholders using this sub-catchment, particularly in the urban space.
- Education is needed on stormwater in general including its connectivity through the landscape including urban centers.
- The group agreed more relevant conclusions would be reached on this exercise with more local stakeholders in the room.



For the Myrtle creek sub-catchment, the management prioritisation group activity revealed the following key points:

- Pesticides and DIN from agricultural land uses were considered management priorities however information is needed on contribution from urban and rural residential land uses as these are increasing in this sub catchment;
- Further extension, monitoring and behavioural change is needed;
- Application of mill mud on top row of cane is an effective way of reducing DIN losses on-farm (has been trialled successfully elsewhere);
- An audit may be required on some of the BMP targets for this sub-catchment to identify where the most effective projects have been undertaken and where investments are needed.

For the Sandy creek sub-catchment, the management prioritisation group activity revealed the following key points:

- Pesticides, nutrients and sediments from agricultural land use are considered to be the management priorities in this sub-catchment;
- There have been lots of prior investment in activities or projects in this sub-catchment but more needs to be done including landholder extension/BMP, habitat/waterway restoration, erosion and sediment control projects, sediment tracing, upgrades to existing infrastructure (e.g. STPs) and capacity building prior to the introduction of the proposed Reef regulation.

There was consensus that the process of pollutant, basin and sub-catchment prioritisation for the Region was important. However, attendees felt that incorporating more local technical

knowledge in each sub-catchment prioritisation would improve the outputs. This should include involving local landholders in sub-catchment scale management prioritisation discussions, both to share local knowledge and increase buy-in.

The Reef restoration session revealed that GBRMPA is working to further understand both coastal and marine ecosystem resilience. Al Grundy from Tourism Whitsunday discussed the issues facing the tourism industry in the face of climate change and major disturbances (such as cyclone Debbie) including some industry responses such as moving to non-reef based tourism activities. He summarised by calling for more agile marine park management mechanisms that allow more dynamic action in the face of a changing climate and major disturbances such as cyclones.

Day 2 opened with a summary of Day 1, which revealed some thoughts and discussion around the Partnership's role in the context of the traditional adaptive management cycle (Plan, Do, Monitor, Review). It was identified that there is currently a role to play for the Partnership in the 'review' stage to inform future iterations of the Mackay Whitsunday Isaac WQIP and throughout the cycle of management actions identified by the WQIP. There was consensus that the Partnership could assist in informing decision-makers as part of the 'review' component of the adaptive management cycle.

The role of the Partnership session concluded that:

- Clarity is needed on the role of the Partnership in the context of reporting on management actions and progress to targets. The Management Committee was tasked with progressing this discussion at their next meeting; and
- The Partnership needs to be involved in the development of the next Mackay Whitsunday Isaac WQIP.

During the priority projects discussion, there was general support for all projects presented. It was recommended that the educational materials project develop a pilot version of the proposed catchment/basin stories. It was also recommended that the Mackay Whitsunday Traditional Owner Reference Group are consulted to determine if any cultural heritage elements are appropriate for incorporation into the pilot educational materials project. A consolidated list of priority projects that require additional funding will be provided to the Management Committee in May for endorsement.

Forum attendees supported that this report and recommendations/outputs from the next Management Committee are presented to the CEOs of Partner organisations.

Forum feedback (refer to Appendix B) obtained via evaluation sheets provided at the forum demonstrated the event was attended by a range of different sectors, however indigenous (Traditional Owner) and conservation were notable sectors not in attendance. Attendees ranked the information about targets and management efforts and the discussion on the role of the Partnership of highest value out of all the sessions held over the 1.5 days.



DAY 1: OBJECTIVES, SUMMARY AND KEY AGREEMENTS IN DETAIL

Forum Objectives Day 1

- Present existing load reduction targets for our Region's basins and outline how these relate to management action targets in place via existing plans;
- Based on load reduction targets and report card data, identify a list of priority indicators/works/project/pollutants within the Region;
- Consolidate a list of management investment priorities to provide guidance to Partners on investment in management actions to improve report card grades;
- Agreed approach established to linking report card results with priorities for management; and
- Agreed role for the Partnership in tracking / reporting on Partners' commitments.



SESSION 1: WHAT NEEDS TO BE DONE

Judith Wake opened with a presentation on work to update the conceptual model underpinning the report card, which includes the integration of ecosystem services into the current Pressure State Response model. Mark Baird provided information on the joint AIMS/CSIRO project being undertaken in the Whitsundays. Early results from this project suggest that the turbidity issues being reported by local tourism operators and our report card monitoring programs is being caused by a layer of very fine sediment (a "fluffy" layer) that is likely being transported into the marine zone by the Proserpine and O'Connell River systems. These fluffy particles are very small and sink much more slowly, contributing to longer residence times in the marine environment compared to heavier sediments.

Feedback/clarification was provided for Mark's presentation on the following points:

- The Project will run for a further year;
- Vertical mixing is likely adding to the unpredictable nature of turbidity in the inshore Whitsunday region;
- The e-Reefs model is able to detect planktonic

blooms as satellite data can differentiate between organic and non-organic particles;

- Particles included in 'fluffy layer' analysis are very small. The fluffy layer itself acts like a diffuse pollutant that is impacted by local conditions (e.g. wind and waves). This layer has a longer residence time in the Whitsunday region than in other areas examined by e-Reefs (e.g. Cairns); and
- Further updates will be provided as the project progresses.

Emma presented on a broad contextual knowledge base to identify priority pollutants and key sub-catchments for directing management investment. The following main points were raised in a group discussion after the presentation:

- Reasons why Plane Creek is a priority - it is a short, sharp catchment with less in-stream dilution processes than other basins in our Region, and there is intense cane land use in close proximity to riparian areas;

- Discussion on why the Proserpine River has only just been added to the Great Barrier Reef end of Catchment Loads Program (CLP) and the availability of data;
- Discussion on whether the flood flows of the O’Connell and Proserpine Rivers are re-suspending any seasonal influence/load from the Fitzroy River to the south. Mark (CSIRO) indicated this was unlikely and that wave/tide conditions were contributing to the existing turbidity issues experienced in the inshore Whitsunday area;
- Discussion on whether the prioritisation process should be focussed on catchment loads rather than concentration of pollutants. There was consensus that concentration data is dependent on rainfall (i.e. dilution factor). There was discussion around the validity of using pollutant concentration data to track freshwater fish health and creek health, rather than load data that is more relevant to tracking the health of the marine environment. It was noted that load data generally is more available than concentration data however both should be considered when appropriate.
- There was discussion around linking management targets back to community values – e.g. fish health or water clarity. Paul (GBRMPA) raised that GBRMPA have a tool which analyses ecological processes impacted by land use derived from community values (e.g. fish habitat) rather than more traditional catchment load or ecosystem targets.

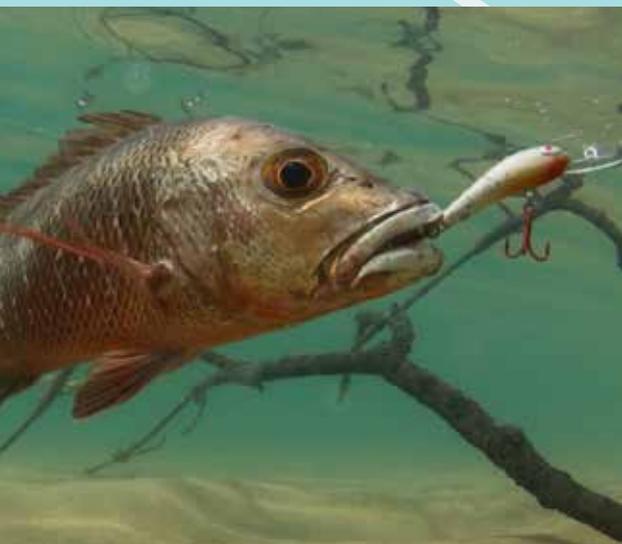
Day 1: Session 1- Priority pollutants and sub-catchment information

Table 1 Sub-catchments and their load reduction targets as identified in the regional WQIP in priority order based on priority pollutants identified in Reef WQIP.

Basin	Catchment	Total herbicides (kg/yr) reduction 2021	DIN (t/yr) reduction 2021	TSS (t/yr) reduction 2021	PN (t/yr) reduction 2021	PP (t/yr) reduction 2021
Proserpine	Myrtle	222	25	700	7	2
Pioneer	Pioneer	178	0	0	45	30
O’Connell	Blackrock	103	11	100	1	0
O’Connell	Murray	73	31	0	0	0
Pioneer	Mackay city	54	6	0	0	0
O’Connell	Reliance	50	2	0	1	1
Plane	Rocky Dam	45	10	1400	5	1
Proserpine	Lethebrook	33	12	0	0	0
Plane	Alligator	31	5	800	6	4
O’Connell	O’Connell	23	8	5900	14	5
Plane	Sandy	20	5	1900	12	0
O’Connell	St Helens	14	6	0	0	1
Pioneer	Blacks	13	4	19400	74	23
Proserpine	Thompson	11	3	0	0	0
Pioneer	Upper cattle	10	0	0	0	0
Plane	West Hill	7	2	1900	10	3
O’Connell	Constant	5	4	0	0	0
Proserpine	Gregory	5	8	0	0	0
Plane	Bakers	5	2	200	1	0
Proserpine	Proserpine	5	38	0	0	0
Plane	Marion	4	1	1200	5	3
Plane	Plane	3	1	0	0	0
O’Connell	Waterhole	2	3	0	0	0
Plane	Carmila	2	1	0	0	0
Plane	Sarina Beaches	2	0	200	1	4
Proserpine	Eden Lassie	1	0	2300	5	1
Plane	Cape	1	0	0	0	0
Don	Upstart Bay	0%	50% ^	20% ^	20% ^	20% ^
Don	Abbot Bay	2025	2025	2025	2025	2025
Don	Don River	2025	2025	2025	2025	2025
O’Connell	Andromache	0	2	6100	10	5
Proserpine	Repulse	0	0	0	0	0
Proserpine	Whitsunday	0	0	0	0	0
Proserpine	Upper Proserpine	0	5	0	0	0
Plane	Flaggy Rock	0	1	700	3	1
Plane	Gillinbin	0	0	0	0	0

Pesticides ■ >200; ■ 100-200; ■ 10-100; ■ 1-10; ■ <1
 DIN, PN, PP ■ >50; ■ 25-50; ■ 10-25; ■ 1-10; ■ <1
 TSS ■ >5000; ■ 2500-5000; ■ 1000-2500; ■ 100-1000; ■ <100

^ The Burdekin WQIP identifies that there is not enough information to derive an ecologically relevant target for DIN, TSS, PN or PP for the Don basin. Targets listed in the Burdekin WQIP are % reduction targets from the Reef Water Quality Protection Plan for the GBR.



IMPORTANT:
 Target of zero means no change from current

Table 2 Sub-catchments and their load reduction targets as identified in the regional WQIP in priority order based on priority basins and pollutants identified in Reef WQIP.

Basin	Catchment	Total herbicides (kg/yr) reduction 2021	DIN (t/yr) reduction 2021	TSS (t/yr) reduction 2021	PN (t/yr) reduction 2021	PP (t/yr) reduction 2021
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Plane	West Hill	7	2	1900	10	3
Plane	Bakers	5	2	200	1	0
Plane	Marion	4	1	1200	5	3
Plane	Plane	3	1	0	0	0
Plane	Carmila	2	1	0	0	0
Plane	Sarina Beaches	2	0	200	1	4
Plane	Cape	1	0	0	0	0
Plane	Flaggy Rock	0	1	700	3	1
Plane	Gillinbin	0	0	0	0	0
Pioneer	Pioneer	178	0	0	45	30
Pioneer	Mackay city	54	6	0	0	0
Pioneer	Blacks	13	4	19400	74	23
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O'Connell	Blackrock	103	11	100	1	0
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Proserpine	Myrtle	222	25	700	7	2
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Proserpine	Eden Lassie	1	0	2300	5	1
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Proserpine	Whitsunday	0	0	0	0	0
Proserpine	Repulse	0	0	0	0	0
Don	Upstart Bay	0%	50% ^	20% ^	20% ^	20% ^
Don	Abbot Bay	2025	2025	2025	2025	2025
Don	Don River	2025	2025	2025	2025	2025

Pesticides ■ >200; ■ 100-200; ■ 10-100; ■ 1-10; ■ <1
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IMPORTANT:
 Target of zero means no change from current

The Forum was asked if they agreed with the prioritisation of key pollutants, basins and sub-catchments proposed, based on work undertaken by Emma comparing the new Reef 2050 WQIP and Mackay Whitsunday Isaac WQIP targets) as follows:

Regional Pollutant priorities:

1. Pesticides
2. Dissolved Inorganic Nitrogen
3. Sediment
4. Particulate nutrients

Priority basins:

1. Plane (Rocky Dam, Alligator, Sandy)
2. Pioneer (Pioneer, Mackay City)
3. O'Connell (Blackrock, Murray)
4. Proserpine (Myrtle, Lethebrook)
5. Don

Overall key agreement:

The Forum agreed on the order of the above priority pollutants and basins. These priorities can be used by Partners when identifying their respective management investments and when seeking grants from government programs.





SESSION 2:

ARE WE ON TRACK OR NEEDING TO DO MORE?

Emma presented a range of management information specific to the Mackay-city sub-catchment, which related to load reduction and ecosystem health targets in the Mackay Whitsunday Isaac WQIP, including:

- Management effort and achievements since 2014;
- Current and planned projects; and
- Regional projects and funding streams.

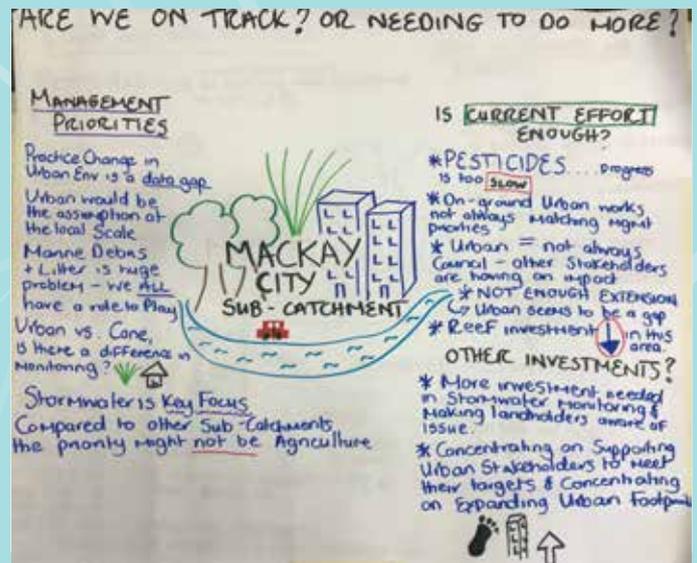
Four key questions were then posed and discussed as a group:

- 1. What are the management priorities for the Mackay-City sub-catchment?**
- 2. Is current effort (i.e. local projects and regional programs) enough to meet Mackay City sub-catchment targets? Why?**
- 3. What other investments are needed for Mackay City sub-catchment?**
- 4. How do planned activities at the sub-catchment and regional level contribute to this?**

The group was then asked to break into four different groups to answer the same questions for the Myrtle and Sandy Creek sub-catchments.

Feedback from all groups was captured graphically and is consolidated below:

MACKAY CITY SUB-CATCHMENT:



1. Management Priorities:

- Practice change information in the urban environment is a knowledge gap;
- Marine debris and litter is a big problem in this sub-catchment and everyone has a role to play in addressing the problem;
- There is an actual and perceived difference in the way cane and urban landuses are monitored and reported;
- Urban stormwater management is a priority here compared to other sub-catchments; and
- Focus should be on supporting urban-based stakeholders to improve their land management practices and concentrating on the expanding urban footprint.

2. Is current effort enough?

- Progress towards achieving pesticide targets is much too slow;
- On-ground urban works not always aligned to management priorities;
- Urban includes stakeholders other than Council (common misconception); and
- Not enough extension effort with landholders.

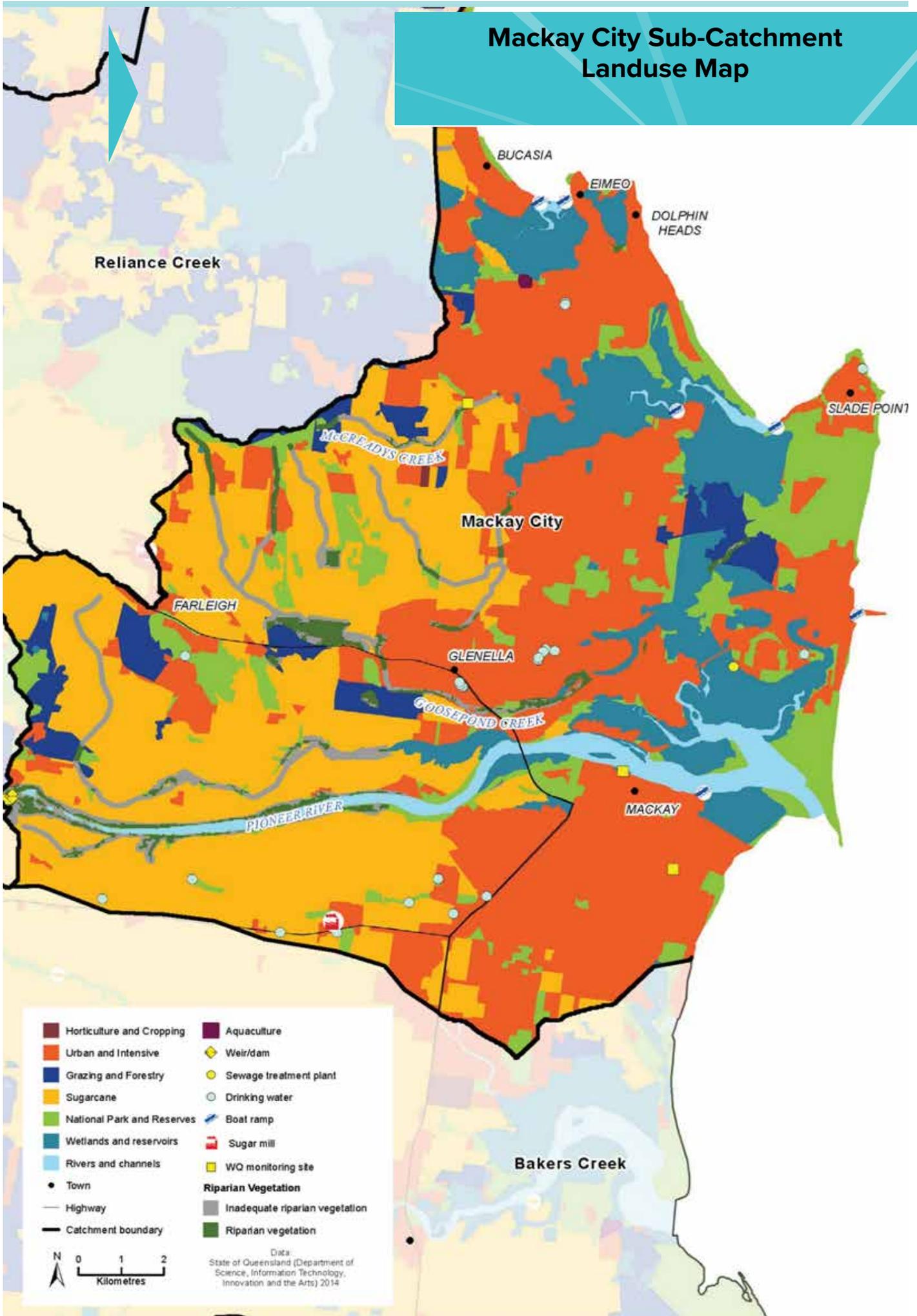
3. Other investments/action needed:

- More investment needed in stormwater monitoring and making landholders aware of the issue. Partnership has a role to play in this;
- More collaborative conversations needed on landuse and how pollutants move through our catchments/waterways;
- Local collaboration is needed for improving practice change in agriculture (acknowledged as already being addressed by Mackay Regional Council but needing further investment);
- Ag practice change needs consistent and well-funded extension effort supported by multiple partners;
- Targets need to be achievable and alternative methods/options need to be given to landholders to help them meet targets;
- Multiple barriers to change exist, investment needs to be targeted and evaluated; and
- Focus should be on the expanding urban footprint in this sub-catchment.

Overall key agreements:

- Stormwater and waterway/ marine debris were identified as important issues in this sub-catchment.
- Progress towards achieving targets set for pesticides is much too slow, partially due to a lack of extension.
- More support is needed for landholders, including the provision of 'alternatives' in the case of agricultural land use change.
- Further collaboration is needed between the multiple stakeholders using this sub-catchment, particularly in the urban space.
- Education is needed on stormwater in general, including its connectivity through the landscape including urban centers.
- The group agreed more relevant conclusions would be reached on this exercise with more local stakeholders in the room.

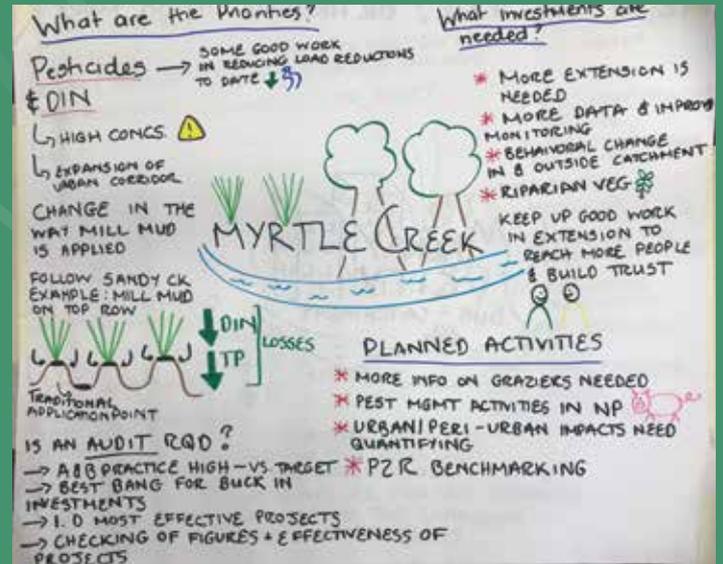
Mackay City Sub-Catchment Landuse Map



Horticulture and Cropping	Aquaculture
Urban and Intensive	Weir/dam
Grazing and Forestry	Sewage treatment plant
Sugarcane	Drinking water
National Park and Reserves	Boat ramp
Wetlands and reservoirs	Sugar mill
Rivers and channels	WQ monitoring site
Town	Riparian Vegetation
Highway	Inadequate riparian vegetation
Catchment boundary	Riparian vegetation

Data
State of Queensland (Department of
Science, Information Technology,
Innovation and the Arts) 2014

MYRTLE CREEK SUB-CATCHMENT:



1. Management Priorities:

- Pesticides and Dissolved Inorganic Nitrogen (high concentrations);
- It was noted some good work has been done to date in reducing load reductions of DIN;
- Information is needed on the priority pollutant contributions from urban and rural residential land uses as these are increasing in this sub catchment;
- There are pest management issues in the National Park in this area (especially pigs);
- Need more pollutant load monitoring data, particularly for the Proserpine River.

2. Is current effort enough?

- More extension is needed;
- More data and improved monitoring is needed;
- Behavioural change is needed both within and outside this sub-catchment; and
- Riparian vegetation is also a priority.

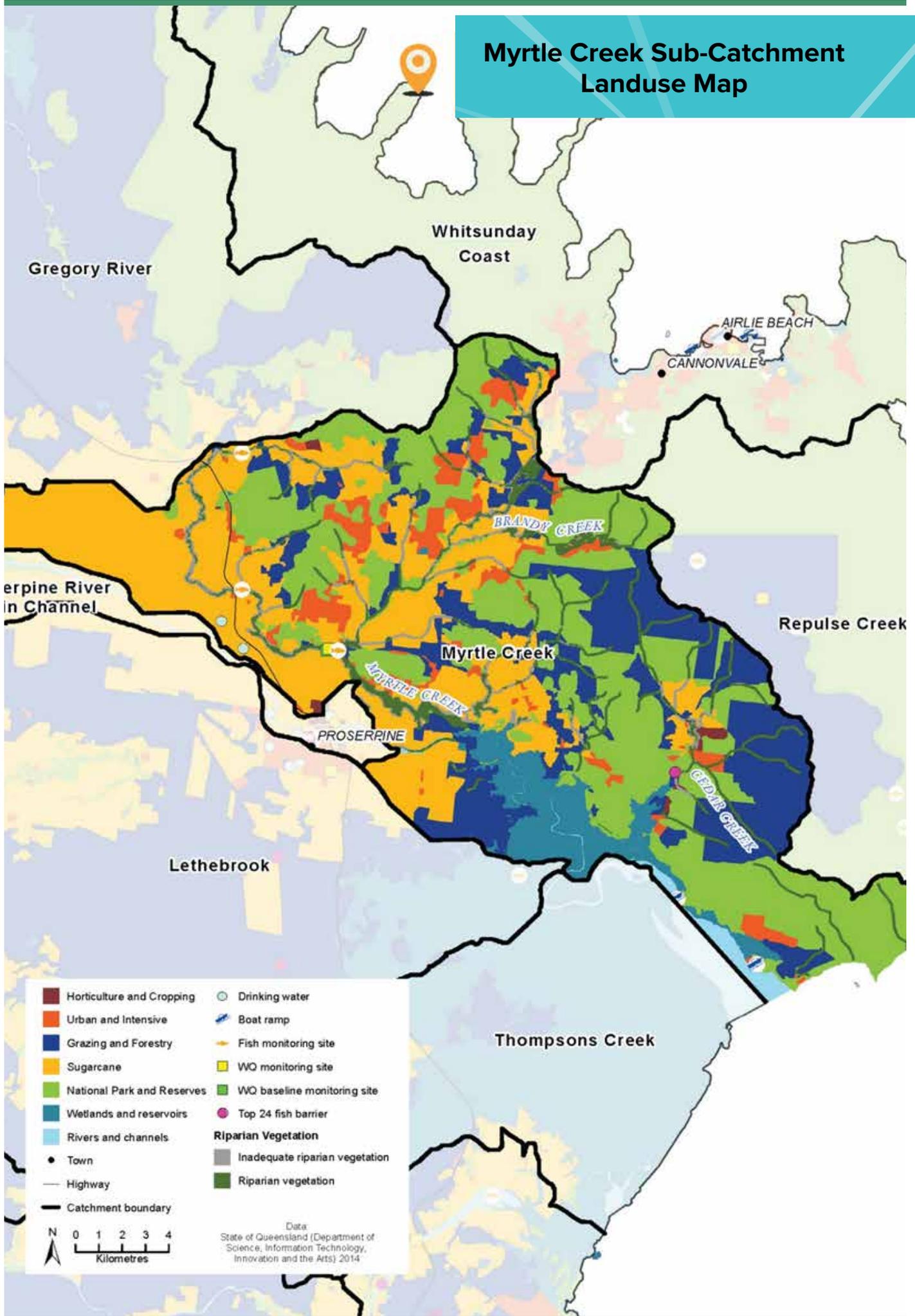
3. Other investments/action needed:

- Application of mill mud on top row of cane (following from example in Sandy Creek). Has demonstrated success where it has been trialled in reducing DIN and TP losses;
- Focus should be on keeping up existing good extension work to build trust and form long-lasting relationships
- More information on graziers is needed in this area;
- Urban/peri-urban impacts need quantifying in this area, particularly around expansion of the existing urban footprint/corridor (road to Airlie Beach and associated urban footprint); and
- Is an audit required?
 - A&B best practice figures for this area are high compared to target. Benchmarks for best practice management are currently being re-visited by the Paddock to Reef Program which could impact these figures. Identification of best “bang for buck” in the context of management investment priorities
 - Identification of most effective projects – what has worked to date and why?

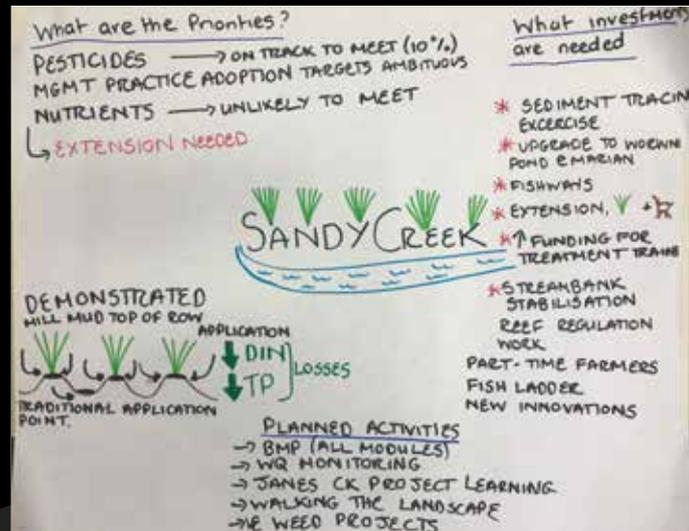
Overall key agreements:

- Pesticides and DIN from agricultural land uses were considered management priorities whilst a knowledge gap in the urban context exists in this sub-catchment.
- Further extension, monitoring and behavioural change is needed.
- Application of mill mud on top row of cane is effective way of reducing DIN losses on-farm (has been trialled successfully elsewhere).
- An audit may be required on some of the BMP targets for this sub-catchment and to identify where most effective projects have been undertaken and where investments are needed.
- The group agreed more relevant conclusions would be reached with more local stakeholders in the room.

Myrtle Creek Sub-Catchment Landuse Map



SANDY CREEK SUB-CATCHMENT:



1. Management Priorities:

- Pesticides (although may be on track to meet 10% target);
- Nutrients (unlikely to meet); and
- Sediment (unlikely to meet).

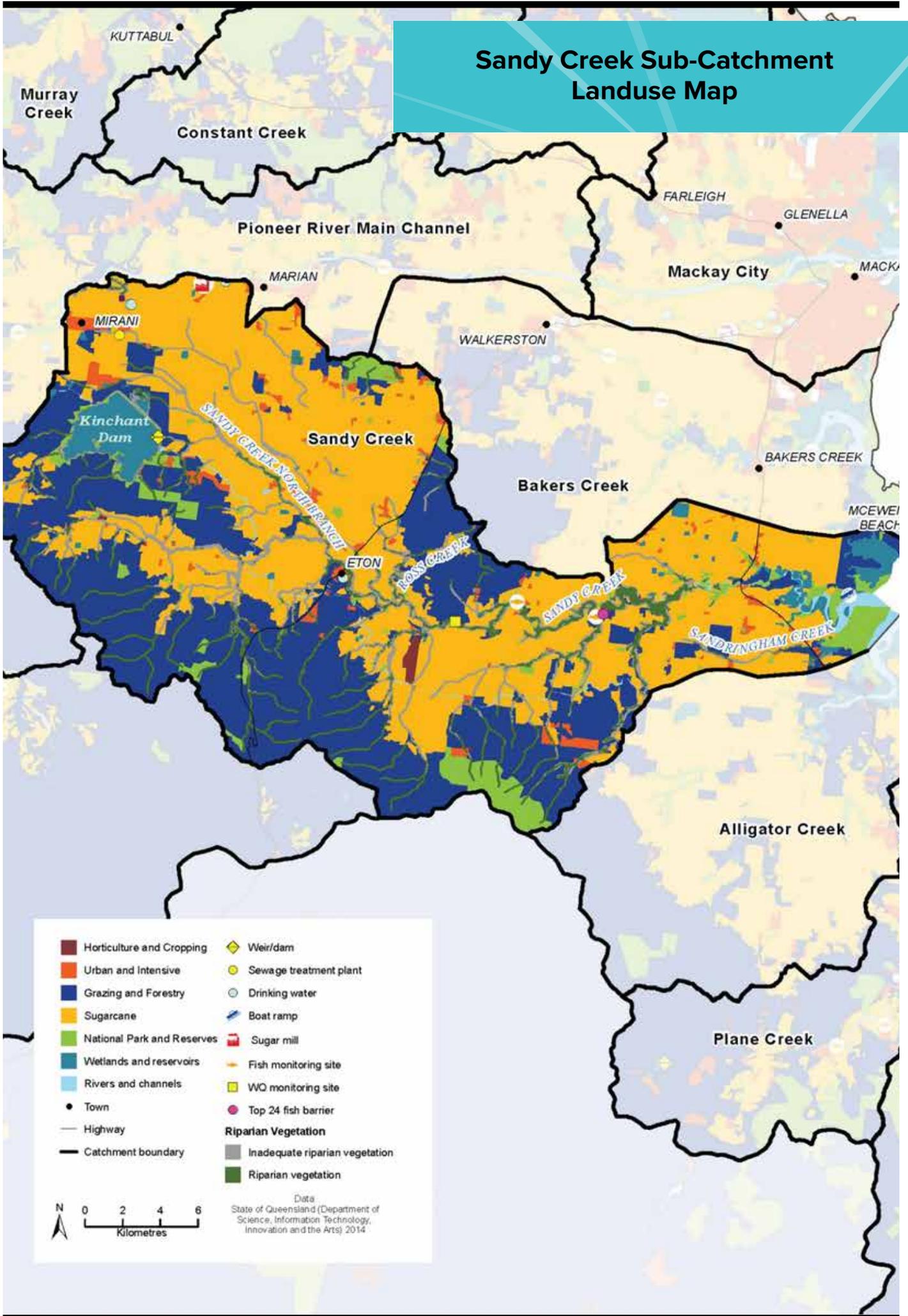
3. Other investments/action needed:

- Lots of investment/existing projects here but more needs to be done – particularly grazing extension work along creekbanks;
- Sediment tracing exercise;
- Upgrade to working pond at Marian;
- More extension;
- Increased funding for treatment trains including bioreactors, wetlands and re-use options;
- Stream bank stabilisation;
- Upgrades to STP ponds (Palm Creek fishway);
- Some preparatory/capacity building work before Reef regulations are introduced including how to deal with part-time farmers/contractors;
- Fish ladders and new innovations;
- Existing projects will assist stakeholders in reaching targets sooner and will increase our collective knowledge of the area. These include:
 - Growers completing all modules of the Best Management Practice program;
 - Water quality monitoring;
 - Janes Creek project learnings; and
 - The Walking the Landscape project/process.
- Exposure to new innovations is needed.

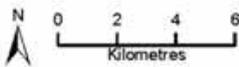
Overall key agreements:

- Pesticides, nutrients and sediments from agricultural land use are considered to be the management priorities in this sub-catchment.
- Lots of prior investment in activities or projects in this sub-catchment but more needs to be done across a range of areas and sectors from physical engineering projects and infrastructure upgrades to capacity building within agricultural communities, to further research and monitoring.
- The group agreed more relevant conclusions would be reached on this exercise with more local stakeholders in the room.

Sandy Creek Sub-Catchment Landuse Map



- | | |
|--|--|
| Horticulture and Cropping | Weir/dam |
| Urban and Intensive | Sewage treatment plant |
| Grazing and Forestry | Drinking water |
| Sugarcane | Boat ramp |
| National Park and Reserves | Sugar mill |
| Wetlands and reservoirs | Fish monitoring site |
| Rivers and channels | WO monitoring site |
| Town | Top 24 fish barrier |
| Highway | Riparian Vegetation |
| Catchment boundary | Inadequate riparian vegetation |
| | Riparian vegetation |



Data
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Science, Information Technology,
Innovation and the Arts) 2014

SESSION 3:

REFLECTION/WAY FORWARDS

Following the sub-catchment exercises, attendees were asked the following three questions in order to reflect on the day so far:

1. What feedback do you have on the process to identify management priorities?
2. Is there value in this process?
3. How do we improve the process?

The following feedback was given:

1. Feedback on process

- More information on sub-catchments is needed (feasibility of practices)
- Need local knowledge to ground-truth information
- More agricultural representatives are needed (relative to land use and spread of stakeholders present in the room this time);
- Is there an opportunity to discuss/involve any influences from the Fitzroy River?
- Auditing of grants is critical and provides much more targeted learnings of specific projects to meet specific targets/goals;
- Bottom-up approach such as this builds credibility; and
- This was a similar process to the Walking the Landscape project.

2. Value in process

- Who are the results useful for? What is the Partnership doing with the information?
- It allows people to see different perspectives between different industries (a positive);
- Important for the community to identify their own actions in response to each identified priority;
- Regulation has not been discussed – farmers only around the table now because they care. Getting to those who are not engaged and motivated to change practices is the challenge (true for every industry, not just agriculture);
- Important to understand what has worked well and where (including from other regions); and
- Identifying incentive to boost BMP uptake is important.

3. Improvements in process

- Process needs to be defensible to all parties/participants;
- Need to tell the story of values downstream (e.g. reef);
- Further thinking around urban sector;
- Needs to have an extra step of adding in local stakeholders (relative to each sub-catchment) to check and validate information;
- The building of education programs could occur using the information supplied during this process to both key stakeholders and the wider community; and
- The question needs to be asked of do we need to do it for all catchments? Are there catchments where we know there is going to be a good response?

Overall key agreement:

The group agreed there was value in the outputs but were not sure how they would be best used to achieve an outcome, or whether further analyses of sub-catchments were useful. There was consensus that additional local stakeholders would be required to be involved in any further prioritisation exercises in order for the outputs to be meaningful. The Partnership needs to consider the Forum's feedback and identify opportunities to extend the analysis to the other sub-catchments identified

SESSION 4:

REEF RESTORATION PRESENTATION

Paul Groves (GBRMPA) gave a brief presentation on two projects GBRMPA are working on to understand coastal and marine resilience. Some key points of his presentations are summarised below:

- A healthy catchment is integral to a healthy reef and we need to understand, even down to a local waterway, how the system functions and what these changes in the catchment mean for the Reef.
 - The influences of the underlying geology influence how water flows across the catchment. The way we use the catchment has changed these flows, and we really need to understand how this changed landscape operates before we can prioritise actions for the most cost effective outcomes.
 - The Reef Blueprint was developed last year and GBRMPA is now looking at all of the drivers that are influencing Reef health in order to identify the coral reefs (mid and outer shelf reefs) that are more 'fortunate' than others as a result of geology and oceanography – a process similar to that undertaken to understand the processes in the catchment and how they affect the Reef. The project will also seek to understand the various levels of connectivity between reefs.
 - A range of management actions will then be developed to manage for the variable 'fortunes' of the Reef including crown-of-thorns starfish control and interventions (such as coral restoration work).
- In 2016 44% of all commercial GBR tourism was in the Whitsundays.
 - Whitsunday Plan of Management (WPOM) represents footprint of just 1% of Marine Park (MP). On a per sq Km basis, the WPOM area is the most valuable socio-economically area of the Marine Park.
 - When considering the report card's environmental, economic and social indicators, it could be argued that funding for WQIP is more critical in the MW catchment than any other area of the Queensland Coast; however, funding cuts have left our NRM less able to implement programs to deal with declining water quality.
 - From Eye on the Reef data, prior to 2007 fringing island reefs' average visibility was 15 metres, in 2016, average visibility was 8.9 meters.
 - Unique selling proposition which sets Whitsundays apart from other locations - islands are close to each other, numerous protected bays, fringing reefs, guests walk in from beaches to snorkel, Whitehaven Beach, island walks, sailing mecca.
 - Declining water quality and cyclone have badly damaged many of the commercial operator snorkelling and diving sites around the islands, limiting the access by operators to sites and creating crowding. Operators have been forced to replace below water activities with above water activities, e.g. stand-up paddleboards, island walks. However, operators have to collect EMC of \$6.50 per person per day even when they cannot do below water activities, so then doing island walks as an alternative and now collecting \$1.98 for the walks under Commercial Activity Permits.
 - We need a paradigm shift in management thinking and intervention is required, however, the WPOM and current policy is inflexible and not suited to the new world we are living in. We need to be agile and the CEO and Board of GBRMPA need to be able to implement policy to deal with the new challenges.

Al Grundy (Tourism Whitsundays) gave a verbal overview of the tourism industry's situation in the Whitsundays. His main points are summarised below:

- Whitsunday Islands are on the inner shelf and in close proximity to mainland.
- 9 months of the year they have S.E trade winds and the islands offer protection and foster growth of coral reefs in the bays on N.E side of the islands.
- Islands popular for commercial and recreational use, however commercial operators pay the fees and are heavily regulated. E.g. \$6.50 for EMC to GBRMPA, \$1.98 for walks on islands to Qld Parks, while recreational users go into the Marine Park for free.

DAY 2: OBJECTIVES, SUMMARY AND KEY AGREEMENTS IN DETAIL

Forum Objectives Day 2

- Consolidate a list of priority projects for the Partnership to invest in to improve the report card/our understanding of either impact of pressures or state of the Region's ecosystems.
- Provide opportunity for collaboration between Partners on projects to advance management investment priorities.
- Agree on next steps including outputs of forum and opportunities to brief key-decision makers within the Partnership.



SESSION 5: SUMMARY OF DAY 1

Rachel gave a verbal summary of the key topics and messages raised from Day 1 including:

- That there is a gap in ecosystem services in the conceptual framework underpinning the report card (Judith);
- Modelling around the Whitsundays is showing a 'fluffy' sediment layer due to long residence times which is likely contributing to the variable high turbidity conditions there (Mark);
- There are a number of existing plans, targets and management priorities for our Region. Using this information, a list of priority pollutants and catchments have been established;
- Management effort and priorities were examined in the Mackay City, Sandy Creek and Myrtle Creek sub-catchments;
- Mackay City highlighted a knowledge gap in the impacts of urban land and that this key land use was a priority for this sub-catchment;
- To move forwards with further sub-catchment prioritisation exercises, more information is needed including local knowledge; and
- The question of value in the sub-catchment prioritisation process needs to be re-visited later by the Management Committee to answer the questions of why do it, what is it for and who will use the data.

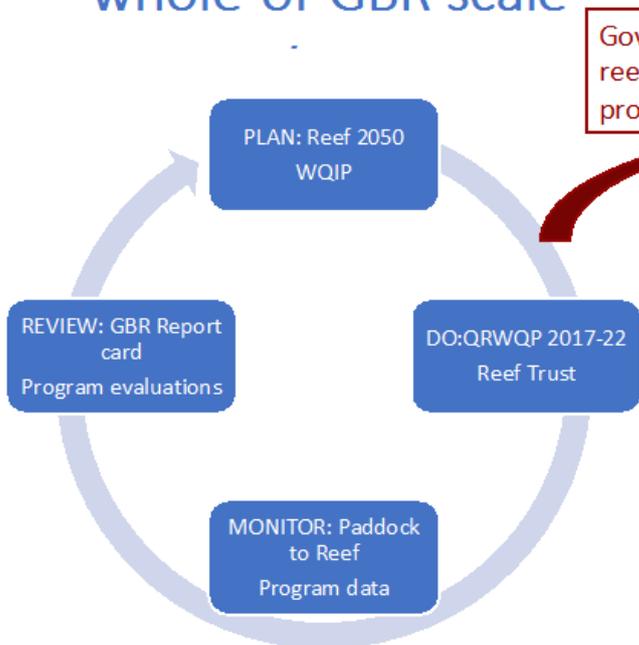
Rachel then provided her summary of the Partnership's role in the context of the traditional adaptive management cycle. The group agreed there is a missing stage in the Partnership's report card production cycle (adaptive management on a regional scale, refer to Figure 1 below). There was consensus on the Partnership's role in the 'monitoring' component of Figure 1 in producing the annual report cards however the formal linkage between the Mackay Whitsunday Isaac WQIP (the plan stage of the adaptive management cycle) and the regional report cards/Paddock to Reef (the monitor stage) and project evaluations (the review stage) is less clear and to date has not been formalised.

Overall key agreement:

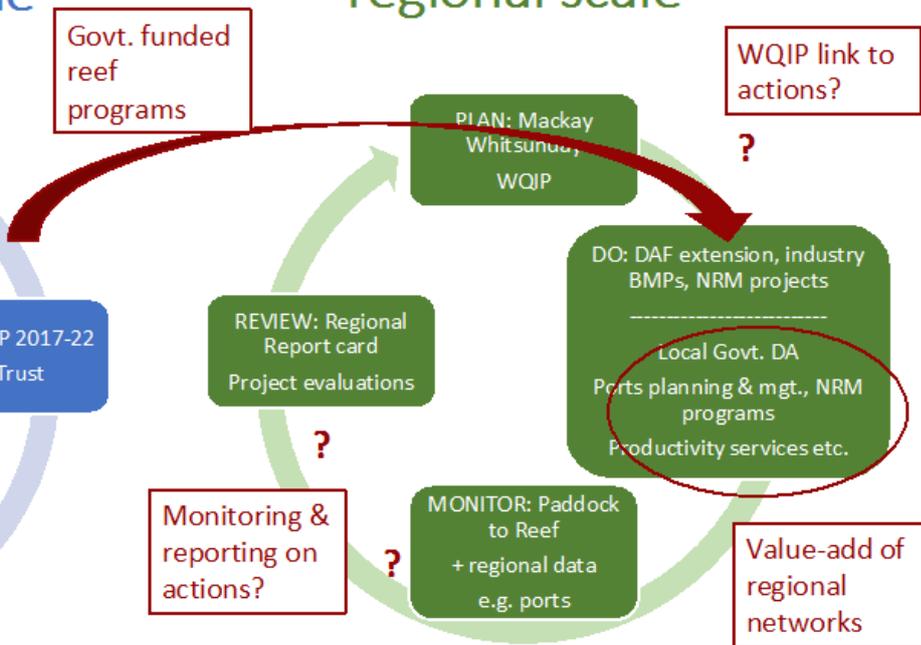
There was general consensus that the missing 'review' stage of the cycle should include the Partnership providing advice back to government investors, Partners and the community.

Figure 1: Whole of GBR and regional scale adaptive management cycles, highlighting HR2RP's relationship to the Regional WQIP and other programs.

Adaptive management whole-of-GBR scale



Adaptive management regional scale



Eberhard Consulting



HEALTHY RIVERS TO REEF PARTNERSHIP
MACKAY-WHITSUNDAY

SESSION 6:

ROLE OF THE PARTNERSHIP

Rachel led a group discussion on the future role of the Partnership. Table groups were asked to consider four different scenarios on the role of the Partnership in addressing management investment priorities:

1. Partners are responsible for identified management investment priorities advocacy, investing, reporting;
2. Partnership is responsible for tracking and reporting on management investments made by Partners;
3. Partnership is responsible for advocating for investment in management investment priorities: internal and external; and
4. Partnership is responsible for investing in management investment priorities.

Collated feedback from all four groups is detailed below:

- Primary role for the Partnership is advocacy – do not want to compete against Partners for funding (i.e. advocating for the Region, not for the Partnership itself);
- Partnership should be responsible for producing a set of ‘wish list’ projects, already scoped and ready for funding (similar to the priority projects list);
- Partnership has a strong role/voice for funding in region which is currently being underutilised;
- Partnership has a role for determining which program/method has been successful in reaching its goals (might not always be related to water quality loads). The Government also has a role to communicate back to stakeholders which projects were effective (or not);
- Report card is supplementary information for different groups. Specific education packs could be made for different demographics/sectors e.g. cane, grazing, educational;
- What is the external view of what the Partnership is doing;
- Are we achieving our current objectives;
- Partnership investment in monitoring has come from HR2RP staff/ TWG work not the WQIP. Why is the document not being used for this purpose;
- There was a discussion around whether the Partnership should be reporting against the progress in implementing the Mackay Whitsunday Isaac WQIP, however it was acknowledged further sub-catchment prioritisation work and/or creation of an additional product to the report card would require additional HR2RP resources;
- It was suggested that one option to track progress towards targets might be the use of the stewardship frameworks;
- One other option might be tracking the momentum of actions rather than progress to targets (focussing on action rather than the target);
- The Partnership can function as the Region’s brain trust (what is happening, where is the shortfall, what needs to be done); and
- Communication is the key to habit/behaviour change – should this be an objective of the Partnership?



Overall key agreements:

- The Partnership needs to obtain clarity about its own role and those of the Partners, (including Reef Catchments in the context of future development of an updated Mackay Whitsunday Isaac WQIP) in the context of reporting on management actions and progress to targets. The Management Committee is tasked with this activity at their next meeting;
- The Partnership needs to be involved in the development of the updated Mackay Whitsunday Isaac WQIP, in collaboration with Reef Catchments; and
- The Partnership should be responsible for advocating for investment but not undertaking the projects (on-ground action).

SESSION 7:

PRIORITY PROJECTS TO IMPROVE THE REPORT CARD

Charlie provided an overview of 19 projects that were identified in November and December 2017 as being priority to fill in gaps in the report card or improve our understanding of the Drivers, Pressures, Impacts or State of our Region. Ideas for collaboration were welcomed from attendees.

Projects were discussed in the following order (with projects 1 – 6 having been identified by the Management Committee in December 2017 as highest priority). Projects below in Table 1 have been shaded in order of priority as follows:

	High priority
	Moderate priority
	Low priority

Table 3 HR2RP Priority projects

Project	Detail
1. Report card automation	Rachel (facilitator) raised that Fitzroy Partnership for River Health might be able to help us in our initial scoping of this project as they have gone through/are going through this process at present.
2. Southern Inshore	It was noted the next round of this project would be funded by DBCT. Ricci (DBCT) would like some of the images and will request these from Charlie.
3. Marine Debris	It was noted by Rachel D'Arcy there is some strong interest in this topic from the State Government (OGBR would like to see this reported on in all report cards). The Marine and Myriad festivals and associated 'hack the reef' event this year in Cairns might be good forums for HR2RP staff to attend to ascertain project linkages. There was a brief discussion on RCL's role in marine debris in the Whitsunday (linkages via NLP2 funding, project catalyst via coca cola). Luke (MRC) noted the Mackay urban Gross Pollutant Traps had been a big success and the ABC show 'War on Waste' were interested in filming the MRC team emptying and sorting the contents of the GPTs. There was general discussion on the importance of source reduction mechanisms rather than just reporting on the clean-up effort and the extent of the problem. Carolyn (GBRMPA) noted the new version of the Eye on the Reef app would have a marine debris reporting mechanism.
4. Pesticides	consistently noted as highest priority water quality issue in our Region. There was consensus that we need to increase confidence in our data and understanding of how pesticides behave in the receiving environment. Katrina (RCL) noted that RCL may be able to provide guidance and/or support on locating key sites for additional estuarine pesticide monitoring.
5. Management Targets	This work is linked more broadly in the 'role of the Partnership' discussion and subsequent work tasked to the Management Committee.
6. Whitsunday Inshore Reef assessments	Rachel (facilitator) noted ReefCheck had completed some pilot work for the Fitzroy Partnership for River Health; there may be some learnings associated with this work.
7. 5 year Technical Work plan (Program Design)	Donna (NQDT) queried whether each monitoring project would include a consideration of threats (e.g. Carmichael mine go-ahead and what this might mean for future monitoring of the Don basin and associated marine reporting zones).
8. Spatial expansion of water quality monitoring	It was noted that the HR2RP staff consider this to be the highest priority project to improve data confidence in the future report cards, but that it represented a significant investment due to the high costs involved in water quality monitoring. There is good potential for citizen science integration within this project however care will need to be taken in establishing QA/QC protocols with any data collected by community groups/initiatives.
9. Fish indicator	Luke (MRC) and John (MRFA) recommended Bill Sawynok is a good contact for any future discussions on development of the fish indicators/fisheries stewardship indicator development.

Project	Detail
10. SELTMP integration	
11. Indigenous Cultural Heritage	
12. Stewardship assessments	It was noted that the State Government were leading a review of urban stewardship only at this stage.
13. Educational materials	<p>Broad discussion of this project included:</p> <ul style="list-style-type: none"> • There was a question from Sally (RCL) on how this project was a priority and broadly how this fits in to the Partnership's objectives (i.e. is education one of the Partnership's key objectives? Kev (NQBP) responded that education is a different kind of action to addressing either a gap in knowledge or a declining trend/poor condition result however it is as equally as important and it is only a matter of time before the Partnership will start to take more of an active role in this space. • Can we target rural schools and focus on the cane industry? • Where is the evidence of impact (what is the metric for success)? • It was suggested to pilot one priority catchment/basin and test the receptivity for the project and our materials. Then roll out something larger and more long-term. • Cultural Heritage aspects might be able to be bought into the pilot catchment/basin story via the Mackay-Whitsunday-Isaac Traditional Owner Reference Group.
14. Climate change	
16. Invasive weeds	
17. Groundwater quality	
18. Maritime cultural heritage (European)	
18. Maritime cultural heritage (European)	

	High priority
	Moderate priority
	Low priority

Key agreements/actions:

- There was strong interest in the marine debris project and support from the group to commence scoping activity to determine where the Partnership can add value to existing projects/reporting mechanisms;
- There was support for educational materials project, however a pilot to develop one set of resources for one catchment/basin might be appropriate, before scaling up the project including options to link with annual report card data. A discussion is required with the TORG and other key stakeholders to determine if any cultural heritage elements can be factored in;
- A revised project list will be developed by Charlie and will be presented to the next Management Committee for endorsement against available/appropriate 17/18 FY and 18/19 FY budget allocations. This revised list should include delivery format of projects, delivery, impacts to report card, resources required and next steps in each project's development, as appropriate;
- There is potential to have working groups for any particular projects of interest to Partners; and
- There was support to deliver both this report and the outcome of the Management Committee's discussion to the CEOs of each Partner organisation.

APPENDIX A: FORUM ATTENDEES

Attendee(s)	Organisation	Day(s) attended
Di Tarte	HR2RP	1+2
Charlie Morgan, Emma Carlos, Alysha Sozou	HR2RP	1+2
Katrina Dent, Sally Young and Chris Dench	Reef Catchments	1+2 (Chris Dench day 1 only)
Donna Turner (proxy for Scott Crawford)	North Queensland Dry Tropics	1+2
Kev Kane	North Queensland Bulk Ports	1+2
Ricci Churchill and Mark Svaikauskas	Dalrymple Bay Coal Terminal	1 (Mark day 1 only)
Peter Conway	BHP Billiton	1+2
Luke Galea and Robyn Birkett	Mackay Regional Council	1+2 (Robyn day 1 only)
Adam Folkers and Melissa Albisetti	Whitsunday Regional Council	Day 1 only
Rachel D'Arcy and Meg Bickle	Department of Environment and Science (Qld Gov)	1+2
Phil Trendall	Department of Agriculture and Fisheries	1+2
Ken Rhode	Department of Natural Resources, Mines and Energy	1+2
Carolyn Thompson (proxy for David Wachenfeld) and Paul Groves	Great Barrier Reef Marine Park Authority	1+2
John Agnew	Mackay Area Productivity Services	1+2
Beena Al Biswas	Sugar Research Australia	1+2
Tony Hinschin	Canegrowers Proserpine	1+2
Al Grundy	Tourism Whitsundays	Day 1 only
Sharon Smallwood	Whitsunday Charter Boat Association	1+2
Kade Slater	Pioneer Catchment Landcare	1+2
John Bennett	Mackay Recreational Fisheries Alliance	1+2
Mark Baird and Nugzar Margvelashvili	CSIRO	Day 1 only
Phil Jeston	Catchment Solutions	1+2

APPENDIX A: FORUM ATTENDEES

Attendee(s)	Organisation	Day(s) attended
Donna Martin	Charles Sturt University	1+2
Apologies		
Caitlin Davies	Conservation Volunteers Australia	1+2
Kerry Latter	Mackay Canegrowers	1+2
Samarla Deschong	Traditional Owner Reference Group	1+2
Ben Wearmouth	Regional Development Australia	1+2
Tim Malthus	CSIRO	1+2
Gert Nel	Isaac Regional Council	1+2
Whitsunday and Sarina Land-care	1+2	Day 1 only

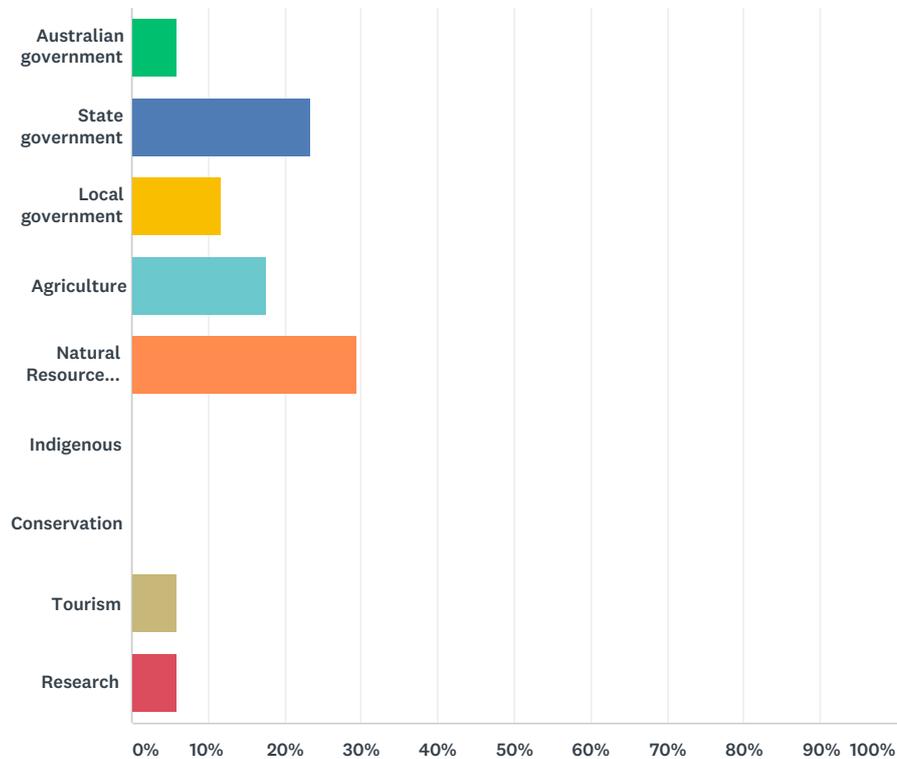
APPENDIX B: FORUM FEEDBACK

MWHR2RP workshop

SurveyMonkey

Q1 What sector are you representing?

Answered: 17 Skipped: 7



ANSWER CHOICES	RESPONSES
Australian government	5.88% 1
State government	23.53% 4
Local government	11.76% 2
Agriculture	17.65% 3
Natural Resource Management	29.41% 5
Indigenous	0.00% 0
Conservation	0.00% 0
Tourism	5.88% 1
Research	5.88% 1
TOTAL	17

#	OTHER (PLEASE SPECIFY)	DATE
1	consulting	3/28/2018 1:57 PM
2	RDA	3/28/2018 1:56 PM
3	Community	3/28/2018 1:56 PM
4	Industry	3/28/2018 1:55 PM
5	Landcare	3/23/2018 4:09 PM

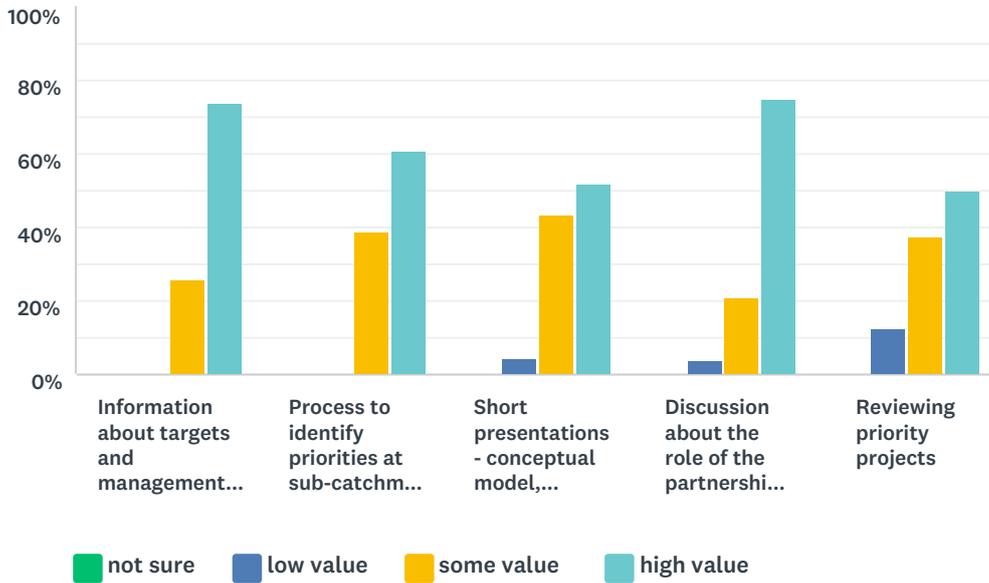
MWHR2RP workshop

SurveyMonkey

6	Ports industry	3/23/2018 4:01 PM
7	Industry	3/23/2018 4:00 PM

Q2 How useful were the following materials and sessions?

Answered: 24 Skipped: 0



	NOT SURE	LOW VALUE	SOME VALUE	HIGH VALUE	TOTAL	WEIGHTED AVERAGE
Information about targets and management efforts	0.00% 0	0.00% 0	26.09% 6	73.91% 17	23	3.74
Process to identify priorities at sub-catchment level	0.00% 0	0.00% 0	39.13% 9	60.87% 14	23	3.61
Short presentations - conceptual model, Whitsundays research, Reef restoration	0.00% 0	4.35% 1	43.48% 10	52.17% 12	23	3.48
Discussion about the role of the partnership in tracking/reporting progress?	0.00% 0	4.17% 1	20.83% 5	75.00% 18	24	3.71
Reviewing priority projects	0.00% 0	12.50% 3	37.50% 9	50.00% 12	24	3.38

Q3 What did you most appreciate about the workshop?

Answered: 23 Skipped: 1

#	RESPONSES	DATE
1	scope where to from here. Networking opportunity. 2 meetings in 2 days.	3/28/2018 2:01 PM
2	it was extremely informative	3/28/2018 2:00 PM
3	great networking opportunity. Interesting to hear about the different views in the Partnership's role/direction.	3/28/2018 1:59 PM
4	open conversations	3/28/2018 1:58 PM
5	reviewing priority projects. Open discussion - different opinions.	3/28/2018 1:57 PM
6	Priority project discussion. Very important to discuss and review.	3/28/2018 1:56 PM
7	future direction and assessing where we get the best value	3/28/2018 1:56 PM
8	networking	3/28/2018 1:55 PM
9	the honest input from all stakeholders and the information shared	3/28/2018 1:54 PM
10	the group activities	3/28/2018 1:53 PM
11	interacting with other sectors	3/28/2018 1:52 PM
12	discussion groups were great. Talks were really interesting and relevant.	3/28/2018 1:51 PM
13	Bringing everyone together and highlighting priority projects moving forwards	3/28/2018 9:01 AM
14	Bringing everyone together and highlighting priority projects moving forwards	3/23/2018 4:16 PM
15	The level of detail provided around priorities at sub-catchment.	3/23/2018 4:12 PM
16	The level of detail provided around priorities at sub-catchment.	3/23/2018 4:12 PM
17	Getting a good understanding on the Partnership and what it is all about.	3/23/2018 4:09 PM
18	Significant effort to present lots of information in a clear way. Information was well presented.	3/23/2018 4:02 PM
19	Starting to unpack role of Partnership. Highlighting issues at sub-catchment level.	3/23/2018 4:01 PM
20	Involvement in prioritisation	3/23/2018 4:00 PM
21	interaction across the many sectors. Lots of opportunity for input into discussions.	3/23/2018 3:59 PM
22	great participation. People were really engaged. Good group activities to get more people involved.	3/23/2018 3:58 PM
23	looking at research priorities	3/23/2018 3:55 PM

Q4 What could have been done better in the workshop?

Answered: 21 Skipped: 3

#	RESPONSES	DATE
1	encourage people to move around onto different tables	3/28/2018 2:01 PM
2	N/A	3/28/2018 2:00 PM
3	need microphones - hard to hear questions from the floor	3/28/2018 1:59 PM
4	more data/info for process to identify sub-catchment priorities	3/28/2018 1:58 PM
5	a lot of detail in a short time period.	3/28/2018 1:57 PM
6	priority project discussion was a bit rushed	3/28/2018 1:56 PM
7	prioritising the sub-catchment focus - felt this was done for us	3/28/2018 1:55 PM
8	involve more representatives from the local community	3/28/2018 1:53 PM
9	Thought it ran well, on-time, engaging.	3/28/2018 1:51 PM
10	breaks - outside (e.g. on balcony) to get fresh air/trip to beach.	3/28/2018 1:51 PM
11	Having the right time on the invite!	3/28/2018 9:01 AM
12	having the right time on the invite	3/23/2018 4:16 PM
13	Reviewing priority projects did not result in an outcome. This information has been to the MC and emailed to Partners and was designed to influence Partners budgets and priorities. We did not achieve that, or come close. We've done the process 3 times now and no outcome. What needed to occur was a reminder about the objectives of each day.	3/23/2018 4:12 PM
14	Reviewing priority projects did not result in an outcome. This information has been to the MC and emailed to Partners and was designed to influence Partners budgets and priorities. We did not achieve that, or come close. We've done the process 3 times now and no outcome. What needed to occur was a reminder about the objectives of each day.	3/23/2018 4:12 PM
15	All seemed good, might need more time to support conversation.	3/23/2018 4:09 PM
16	Sometimes difficult to hear commentary from participants. Occasionally unclear on what was expected from group session.	3/23/2018 4:02 PM
17	Nil	3/23/2018 4:01 PM
18	I'm not clear about what we actually achieved.	3/23/2018 4:00 PM
19	Always need more time for discussion.	3/23/2018 3:59 PM
20	Nothing - but a comment on % targets used - questions regarding validity of baseline e.g. ag management practice update, just made it difficult to assess. Nothing you couldn't fix.	3/23/2018 3:58 PM
21	more time for discussion on more information on priority catchments	3/23/2018 3:55 PM



HEALTHY RIVERS TO
REEF PARTNERSHIP
MACKAY-WHITSUNDAY