Evaluation of NERP TE Hub Generated Knowledge Uptake by Research Users

Final Survey Report

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ACKNOWLEDGEMENTS

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ACRONYMS & ABBREVIATIONS

ABS	Australian Bureau of Statistics
AIMS	Australian Institute of Marine Science
AFMA	Australian Fisheries Management Authority
APVMA	Australian Pesticides and Veterinary Medicines Authority
CAFNEC	Cairns and Far North Environment Centre
CERF	Commonwealth Environment Research Facilities program
CQU	Central Queensland University
CRC	Cooperative Research Centre
CSIRO	Commonwealth Scientific and Research Organisation
DAFF	Department of Fisheries and Forestry (formerly DPI and F - Department of Primary Industries and Fisheries)
DEHP	Department of Environment and Heritage Protection
DERM	Department of Environment and Resource Management (formerly EPA – Environmental Protection Agency, including QPWS – Queensland Parks & Wildlife Services)
DOE	Department of the Environment
FNQ	Far North Queensland
FNQROC	Far North Queensland Regional Organisation of Councils
GBR	Great Barrier Reef
GBRMPA	Great Barrier Reef Marine Park Authority
JCU	James Cook University
KPI	Key Performance Indicators
LMAC	Local Marine Advisory Committee (GBRMPA)
MLA	Meat and Livestock Association
MTSRF	Marine and Tropical Sciences Research Facility
NPRSR	Department of National Parks, Recreation, Sports and Racing
NQ	North Queensland
NRM	Natural Resource Management
PNG	Papua New Guinea
RRRC	Reef & Rainforest Research Centre
SRI	Sugar Research Institute
TSRA	Torres Strait Regional Authority
UQ	University of Queensland
WHA	World Heritage Area
WTMA	Wet Tropics Management Authority
WTWHA	Wet Tropics World Heritage Area

EXECUTIVE SUMMARY

This report provides the final evaluation of the uptake of knowledge from the NERP Tropical Ecosystems Hub (NERP TE Hub), a research program funded by the Australian Government's Department of the Environment (DOE). The project measures the success of the NERP TE Hub in influencing the decision making of government and stakeholders in regards to the condition, threats and management options for North Queensland's environmental assets. Comparative results are provided where possible throughout the report with results from the baseline evaluation survey report.

Methodology
Through a qualitative approach and a cluster sampling method, two tiers of research users were surveyed by e-survey for the project. These two tiers represent:

- Tier 1 - The NERP TE Hub contractually identified *research users;*
- Tier 2 - Business, government, indigenous, environment (including NRM Groups), agriculture, fishing, and tourism sectors that should be aware called *next users: expected awareness;* and *next users: potentially aware*.

Survey Sample
A total of 539 individuals were identified as potential respondents and emailed the e-survey using Survey Monkey in mid-November. The final sample consisted of 149 individuals, representing *contractually identified research users* (20.1%) and *expected awareness* (79.9%). The largest cluster was the government respondents (n=69; 46.3%), followed by the environment cluster including NRM Groups (n=42; 28.2%). The smallest group of respondents was the agriculture cluster (n=4; 2.7%).

Survey Results: Unaware of the NERP TE Hub
Respondents who said they had not heard of the NERP TE Hub (16.1% of the total respondents) and did not use research were predominantly from the Indigenous cluster. Only 14 of the 24 respondents unaware of the NERP TE Hub said they used some form of research for policy or decision-making in their working position and these were predominantly from the Business cluster.

Survey Results: Aware of the NERP TE Hub
Overall, 116 respondents (82.9%) were aware of the NERP TE Hub. This is an increase from 2012 when only 62.6% of respondents were aware of the Hub. More than half of the respondents who were aware of the NERP TE Hub had received communications or information. This was dominant amongst the government and environment clusters. Approximately 40% of respondents received communications directly from James Cook University, individual NERP researchers and RRRC. Information was mostly communicated by workshops and reports.

Almost half of the respondents indicated the NERP TE Hub research to be very credible (49.4%). In fact, there were no negative responses to this question in 2014. In 2012, a significant percentage of the sample was not in a position to comment on the influence of NERP TE Hub research. However, in 2014, more than half of respondents (56.3%) indicated the NERP TE Hub research very strongly or strongly influenced policy and decision-making in their position. mainly from the government and environment sectors.

Results: Qualitative Data
Project Outputs
The outputs generated from the NERP TE Hub projects during the last six months of 2014 included 78 NERP TE Hub stakeholder meetings, workshops or presentations, 98 "external" stakeholder meetings, workshops or presentation (including two conferences with approximately 250-300 participants) and. As at mid-January 2015, 201 media reports, 150 scientific papers published or in review, 98 conference/seminar/workshop presentations, 46 technical reports and 187 various factsheets amongst a number of other communication products are available to the public through the NERP TE Hub website.

Website Information

A review was conducted on the NERP TE Hub website's resources available to the public. As at 11 January 2015, media reports, journal articles and conference/ workshop/ seminar presentations were the main project outputs relating to the key performance indicators (KPI). The total number of page views to the NERP TE Hub website during the July-December 2014 period was 20,633. The total number of unique page views was 14,655. Access to the NERP TE Hub website was primarily through Google searches and secondary methods of searches were made direct to the NERP TE Hub website primarily from the RRRC website, then the Department of the Environment website and followed by the e-Atlas website.

e-Atlas

While the e-Atlas is continually being expanded, the website's Google Analytics shows a significant amount (2,660 page views per month) of traffic already accessing the information available on the site.

Impact of the Research

The NERP TE Hub research has informed policy and management. From the baseline survey in 2012 to the final evaluation survey in 2014, it is evident the NERP TE Hub has been successful in conveying information and contributing to policy and management decisions for the sustainable management and conservation of North Queensland's natural assets of the Great Barrier Reef, Wet Tropics rainforests and Torres Strait. NERP TE Hub research has contributed directly to the GRMBPA Outlook Report 2014, the Torres Strait Development Plan 2014-2018 and is intended to be used in the Australian and Queensland State of the Environment Reports due in 2016.

However, it is also expected that a proportion of the NERP TE Hub research will have an ongoing influence after the NERP. For example Project 1.2 has been cited in the GBRMPA's Strategic Assessment Report and the 2014 Outlook Report; the Revised Recovery Plan for Marine Turtles; and in the draft referral guidelines being developed for dugongs, turtles and coastal dolphins by the Department of the Environment. As well, the WTMA extensively used project outputs in their Conservation Plans and Research Priorities documents; and that Terrain NRM refers to many project publications in all regional natural resource policy and planning initiatives. Outputs and data are included in the FNQROC local councils environmental planning; and the Queensland and Australian Governments refer to the Wet Tropics biodiversity outputs and climate change predictions in a wide variety of documents and polices. In the Torres Strait, Project 2.3 has noted that the skills transfer and training component of the project has informed management of coral reef monitoring in the Torres Strait to the point where it is envisaged that future reef monitoring work will be done in the region and will become an integral part of TSRA Government policy and procedure. There are many other project outputs which are and will continue to contribute to policy and management decisions. These are available in the NERP TE Hub Final [Biannual] Report #8 July – December 2014.

1.0 INTRODUCTION

1.1 PROJECT BACKGROUND

The $26 million National Environment Research Program Tropical Ecosystems Hub (NERP TE Hub) is a federally-funded program involving more than 240 scientists across 39 research programs, working to solve the environmental problems facing north Queensland's key environmental assets: the Great Barrier Reef (GBR) and its catchments, tropical rainforests including the Wet Tropics World Heritage Area (WTWHA), and the Torres Strait.

As described in the NERP TE Hub Multi Year Research Plan (MYRP) 2011-2014, the Hub

> *... builds on five years of 'public good' environmental research supported through the Marine and Tropical Sciences Research Facility (MTSRF). The MTSRF was a large investment by the Commonwealth Environmental Research Program (CERF) funded by the Australian Government through the former Department of Environment, Water, Heritage and the Arts. The MTSRF program was built on the foundation of thirteen years of prior tropical research supported by the Cooperative Research Centre Program, which funded twin Cooperative Research Centres for the reef (GBR, Torres Strait) and Wet Tropics rainforest. As in these previous programs, the NERP TE Hub will benefit from significant co-investment from research providers and other agencies.*
>
> *The mission of the Hub is to deliver research that supports evidenced-based policy, management, and decision-making by the Australian Government and other key end-users.*[1]

[1] NERP Multi Year Research Plan (MYRP) 2011-2014, p. 8

1.2 PROJECT OBJECTIVES

This evaluation project measures the success of the NERP TE Hub in influencing the decision making of managers, policy makers, industries and community groups in regards to the condition, threats and management options for North Queensland's environmental assets. A mixed methodology approach involved the reporting of both quantitative and qualitative results in the initial baseline report (2012-13) and again for the final evaluation of the NERP TE Hub at its conclusion in 2014.

The qualitative approach has involved a final evaluation survey to report on the current understanding and use of the NERP TE Hub research. Specifically, the survey has:

- Identified the level of awareness of the NERP TE Hub;
- Investigated the level of use of the research produced by the NERP TE Hub; and
- Evaluated the acceptance of the NERP TE Hub research.

Quantitative monitoring reported includes statistics based on the number of visitors to the NERP TE Hub website and the e-Atlas website; the number of document downloads from the NERP TE Hub website; the number of peer-reviewed publications; media uptake of research project results; and various other measures of impact will be reported upon after the finalisation of the NERP TE Hub.

2.0 METHODOLOGY

2.1 INTRODUCTION

The size and complexity of the NERP TE Hub means there is considerable scope for monitoring and evaluation of the success of knowledge delivery efforts. A particular focus is to evaluate the credibility and impact of information generated by the NERP TE Hub. This credibility and impact will be based on research user perceptions and the uptake of advice and actions based on the NERP TE Hub generated research projects.

The mixed methodology approach involves the reporting of both quantitative and qualitative results drawn from an e-survey and the analysis of communication outputs and the 'pathway to impact' of research from the NERP TE Hub.

2.1.1 Baseline & Final Surveys

A fundamental component of assessing delivery success is a purposely designed survey targeting research users. The baseline survey was used to analyse and report on the understanding and use of the NERP TE Hub research two years after the Hub was operational (July 2013). The survey was repeated at the end of the NERP TE Hub program and the results have been compared, providing a robust assessment of the degree to which new Hub information was utilised in decision-making.

The Baseline Evaluation survey was conducted by telephone interviews. For financial and timing reasons, the Final Evaluation of the Hub survey was conducted by using an online survey development program, Survey Monkey. The final evaluation survey followed a similar line of questioning from the baseline evaluation survey to elicit comparative results. Potential respondents were invited to complete the e-survey one week after the NERP TE Hub conference was held on the 5-7th November 2014. A reminder to complete the survey was sent out to respondents who had not completed the survey two weeks later and a final reminder was sent two weeks later again. The survey was closed on the 19 December 2014. Survey Monkey allows for the survey reminder to be sent only to those identified email addresses that have not completed the survey. Given the relatively long time periods typically required for research to impact on policy and management, and the relatively short time period available for assessment of the delivery success, this final Hub evaluation survey may not fully monitor the pathway to impact of the NERP outputs.

2.1.2 Quantitative Monitoring

Quantitative monitoring focuses on statistics drawn from the number of visitors to the NERP TE Hub website; the number of document downloads from the NERP TE Hub website; the number of peer-reviewed publications; media uptake of research project results; and various other measures of impact. The number of visitors and downloads to the e-Atlas website hosted by the Australian Institute of Marine Science (AIMS) has also been included in this section of the report.

2.2 SURVEY METHODOLOGY

2.2.1 Sample Structure

NERP Monitoring & Evaluation Plan Parameters

The NERP TE Hub Multi Year Research Plan (MYRP) *establishes both the context and the challenge* for the Hub's research projects. The Hub *intends to transfer new knowledge and tools to managers and other users requiring environmental, social and/or economic information to support their respective future decisions*. Therefore one of the Hub's key performance indicators is *the uptake of knowledge generated by research and the generation of new understanding*.[2]

Specifically, The Hub's key audience are government agencies including the Department of the Environment (DOE), Great Barrier Reef Marine Park Authority (GBRMPA), Torres Strait Regional Authority (TSRA) and the Wet Tropics Management Authority (WTMA). Queensland Government departments include the Department of Agriculture, Forestry and Fisheries (DAFF), Department of Environment and Heritage Protection (DEHP) and the Department of National Parks, Recreation, Sport and Racing (NPRSR). Other significant identified research users are represented by industries such as agriculture, fishing, tourism, ports and shipping, and mining; traditional owners and their communities; regional NRM organisations; regional development associations; and environmental non-government organisations (NGOs) such as the World Wildlife Fund (WWF).

Cluster Sample

A cluster sampling structure was selected for this project as this method previously proved successful in the 2009 evaluation of the Marine and Tropical Sciences Research Facility (MTSRF) and the NERP TE Hub Baseline Evaluation Survey in 2012. In total, 7 clusters were identified with respect to the NERP TE Hub and qualified by the following characteristics:

- Government: local, state and federal government, government departments and agencies (e.g. GBRMPA, DOE, DEHP, DAFF, WTMA);
- Business: businesses that are primarily focused on or include departments that provide environmental services such that they would reasonably be expected to have had some exposure to NERP TE Hub or related research; e.g. mining, engineering, construction, development, marine, or environmental consultancy and advisory services;
- Indigenous: Indigenous authorities/ councils; and Indigenous businesses/organisations;
- Environment: NGOs, NRM & environmentally focused agencies, environmental organisations;
- Industry – Agriculture: grazing, sugar, farming, and agricultural industry organisations and associations;
- Industry – Fishing: commercial & recreational fishing, aquaculture, and associated organisations;
- Industry – Tourism: tour operators, tourism organisations and tourism authorities;

The choice of respondents for the Final Hub Evaluation survey was based on the previous survey sample clusters. Additional survey respondents were selected from the NERP TE Hub 2014 Conference delegate list. To administer the e-survey, the process involved pulling together email addresses for each individual and these were grouped for delivery of the e-survey. A clarifying question in the survey asked if the respondent was an identified research user of any of the projects, and if so, which projects. This method has resulted in only two clusters for analysis: identified research users and others who were aware of the NERP TE Hub.

[2] NERP Multi Year Research Plan (MYRP) 2011-2014, p. 9

Tier 1: Contractually Identified Research Users
Identified directly in the NERP TE Hub project schedules of the MYRP.

Tier 2: Expected Awareness and Potentially Aware (Next Users)
These two tiers were grouped together for the Final Evaluation of the Hub e-survey.
Individuals and organisations not identified in the NERP TE Hub project schedules in the MYRP as research users, but are working in programs associated with NERP TE Hub researchers or research outcomes (e.g. water quality, reef and rainforest programs, steering/advisory committees). As well, this tier included individuals and/or organisations that would be expected through their affiliation with related organisations (e.g. industry association members, case studies, active involvement in organisations/associations related to NERP TE Hub research outcomes) to have some level of exposure to NERP TE Hub research (Figure 1).

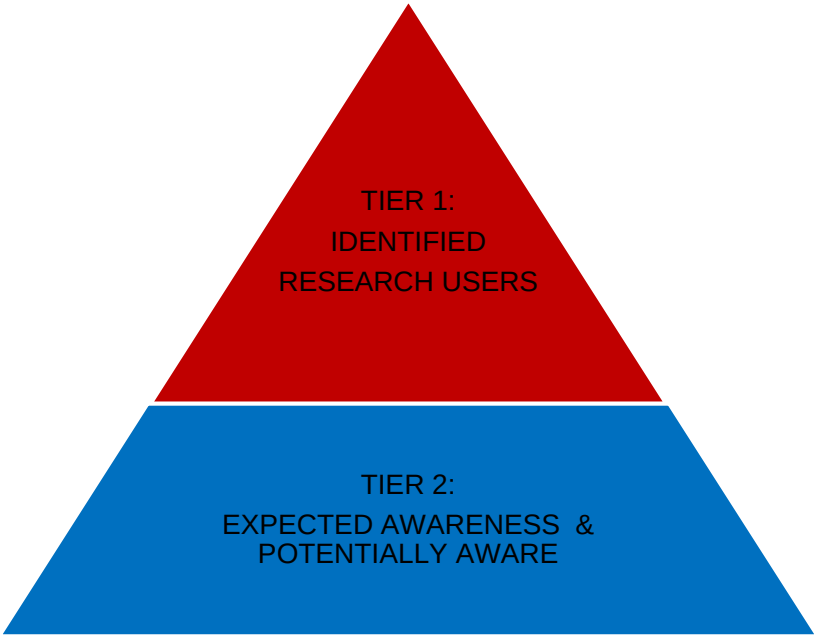


Figure 1: Sample Structure

Finally, it was considered important to focus on capturing the responses of those individuals and groups within the tiers and clusters that were defined as:

> *Industries, management organisations, government departments, and other significant groups* ***that actively make or influence decisions on environmental and related policy within the region*** *spanning from Torres Strait in the north to Gladstone in the south of Queensland.*

Individual representatives were selected by reviewing their organisational/departmental objectives or purpose, projects and programs they have been involved in or have partnered with, to ensure they met all of the sample parameters.

Geographic Parameters

The geographic parameters of the survey project span from the Torres Strait in the North and along the coast to Gladstone in the south of Queensland. This geographic region represents an enormous proportion of Queensland and significant distances to travel for surveys or other instruments. With the Department of Environment in Canberra being the primary research user of the NERP, individuals from the ACT were included. This would require a substantial amount of time as well as resources to conduct representative samples of face to face interviews or random telephone surveys which are most often used instruments for such evaluations.

2.2.2 Sample Parameters & Limitations

The strict sample parameters described in the previous sections impose some limitations on the sample size. A sample quota of 300 individuals proved successful in evaluating the recognition of the outcomes of the Reef and Rainforest Research Centre (RRRC) and Marine and Tropical Sciences Research Facility (MTSRF) research conducted in 2009. This total was also suggested for the baseline evaluation of the NERP TE Hub.

A much broader approach was taken for the Final Hub Evaluation Survey due to the general response rate for an e-survey known to be between 20-24% (Dillman, 2000).

2.2.3 Clusters and Sample Size

A total of 539 individuals representing the clusters were identified from the baseline survey respondents, additional identified and possible research users, and delegates of the final NERP TE Hub conference.

Table 1 shows the NERP TE Hub research users identified for each cluster as listed in the project descriptions in the MYRP 2011-2014, and the sample numbers selected for each cluster in 2012. The 2014 sample included identified research users.

Table 1: Clusters and Target Sample Size (2012 & 2014)

CLUSTER	IDENTIFIED NERP RESEARCH USERS*	NERP TE Hub EVALUATION 2012** Target Sample	NERP TE Hub EVALUATION 2014** Target Sample
Business	0	30	42
Environment	15	50	90
Government	64	110	254
Indigenous	1	20	57
Industry - Agriculture	2	35	34
Industry - Fishing	0	30	27
Industry - Tourism	1	25	35
TOTALS	**83**	**300**	**539**

* Identified NERP research users as listed by each NERP TE Hub program in the MYRP 2011-14.
** Sample numbers include current identified NERP research users.

2.3 "RECOGNITION OF NERP TE HUB EVALUATION SURVEY"

2.3.1 Survey for Interviewing

The "Final NERP TE Hub Evaluation Survey" (Appendix A) was specifically developed to address the aims and objectives set for the project. The Final Evaluation of the NERP TE Hub Survey used similar questioning as the Baseline Evaluation Survey for comparative reporting of results. Five sections within the survey represented:

- General awareness of the NERP TE Hub
- Information and research gained from the NERP TE Hub and related organisations
- Accessibility and dissemination of NERP TE Hub information and research
- Impact of research
- Suggestions for future research

The survey was set-up using Survey Monkey, an e-survey program. A total of 24 questions were included in the survey, based on the previous Baseline Evaluation Survey of the NERP TE Hub carried out in 2012 and objectives of the project.

2.4 LIMITATIONS

The timeframe for completing the survey interviews presented some challenges. The e-survey was circulated to potential respondents one week after the Final NERP TE Hub Conference was held (5-7th November 2014). With two reminders, two weeks later after commencement, the timing coincided with organisations winding down for the year. This may have limited the potential for more respondents.

The previous Baseline Evaluation Survey was able to identify respondents into three tiers of identified research users, expected awareness research users and potential research users based on the compilation of potential telephone respondents and their organisations. The e-survey was limited to two tiers of respondents – identified research users and expected awareness research users. Expected awareness research users include the potential research users.

2.5 NOTES ON ANALYSIS OF DATA

2.5.1 Open-ended Questions

The Final NERP TE Hub Evaluation Survey contained many open-ended questions. As such, analysis of data required specialised coding which should be clarified in order to understand the results clearly. Content analysis of the text in the open-ended question was used through Survey Monkey. While there are many methods of approach for content analysis, a simplified version was used for this data. Firstly, obvious key words relating to the study were identified. Secondly, the 'word sense', 'sentence and theme' were reviewed in order to ascertain the correct meaning of the response.

For ethical reasons, the names of individuals or specific organisations have been omitted from the results of this report. All responses remain anonymous.

2.5.2 Cross-tabulation Analysis

Since two key structural variables largely dictate the sample parameters – clusters and tiers of users – these were considered as providing valuable insight for evaluating the uptake of communications from the NERP TE Hub. For example, it is reasonable to assume that various levels, methods and conduits of communication vary within industries, government departments, and other NERP TE Hub related

stakeholders; and that identified NERP TE Hub research users are more likely to have closer communications with the Hub than next users or others.

For these reasons, the data was cross-tabulated using these two variables where appropriate. In some cases, these cross-tabulations resulted in small numbers in cells. While it is known to be problematic for statistical analysis, this project focuses on informative data with respect to evaluating the uptake of communications from the NERP TE Hub rather than statistical analysis of the data.

3.0 RESULTS: FINAL EVALUATION SURVEY

3.1 SURVEY SAMPLE

A total of 539 individuals (with email addresses) were identified as potential contacts. The e-survey was emailed to each of these potential respondents with a brief introduction asking them to take a short questionnaire about the NERP Tropical Ecosystems Hub. Of these 539 possible respondents, 21 email addresses bounced and 7 respondents chose to opt out of the survey. This resulted in a sample size of 511 respondents with eligible email addresses. The final sample consisted of 149 individuals from the 7 different cluster groups (see Table 2), which was a response rate of 29.2%. The largest clusters were the government respondents (46.3%) and the environment cluster (28.2%).

Table 2: Sample Characteristics (2012 & 2014)

	2012				2014	
CLUSTER	TOTAL SAMPLE REQUIRED	IDENTIFIED CONTACTS	TOTAL INDIVIDUALS CONTACTED	CONTACTS REQUIRING REPLACEMENT	**NUMBER OF SURVEYS COMPLETED**	**% OF TOTAL RESPONDENTS**
Business	30	37	37	9	10	*6.7*
Environment	50	52	52	4	42	*28.2*
Government	110	173	172	37	69	*46.3*
Indigenous	20	12	12	1	6	*4.0*
Agriculture	35	43	32	7	4	*2.7*
Fishing	30	24	24	6	5	*3.4*
Tourism	25	26	26	6	13	*8.7*
TOTAL (N)	300	367	355	70	**149**	***100.0***

The e-survey allowed for respondents to indicate if they were an identified research user of a NERP TE Hub project. As shown in Table 3, only 20.1% of the sample identified as research users, predominantly from the government cluster.

Table 3: Sample Status (2012 & 2014)

CLUSTER	NERP TE Hub RESEARCH USERS* 2012	EXPECTED AWARENESS 2012	POTENTIAL AWARENESS 2012	**NERP TE Hub RESEARCH USERS* 2014**	**EXPECTED AWARENESS 2014**
Business	0	8	9	-	10
Environment	12	13	5	5	37
Government	59	23	1	19	50
Indigenous	3	0	0	1	5
Agriculture	4	13	7	-	4
Fishing	4	10	4	1	4
Tourism	0	12	0	4	9
TOTAL	82	79	26	30	119
% of TOTAL SAMPLE	***43.8***	***42.2***	***14.0***	***20.1***	***79.9***
	100.0			***100.0***	

* Note: Variations in the number of NERP TE Hub Research Users (2012) are due to restructuring/redundancies/natural attrition in positions (see Section 2.4 Limitations for further explanation).

The respondents who identified themselves as research users (20.1% of the sample) within the NERP TE Hub are displayed in Figure 2. The projects with the highest number of identified research users were Project 13.1: e-Atlas (n=12), Project 4.1: Tracking coastal turbidity over time and demonstrating the effects of river discharge events on regional turbidity in the GBR (n=10), Project 4.3: Ecological risk assessment of pesticides, nutrients and sediments on water quality and ecosystem health (n=10).

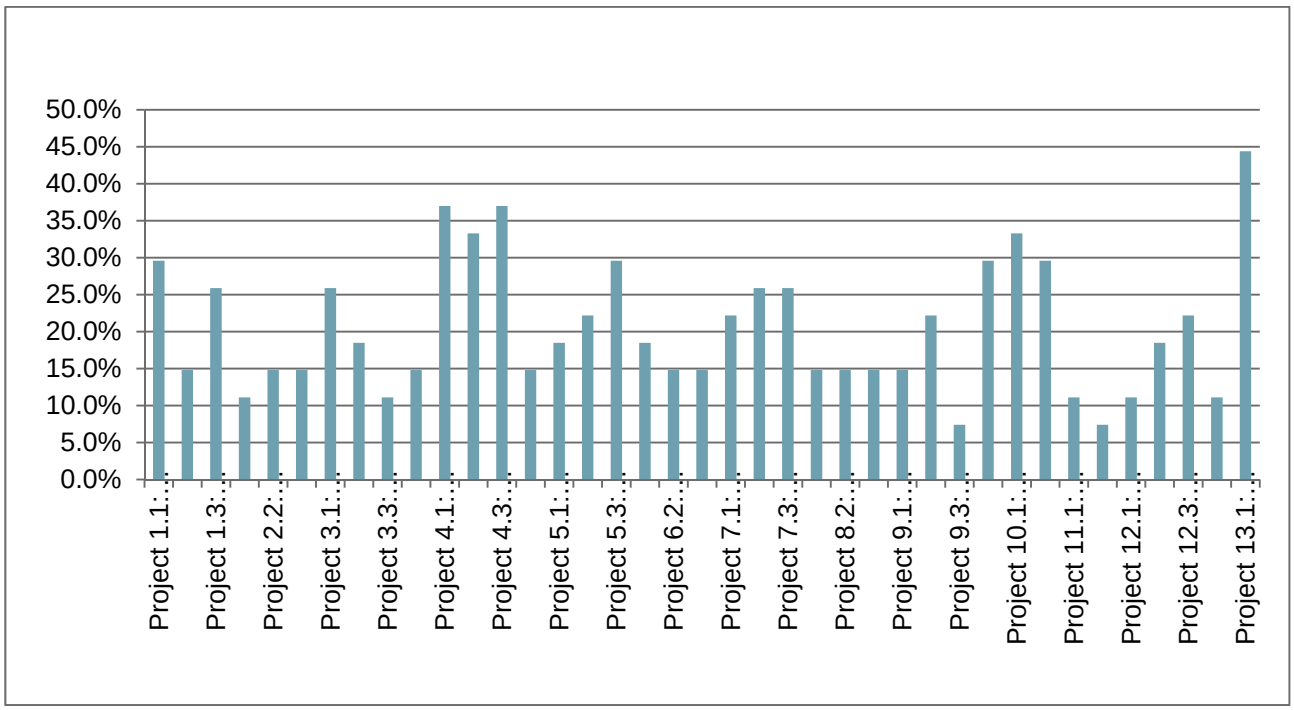


Figure 2: Respondents who identified as NERP TE Hub Research Users

The occupation of respondents is provided in Table 4. Respondents were mostly Executive officers/managers/directors (n=37), Policy & Projects Officer/ Manager (n=20) or Manager (n=19).

Table 4: Cluster by Occupation of Respondent (2014)

	Government	Business	Indigenous	Environment	Agriculture Industry	Fishing Industry	Tourism Industry	Total
Active stakeholder	0	0	0	0	0	1	0	1
Administration Manager	1	1	0	0	0	0	0	2
Biodiversity planner	1	0	0	0	0	0	0	1
Committee member	0	0	0	1	0	0	0	1
Coordinator	1	0	2	4	0	0	0	7
Local Government	2	0	0	0	0	0	0	1
Engagement/ Education Officer	1	0	1	0	0	0	1	3
Environmental consultant	0	0	0	2	0	0	0	2
Executive Officer/ Director/ Manager	16	4	2	7	1	2	5	37
Extension Officer	1	0	0	0	0	0	0	1
Fisherperson	0	0	0	0	0	1	0	1
Founding President/ Member	0	0	0	1	0	0	1	2
GIS Officer	1	0	0	0	0	0	0	1
Manager	12	0	0	4	1	0	2	19
National Treasurer	0	0	0	0	0	1	0	1
Owner/Operator	0	1	0	0	0	0	2	3
Policy & Projects Officer/ Manager	10	2	0	5	2	0	1	20
President	0	0	0	3	0	0	0	3
Principal	1	0	0	1	0	0	0	2
Project Manager/ Leader/ Coordinator	5	0	0	2	0	0	0	7
Scientist	12	2	0	4	0	0	1	19
Secretary	0	0	0	2	0	0	0	2
Senior Community Liaison Officer	0	0	1	0	0	0	0	1
Team Leader	1	0	0	3	0	0	0	4
Not Stated	4	0	0	3	0	0	0	7
Total	**69**	**10**	**6**	**42**	**4**	**5**	**13**	**149**

3.2 AWARENESS OF NERP TE HUB

The respondents were asked a qualifying question, namely if they were familiar with the NERP TE Hub. This question served to direct the respondent to suitable questions in the e-survey.

Are you familiar with NERP TE Hub?

Overall, 116 respondents (82.9%) were aware of the NERP TE Hub and 24 respondents (17.1%) were not aware of the NERP TE Hub (Table 5). Nine respondents did not answer the question.

As can be expected, respondents aware of the NERP TE Hub were from the government cluster (n=61; 92.4%) and environment cluster (n=34; 91.9%). Respondents who were unaware of the NERP TE Hub were mostly from the business cluster (n=5), government cluster (n=5) and the Indigenous cluster (n=4). There was a noticeable increase in awareness from the environment cluster since 2012.

Table 5: Cross-tabulation - Familiarity with NERP TE Hub

CLUSTER GROUPS		FAMILIAR WITH NERP TE Hub			
		2012		2014	
		YES	NO	YES	No
Business	Frequency	4	13	5	5
	% of Cluster	23.5	79.5	50.0	50.0
Environment	Frequency	22	8	34	3
	% of Cluster	73.3	26.7	91.9	8.1
Government	Frequency	68	15	61	5
	% of Cluster	81.9	18.1	92.4	7.6
Indigenous	Frequency	3	0	2	4
	% of Cluster	100.0	0.0	33.3	66.7
Agriculture	Frequency	7	17	2	2
	% of Cluster	29.2	70.8	50.0	50.0
Fishing	Frequency	9	9	2	3
	% of Cluster	50.0	50.0	40.0	60.0
Tourism	Frequency	4	8	10	2
	% of Cluster	33.3	66.7	83.3	16.7
TOTAL	**Frequency**	**117**	**70**	**116**	**24**
	% of Cluster	**62.6**	**37.4**	**82.9**	**17.1**

Respondents both aware and unaware of the NERP TE Hub were directed to the question asking if they used any form of research in their position particularly for policy or management decision-making.

3.3 NOT AWARE OF NERP TE HUB

The respondents who said they were not aware of the NERP TE Hub (n=24) and did not use research were predominantly from the Indigenous cluster (n=4).

Do you use any form of research in your position, particularly for policy or decision-making?

Only 14 respondents (58.3%) said they used some form of research for policy or decision-making in their working position. The responses were cross-tabulated with the cluster groups and the results are presented in Table 6. Those from the Business cluster were most likely to use research for policy or decision making. The level of unawareness of the NERP TE Hub decreased by 34% since 2012, an indication of the impact of the NERP TE Hub outcomes to potential research users.

Table 6: Respondents unaware of NERP TE Hub and use Research

CLUSTER GROUPS		USE RESEARCH (2012)		USE RESEARCH (2014)	
		YES	NO	YES	NO
Business	Frequency	12	1	4	1
	% of Cluster	92.3	7.7	80.0	20.0
Environment	Frequency	8	0	3	0
	% of Cluster	100.0	0.0	100.0	0.0
Government	Frequency	14	1	3	2
	% of Cluster	93.3	6.7	60.0	40.0
Indigenous	Frequency	0	0	0	4
	% of Cluster	0.0	0.0	0.0	100.0
Agriculture	Frequency	16	1	2	0
	% of Cluster	94.1	5.9	100.0	0.0
Fishing	Frequency	8	1	2	1
	% of Cluster	88.9	11.1	66.6	33.4
Tourism	Frequency	7	1	0	2
	% of Cluster	87.5	12.5	0.0	100.0
TOTAL	**Frequency**	**65**	**5**	**14**	**10**
	% of Total	**92.8**	**7.2**	**58.3**	**41.7**

These respondents were further asked to specify their most influential or important types of research they use for policy or decision-making. The results for each cluster are listed in Table 7. A large variety of information types is used by the government and environment sectors.

Table 7: Most Influential or Important Types of Information used by Respondents **not aware of the NERP TE Hub**

CLUSTERS	SPECIFIC TOPICS
Business (n=10)	Air quality research Analysis Climate change research Cumulative impacts work Economic analysis
Environment (n=42)	Agricultural extension – adoption Agricultural land management practices affecting water quality in GBR catchments Agriculture - environment nexus Applied economics Aquatic ecosystem health Biodiversity conservation and loss Cassowary population dynamics, including specific threats, use of habitat Climate change and climate refugia Crown of Thorns Ecological - terrestrial and aquatic (including marine) Ecological research on bats Fauna ecology/dynamics GBR ecosystem response GBR water quality Impact of human development/actions on ecosystems impacts of water quality on natural resources and assets Increasing knowledge of life histories of species such as dugong and seabirds Indicators of reef resilience Impacts of land management on natural resource condition Integration of research outcomes Landscape approaches Local plant species Management of biosecurity threats to the WHA NRM in agricultural landscapes Offsets Persistence and mobility of PSII herbicides off farms Pest species management (plants and animals) Rainforest research Regional Asset Assessment Research on management and survey methods Research relating to coastal area and water quality Results and synthesis of long term monitoring including effects of zoning and particular activities Revegetation/rehabilitation/recovery of rainforest and coastal vegetation Social sciences research particularly into attitudes Socio-economic and financial research relating to farm management to water pollution Socio-economic research about communities Socio-economic solutions in farming and fishing Solutions to climate change Spatial development initiatives Species distribution and abundance Sustainable land management Synthesis of impacts of land based pollutants on marine and coastal receiving environment The causes and effects of multiple pressures, water clarity and turbidity on corals and seagrass Threatened species and ecological community management Threats to ecosystems and species Torres Strait research Understanding ecosystem processes associated with outstanding WH universal value and integrity Vegetation/ecosystems mapping Water quality R&D, science, M&E Wildlife and habitat stewardship
Government (n=69)	Adaptive management research linked to on-ground management practices Air and Water monitoring information Aquaculture: environmental mitigation Barriers to adoption of BMPs Benchmarking Biodiversity - ecology Biodiversity studies and species capture

	Biological supporting sustainability Causes of water pollution Climate change Community resilience planning Community surveys Condition and trend of GBR ecosystems Conservation management Customer surveys Deductions science Desired state of the resource Ecosystem health and indicators Ecotoxicology information - impacts of chemicals Effectiveness of management actions Energy Efficiency Engineering specifically road focused Environmental drivers and ecosystem state Environmental impact assessment Environmental, social and economic monitoring Exposure data - what people (members of the public, workers) and the environment come into contact with Feral animal management Fire management Fisheries: stock assessments and biological aspects related to stock assessments General rangeland biodiversity Grazing land management Herbicides - management, pathways, impacts How industries and communities value the different ecosystem services provided by the Reef Human impacts on the Great Barrier Reef Impacts of coastal development on fisheries resources and habitats Impacts of water quality and other stressors Improved understanding of impacts and, in particular, their causes and effects Indigenous management of sea country Industry/user practices - who, what, where, why & how chemicals are used information on cause and effects (environmental) information on condition and trend of values (natural, social, economic) Infrastructure studies for water, sewer and roads Invasive species - ecology, biology Investment prioritisation of land management practice improvement Land rehabilitation methods Landscape resilience (prioritising) Latest condition and trends of the marine environment Life history and distribution of threatened marine flora and fauna Long term biodiversity monitoring trends Management actions to address declining ecosystem health Marine debris Marine science and management Monitoring information MSE Multi-scale environmental predictive modelling NRM Nutrients - management, pathways, impacts Pasture species evaluation for degradation prevention Pest and Weed management Phylogenies Priority industries, pollutants and locations for investment Public enjoyment of the Reef and attitudes towards Reef protection and conservation quality research Reef health and water quality Research about resource use Sediments - land management, pathways, impacts Solutions-based research for GBR Species distributions/ observations Specific projects around localised issues Stock assessment Sustainable ecosystem services management Sustainable intensive livestock systems: effluent reduction Terrestrial species research (fauna and flora) Threatened species research Thresholds for ecosystem health

	Toxicity data - covering human health & the environment Understanding cause and effect relationships in the GBR system Use patterns of people visiting the Great Barrier Reef Validation of BMPs - ie. cost-effectiveness, environmental outcomes Water quality of rivers and improvement Weed ecology/biology/research/control
Agriculture (n=5)	Climate change Flood event impacts on coastal waters Peer reviewed Practical Water quality both fresh and saline
Fishing (n=5)	Environmental impact assessments Fisheries management research Social capital and supply-chain Socio-economic contributors and contributions Stock status Technology research
Tourism (n=13)	Decline in coral and sea grass All environment research is important to a tourist industry that relies on natural assets Commercial advantage to saving the environment Coral cover on the GBR Effects of water quality Crown of Thorns research Economic values of tourism Education purposes - flora fauna research Effects of Green zones on fish populations Land Reef Tourism use, trends Water Quality Zoning areas
Indigenous (n=6)	Coral reef monitoring Mapping (e-atlas) Status of turtle & dugong populations

How do you access information that does influence decision-making in your position/business/organisation?

A closed question multiple choice format was used in the 2014 e-survey to elicit responses to where respondents unaware of the NERP TE Hub (n=24) sourced information from for decision-making. Responses were highest for conferences/ seminars/ workshops (79.1%), meetings/ briefings (66.7%) and reports sent by email (50.0%) as shown in Table 8. There was a decrease in general of all information sources used by respondents unaware of the NERP TE Hub.

Table 8: Sources of Information used by Respondents Unaware of NERP TE Hub

INFORMATION SOURCE	FREQUENCY* (n=55) 2012	PERCENTAGE OF RESPONDENTS 2012	FREQUENCY (n=24) 2014	PERCENTAGE OF RESPONDENTS 2014
Conferences/seminars/workshops	17	30.9	19	79.1
Meetings/briefings	21	38.2	16	66.7
Reports - sent by email	23	41.8	12	50.0
Reports - sent by mail	20	36.4	7	29.2
Websites	35	63.6	0	0.0
Email newsletter	25	45.5	0	0.0
Journals	17	30.9	0	0.0
Newsletter - by mail	10	18.2	0	0.0
Media releases	9	16.4	0	0.0
Newspaper articles	9	16.4	0	0.0
TV news	7	12.7	0	0.0
Fax bulletin	0	0.0	0	0.0
Other Sources:				
Researchers directly	9	14.5	0	0.0
In-house Research/ policy directives	2	3.6	0	0.0
Environmental/community member organisations (Birdlife Australia, Landcare)	6	10.9	0	0.0
Transformative system collaboration workshops	0	0.0	1	4.2
Government departments	6	7.3	0	0.0
GBRMPA/LMACs	4	7.3	0	0.0
University (JCU/CQU)	3	5.5	0	0.0
Canegrowers Assoc.	2	3.6	0	0.0
Environmental consultants	2	3.6	0	0.0
GRDC	1	1.8	0	0.0
Other growers	2	3.6	0	0.0
Reef Catchments	1	1.8	0	0.0
Seafood CRC	1	1.8	0	0.0
Terrain	1	1.8	0	0.0
TOTAL	233*	-	55*	-

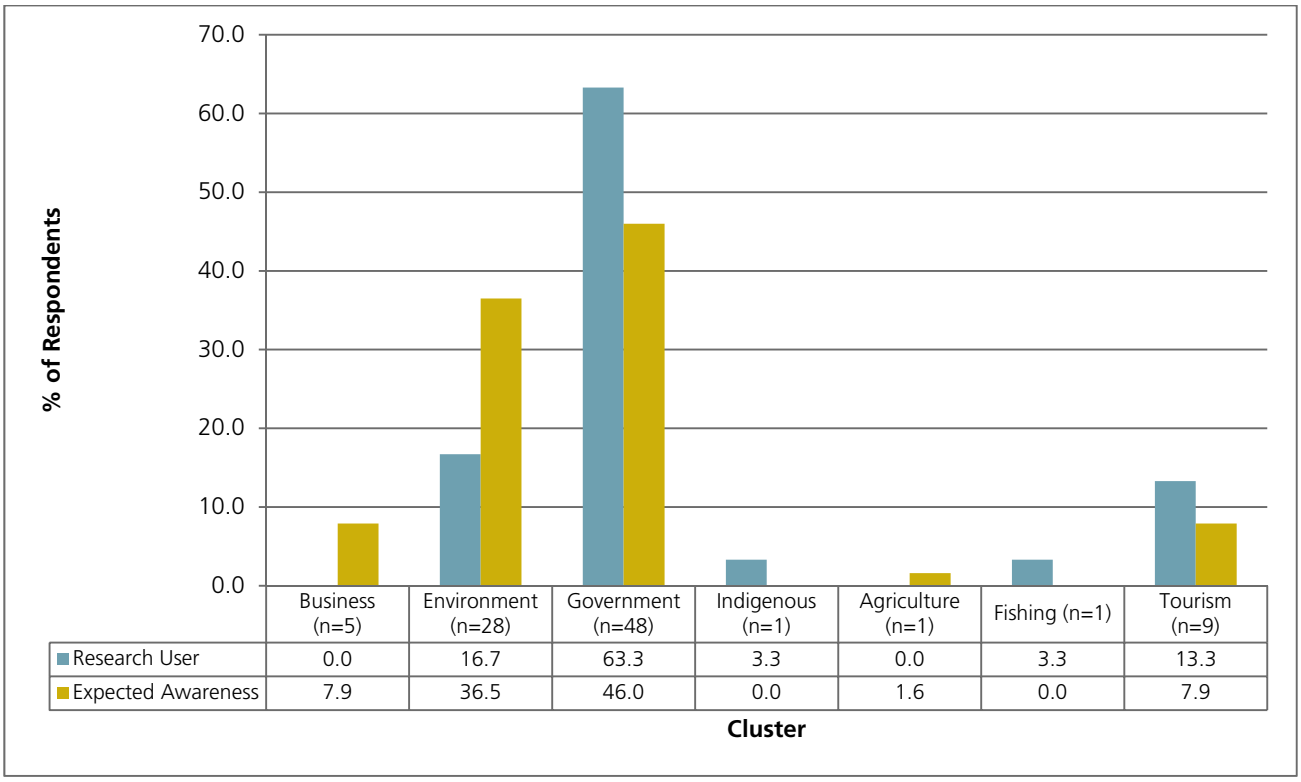
* Note: Multiple choice question therefore total will exceed number of respondents.

3.4 AWARE OF NERP TE HUB

3.4.1 Awareness of NERP TE Hub

Respondents who indicated they had heard of the NERP TE Hub (n=114) were directed towards questions pertaining to awareness of the NERP TE Hub and results are tabulated in the following sections.

Figure 3 shows the respondents who indicated they were aware of the NERP TE Hub by cluster and classified within the two tiers of *contractually identified research user and expected awareness*. Respondents within the government cluster who were aware of the Hub (n=48) comprised of 63.3% being identified research users. The entire Indigenous cluster (n=1) was a research user aware of the NERP TE Hub. Those aware of the NERP TE Hub within the business cluster (n=5) were identified as expected awareness respondents.



	Business (n=5)	Environment (n=28)	Government (n=48)	Indigenous (n=1)	Agriculture (n=1)	Fishing (n=1)	Tourism (n=9)
Research User	0.0	16.7	63.3	3.3	0.0	3.3	13.3
Expected Awareness	7.9	36.5	46.0	0.0	1.6	0.0	7.9

Figure 3: Respondents aware of the NERP TE Hub by cluster and tier (2014).

Table 9 provides a comparative of those respondents aware of the NERP TE Hub and the methods of accessing information from the Hub. Due to the limitation of the e-Survey program, other methods are grouped into one. There was a marked increase in the use of all information access methods in 2014 from 2012. Of note, is the increase in meetings/ briefings (80.5%), conferences/ seminars/ workshops (79.7%) and reports sent by email (72.4%).

Table 9: Aware of Hub and Access information (2014)

INFORMATION SOURCE	FREQUENCY* (n=55) (2012)	PERCENTAGE OF RESPONDENTS (2012)	FREQUENCY (n=123) (2014)	PERCENTAGE OF RESPONDENTS (2014)
Websites	35	63.6	98	79.7
Email newsletter	25	45.5	72	58.5
Reports - sent by email	23	41.8	89	72.4
Meetings/briefings	21	38.2	99	80.5
Reports - sent by mail	20	36.4	29	23.6
Journals	17	30.9	89	72.4
Conferences/seminars/workshops	17	30.9	98	79.7
Newsletter - by mail	10	18.2	25	20.3
Media releases	9	16.4	41	33.3
Newspaper articles	9	16.4	32	26.0
TV news	7	12.7	18	14.6
Fax bulletin	0	0.0	0	0.0
Other Sources:			31	25.2
Researchers directly	9	14.5	-	-
Environmental/community organizations (Birdlife Australia, Landcare)	6	10.9	-	-
Government departments	6	7.3	-	-
GBRMPA/LMACs	4	7.3	-	-
University (JCU/CQU)	3	5.5	-	-
Canegrowers Assoc.	2	3.6	-	-
Environmental consultants	2	3.6	-	-
In-house Research	2	3.6	-	-
GRDC	1	1.8	-	-
Other growers	2	3.6	-	-
Reef Catchments	1	1.8	-	-
Seafood CRC	1	1.8	-	-
Terrain	1	1.8	-	-
Scientists			-	-
Industry			-	-
TOTAL	233*	-	721*	-

When did you first find out about the NERP TE Hub?

As shown in Table 10, most respondents first heard about the NERP TE Hub from 2010 (54.1%) or couldn't remember (34.8%). Of these, 23.9% of respondents had heard of the program during the first two years of the NERP TE Hub (2011-2012). There was a large increase in respondents not remembering when they heard about the Hub from 2012 to 2014.

Table 10: When found out about NERP TE Hub

WHEN	FREQUENCY 2012	PERCENTAGE OF TOTAL RESPONDENTS 2012	FREQUENCY 2014	PERCENTAGE OF TOTAL RESPONDENTS 2014
No idea/Can't Remember	9	7.7	38	34.8
CRC ERA				
CRCs	7	6.0	6	5.6
2000	1	0.9	-	-
MTSRF ERA				
2006	9	7.7	2	1.8
2007	2	1.7	-	-
2008	1	0.9	1	0.9
2009	24	20.5	3	2.8
2010	19	16.2	13	11.9
NERP ERA				
2011	19	15.4	20	18.3
2012	27	23.1	6	5.6
2013	-	-	12	11.0
2014	-	-	8	7.3
TOTAL	**117**	**100.0**	**109**	**100.0**

How did you first find out about the NERP TE Hub?

Responses to this question were recorded from all of the 117 respondents who said they were aware of the NERP TE Hub (Table 11). The most common sources for finding out about the NERP TE Hub were from colleagues/ word of mouth (22.0%), MTSRF - NERP transition (14.7%), NERP work groups/committees/meetings (12.8%) and NERP projects (10.1%). Discussions about the NERP TE Hub research increased from 2012 (4.3%) to 22.0% in 2014.

Table 11: How found out about NERP TE Hub

INFORMATION SOURCE	FREQUENCY* 2012	% OF TOTAL RESPONDENTS 2012	FREQUENCY* 2014	% OF TOTAL RESPONDENTS 2014
NERP/RRRC/MTSRF				
MTSRF - NERP	7	6.0	16	14.7
NERP - work groups/ committees/ meetings	9	7.7	14	12.8
NERP – projects/ involvement	21	17.9	11	10.1
RRRC - NERP	7	6.0	8	7.3
MTSRF (and RRRC) - NERP	12	10.3	1	0.9
e-Atlas	2	1.7	1	0.9
e-Reefs	1	0.9	-	-
NERP - other hub	1	0.9	-	-
INDIVIDUALS				
Malcolm Dunning	4	3.4	-	-
Ro Hill	3	2.6	-	-
Bob Pressey	2	1.7	-	-
Cathy Dichmont	1	0.9	-	-
John Brodie	1	0.9	-	-
Katrina Fabricius	1	0.9	-	-
GOVERNMENT AGENCIES/PROGRAMS/ORGANISATIONS				
AMPTO	-	-	1	0.9
GBRMPA	11	9.4	3	2.8
Reef Rescue	5	4.3	3	2.8
SEWPAC/ DOE	5	4.3	5	4.7
Fisheries QLD	2	1.7	-	-
CSIRO	1	0.9	2	1.8
DERM	1	0.9	-	-
Ecotourism Australia	-	-	1	0.9
Fisheries NSW	1	0.9	-	-
FNQROC	1	0.9	-	-
Government agencies/departments	1	0.9	4	3.6
National Hendra Task Force	1	0.9	-	-
Great Barrier Reef Foundation	-	-	1	0.9
Parks Australia	1	0.9	-	-
TSRA	-	-	1	0.9
WTMA	1	0.9	3	2.8
Terrain	2	1.7	-	-
Cassowary Recovery Team	1	0.9	-	-
University of Sunshine Coast	1	0.9	-	-
University of Queensland	-	-	1	0.9
James Cook University	-	-	2	1.8
WORD OF MOUTH				
Colleagues/Work	5	4.3	24	22.0
OTHER SOURCES				
Can't remember	4	3.4	5	4.7
Media	1	0.9	2	1.8
TOTAL	**117**	**100.0**	**109**	**100.0**

3.4.2 Communications from NERP TE Hub or Related Organisations

Respondents were asked several questions to gauge communication of research information, particularly from the NERP TE Hub and associated organisations.

Have you received any form of communication or information from the NERP TE Hub and/or related research organisations?

More than half of the respondents who were aware of the NERP TE Hub had received communications or information (n=84; 68.3%). This was dominant amongst the government (n=46; 78.0%) and environment (n=23; 74.2%) clusters (Table 12).

Table 12: Received NERP TE Hub Communication by Clusters

CLUSTER GROUPS		RECEIVED COMMUNICATIONS?					
		YES (2012)	NO (2012)	TOTAL (2012)	YES (2014)	NO (2014)	TOTAL (2014)
Business	Frequency	1	3	4	5	5	10
	% of Cluster	25.0	75.0	100.0	50.0	50.0	100.0
Environment	Frequency	14	8	22	23	8	31
	% of Cluster	63.6	36.4	100.0	74.2	25.8	100.0
Government	Frequency	57	11	68	46	13	59
	% of Cluster	83.8	16.2	100.0	78.0	22.0	100.0
Indigenous	Frequency	3	0	3	2	4	6
	% of Cluster	100.0	0.0	100.0	33.3	66.7	100.0
Agriculture	Frequency	3	4	7	2	1	3
	% of Cluster	42.9	57.1	100.0	66.7	33.3	100.0
Fishing	Frequency	3	6	9	1	2	3
	% of Cluster	33.3	66.7	100.0	33.3	66.7	100.0
Tourism	Frequency	2	2	4	5	6	11
	% of Cluster	50	50	100.0	45.5	54.5	100.0
TOTAL	**Frequency**	**83**	**34**	**117**	**84**	**39**	**123**
	% of Total	**70.9**	**29.1**	**100.0**	**68.3**	**31.7**	**100.0**

The 84 respondents who indicated they had received communications from the NERP TE Hub in 2014 were asked additional questions regarding the information they had received. These included from whom and how the information was received, the type of information, and the regularity of these communications.

From whom did you receive this information?

A total of 322 different types of communication were received from various sources as mentioned by the 84 respondents in this multiple response question. The responses were grouped into key organisations or key words for ease of analysis. As shown in Table 13, a large proportion of respondents received communications directly from The RRRC (41.6%), James Cook University (38.9%) and individual NERP researchers (37.6%).

Table 13: From which organisation/s have you received any form of information or communication?

SOURCE OF COMMUNICATION	FREQUENCY* (n=84) 2014	PERCENTAGE OF TOTAL RESPONSES 2014
RRRC	62	41.6
JCU	58	38.9
Individual NERP Researchers	56	37.6
CSIRO	41	27.5
AIMS	35	23.5
DOE	28	18.8
UQ	25	16.8
Griffith University	14	9.4
None of the above	3	2.0
TOTAL	**322**	**-**

* Note: Multiple choice question therefore total will exceed n=84.

How was information communicated?

The e-Survey grouped responses to the open-ended question based on text analysis. In 2014, information was mostly communicated by workshops (27.2%), reports (25.9%) and by newsletter (22.2%). Word-of-mouth (2.5%) was the least used form of information communication (Table 14).

Table 14: How was Information Communicated?

HOW COMMUNICATED	FREQUENCY (2012) (n=117)	PERCENTAGE OF TOTAL RESPONSES (2012)	FREQUENCY (2014) (n=82)	PERCENTAGE OF TOTAL RESPONSES (2014)
Researchers directly – email, meeting, telephone, factsheet	65	47.0	-	-
NERP – workshop/meeting - steering committee/ implementation group	19	13.8	-	-
Emails – RRRC	16	11.6	-	-
Emails – NERP	14	10.1	-	-
Can't remember	5	3.6	-	-
Indirectly communicated through other agencies	5	3.6	-	-
NERP – unspecified communication	4	2.9	-	-
Meetings – other organisations	3	2.2	-	-
Website - RRRC/NERP	3	2.2	-	-
Emails – from non-NERP related	2	1.5	-	-
RRRC – unspecified communication	2	1.5	-	-
Workshops	-	-	22	27.2
Report	-	-	21	25.9
Newsletter	-	-	18	22.2
Conferences	-	-	10	12.3
Meetings	-	-	8	9.9
Word of Mouth	-	-	2	2.5
TOTAL	**138**	**100.0**	**81**	**100.0**

* Note: Multiple choice question therefore total will exceed n = 117 (2012)

What type of information did you receive?

The majority of the information that respondents received was NERP TE Hub project-specific research reports (29.3%), factsheets (23.6%) and newsletters (10.5%) as listed in Table 15. These results are based on text analysis by the online survey program to the open-ended question.

Table 15: Type of Information Received

INFORMATION	FREQUENCY (n = 79)*	PERCENTAGE OF TOTAL RESPONSES
Research reports	36	29.3
Factsheet	29	23.6
Newsletters	13	10.5
Media release	12	9.7
Presentations	10	8.1
Papers	7	5.7
Journal articles	6	4.8
Meetings	4	3.2
Briefing	2	1.7
Contact	2	1.7
Input	2	1.7
TOTAL	**123**	**100.0**

* Note: Multiple choice question therefore total will exceed n = 79. Additionally, respondents noted receiving project information from more than one NERP project or more than one type of information from a project.

Is this information received on a regular basis from this source?

As shown in Table 16, information was mostly communicated on a monthly (23.2%) or regular basis (18.3%). Only 11.0% indicated they received information on a quarterly basis. However, this would indicate a high level of communication between researchers and research users. There was a notable increase in the frequency of information being communicated on a monthly basis during 2014 compared to that of 2012.

Table 16: How Often Communication Received?

REGULARITY OF COMMUNICATION	FREQUENCY (n = 117)	PERCENTAGE OF TOTAL RESPONSES	FREQUENCY (n = 81)	PERCENTAGE OF TOTAL RESPONSES
Regular	61	45.9	15	18.3
Recently	15	11.3	-	-
Occasionally	13	9.8	2	2.4
Once/one off	10	7.5	-	-
Ad-hoc/as needed	5	3.8	4	4.9
Monthly	4	3.0	19	23.2
Quarterly	4	3.0	9	11.0
This week (Nov 2012)	4	3.0	-	-
Few in last 12 months	4	3.0	-	-
6 months ago	4	3.0	-	-
Weekly	2	1.5	-	-
Twice	2	1.5	-	-
Several	1	0.8	-	-
Every 2 years	1	0.8	-	-
Fortnightly	1	0.8	-	-
Twice/year	1	0.8	-	-
Can't remember	1	0.8	4	4.9
Newsletters	-	-	6	7.3
Irregular	-	-	8	9.7
Researchers	-	-	5	6.1
NERP	-	-	4	4.9
Email	-	-	4	4.9
Daily	-	-	2	2.4
TOTAL	**133***	**100.0**	**82**	**100.0**

* Note: Multiple choice question therefore total will exceed n=117 (2012) and n=81 (2014)

What is the most useful piece of information you have received from the NERP TE Hub to date?

A total of 67 respondents were able to comment on the most useful piece of information they had received from the NERP TE Hub program to date. For ease of understanding and context, the respondents' comments have been grouped by clusters in Table 17. Many respondents made reference to specific NERP TE Hub project information they had already been exposed to, and which they thought was useful. The government cluster (n=29) and environment cluster (n=22) had received the most useful pieces of information from the NERP TE Hub.

Table 17: Most Useful Information from NERP Program

CLUSTERS	MOST USEFUL INFORMATION
Business (n=8)	Various, however as field-based land use / management planning practitioners hard copy (printed) research reports remain invaluable for sharing and growing awareness and understanding of key science-based research findings
	Some good information on natural regeneration of vegetation
Environment (n=22)	Program 1 'Historical and current condition of the Great Barrier Reef'
	All work relating to nitrogen and sediment impacts on the GBR and risk factors by source and location eg. COTS risk by river basin
	Conference material
	General
	Information on rainforest resilience
	Information on CIAs and coastal management assessment techniques
	Katharina Fabricius / Glen De'Ath papers on decline in coral cover and the modelled causes
	Reef water quality related info
	Relating to coastal development survey with communities along GBR coast, and their perception of what threats are to the reef. Community is central to our role as NRM group so this is valuable insight.
	Some study report on GBR
	Synthesis reports.
	The importance of peripheral areas of the Wet Tropics for conservation of biodiversity
	The magnitude of impact on reef cause by cyclones and storms over the past few years.
	USB on TRaCK research
	Water quality information
	Web-based reports and videos
	Well, if I had been able to attend that conference, the conference invite would have been pretty important.
Government (n=29)	Acoustic monitoring work (Simpfendorfer et al); Dichmont MSE project
	Advice of progress/finalisation of research projects
	Alert about the NERP conference, journal papers
	Annual Seagrass reports
	Balancing the trade-offs for the GBR paper Management strategy evaluation project in the GBR
	Couldn't say. I like to browse through the site and review articles
	Dave Westcott weed
	De'ath long term coral decline paper, Fabricius coastal turbidity paper, Lewis pesticides paper, scientific consensus statement etc.
	Hard to say. I browse research on the website when a need arises. Possibly green zone research?

	How MPA networks work (Jones, Williamson and co-workers)
	Impact of pesticides on the reef. I don't necessary agree with all the findings but it has kept me informed.
	Information and data showing faunal population declines and up-ward shifts in distributional ranges
	Information on the degree of connectivity between different zones in the Great Barrier Reef Marine Park
	Information on the health of the Great Barrier Reef
	Information on the strategic direction of the program, preliminary work on environmental monitoring and development of alternate testing methods for assessing toxicity
	Information on water quality in the GBR catchment, especially quantitative analyses and trends.
	Its existence
	List of published papers.
	New valuation for the GBR - Project 10.2
	October conference - opportunity to make new contacts and learn about a range of research
	Paper on the 27-year decline in coral cover in the GBR
	Pesticide toxicity concentrations for ecosystem protection
	Project snapshot summaries
	Project summaries and milestone reports, and specific information directly from researchers
	Research freshwater Torres strait
	Research papers
	Research updates
	Social and Economic Long Term Monitoring Program
	Socioeconomic analysis of value/perceptions of WT WHA users
	Status of terrestrial and marine ecosystem health and issues
	The NERP Chirp newsletters that keep you informed on progress of all the different projects.
	The Research Snapshots and meetings with individual researchers as you are able to receive up to date information on the projects this way.
	Updates, news
	Water quality and health of the Great Barrier Reef ecosystem
	Would be hard to separate information coming from NERP from other sources
	Reports on effects of river discharge on turbidity, report & journal articles on light thresholds for seagrass
Indigenous (n=3)	Environmental conditions reports
Agriculture (n=2)	Conferences
	Water quality and COTS information
Fishing (n=1)	Report updates
Tourism (n=2)	Coordinating role for accessing researchers
	Information on the use of Bile salts to control COTS
	SELTMP information
	The work done by Natalie Stoeckl the ONLY tourism project in the program.. sadly

3.4.3 Dissemination of NERP TE HUB Communications

Respondents were asked a number of questions on the distribution and use of NERP TE Hub information for the purpose of understanding the extent to which NERP TE Hub research is disseminated to colleagues and networks in the community.

Do you share or distribute the NERP TE Hub research or information with others – if so, who?

There were 71 (86.6%) respondents who indicated they share or distribute NERP TE Hub research with others and 11 (13.4%) who said they did not share research. These results were cross-tabulated with cluster groups and are presented in Table 18. Although small in numbers, those in the Indigenous, fishing, tourism and agriculture clusters all distributed information they received. There was an increase in government respondents distributing NERP funded research outcomes in 2014.

Table 18: Share/ Distribute Research by Cluster Groups

CLUSTER GROUPS		DISTRIBUTE RESEARCH? (2012)		DISTRIBUTE RESEARCH? (2014)	
		YES	NO	YES	NO
Business (n=1)	Frequency	1	0	3	1
	% of Cluster	100.0	0.0	75.0	25.0
Environment (n=14)	Frequency	8	6	18	5
	% of Cluster	57.1	42.9	78.2	21.7
Government (n=57)	Frequency	37	20	41	5
	% of Cluster	64.9	34.1	89.1	10.8
Agriculture (n=3)	Frequency	2	1	2	0
	% of Cluster	66.7	33.3	100.0	0.0
Fishing (n=3)	Frequency	3	0	1	0
	% of Cluster	100.0	0.0	100.0	0.0
Tourism (n=2)	Frequency	1	1	4	0
	% of Cluster	50.0	50.0	100.0	0.0
Indigenous (n=3)	Frequency	3	0	2	0
	% of Cluster	100.0	0.0	100.0	0.0
TOTAL (n=83)	**Frequency**	**55**	**28**	**71**	**11**
	% of Respondents	**66.3**	**33.7**	**86.6**	**13.4**

The respondents who said they did distribute research (n=71) were then asked to specify who they shared this research with. A total of 160 responses were given for this multiple response question (Table 19), with the main distribution points being certain employees in the organisation (34.9%) and industry colleagues (33.6%).

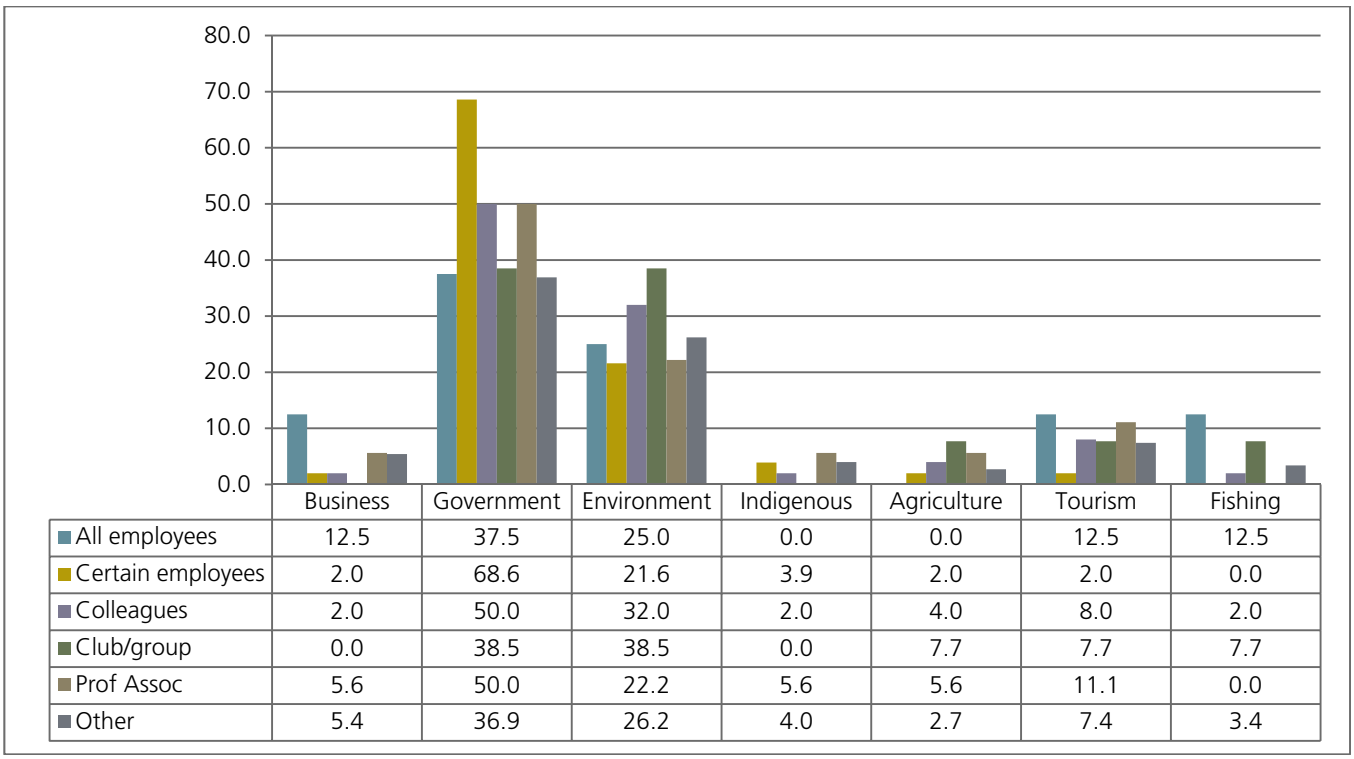
Table 19: Who NERP TE Hub Information is shared with

WHO SHARE INFORMATION WITH	FREQUENCY* (n=55) (2012)	PERCENTAGE OF RESPONDENTS (2012)	FREQUENCY* (n=149) (2014)	PERCENTAGE OF RESPONDENTS (2014)
Only certain employees	35	63.6	52	34.9
Colleagues in your industry	17	30.9	50	33.6
Professional associations	9	16.4	19	12.7
Members of club/group	6	10.9	13	8.7
All employees in organisation	15	27.3	8	5.4
Others:				
Government agencies	10	18.2	7	4.7
Stakeholders	13	23.6	5	3.4
Community members/groups	7	12.7	3	2.0
Other	1	1.8	2	1.3
Researchers	2	3.6	1	0.7
TOTAL	**115**	-	**160**	-

* Note: Multiple choice question therefore total will exceed n=55 (2012) and n=149 (2014)

These results were cross-tabulated with clusters as displayed as percentage of the total responses within each cluster (total of responses per cluster shown in brackets) in Figure 4.

The results show the government cluster group tended to distribute this information more with certain employees (68.6%), colleagues (50.0%) and professional associations (50.0%). Those from the business, tourism and fishing industries shared information with all employees. The tourism industry also shared information with professional associations. With government being a large and varied cluster, it is understandable that sharing of information was dominated by distribution to certain employees.



	Business	Government	Environment	Indigenous	Agriculture	Tourism	Fishing
All employees	12.5	37.5	25.0	0.0	0.0	12.5	12.5
Certain employees	2.0	68.6	21.6	3.9	2.0	2.0	0.0
Colleagues	2.0	50.0	32.0	2.0	4.0	8.0	2.0
Club/group	0.0	38.5	38.5	0.0	7.7	7.7	7.7
Prof Assoc	5.6	50.0	22.2	5.6	5.6	11.1	0.0
Other	5.4	36.9	26.2	4.0	2.7	7.4	3.4

Figure 4: Who share Information with by Clusters (2014)

3.4.4 Impact of Research

In order to gauge the impact of NERP TE Hub research, respondents were asked several questions relating to the:

- credibility of NERP TE Hub research,
- extent of use of NERP TE Hub research, and
- if and how this research influences policy or decision-making.

How credible do you think the research produced by the NERP TE Hub is?

Respondents were asked to use a rating scale where 1 = Very credible and 5 = Not credible at all to indicate how credible they thought NERP TE Hub research is.

Figure 5 provides comparative results from the 2012 Baseline Evaluation Survey and the 2014 Evaluation Survey. There is a general trend of increasing credibility of the NERP TE Hub research. In fact, there were no negative responses to this question in 2014. Almost half of the respondents indicated the NERP TE Hub research to be very credible (49.4%) and 44.4% of respondents indicated the research was credible.

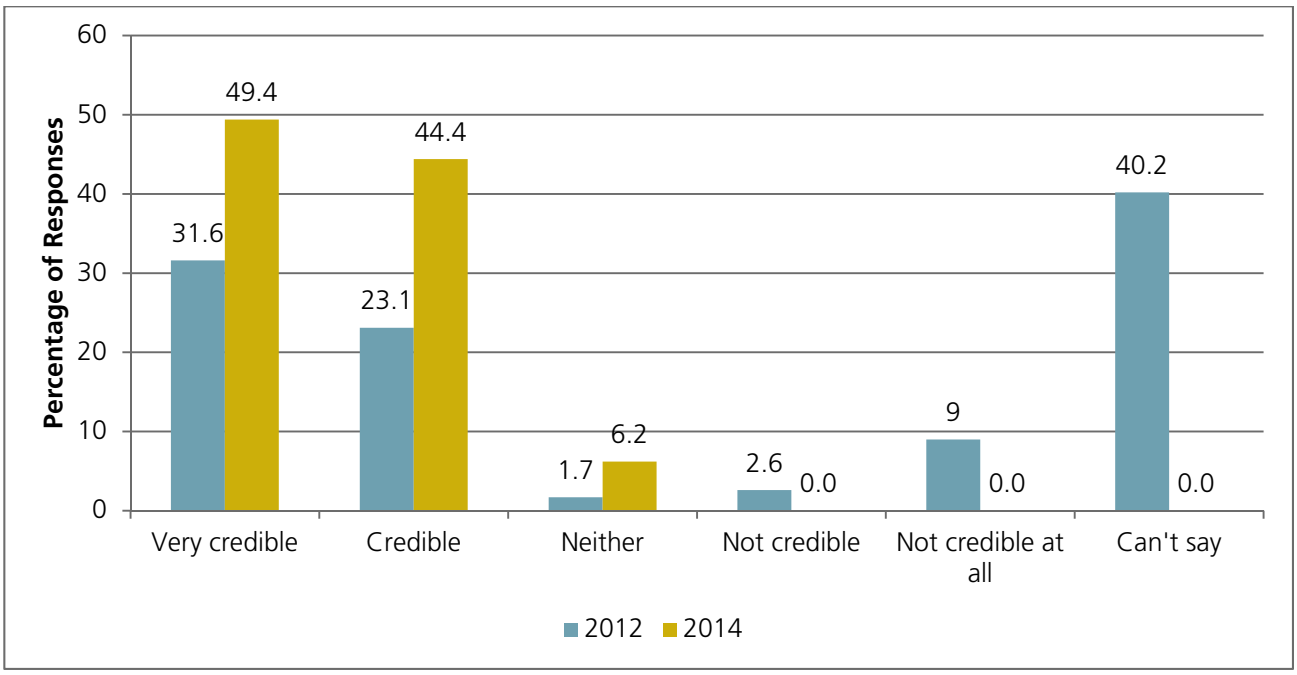


Figure 5: How Credible is NERP TE Hub research (2012 & 2014)?

The responses were cross-tabulated with the clusters as displayed in Table 20. All of the respondents from the tourism cluster deemed NERP TE Hub research to very credible. More than 90% of the government cluster identified the NERP TE Hub research to be very credible and credible.

Table 20: How Credible is NERP TE Hub Research by Cluster Groups

CLUSTER GROUPS		HOW CREDIBLE IS NERP TE Hub RESEARCH? (n = 81)						
		Very credible	**Credible**	**Neither**	**Not credible**	**Not credible at all**	**Can't say**	**Total**
Business	Frequency	1	3	0	0	0	0	4
	% of Cluster	25.0	75.0	-	-	-	-	100.0
Environment	Frequency	11	10	1	0	0	0	22
	% of Cluster	50.0	45.5	4.5	-	-	-	100.0
Government	Frequency	23	19	4	0	0	0	46
	% of Cluster	50.0	41.3	8.7	-	-	-	100.0
Indigenous	Frequency	1	1	0	0	0	0	2
	% of Cluster	50.0	50.0	-	-	-	-	100.0
Agriculture	Frequency	0	2	0	0	0	0	2
	% of Cluster	-	100.0	-	-	-	-	100.0
Fishing	Frequency	0	1	0	0	0	0	1
	% of Cluster	-	100.0	-	-	-	-	100.0
Tourism	Frequency	4	0	0	0	0	0	4
	% of Cluster	100.0	-	-	-	-	-	100.0
TOTAL	**Frequency**	**40**	**36**	**5**	**0**	**0**	**0**	**81**
	% of Respondents	**49.4**	**44.4**	**6.2**	**-**	**-**	**-**	**100.0**

To what extent does the research from the NERP TE Hub influence policy and decision-making in your position?

Respondents were asked to use a rating scale where 1 = Very strongly influences and 5 = No influence at all to indicate the extent that NERP TE Hub research influenced policy or decision-making in their position.

In 2012, a significant percentage of the sample were not in a position to comment on the influence of NERP TE Hub research (n=52; 44.4%). However, in 2014, more than half of respondents (56.3%) indicated the NERP TE hub research very strongly or strongly influenced policy and decision-making in their position. There were still 41.3% of respondents who could not indicate if the research influenced or not (Figure 6). This could be a result of final reports and outcomes still to be published or the fact they don't use research in their policy and decision-making process.

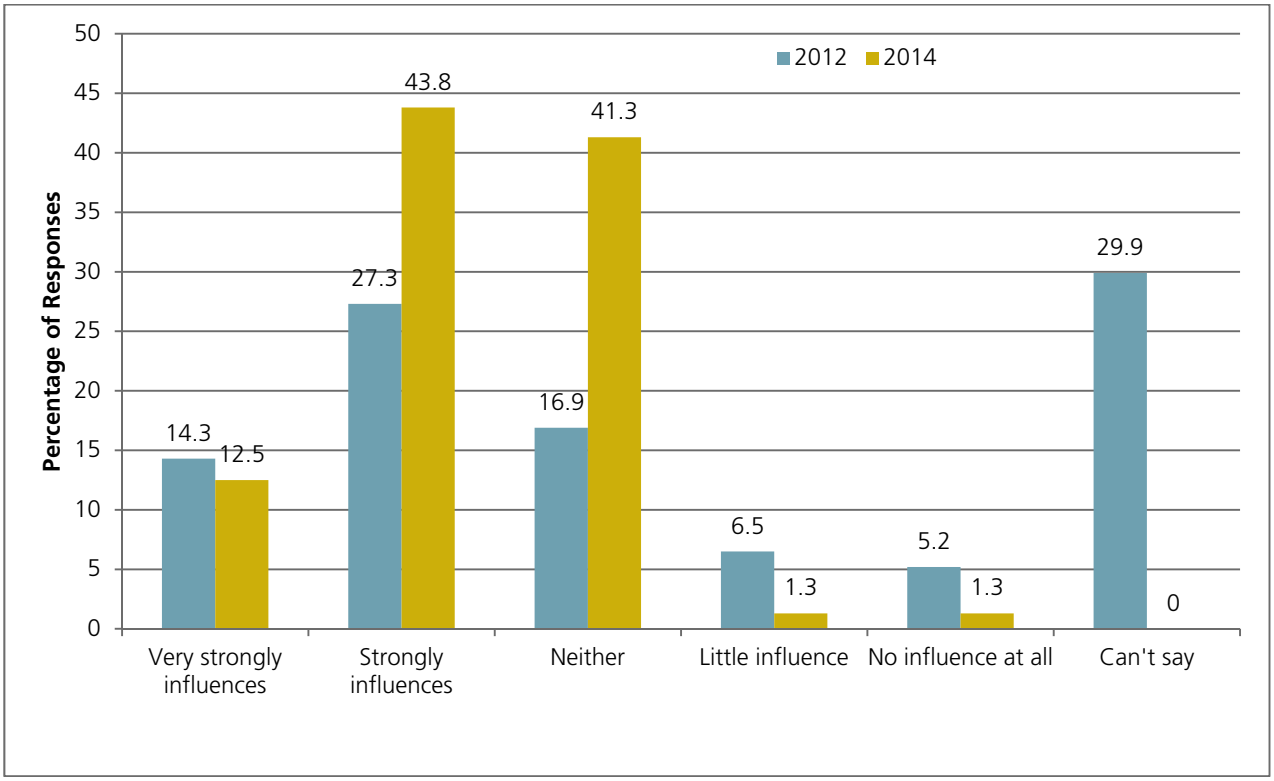


Figure 6: Extent of NERP TE Hub research influence?

The responses were cross-tabulated with the clusters as displayed in Table 21. Most of the clusters had higher percentages of respondents stating the research strongly influenced policy and/or decision-making, noting that business is the exception.

Table 21: How much NERP TE Hub Research Influences by Clusters

CLUSTER GROUPS		HOW MUCH INFLUENCE						
		Very strongly influences	**Strongly influences**	**Neither**	**Does not influence**	**No influence at all**	**Can't say**	**Total**
Business	Frequency	0	1	3	0	0	0	4
	% of Cluster	-	25.0	75.0	-	-	-	100.0
Environment	Frequency	4	8	10	0	0	0	22
	% of Cluster	18.2	36.4	45.5	-	-	-	100.0
Government	Frequency	3	23	17	1	1	0	45
	% of Cluster	6.7	51.1	37.8	2.2	2.2	0	100.0
Indigenous	Frequency	1	1	0	0	0	0	2
	% of Cluster	50.0	50.0	-	-	-	-	100.0
Agriculture	Frequency	0	1	1	0	0	0	2
	% of Cluster	-	50.0	50.0	-	-	-	100.0
Fishing	Frequency	0	0	1	0	0	0	1
	% of Cluster	-	-	100.0	-	-	-	100.0
Tourism	Frequency	2	1	1	0	0	0	4
	% of Cluster	50.0	25.0	25.0	-	-	-	100.0
TOTAL	**Frequency**	**10**	**35**	**33**	**1**	**1**	**0**	**80**
	% of Cluster	**12.5**	**43.8**	**41.3**	**1.3**	**1.3**	**-**	**100.0**

In what specific way does the NERP TE Hub research influence policy or decision-making in your position?

The respondents who said that NERP TE Hub research either "1 = very strongly influences" or "2 = somewhat influences" were then asked to explain in what specific way does that research influence policy/decision-making in their position. These comments were grouped according to clusters and are shown in Table 22. The highest number of comments made was for those relating to the research supporting policy and decision-making in the government cluster.

Table 22: Specific Way that NERP TE Hub Influences Policy/Decision-making

CLUSTER	SPECIFIC WAY INFLUENCES
GOVERNMENT	Added evidence/information relating to the human dimensions of managing the Great Barrier Reef for the Strategic Assessment, Outlook Report, Reef 2050 Long Term Sustainability Plan, GBRMPA Science Strategy
	Assists in formulating policy positions and implementing management strategies
	Current information and links to the research users
	Curriculum delivery
	Design and implementation of government policies and programs to protect and manage the GBR.
	Desired state of the ecosystem and associated thresholds allow the determination of guideline values for management action to occur. These are placed into legislation and policy tools for management.
	Evidence-based decisions, used as evidence in statutory and non-statutory reporting, use in applying for funding bids to undertake and prioritise on-ground conservation activities
	Identifies priorities, information progression and research gaps
	Informs assessments I contribute to, and policy advice I provide
	Informs management actions and planning for infrastructure
	Informs policy or decision making
	Metrics or data to support assumptions, validation or demonstration of key concepts
	NERP research directly affects the manner in which I feed in to policy development across agency stakeholders and bilaterally with PNG environment-related officials.
	NERP TE Hub research influences decision making across Zoning, water quality improvement, climate change adaptation
	Provides evidence to support my work to push for continual improvement in agricultural land management practices
	Providing data and information to better inform advice given and decision making for conservation management.
	Provides evidence of agricultural impacts on reef water quality and provides justification to encourage farmers to adopt better management practices to reduce this pollution.
	Reef Guardian Council action plan
	Research directly relates to the work that our colleagues conduct. Outcomes from the research or fed back into our work plans to improve future monitoring and environmental management in the region. I use the research datasets to provide GIS support to projects that are developed around research outcomes.
	Research findings provide evidence to support policy approaches
	Strongly influence was a bit much but still working out how the influence will emerge. Inform prioritise actions for Reef Plan, improved people's understanding of ecosystems, possible application of light thresholds to dredge management (work to do yet), pesticide work applied through guideline assessments
	The NERP TE Hub is one of the main sources of scientific information that we use to underpin our management. It has been a major input to the Strategic Assessment and Outlook Report for the GBR and that influence has flowed through to the policy documents that have followed those reports - Reef 2050 Long term Sustainability Plan and the GBRMPA 25-yr Program.
	Wide variety - assessing and forming policy relating to marine park management and protection

BUSINESS	Provides details about innovative research outcomes, provides sound facts for inclusion in related (private-sector) professional reports and design of processes, including policy and legislative reform processes.
ENVIRONMENT	Determining policy rationale for advocacy purposes, based on credible up to date science eg. risk weighting of GBR impacts, loads data, water quality changes
	Feeds into government lobbying
	I am a researcher, not a policy or decision maker. The NERP research does influence how I think about and act on my research goals and objectives
	Informs my advice including reviews and reports on government policy and management.
	Most recently in the development of Wet Tropics WQIP
	Ours is a very small business but I use NERP information in submission-writing for E-NGOs and others.
	Policy related to protection and management of the Wet Tropics World Heritage Area
	Providing data input to strategies
	Scientific (objective) information on which we can base our decisions/actions.
	The research helps NRM groups better understand the causes of reef and seagrass decline
	They ask some of the best applied research questions of any relevant agency - therefore they get back some of the best insights and most useful information for decision makers and for explaining things simply to the public
	To make sure we are on the right track
	We use the based available science and research information to guide NRM investment in the region
INDIGENOUS	Incorporated into overall management plans. Ranger training & 6 weekly work plans
TOURISM	Dredging - we mounted a court case against the government based in part on water quality information
	Include in reef Interpretation, advice and recommendations to Managing Director
	The tourist industry needs continual relevant research
AGRICULTURE	Helps in developing best management practices and focusing internal industry research

Why is there little or no influence?

The respondents who said that NERP TE Hub research either has "4 = little influence" or "5 = no influence at all" were then asked to explain why this was the case. These responses were grouped by cluster and are listed verbatim in Table 23. In general, reasons for the lack of influence centred on a lack of relevance, not in a position to amend policy, a lack of engagement between researchers and their end users, or timing.

Table 23: Why Little or No Influence in 2014

CLUSTER	SPECIFIC REASONS FOR LACK OF INFLUENCES
GOVERNMENT	Current government policy direction setting.
	Doesn't connect well enough with the end user in planning, research and delivery
	I haven't seen any research results that are relevant to my work area
	I expect the TV and newspaper articles do have an influence on public perceptions and opinions; and the research project summaries will influence other relevant researchers and managers
	Influence is limited by the level of engagement possible between the department and the research community and staff turnover in the department.
	It has to be balanced with other information from a range of groups
	It is one of many sources of information that policies use. It is an influence - just not strong
	It is one source of information primarily used to mitigate risks or identify the need for permits etc
	It's mainly academic where we are on ground based
	Not all research conducted by the Hub has immediate and practical application for land and sea managers
	Not reaching all the right end-users
	Research is often not management-outcome focussed or results/outcomes are not presented in a user-friendly format.
	Role does not require it
	Some of the research is not management focussed or failed to deliver the information that management required (e.g. what is a healthy seagrass meadow? still not defined).
	Strongly was too strong a category - NERP research is not the sole informer for policy and decision making and all of the outcomes are not yet fully realised and therefore not been fully taken up into policy and decision making
	The results are closer to background material for my work, rather than directly relevant.
	Time lag to test or implant
	We are currently in a political climate that anti the environment and pro-development that actively hostile towards research that contradicts this view.
	We should be guided by what Torres Strait communities want, the NNERP programs help inform us and communities on what is going on, however our priorities of decision making should always serve TS communities in first instance
BUSINESS	Because I've only seen it infrequently and we are subject to broader government policies. I think your research is most relevant to the broader government policies.
	Timeframes for changing policy, decision making, legislative regimes is increasingly faster and faster. Research inputs take too long to provide much influence to these processes. Further tighter links between government/ policy makers research needs and undertaking research to meet these would

	be useful. Communication remains fundamental with specific briefs, presentations and delegations required to really ensure research outcomes are understood and can truly influence policy and decision making.
	Unaware of topics
ENVIRONMENT	The main reason would be the work a) does not relate directly to stakeholders' critical policy questions b) the research paper does not clearly spell out the policy implications, and c) the importance or context of the work is not easily understood
	I have little say over the policy and decision making in my organisation
	It helps guide our teaching and research agendas but many other factors influence our programmes
	Not directly relevant to decisions.
	Research supports our activities however it would be good to get research ahead of planning so we can be led by research (in turn it would be good if research was more led by NRM priorities)
	Should have a category 'Minor influence'. Only use information directly relevant to the subjects I am interpreting
	Sometimes there is a lack of certainty or the research outcomes may be more applicable to other regions (e.g. Torres Strait)
	The information is taken into account along with other information, mostly driven by AG and QG policies and programs.
	There is a disconnect between the research being conducted and end users. Additionally there is a problem with communication of outcomes to influence decision making on big issues such as climate change and Reef health.
	You have no power over the political and financial decisions which affect our areas of interest.
FISHING	Many of the projects did not actively engage us as a sector, even though they would impact our activities. Some of the projects appeared to have an investigator bias.
	Never heard of NERP
AGRICULTURE	Not all research relevant to my industry
	Not all the science is applicable to my work.
TOURISM	We are not land managers so only use the research for education

Respondents were asked to indicate if they were aware of NERP TE Hub research outcomes or outputs known to impact on policy or management actions. The responses are listed in Table 24 and are grouped by cluster for ease of interpretation. Those from the environment cluster particularly related outcomes to the Great Barrier Reef and water quality.

Table 24: Outcomes or outputs known to impact on policy or management actions

Cluster	Comment
GOVERNMENT	'Characterising the cumulative impacts of global, regional and local stressors on the present and past biodiversity of the Great Barrier Reef'
	27 year coral cover decline paper. Zoning monitoring - inshore and offshore and well as larval connectivity findings. Historical changes to inshore coral reef communities - shifted baseline. Social and economic monitoring; Movement, habitat and abundance of predators.
	A number are used to inform prioritisation of actions under Reef Plan including regional turbidity work, pesticide work, seagrass exposure to flood plume work
	Acoustic tracking work, spatial analysis of zoning, working with stakeholders, setting direction and a variety of projects contribute
	Better understanding of flood turbidity and duration of impacts - important for developing WQIPs and ecological targets Better understanding of the acute and chronic impacts of herbicides on inshore seagrasses - may influence the use and regulation of herbicides
	Climate impact modelling.
	Community resilience research is being urged to be directly fed in to the development and implementation of community-based management plans in PNG Torres Strat Treaty villages, through bilateral relations with PNG government environment agencies. Dugong and turtle research outcomes are informing the implementation of the Government's Protection Plan and water quality research is being used in developing policy responses to broader environmental management policies and bilateral relations on these issues in the Torres Strait.
	GBR risk assessment
	Has identified sugar cane as a primary cause of water pollution and hence has changed the focus away from other agricultural industries and more directed to cane.
	Identification of stable areas/refugia influenced on ground restoration efforts and landholder liaison (e.g. Making Connections - Caring for our Country project). influenced our connectivity priorities, influenced road management of high altitude roads,
	Information supplied to the Strategic Assessment about Community Benefits derived from the Reef have influenced the development of targets and objectives identified in the 2050 Long Term Sustainability Plan
	Larval connectivity between zones; monitoring of coral reefs in different zones, impacts of climate change, impacts of water quality, population status, trend and movement of megafauna (sharks, dugong, turtles), social and economic research
	Mangrove watch, Dugong and turtle research, Coral monitoring

	No specific NERP outputs come to mind; but management has maintained resource input into grazing research aimed at a direct influence on water quality affecting the GBR
	Outcomes of water quality research influence mgt of transport infrastructure
	Pesticide projects - reported at Pesticide working group has directly influenced APVMA and Chemical Assessment Unit.
	Pesticide risk research - A. Negri, AIMS LTMP results, COTS single injection culling method, coral and seagrass health indicators work
	Pesticide toxicity.
	Project 3.1 - has been used to inform the Queensland Government's protected area acquisitions policy
	The NERP MSE Dichmont research is influencing management planning and very likely to influence future actions in the Mackay region. The SELTMP research is influencing the development of policy and management actions
	The proposal put up by Dr Conrad Hoskin JCU to translocate a critically endangered frog species changed the management trajectory of this species.
	Torres Strait e-Atlas website - mapping system Results of turtle and dugong distribution studies Resilient community plans
	Water quality research
	We altered the field management program to support the COTS control work
BUSINESS	Not aware as not specifically engaged in GBR or WT management policy - northern Australia NERP more relevant for my work
	We understand that numerous specific research outputs are seeking to positively and progressively influencing policy making at local, regional, State and federal levels, and that these remain works in progress given present political level constraints
ENVIRONMENT	As stated, NERP work on pollution loads impacting the GBR, source and quantity, relative risk constantly influence WWF policy and ultimately government policy (I would need to go through a list of NERP publications to be more specific)
	Assessing ecosystem condition and trend - GBR condition report Threats to rainforest health
	For example work regarding runoff and how the marine environment responds to land based factors plays a part in setting water quality improvement targets
	In the design of Reef Rescue, the Reef Trust - focus of expenditure on Wet tropics where highest risk rivers are from a pollution perspective. Colin Simpfendorfer's work on net fisheries management. in the design of the governance systems in Reef 2050 long term sustainability plan,

	many others
	Informing REEF rescue and WQIP. Management actions
	Investment in reducing nitrogen loads in Wet Tropics region based on links with COTS outbreaks. Reinforcement of values of green zones through Coral Trout kin work. Dugong management in the Torres Strait. Increasing knowledge re pesticides in the marine environment and prioritisation of Reef Plan land management investments.
	NERP project outputs will be used to inform the new WQIP and will also improve our organisations and the wider communities' understanding of the current status of the GBR and what the major threats are.
	Not aware of any yet, but difficult to get traction with current governments.
	Project 1.1 'Monitoring status and trends of coral reefs of the Great Barrier Reef' has provided the emphasis for the need for continued investment and policies to assist in the management and reducing of threats to the GBR
	Water Quality research
INDIGENOUS	All outcomes are discussed by the team I work for and incorporated into future planning so unable to specify.
TOURISM	Dredging, COTS, Economic information have all been used by me.
	It is too early as we do not yet have the approval to use the information that is the outcome of the relevant research
	Use of Bile salts to control COTS

3.4.5 Future Research Opportunities

The final question in the "Recognition of NERP TE Hub Evaluation Survey" asked respondents about their desire for future research.

What specific issues/problems relevant to your position/business/organisation would you like to see addressed by NERP TE Hub in the future?

This open-ended question allowed respondents the freedom to express any desires for specific issues/problems to be addressed by the NERP TE Hub researchers in the future.

These results were grouped according to key themes and are presented in Table 25. Briefly, the themes were:

- agriculture
- climate change
- coastal
- fisheries
- Indigenous
- land
- marine
- linkages (collaboration and cross-disciplinary research)
- long-term research
- pest management
- rainforest
- water quality
- social/socio-economic
- tourism

Table 25: Future Research Opportunities

GROUPED RESPONSES	FUTURE RESEARCH
RESEARCH	Baseline data.
AGRICULTURE	On-ground research and solid extension to the agricultural industry.
CLIMATE CHANGE	Conservation and adaptation of species at risk to climate change.
	Environmental, social and economic monitoring; adaptive management to cope with climate change (biodiversity protection, catchment management); environmental restoration
	I think Climate Change and doing research that shows in practical terms what the impact on ecosystems are useful as this will inform future government decisions
	Impact of global warming on tropical ecosystems
	Sustainability, critical thresh holds, climate change, making decision makers aware of and responsive to key environmental issues
	Offsets - start some longer term trials on the impacts of offsets - such as Carla Catteralls trials on the unsuccessful restoration programs.
	Understanding how offsets and net environmental benefits can operate.
COASTAL	Catchment management
	Further work to assist a regional management approach to inshore biodiversity management.
	Impacts of dredging development of improved agricultural land management practices improved water quality monitoring risk assessment of emerging pesticides evaluation of part investments priorities for future investments climate change impacts, synergies with other stressors and management of impacts
	Urban run-off impacts on the GBR
	Water Quality/ Coastal food webs
	My view = determining desired ecosystem states for key values of the GBR. Assume optimal conditions. Then explain deviations from the desired state and substantiate realistic expectations of state given the drivers & pressures on the system and the limitations of management inteventions
	Would like to see investment into catchment (ag land use) issues that impact on reef ecosystem health.
FISHERIES	Habitat protection environmental influences on the recruitment to stocks of significance to commercial fisheries
	Over fishing in the GBR region
INDIGENOUS	Cultural issues
	Indigenous capability status and extant needs for contestability in governance of these environments and leveraging significant socio-cultural- economic (including commercial interests) benefits from these environments
	More interaction with the Traditional Owners of different areas.
	There is an issue for when research is being commenced on country that we are contacted for advice and to be included on any research projects. This is lacking in a large way where indigenous concerns are not even thought of!
	Traditional Knowledge management
LAND	Cumulative impacts of land management and related risk assessment for areas of high natural and cultural values and the impacts this may have on society and/or specific communities; i.e. resultant social impacts

	Gap filling surveys - distribution of species
	Monitoring ecosystem change. More detailed and region-specific research into carbon sequestration linked to land management practices. Expand research into landscape connectivity restoration methodology.
	More specific info on measures and outcomes relating to systems repair (I.e terrestrial ecosystems) and synergistic outcomes for improved ecosystem health and WQ
	On-farm implementation of innovative practice changes which will improve environmental sustainability
	On-farm practices of the use of registered agricultural and veterinary chemical products and how this translates to environmental outcomes/impacts. Also environment monitoring following a regulatory decision to remove chemicals or change how they are used.
	Please refer to extensive report prepared by Gay Crowley and Allan Dale where RDA views are captured
	Protected area management
	Reduction of cassowary deaths due to roads/traffic. Reduction in habitat loss due to cyclone 'clean-up' work (Improved cyclone recovery processes for communities)
	restoring connectivity in fragmented landscapes, more info on threatened species habitat and actions to promote habitat, restoring rainforest
	Restrict the damming of rivers and estuaries. No dumping of dredge spoil near the GBRMP and ensure that strict EPA standards are adhered to when dumping spoil onshore. Run off is detrimental to reefs, and nursery areas.
	revegetation methods, values of regrowth vegetation
	Run off prevention from roads, improved guidance on preservation of habitat
	Spatial development processes - landscapes - agriculture - environment trade offs
	terrestrial and freshwater ecology - bio-economics
	Torres strait - island vertebrate fauna dynamics, issues
	Understanding Cumulative effects. Research to support integrated monitoring and reporting
LINKAGES	Cyclical and steady state economic trajectories which Recognise and ecologically sustainablity principles and enhance biodiversity, terrestrial,, aquatic, marine, e.g. Great Barrier Reef,
	Extension of focus from ecosystem behaviour to business (as widely defined, fishing, farming, etc) management.
	Private sector operators such as our company rely heavily and increasingly on object science-based research outputs to inform our diverse client base. Reductions in resources are not acceptable given the unique nature of NERP's current areas of focus. It is unacceptable that research flagships are forced to restructure and relabel themselves every 3-4 years at the whim of blinkered political ideologies. Given the real and grave threats these ecosystems and the many industry sectors and communities that rely on them now face from accelerated adverse anthropogenic impacts, all levels of Australian society need all the objective, unbiased, science-derived information and policy inputs as possible.
LONG-TERM RESEARCH	Continuation of long term rainforest research
	Long-term ebbs and flows in natural environments rather than short-term changes brought about by arguable reasons. Show the resilience of natural systems and what interference is actually required to allow a system to recover or be maintained.
	please continue this research, but focus it more on the HOW we will solve our problems, not quite as much WHAT are the problems
	Would like an opportunity to address this question more fully, but in brief I would like an analysis of the goals of the Long Term Sustainability Plan to assess gaps and to design appropriate programs to fill them
MARINE	Blue carbon - the role of seagrass and mangrove communities Cumulative impacts of coastal development on fisheries resources Cumulative impacts of resource extraction on marine and freshwater systems
	C.O.T.S program.

	Consultation and sharing with educators located in southern areas of the reef, and non political reporting from GBRMPA
	Continued work on GBR and influences on it -climate change, terrestrial runoff and other indicators of reef health and condition.
	Control of ship traffic through the GBR with particular reference to associated acoustic and sediment re-suspension impacts.
	Don't move focus away from the major impactors on the reef. I here talk about increasing work on urban and port impacts but these are miniscule compared to agricultural land management derived impacts. More focus on freshwater and wetland systems rather than the GBR - wetlands research receives very little funding. Herbicides have far greater impact on these systems than the GBR, yet they are vital for the long term health of the GBR. Stream bank erosion is a major source of turbidity. More research on reducing this cost-effectively on private land.
	Marine benthic habitat mapping south of GBR to provide data / to inform on ground management decisions / actions, policy and legislation.
	Marine management & conservation
	Metrics for trade-off between development and environment GBR management and use will need to continue
	Needs to underpin science requirements in the Reef 2050 Long Term Sustainability Plan. Continuing investment in improved understanding to inform management in the Torres Strait.
	Origin of marine debris (ghost nets)
	Reef Education and synergies of local communities
	Research to inform monitoring of condition and trends, including at-risk species. Improved understanding of relationship between DPSIR components to better report and inform future management actions. Evaluation of new biodiversity values (eg continental slope, especially southern GBR). Understanding social and economic drivers affecting the GBR and refined outcomes and targets for community benefits, based on their condition and trend over time. Delivering adaptation and direct action on climate change. Development of regionally-based ecosystem health standards for fisheries. Improved understanding of the impacts of noise on marine species. Understanding what constitutes a healthy Great Barrier Reef. Understanding open water ecosystem processes and effectiveness of management for seabirds and ways to reduce risks. Understanding effectiveness of management for top predators and solutions to reduce risks.
	Stock assessments on more reef associated species eg nannygai, any cod species, any Lutjanids. Genetic work on defining fish species management units
	Sustainable use of resources with the GBRMP
	Toxicology, toxicology, toxicology, toxicology! I think that a lot of the research going on could just be chasing its own tail if we don't start getting a very clear picture on the impacts of sub-lethal doses of chemicals. This is especially so in reef catchments. How many cases of cancer in wildlife, mass die-offs, disappearances, and malformations do we need to see before chemical contamination and its gross overuse in Australia is targeted???? Every time I ask about toxicology projects, I am told that it is way too expensive. Then we also need to look at ways of refining the toxicology process to bring the costs down!!!
	Most effective COTS management strategy Determining realistic desired states for GBR habitats and species populations Climate change resilience and adaptation options Catchment to marine and inter-reefal connectivity
	What is a healthy state for seagrass meadows, coral reefs and other inter-reefal ecosystems? What threshold conditions must be met to ensure that this resource state is maintained or achieved? Based on these management interventions and adaptive management can occur.
PEST MANAGEMENT	Feral animal control, weed control.
	Improved technologies for weed management
	Pest Management
	Invasive species - weeds, animals and pest fish
	Practical tools that helps to prioritise weed species management - any species/ specific ecosystem research which contributes to a better understanding of how to manage environmental impacts resulting from infrastructure footprints
RAINFOREST	Conservation and management based on science and evidence for bats in wet tropics

	Protection and maintenance of the Wet Sclerophyll forests within and adjacent to the Wet Tropics WHA. Monitoring of the Spectacled Flying fox population
	fire management in the wet tropics - a balanced approach that incorporates and values Indigenous knowledge with Western science; feral cat management and feral pig management in TEs
	Further prioritisation of areas to actively manage, regionally specific projects, more understanding of future impacts as a result of drivers of change, need to involve more senior NRM group staff in priority setting
	Greater emphasis on World Heritage and their Outstanding Universal Value, greater investment in rainforest research. Regular meetings/reporting at an individual program level rather than a whole of rainforest basis. Each individual program to have a user support group associated with it. Greater user involvement and relevance.
	Repair/prevention of environmental degradation
	Sustainable use of the wet tropics; improving science outcomes and protection mechanisms to benefit management and infrastructure agencies working in and adjacent to world heritage areas
	The distribution and abundance of the Lumholtz's tree-kangaroo within its natural range with an accuracy that is meaningful for conservation planning
SOCIAL/SOCIO-ECONOMIC	In Torres Strait ask what communities want rather than conducting scientific research based on what scientists want. This will ensure relevance and outcomes aimed at benefiting people of the Torres Strait
	More emphasis on long term monitoring of the social and economic dimensions of Reef management so we are better able to assess trends in ecosystem services derived from the Reef
	Prove the economic and social benefit of a healthy Reef to the short sighted / lobby influenced or possibly ignorant politicians and the general public.
	Sustainable energy demand management, energy efficiency and embedded renewables, sustainable buildings, services and materials; fringing coral reef protection from land based activities, local governance and support; effective environmental communications based on social learning, social cognitive learning, applied brain science and experiential learning processes and collaborations.
	The imbalance of science and extremes of politics driving the perpetuation of adverse outcome to the marine and terrestrial transport chains
	Social and economic monitoring
THREATS	Ensuring unallocated state lands and council reserves are managed for threats
	Research into active management options for threatened species, more adaptive management research.
WATER QUALITY	1) Evaluation of how much government policy adoption and expenditure (eg. Reef programs) actually reflect advances in reef and agricultural science eg. has the $375 M spent by state & federal government to 2013 actually reduced the Nitrogen surplus (or even fertiliser sales), increased A class grazing land, or cut pesticide sales When if ever, is it likely to? How? 2) Better understanding of the relationship between nitrogen and sediment pollution and Reef health, the relative risk from various forms and sources, and the economic consequences of failing to significantly cut agricultural pollution of GBR waters. In particular, some description of the implications for Reef ecosystems and dependent industries of allowing continual declines in coral cover, seagrass and ambient water quality in the context of current and expected climate scenarios. In particular, the implications and relative importance of findings of the AIMS Long Term Monitoring Program eg. is the slight improvement since 2012 enough to compensate for the steep decline since 1985, or should we expect the decline toward 5% cover to continue?
	1) I think the Wet Tropics Water Quality Hub is right on target to address one of the major threats to the GBR. 2) Strong skills and capabilities to address some of the important issues reside in groups that are outside the usual hub coordinators. To get the most out of NESP it will be important for DoE to provide expert oversight on the development of the research program under each hub to ensure that the suite of programs is as focused on key problems, with the best skills, as possible. 3) There's no single hub within which fisheries would obviously sit. This may be appropriate because I believe that ecosystem impacts of fishing on most fished species are unlikely to be large. But it may make it difficult for fishery research groups (such as the one at JCU) to find a focal point within NESP for their research bids. 4) There needs to be strong attention given to engaging with senior bureaucrats/govt ministers, especially in Canberra but also Brisbane, to get the key messages emerging from each of the hubs across. More of this is what's needed to effect change. Engaging with senior scientists, policy makers and those close to the Ministers' senior advisors could help with this. 5) NESP projects should focus on finding solutions to the various threats, not doing yet more work to 'better understand' the threats and their trends. It's time for action that achieves results. 6) Projects should be guided better by past results. I despair that there are pleas for an expanded COTS removal program when past experience on the GBR and elsewhere is that this is ineffective except at small (tourist

	viewing area) scale. Past experience says that COTS outbreaks need to be nipped in the bud if there is to be any chance of success -- so why invest in a belated control program now when a trigger outbreak was spotted in FNQ 18 months ago? Funding is limited and the threats to the GBR are strong. Funds should be invested in activities that can make a strong enduring difference.
	Adoption rate and practices for the BMPs
	Continued focus on water quality, practical management issues such as on-farm fertiliser applications, social research
	Continued work on water quality, effects of dredging on water clarity. Greater understanding of larval phase of COTS, length and vulnerability.
	I'd like to see more research focussing solutions to problems rather than putting more investment into understanding the problems better. There is an urgent need for a rapid improvement in water quality entering the GBR and to meet targets and this will require management interventions that will have a huge impact on the amount of DIN, PSII herbicides and sediment entering the GBR. In my opinion we are putting too much effort into the wrong end of the GBR water quality problem.
	Improving resource knowledge and economic management of grazing and farming landscapes that affect water quality entering the GBR lagoon
	Inventory & baseline monitoring of surface & ground water resources (quantity, flow, seasonality, quality, aquifer recharge rates), along with climate change projections Identify processes that influence aquifer recharge & water quality Assess impacts of water extraction on biodiversity (e.g. Freshwater sawfish, Speartooth Shark, stygofauna, troglofauna) & cultural values & agriculture, including thresholds of tolerance & trade-offs of different models of extraction Saltwater intrusion & ground water quality mapping, along with climate change projections
	There needs to be more focus on issues related to water quality impacts on the GBR. This is a major problem for the entire GBR ecosystem and is the one area where management actions can influence the health of the ecosystem!
	Utilising free living nitrogen fixer microorganism as an alternative to N fertiliser
	Water issues (esp GBA) GBRWHA Climate change
	Water quality
TOURISM	tourism was not adequately included in the research mix and the funding was hijacked and not serious about ender users
OTHER	Better awareness
	Carryover of existing project areas to maintain continuity and consistency between the two programs.
	Greater communication
	Greater integration between science and industry
	It is highly unlikely that NESP will be able to address the bulk of scientific research concerns for the Torres Strait region. Any issues that can contribute to the overall health status of the local ecosystem will be discussed & prioritised by the appropriate reps.
	Opportunities to have management protocols reflect environmental variables and impacts.
	Research communication strategy
	There needs to be greater integration of end users needs into project development. Collaboration around projects has been tokenistic with good communication happening during project development and then nothing once projects have commenced.
	While there are no real issues that need addressing, I'd like to see a more concerted effort to engage regional partners - particularly PNG, with whom we directly share a border - in developing projects and sharing outcomes to ensure policy responses are critically evidence-based. Also, the excellence of the research should be heralded globally, though of course particularly regionally.
	Would like to see a return to some of the theme-based synthesis documents produced by the former Reef and Rainforest CRCs and more communications for community groups

4.0 RESULTS: QUALITATIVE DATA

4.1 PROJECT OUTPUTS

Monitoring and evaluation of the NERP TE HUB is described in detail in the NERP TE HUB Monitoring and Evaluation Plan. Within the plan, it is noted that DOE (previously DSEWPaC) required the NERP TE Hub to develop key performance indicators for three phases of program implementation:

> ***1. Systems establishment phase (1/1/11 – 1/1/12)*** *– assesses how well the Hub has implemented the systems required to successfully deliver on the NERP Hub MYRP. These indicators will become obsolete following the first year of funding.*
> ***2. Outputs delivery phase (1/7/11 – 30/6/14)*** *– provides confidence that the Hub is delivering research outputs intended for input into the policy development process.*
> ***3. Project impact phase (1/1/12 – 30/6/14)*** *– will reveal how well the Hub has delivered outcomes, i.e. demonstrate that Hub research has had a positive and demonstrable effect on the policy issues managed by the department and other Australian Government agencies and resource management organisations specified in Hub work plans. It is recognised that many, but not all research outcomes occur after programs have been completed.*

4.1.1 Project Outputs and Communications

Overview of Outputs

There were a significant number of outputs generated from the NERP TE HUB projects and related committees. The outputs reported in terms of KPIs in the NERP Final Biannual Progress Report #8 (2015) are presented in the following sections:

Stakeholder Workshops – Departmental and External

> ***KPI B1 -*** *Number and description of stakeholder workshops with departmental/ portfolio staff.*

Project Leaders reported that an additional **78** workshops and/or meetings were held that involved Departmental or Portfolio representative. This excludes reference to 'numerous' *ad hoc* or 'ongoing' meetings with Portfolio staff.

> ***KPI B2 -*** *Number and description of stakeholder workshops with parties external to the department.*

Project Leaders reported that an additional **98** meetings and workshops that involved staff from research user agencies and other research user groups plus presentations at symposia and conferences both within Australia and internationally. This excludes reference to 'numerous' ad hoc or 'ongoing' meetings.

Implementation Group Meetings

Two Implementation group meetings per node were held at various times throughout 2014, with opportunities for research users to gain valuable updates on NERP TE Hub projects (see Table 26).

Table 26: Implementation Group Meetings 2014

MEETING DATES	DATES BY GROUPS			
	Rainforest	**GBR - Bio**	**GBR – Water Quality**	**Torres Strait**
	4 Feb 2014	7 Feb 2014	30 Jan 2014	5 Feb 2014
	5 Aug 2014	8 Aug 2014	7 Aug 2014	13 Aug 2014

Publications

KPI B3 - *Papers being published according to (or in excess of) the work plan*

Project Leaders reported a total of 150 scientific papers from the NERP TE Hub in the reporting period. There are numerous papers in review and awaiting publication that will be uploaded to the TE Hub website when published.

Research Outputs Communicated

KPI B4 - *Research outputs provided to end-users on time and as identified in the work plan*

During the reporting period, Project Leaders reported that there were a total of 107 research outputs provided to research users. Research outputs were provided to research users via Implementation Group meetings. In addition, RRRC Ltd provides project updates to the identified research users for each project as project outputs are produced, such as technical reports, fact sheets and journal articles. RRRC Ltd also distributed bimonthly electronic newsletters to all recipients in the database and weekly contributions to the NERP Chirp that includes a link to a report posted on the TE Hub website. Individual projects have also established mechanisms to update identified research-users on a regular basis.

Cross-disciplinary Meetings

KPI B5 - *Number of cross-disciplinary meetings held between hub consortium members, and with other NERP hubs, to further hub objectives*

Project Leaders reported that, during the reporting period, 40 collaborative meetings were held to discuss project synergies with other NERP Hubs. This excludes reference to 'numerous', 'several', 'various' and 'ongoing' meetings reported.

Research Information made accessible

KPI B6 - *Research information (i.e. data and metadata) made accessible to other users in accordance with the NERP Guidelines and the funding agreement*

During the reporting period, each project was required to deliver metadata to the e-Atlas in accordance with project milestones. In addition, Project Leaders contributed to other databases, including those that are publicly available.

Research outputs cited by government for policy change

KPI C1 - *Examples of research outputs being cited by Government as evidence that policy change is required.*

Project Leaders reported 37 cases where research outputs had been cited as evidence that policy change is required. Examples of these include:

- Project 1.2 has been cited in the GBRMPA's Strategic Assessment Report and the 2014 Outlook Report; the Revised Recovery Plan for Marine Turtles; and in the draft referral

guidelines being developed for dugongs, turtles and coastal dolphins by Department of Environment.

- Project 6.1 reported interactions with GBRMPA and fisheries scientists in Queensland and New South Wales regarding their research have resulted in a greater understanding of the relevance and importance of coral reef based marine protected areas for marine predators. This knowledge highlights the need for multiple management approaches to adequately protect mobile predators and will influence the design and direction of future policy within and beyond the GBR Marine Park.
- Project 1.3 has been cited in the 2014 Outlook Report (Chapters 2,3,5,6,8), GBRMPA Science Strategy (Importance of historical data to identify shifted baselines), GBRMPA Strategic Assessment, Current Condition and Trend, and the Investment Framework for Environmental Resources (INFER) for the improvement of water quality in the Burnett-Mary region.
- Project 5.2 has been cited in the Scientific Consensus Statement, which was used in support of the revision of ReefPlan 2013. The Consensus Statement, in turn, was used to inform various chapters of the GBR Strategic Assessment:
- Project 3.1 reported that the Wet Tropics Management Authority extensively used project outputs in their Conservation Plans and Research Priorities documents; and that Terrain NRM refers to many project publications in all regional natural resource policy and planning initiatives. Outputs and data are included in the FNQROC local councils environmental planning; and the Queensland and Australian Governments refer to the Wet Tropics biodiversity outputs and climate change predictions in a wide variety of documents and polices.
- Project 12.1 reported that Ms Leah Talbot was invited by Minister Hunt to present at the Asia Pacific Rainforest Policy Dialogue and Summit and particularly cited the relevance of research on the role of Rainforest Aboriginal people across the Wet Tropics of Queensland.
- Project 11.1 reported that the project's community planning approach and tools are feeding into TSRA's community-based climate adaptation planning process for the region. The approach and outputs are also being used by the Queensland Government Department of Aboriginal and Torres Strait Islander and Multicultural Affairs (DATSIMA) to inform its work, particularly the community consultation process for the State's draft planning scheme for Torres Strait communities to be rolled out in 2015.
- Project 11.2 reported that Federal Minister for Agriculture, Barnaby Joyce visited Boigu on 27 October 2014 and talked about the importance of biosecurity work in the protection of Australia against emerging infectious and agricultural diseases.

Government policy changed as result of research outputs

> ***KPI C2 -*** *Examples of Government policy being changed as a direct result of research outputs.*

Project Leaders reported 16 cases of Government policy being changed as a direct result of research outputs. Examples of these include:

- Project 9.2 submitted a letter to the Queensland Fisheries Management Review, which will form part of a suite of products that will affect the new fisheries policy. As the draft Policy is yet to be released no impact can be cited, at this stage.
- Project 4.1 results were used in the setting of regional targets for fine sediment in the Burnett-Mary and Wet Tropics Water Quality Improvement Plans and will be rolled out in Fitzroy Basin, Burdekin Dry Tropics and Cape York NRM regions in 2015.
- Project 12.2 findings are highly relevant to Government policy at all levels from local to Commonwealth. At Commonwealth level, results are relevant to initiatives such as the "green army' and "20 million trees" as well as to conservation and recovery planning for threatened species and ecosystems. Through the Tropical Ecosystems/Environmental Decisions Workshop held on 2 September 2014, on decision making about resource allocation to restoration, this project had input through direct knowledge transfer to people responsible for implementing government policy.

- Project 2.3 noted that the skills transfer and training component of the project has informed management of coral reef monitoring in the Torres Strait to the point where it is envisaged that future reef monitoring work will be done in the region and will become an integral part of TSRA Government policy and procedure.

Useful capacity

KPI C3 - *Examples of useful capacity built within the Australian Government as a direct result of hub activities.*

Project Leaders reported 25 cases useful capacity built within the Australian Government as a direct result of hub activities. Examples of these include:

- Project 8.3 has delivered proof-of-concept that the GBRMP zoning plan is providing both biodiversity conservation benefits and fishery subsidy benefits. The key findings generated from this project are of both national and international significance and several of the papers published from this work will be considered pivotal in the fields of marine ecology and conservation planning.
- Project 9.4 built capacity for GBRMPA staff to understand and potentially use Bayesian Networks in the context of cumulative impact assessment, both for large scale GBR-wide coastal development planning and for individual project in the context of Environmental Impact Assessments.
- Project 3.1 conducted workshops and seminars at DOE in Canberra and significantly increased the knowledge of many policy makers and managers in the Department that deal with areas such as Threatened Species, Climate Vulnerability and Adaptation. Links between this project and the Terrestrial Biodiversity NCCARF network also produced many outcomes in National Climate Change Adaptation Policy and increased the capacity of over 1,000 scientists and stakeholders across Australia via the communications of the outputs of this project across the entire national network.
- Project 2.3 has been capacity building in the region as a fundamental foundation. The reef surveys included two training cruises allowing TSRA Rangers to gain skills in coral reef monitoring, coral and fish identification, sampling methods and data capture and analysis. These skills will facilitate the development of a coral monitoring plan for the Torres Strait that relies on and builds in-region capacity. This includes the knowledge and skills required for first level diagnostics and basic maintenance of the real time stations that have also been transferred to local TSRA staff.

Research citations

KPI C4 - *Research citations appearing in other researcher's papers.*

Project Leaders reported 754 citations from papers arising from NERP/NERP Transition/MTSRF funds. Project Leaders pointed out that, as many of the papers produced from the current research have either just been published or are in various stages of publication, the number of citations at the time of reporting will not offer a clear indication of the utility or value of the work. Examples of citations in work published include:

- Project 1.2 published Hagihara R, Jones RE, Grech AM, Lanyon JM, Sheppard JK and Marsh HD (2014) Improving population estimates by quantifying diving and surfacing patterns: a dugong example. Marine Mammal Science 30 (1). pp. 348-366 [8 citations to date]
- Project 6.1 published Heupel MR and Simpfendorfer CA (2014) Importance of environmental and biological drivers in the presence and space use of a reef-associated shark. Marine Ecology Progress Series 496: 47-57 [4 citations to date]
- Project 6.3 published Chambers L.E, C.A. Devney, B.C. Congdon, N. Dunlop, E.J. Woehler, P. Dann, (2011) Observed and predicted impacts of climate on Australian seabirds. Emu-Austral Ornithology 111(3): 235-251 [39 citations to date]

- Project 8.3 published Harrison HB, Williamson DH, Evans RD, Almany GR, Evans RD, Thorrold SR, Russ GR,Feldheim KA, van Herwerden L, Planes S, Srinivasan M, Berumen ML, Jones GP (2012) Larval export from marine reserves and the recruitment benefit for fish and fisheries. Current Biology 22:1023–1028. DOI:10.1016/j.cub.2012.04.008. Over 100 citations since this paper was published in June 2012 (ISI Web of Science).
- Project 1.3 published Roff et al. 2013. Proc. Roy. Soc. B. [10 citations to date] Note: This study has received widespread media attention and a high Almetric score of 44, which puts this article in the top 5%, or in the 98th percentile of 2,628,684 articles of all journals tracked by Almetric
- Project 4.1 published KE Fabricius, G De'ath, C Humphrey, I Zagorskis, B Schaffelke (2013) Intra-annual variation in turbidity in response to terrestrial runoff on near-shore coral reefs of the Great Barrier Reef. Estuarine, Coastal and Shelf Science 116, 57-65 [32 citations to date]
- Project 4.2 published Flores F, Collier CJ, Mercurio P, Negri AP (2013) Phytotoxicity of four photosystem II herbicides to tropical seagrasses. PLoS ONE 8:e75798 [8 citations to date]
- Project 9.4 published Grech, A., Bos, M., Brodie, J., Coles, R., Dale, A., Gilbert, R., Hamann, M., Marsh, H., Neil, K., Pressey, R.L., Rasheed, M.A., Sheaves, M. and Smith, A. (2013). Guiding principles for the improved governance of port and shipping impacts in the Great Barrier Reef. Marine Pollution Bulletin [8 citations to date]
- Project 7.2 states that research publications (including Government reports) arising from the project have been cited a total of 67 times in other researcher's reports and publications (Google Scholar citation report 27 November 2014)
- Project 12.1 published Hill, R., C. Grant, M. George, C.J. Robinson, S. Jackson, and N. Abel. 2012. A typology of Indigenous engagement in Australian environmental management: Implications for knowledge integration and social-ecological system sustainability. Ecology and Society 17 (1):23 http://dx.doi.org/10.5751/ES-04587-170123. [36 citations]
- Project 12.1 published Cullen-Unsworth, L. C., Hill, R., Butler, J. R. A. & Wallace, M. 2012. A research process for integrating Indigenous and scientific knowledge in cultural landscapes: principles and determinants of success in the Wet Tropics World Heritage Area, Australia. The Geographical Journal 178: 351-365. [24 citations]
- Project 12.2 published Shoo, L., A. Hoffmann, S. Garnett, R. Pressey, Y. Williams, M. Taylor, L. Falconi, C. Yates, J. Scott, D. Alagador and S. Williams (2013). "Making decisions to conserve species under climate change." Climatic Change 119(2): 239-246. [9 citations]
- Project 11.1 published Butler, J.R.A., Tawake, L., Tawake, A., Skewes, T. & McGrath, V. 2012. Integration of traditional ecological knowledge and fisheries management in the Torres Strait, Australia: the catalytic role of turtles and dugong as cultural keystone species. Ecology and Society. 17(4): 34 [18 citations]
- Project 2.2 reports that the Duke (2014) e-book app, 'World Mangrove ID' was seen by 36 people, on the author's ResearchGate site. An equal number of copies have been purchased from the online sites at Apple and Google. It is too soon to have formal citation records.
- Project 2.2 also reports that the UNEP (2014) report has been downloaded by more than 66 people on the author's ResearchGate site alone. The report is also listed by the UNEP from their website. The Project Leader does not know how many downloads they have. It is too soon to have formal citation records.

4.2 MEDIA AND OTHER COMMUNICATIONS

4.2.1 Media Releases

It was not possible to collate all of the media releases from the NERP TE Hub projects, however a sample of media releases made within the second half of 2014 has been provided in Figure 7.

SAMPLE OF MEDIA RELEASES FROM NERP TE Hub (JULY – DECEMBER 2014)

18 July: A new measure of biodiversity
A new approach to measuring biodiversity has uncovered some biologically important but currently unprotected areas in Western Australia, while confirming the significance of the world heritage listed Wet Tropics rainforests in the country's north-east…. **Professor Darren Crayn**, Director of the Australian Tropical Herbarium at James Cook University in Cairns, said the research would not have been possible without the decades of groundwork involved in digitising the specimen information held by Australia's herbaria. "The results of that world-leading collaboration are now shared through public resources like the Atlas of Living Australia and the Australia's Virtual Herbarium," Professor Crayn said. "It puts us at the forefront, globally, in identifying important areas of biodiversity by combining cutting-edge genetic analysis with the information contained in scientific collections compiled over centuries."

11 September: 10-year study shows Great Barrier Reef no-fishing zones boost shark numbers
A 10-YEAR study that involved thousands of underwater camera drops has found no-fishing zones are boosting shark numbers on the Great Barrier Reef. Researchers from the Australian Institute of Marine Science and James Cook University also identified a strong link between coral reef health and shark populations. They studied the animals' distribution patterns and habitat associations using 2471 baited remote underwater video stations across the entire park over 10 years from 2000. Sharks attracted to a bait were recorded, allowing scientists to count and identify 21 species on the Reef. **Professor Colin Simpfendorfer** from JCU's Centre for Sustainable Tropical Fisheries and Aquaculture, and a co-author of the study, said sharks were important to reefs.

9 October: Inshore reefs of the Great Barrier Reef especially vulnerable to ocean acidification
The Australian Institute of Marine Scientist (AIMS) has revealed in a peer-reviewed journal, PLoS One today that inshore reefs are particularly vulnerable to Ocean Acidification (OA)* on the Great Barrier Reef (GBR). "We found that inshore reefs were particularly vulnerable to ocean acidification (OA) during the wet season. This is due to the cumulative impacts of both increased soil runoff from rivers because of storms and cyclones as well as OA. OA is caused by elevated carbon dioxide levels in the atmosphere and oceans as a result of humans continuing to burn fossil fuels," said AIMS scientist **Dr Sven Uthicke**.

31 October: Two new lizard species found in Queensland rainforest
Two species of lizard previously unknown to science have been uncovered in a remote part of far north Queensland.
Dr Conrad Hoskin, a researcher at James Cook university, found the two species after landing by helicopter in a largely inaccessible area of rainforest on top of the Melville range, about 170km north of Cooktown.

6 November: Beer could be cure for stopping infectious diseases in mosquitoes say James Cook University researchers in Cairns
SCIENTISTS have found a novel way of ensuring infectious diseases do not cross Australia's northern borders – with beer.
James Cook University researchers have discovered some of the main ingredients of beer – brewer's yeast, sugar and water – can provide an effective method of baiting traps to ensnare potentially disease-carrying mosquitoes. The breakthrough from the Torres Strait was detailed during the first day of the National Environmental Research Program conference in Cairns. JCU **Associate Professor Susan Laurance** said disease surveillance in many tropical areas was restricted by the practicality, cost and portability of equipment.

18 November: Coral spawning: Researchers use annual Great Barrier Reef event to test for pollution effects
Marine researchers have been using the annual spawning event on the Great Barrier Reef to test for the effects of dredge spoil and pesticides on coral reproduction. The release of millions of coral larvae into reef waters provided a chance to replenish and regrow reefs that had been damaged or destroyed. But researchers from the Australian Institute of Marine Science said they were worried poor water quality could threaten the survival prospects of the larvae. **Dr Britta Schaffelke** said the young coral could be vulnerable. "They are more sensitive to a number of pressures and these are mostly pressures that have to do with pollution, with turbidity of the water, with sedimentation and so on," she said. "We understand a lot of what affects a lot of adult marine organisms like corals and seagrasses ... but we really have to learn about what goes on with the early life stages like the larvae, the baby corals and so on." **Dr Andrew Negri** is testing how certain toxins affect young corals.

Figure 7: Samples of Media Releases from the NERP TE Hub - July to December 2014

4.2.2 Website Information

NERP TE Hub Website Information

A review of the NERP TE Hub website's[3] resources available to the public is provided in Table 27. The largest type of output in 2014 was media reports (201), journal articles (153), conference/ seminar/ workshop presentations (98), e-newsletter articles (52) and technical/ research reports (46). As is expected all products have increased since the baseline evaluation of the NERP TE Hub in 2012.

This information corresponds to the project outputs as noted in the previous section. Specifically, the publications, project factsheets (for distribution both internally and externally), and conference/workshop presentations were the main project outputs relating to the KPIs.

It should be noted that the NERP TE Hub website will continue to be updated as final publications are submitted and approved for upload. All publications from the NERP TE Hub are available at http://www.nerptropical.edu.au/publications

Table 27: NERP TE HUB Resources Available on Website

PUBLICATION TYPE	NUMBER OF RESOURCES (2012)	NUMBER OF RESOURCES (2014)
Media Report	11	201
Journal Article	37	153
Conference / Seminar/ Workshop Presentation	25	98
e-Newsletter articles	-	52
Technical / Research Report	2	46
Project Factsheet	38	38
Project Result Factsheet	-	31
Research Synthesis Product	3	24
Project posters	-	23
Hub administration	6	15
Project Factsheet for Traditional Owners	-	11
Book Chapter	2	10
Final Reports/ factsheets	-	9
e-Newsletters	-	8
Magazine articles	-	8
Project Factsheet for the Torres Strait Community	6	6
Communiqué	1	6
Workshop Summary	1	5
Video	-	5
Audio	-	3
Brochure	2	3
Guide	1	1

[3] NERP TE HUB website address: http://www.nerptropical.edu.au/ (accessed on 11 December 2014)

Google Analytics

Google Analytic reports were produced for the NERP TE HUB website and are provided for the period July to December 2014. When tracking the amount of traffic on a Web site, a unique visitor refers to a person who visits a website more than once within a specified period of time. Google Analytics can distinguish between visitors who only visit the site once and unique visitors who return to the site.

As shown in Figure 8, the total number of visitors to the NERP TE Hub website during the July-December 2014 period was 6,180. The total number of unique visitors during the same period was 4,617.

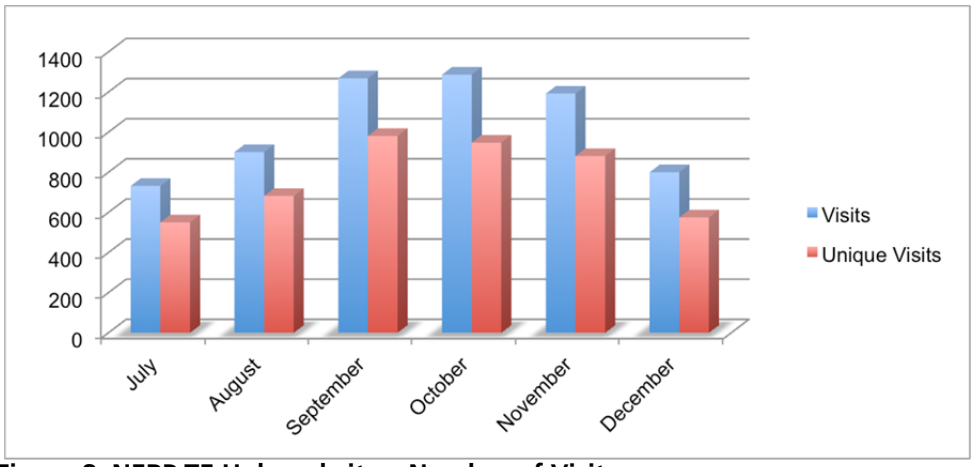


Figure 8: NERP TE Hub website – Number of Visitors

Figure 9 shows the total number of page views to the NERP TE Hub website during the July-December 2014 period was 20,633. The total number of unique page views was 14,655. Page views were highest in November, possibly a result of the final NERP TE Hub conference being held on the 5-7th November.

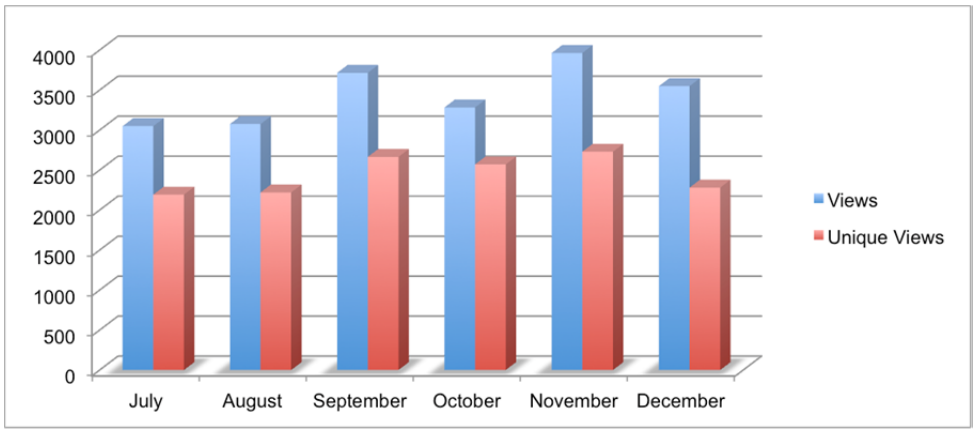


Figure 9: NERP TE Hub Website – Number of Page Views

The total number of countries that visitors accessed the website from was at least 107. Table 28 lists the origin of the visitors to the NERP TE Hub website during July – December 2014. Most visitors were from Australia (4,895), United States (359) and the United Kingdom (134).

Table 28: NERP TE Hub website - number of visitors by country

COUNTRY	NUMBER OF VISITORS
Australia	4,895
United States	359
United Kingdom	134
Germany	71
Algeria	73
India	63
Canada	50
Philippines	43
Singapore	41
Malaysia	31
France	27
Indonesia	26
New Zealand	25
Spain	21
Brazil	18
Netherlands	17
Italy	15
South Africa	14
Bangladesh	13
China	13
Ireland	12
South Korea	12
Others, with 11 or less visits	265
TOTAL	**6,238**

Figure 10 shows the origin of Australian based visitors to the NERP TE Hub website. Visitors from Queensland were the majority and this peaked in September. The total number of Australian based visitors during July-December 2014 was 4,895.

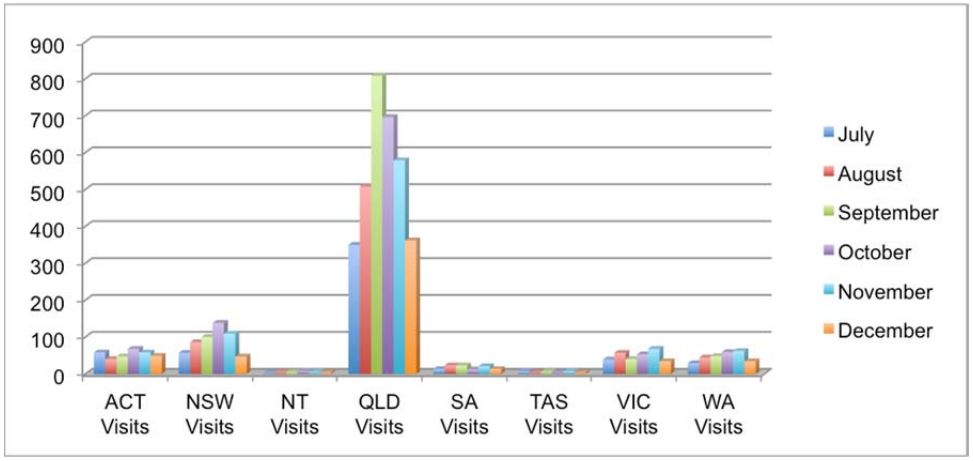


Figure 10: NERP TE Hub Website - Location in Australia of Visitors

English was the primary language used by visitors to the website. The majority of website visitors accessed it either through searches (65.0%) or directly (20.0%) as displayed in Table 29. The majority of searches are conducted using Google.

Table 29: Google Analytics Method of Access to NERP TE HUB Website

METHOD	FREQUENCY (2012)	PERCENTAGE (2012)	FREQUENCY (2014)	PERCENTAGE (2014
Search	876	58.4	4018	65.0
Direct	539	35.9	1233	20.0
Referral	86	5.7	929	15.0
TOTAL	1501	100.0	6180	100.0

*Google Analytics statistics January – June 2012 and July – December 2014

Of the 6,180 visits to the website, the total number of visitors from referred traffic was 929. Table 30 shows referrals came from the RRRC website (295), Department of the Environment website (201) and the e-Atlas website (177).

Table 30: NERP TE Hub Website – Referred Traffic

REFERRED TRAFFIC	NUMBER OF VISITORS
rrrc.org.au	295
environment.gov.au	201
eatlas.org.au	177*
tsra.gov.au	43
seltmp.eatlas.org.au	30
gbrmpa.gov.au	26
wettropics.gov.au	25
terrain.org.au	22
aims.gov.au	21
reefplan.qld.gov.au	21
coralcoe.org.au	20
csiro.au 893	12
Others, with 11 or less referrals	36
TOTAL	**929**

*includes previous website of e-atlas.org.au

As can be seen in Table 31, there was a 36% increase in page views from 2012 to 2014 and less time on average looking at the website. This may be an indication of the improved ease of navigation around the NERP TE Hub website.

Table 31: Google Analytics Overview of NERP TE HUB Website*

GOOGLE ANALYTICS	STATISTICS (Jan-June 2012)	STATISTICS (Jul-Dec 2014)
Page Views	7494	20633
Pages/Visits	4.99	3.47
Average Visit Duration	0:06:20	0:03.05
Bounce Rate	43.24	51.57
New Visits	60.16	62.33

*Google Analytics statistics for July – December 2014

The key access points for NERP TE Hub website visitors in 2014 were the RRRC website (27.0%), the DoE website (18.4%) and the old and new e-atlas websites (16.2%) (Table 32). In comparison, The Conversation website rated second in 2012 (Table 33) and is not in the top 10 access points for 2014. "The Conversation" website is:

> *…an independent source of analysis, commentary and news from the university and research sector viewed by 669,000 readers each month. Our team of professional editors work with more than 4,700 registered academics and researchers from 280 institutions.*[4]

Table 32: Google Analytics Top 10 Access Points to NERP TE HUB Website 2014

ACCESS POINT	FREQUENCY* (Jul – Dec 2014)	PERCENTAGE* (Jul – Dec 2014)
rrrc.org.au	295	27.0
environment.gov.au	201	18.4
eatlas.org.au	110	10.1
e-atlas.org.au	67	6.1
tsra.gov.au	43	3.9
seltmp.eatlas.org.au	30	2.7
gbrmpa.gov.au	26	2.4
wettropics.gov.au	25	2.3
terrain.org.au	22	2.0
aims.gov.au	21	1.9
TOTAL	840	76.8

*Google Analytics statistics July – December 2014

Table 33: Google Analytics Top 10 Access Points to NERP TE HUB Website 2012

ACCESS POINT	FREQUENCY* (2012)	PERCENTAGE* (2012)
rrrc.org.au	33	38.4
theconversation.edu.au	16	18.6
jcu.edu.au	7	8.1
sensis.com.au	5	5.8
tsra.gov.au	5	5.8
dpcvmdev03	3	3.5
google.com.au	3	3.5
search.mywebsearch.com	2	2.3
search.sweetim.com	2	2.3
36ohk6dgmcd1nc.c.yom.mail.yahoo.net	1	1.6
TOTAL	77	90.0

*Google Analytics statistics January – June 2012

[4] *The Conversation – sourced from http://theconversation.edu.au/ on 5 February 2013.*

The main source cities for website users in 2014 are Brisbane, Townsville, Sydney and Canberra as shown in Table 34 and graphically in Figure 11. This is to be expected as many of the researchers, as well as identified NERP TE Hub research users are situated in these regions.

Table 34: Google Analytics Source City

SOURCE CITY	FREQUENCY* (2012)	PERCENTAGE* (2012)	SOURCE CITY	FREQUENCY** (Jul – Dec 2014)	PERCENTAGE** (Jul – Dec 2014)
Brisbane	449	29.9	Brisbane	2306	47.1
Townsville	254	16.9	Townsville	593	12.1
Sydney	159	10.6	Sydney	495	10.1
Melbourne	122	8.1	Canberra	320	6.5
Canberra	90	6.0	Melbourne	279	5.7
Hobart	76	5.1	Perth	274	5.6
Cairns	26	1.7	Cairns	200	4.1
Perth	26	1.7	Adelaide	102	2.1
Not Set	17	1.1	Gold Coast	64	1.3
Adelaide	15	1.0	Sunshine Coast	37	0.7
TOTAL	1234	82.2	**TOTAL**	4670	95.3

*Google Analytics statistics for period 1 January – 30 June 2012 ** Google Analytics statistics for period July – December 2014

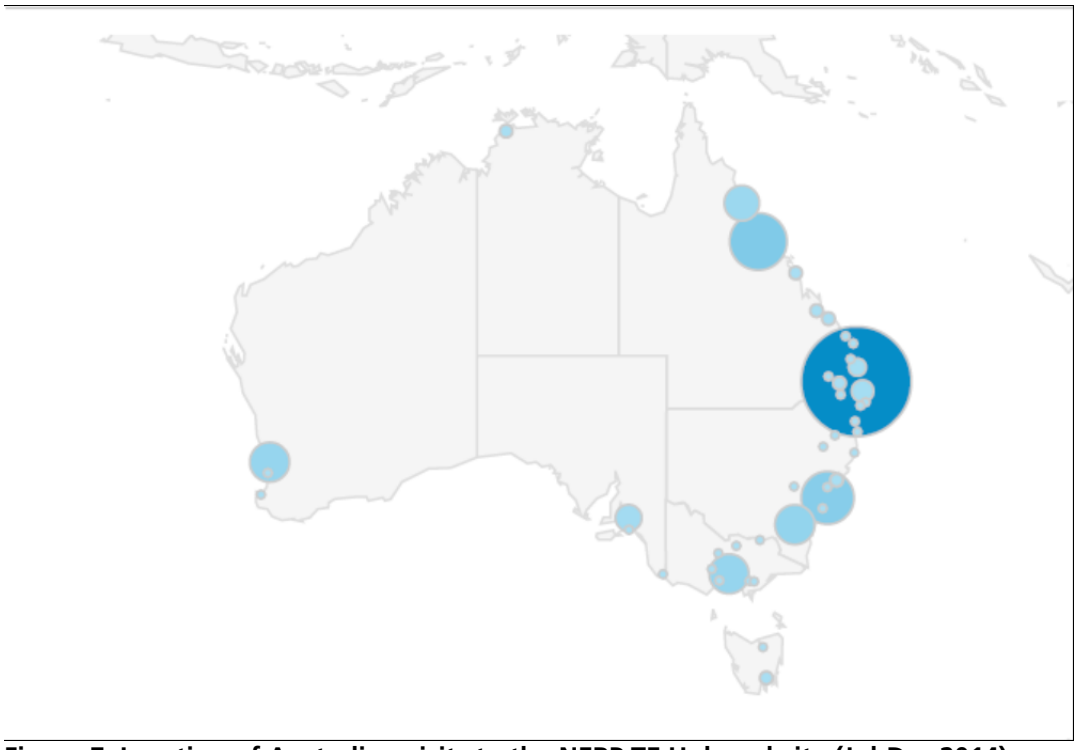


Figure 7: Location of Australian visits to the NERP TE Hub website (Jul-Dec 2014)

4.3 E-ATLAS

4.3.1 e-Atlas

The e-Atlas represents Program 13 of the NERP TE Hub projects (Australia's Tropical Land and Seas e-Atlas) Dr Eric Lawrey, AIMS). It is a partnership between many research providers to provide access to environmental research results and data focusing on the Great Barrier Reef, the Wet Tropics and Torres Strait.[5]

All of the NERP TE HUB projects are expected to feed information into the e-Atlas, thus it is continually expanding. The e-Atlas is seen as a valuable avenue for communicating research data from these projects. Early signs of this are found in the baseline survey results where respondents mentioned using the e-Atlas as an information source.

The e-Atlas' most recent Milestone Report (December 2014) summarises the progress and increased sophistication of this data management system since the commencement of the project:

> "In the last six months the development of a new content management system for the eAtlas was completed. This improved the ability of the eAtlas to manage photos and support multiple subsites tailored to a region or topic, each with their own branding, whilst sharing content with the main eAtlas. This new capability was used to launch a new version of the eAtlas website along with the new Torres Strait eAtlas and a subsite dedicated for the SELTMP project. The SELTMP team was trained and subsequently developed the content for this site and launched it at the IUCN conference in November.
>
> The new Torres Strait eAtlas was launched to a broad selection of the local community at the 2014 Winds of Zenadth Torres Strait Festival on Thursday Island. Two eAtlas team members spent a week on Thursday Island presenting the site as an information stall at the cultural festival, running classes at the local Tagai Secondary College and demonstrating the site to a range of government institutions.
>
> The eAtlas content continues to grow and now contains over 2,500 map layers, 140 datasets, 370 photos and 85 articles. Datasets have been pouring into the eAtlas over the last couple of months and we expect a total of approximately 60 - 70 datasets to come out of the NERP TE program. Work on preparing, checking and presenting these through the eAtlas is currently underway and expected to be completed in the next six months.
>
> The project has had altered schedules, including the development of the Torres Strait eAtlas and the SELTMP eAtlas. Less than 8% of the NERP TE program datasets were received earlier than 6 months from the end of the program and 35% of the datasets are expected to arrive after then end of the program, resulting in a significant backlog of datasets to be processed that is expected to take 3 - 6 months to clear".

4.3.2 e-Atlas Usage Statistics

The Google Analytics for the e-Atlas website are presented in the following tables (Tables 35 and 36).

These show a significant amount of externally-generated traffic already accessing the information available on the site.

[5] Source: http://e-Atlas.org.au/ accessed on 5 February, 2013.

Table 35: Google Analytics for e-Atlas Website

Usage measure	April - May 2012	Oct - Nov 2014
Page visits from Google search traffic (estimated from Google web master tools, web, image, mobile)	1750 page views / month	2660 page views / month
Map tiles images generated and served for eAtlas mapping	230,000 images / month	673,000 images / month
Average number of Unique IPs accessing eAtlas web pages or map tiles	4500 / month	7100 / month
Average number of uses of the new map client	165 / month	1520 / month
Uptime of website, as observed by siteuptime.com	99.98	99.4%*
Approximate uptime of the mapping system	99.9	99.3%*

* June 2014 - Nov 2014: Several serious outages were experienced during this reporting period, both due to optic fibre cuts to AIMS where the eAtlas is hosted. These outages were due to road works on the Bruce Highway and a bush fire.

Table 36: Top 20 Most Popular Pages on the e-Atlas Website*

Page	Impressions	Clicks *	CTR
http://eatlas.org.au/content/qld-dnrm-property-boundaries	7509	871	12 %
http://eatlas.org.au/content/relationship-between-corals-and-fishes-great-barrier-reef	3340	175	5%
http://eatlas.org.au/	910	82	9%
http://eatlas.org.au/content/introduced-species-great-barrier-reef	254	67	26 %
http://eatlas.org.au/content/impacts-severe-tropical-cyclone-inshore-and-offshore-coral-reefs	1807	54	3%
http://eatlas.org.au/content/jellyfish-great-barrier-reef	499	49	10 %
http://eatlas.org.au/content/e-atlas-architecture	924	47	5%
http://eatlas.org.au/content/soft-corals-great-barrier-reef	684	44	6%
http://eatlas.org.au/content/coral-sea	1565	42	3%
http://eatlas.org.au/content/using-kml-files-google-earth	903	32	4%
http://eatlas.org.au/data/uuid/92e4a530-6cbc-456b-918d-55d97c610e01	907	31	3%
http://eatlas.org.au/data/uuid/200aba6b-6fb6-443e-b84b-86b0bbdb53ac	1914	30	2%
http://eatlas.org.au/content/great-barrier-reef-today	1898	29	2%
http://eatlas.org.au/data/uuid/25685ba5-6583-494f-974d-cce2f3429b78	1470	28	2%
http://eatlas.org.au/content/middle-reef-coral-status-and-trends-1993-2009-aims-ltmp	291	17	6%
http://eatlas.org.au/rrmmp/gbr-actrf-jcu-terrestrial-run-off	1003	16	2%
http://eatlas.org.au/content/gbr-aims-bruvs	1338	14	1%
http://eatlas.org.au/data/uuid/ac8e8e4f-fc0e-4a01-9c3d-f27e4a8fac3c	911	14	2%
http://eatlas.org.au/content/gbr-gci-symbiodinium-clade-distribution-article	462	14	3%
http://eatlas.org.au/content/line-fishing-great-barrier-reef	443	14	3%

*Based on traffic from Google search over a 2 month period (4th Nov 2014 – 4th Jan 2015). CTR is the Click Through Rate.

4.4 GBRMPA OUTLOOK REPORT 2014

The Great Barrier Reef Outlook Report 2014 follows on from the first released Outlook Report in 2009. The report is a stocktake of the Great Barrier Reef, its management and its future.

The Outlook Report 2014 underpins decision-making for the long term protection of the Great Barrier Reef. This second report provides a snapshot of current condition and examines progress in protecting the Reef since 2009, better encompassing a full range of values. The publication of an Outlook Report was a key recommendation of the review of the Great Barrier Reef Marine Park Act 1975. A report is to be prepared every five years and given to the Minister for Environment for tabling in both houses of the Australian Parliament.

The Great Barrier Reef Outlook Report 2014 has relied heavily on the research outcomes generated from the NERP TE Hub research projects. The NERP TE Hub Contestable Funds contributed $25,000 towards the Outlook Consensus Workshop was organised and convened by the Great Barrier Reef Marine Park Authority (GBRMPA) in Townsville on 14-16 October 2013. The objective of the workshop and surrounding process was to secure an independent set of expert judgements about condition, trends and risks in the Great Barrier Reef Region that could be used to inform GBRMPA's preparation of the 2014 Great Barrier Reef Outlook Report. The workshop involved 31 GBRMPA-invited experts (28 attended the workshop and an additional three submitted their opinion as a set of score sheets prior to the workshop), selected because of their independence from GBRMPA, their expertise across a range of the types of issues that were expected to be encountered, and because of their long-standing experience of field work in the Region. The workshop outcomes reflect the combined and consensus judgement of these experts. The workshop was conducted and moderated by Trevor Ward, an external expert independent of GBRMPA with extensive experience in the conduct of independent marine performance assessment processes. The findings provided a strong basis for the development of the 2014 Outlook Report.

The Great Barrier Reef Outlook Report 2014 is available from http://www.gbrmpa.gov.au/managing-the-reef/great-barrier-reef-outlook-report

4.5 STATE OF THE ENVIRONMENT REPORT 2016

The National State of the Environment Report (SoE) provide information about environmental and heritage conditions, trends and pressures for the Australian continent, surrounding seas and Australia's external territories. The intent of this report is to capture and present, key information on the state of the 'environment' in terms of: its current condition; the pressures on it and the drivers of those pressures; and management initiatives in place to address environmental concerns, and the impacts of those initiatives. The SoE has been released in 1996, 2001, 2006, 2011 and is due to be released in 2016. It is understood the Department of the Environment will be utilising much of the research outcomes generated from the NERP TE Hub.

4.6 TORRES STRAIT DEVELOPMENT PLAN 2014-2018

Each of the NERP TE Hub Torres Strait research projects has contributed to the *Torres Strait Development Plan 2014-2018*. The projects have contributed new and updated information to the Environmental Management Program Outputs of: sustainable management of key marine habitats and species, including turtle and dugong, seagrasses, wetlands, coral reefs and community-based monitoring, research, water quality assessment, hazard mapping and mitigation; employment of Indigenous Rangers

5.0 CONCLUSION

Overview of the Study

This report has provided the final evaluation for measuring the success of the NERP TE Hub in influencing the decision making of managers, policy makers, industries and community groups in regards to the condition, threats and management options for North Queensland's environmental assets.

Through a qualitative approach and a cluster sampling method, two tiers of research users were surveyed. These represented NERP TE Hub *research users* and *next users*, from the business, government, Indigenous, environment, agriculture, fishing and tourism sectors.

Awareness

The majority of research users were aware of the NERP TE Hub, which is not surprising, considering there have been substantial communications between many of the researchers and *research users*, as well as with *next users*. This was the case for most of the clusters, but more so for the government, environment, tourism and business sectors. In 2012, this was the case for the government, environment, Indigenous, fishing and agriculture. This indicates a minor change in direction for researchers communicating with research users. In particular, noting the engagement with the tourism industry which relies heavily on the natural assets of North Queensland to be sustainably managed.

Communication and Impact of Research

Research users received project updates on a regular or monthly basis from the RRRC and individual researchers from partner institutions. This was mostly through either a direct feedback mechanism or through workshops, meetings or seminars. It is this form of communication which ensures the research is relevant and timely for the government or management agency. The final Hub evaluation survey outcomes correlate to the project outputs, particularly communications involving workshops/meetings/seminars and publications.

For the majority, NERP TE Hub communications were shared mainly with certain employees, colleagues and professional associations. From 2012, the credibility of the NERP TE Hub research increased to almost all of the respondents agreeing the research was credible and very credible in 2014. The lower credibility in 2012 though was more than likely due to the research being only in its early stages of analysis or reporting. The influence of the NERP TE Hub research on policy or decision-making increased from 2012, however there was still more than a third of the respondents who were not certain how the research would influence. This may be in part to the timing of the e-survey, closure of the NERP research program and release of final outcomes from the projects in late December and early January.

The website is an integral component of the communication system for the NERP TE Hub projects. Analytics of the website during the July to December 2014 period, indicated a reasonably high level of interest in the NERP TE Hub with almost 75% of visitors returning to the website within the same period. Visitors were mostly from Australia and in particular, Queensland. Referrals to the NERP TE Hub website were mostly from the RRRC website and the Department of Environment which is to be expected as administrator of the Hub and the government funding department. The e-Atlas is also

considered to be a practical and useful method of storing and communicating data being produced by the NERP TE Hub projects.

In 2012, research user expectations were prominent, evidenced by their anticipation of the NERP TE Hub outcomes that may impact on policy and decision-making activities relevant to their positions. In 2014, this appears to be the case with the outcomes of the NERP TE Hub research feeding into the Great Barrier Reef Outlook Report 2014 and the Torres Strait Development Plan 2014-2018. Within the environment cluster, NERP TE Hub research outcomes have particularly guided NRM planning in the region. For the Indigenous cluster, research has helped guide working on country planning; agriculture for developing best management practices; and for the tourism industry to support lobbying of government and in generally understanding perceptions, expectations and trends of visitors and residents of the region. However, there will be an ongoing impact of the NERP TE Hub research as final publications and outputs become available on the website. It is recommended research users are kept up to date with the release of final outputs stemming from the Australian Government's NERP investment.

REFERENCES

Dillman, D. (2000). *Mail and Internet surveys: The tailored design method* (2nd Edition). New York: John Wiley and Sons.

Reef and Rainforest Research Centre (2015). Final [Biannual] Hub Report #8 July – December 2014.

ATTACHMENT A: FINAL E-SURVEY

Welcome!
You have been selected to complete this final evaluation of the National Environmental Research Program Tropical Ecosystems Hub survey. The survey will take no longer than 10 minutes to complete. All survey respondents will remain anonymous.

1. Which sector does your organisation fall under?
   - ☐ Government
   - ☐ Business
   - ☐ Indigenous
   - ☐ Environment
   - ☐ Agriculture Industry
   - ☐ Fishing Industry
   - ☐ Tourism Industry

2. What is your position within the organisation/ business?

3. Briefly, what is the purpose of your organisation or business?

4. Are you familiar with the NERP Tropical Ecosystems Hub?
   - ☐ Yes
   - ☐ No

5. WHEN and HOW did you first find out about the NERP Tropical Ecosystems Hub?

6. Do you use any form of research in your current position, particularly for policy or management decision-making?
   - ☐ Yes
   - ☐ No

7. What are the most important types of research you use for policy or decisionmaking?
   - ☐ 1.
   - ☐ 2.
   - ☐ 3.

8. How do you access information that does influence decisionmaking in your position, business or organisation?
   - ☐ Websites
   - ☐ Media releases
   - ☐ TV news
   - ☐ Newspaper article
   - ☐ Newsletters by
   - ☐ mail
   - ☐ Email newsletters
   - ☐ Journal articles
   - ☐ Fax bulletin
   - ☐ Reports sent by email
   - ☐ Reports sent by mail
   - ☐ Meetings/briefings
   - ☐ Conferences/seminars/workshops
   - ☐ Other (please specify)

9. Have you received any form of communication or information from the NERP Tropical Ecosystems Hub and/or related research organisations?
   - ☐ Yes
   - ☐ No

10. Which organisation/s have you received any form of information or communication from?
- ☐ CSIRO
- ☐ Reef and Rainforest Research Centre
- ☐ Individual researcher
- ☐ James Cook University
- ☐ University of Queensland
- ☐ Department of Environment
- ☐ Griffith University
- ☐ Australian Institute of Marine Science
- ☐ None of the above
- ☐ Other (please specify)

11. What type of information did you receive (e.g. media release, factsheet, research report)?

12. How was the information communicated? (e.g. email/newsletter/report/workshop)

13. Have you received this information on a regular basis and if so, how often?

14. What is the most useful piece of information you have received from the NERP Tropical Ecosystems Hub projects to date?

15. Do you share or distribute the NERP Tropical Ecosystems Hub research or information with others? (even in discussions or conversations)
- ☐ Yes
- ☐ No

16. Who do you share or distribute this information to?
- ☐ All employees in your organisation
- ☐ Only certain employees in your organisation
- ☐ Members of your club/group
- ☐ Colleagues in your industry
- ☐ Professional associations (member or not)
- ☐ Others (please specify)

17. On a rating scale where 1 = Very credible and 5 = Not credible at all....

How credible do you think the research produced by the NERP Tropical Ecosystems Hub is?

Very credible	Credible	Neither credible or not credible	Not credible	Not credible at all
☐	☐	☐	☐	☐

18. On a rating scale where 1 = Very strongly influences and 5 = No influence at all...

To what extent do the research outcomes from the NERP Tropical Ecosystems Hub influence policy and decision making in your position?

Very strongly influences	Strongly influences	Neither influences or not influences	Does not influence	Does not strongly influence
☐	☐	☐	☐	☐

19. In what specific way does the NERP Tropical Ecosystems Hub research influence policy or decision making in your position?

20. Why is there little or no influence?

21. Please provide examples of NERP Tropical Ecosystem Hub research outcomes or outputs that you are aware of directly changing or varying policy or management actions?

22. The NERP Tropical Ecosystems Hub is a federally funded program involving 240 scientists across 38 research projects addressing issues of concern for the management, conservation and sustainable use of the Great Barrier Reef and its catchments, tropical rainforests including the Wet Tropics World Heritage Area, and the Torres Strait. This program will end on 31 December 2014.

What specific issues/ problems relevant to your position/ business/ organisation would you like to see addressed in the future National Environmental Science Program?

23. Are you listed as a research user in any of the NERP TE Hub research projects?
- ☐ Yes
- ☐ No

24. In which project/s are you an identified research user?
- ☐ Project 1.1: Monitoring status and trends of coral reefs of the GBR
- ☐ Project 1.2: Marine wildlife management in the GBR World Heritage Area
- ☐ Project 1.3: Characterising the cumulative impacts of global, regional and local stressors on the present and past biodiversity of the GBR
- ☐ Project 2.1: Marine turtles and dugongs of Torres Strait
- ☐ Project 2.2: Mangrove and freshwater habitat status of Torres Strait islands
- ☐ Project 2.3 Monitoring the health of Torres Strait coral reefs
- ☐ Project 3.1: Rainforest biodiversity
- ☐ Project 3.2: What is at risk? Identifying rainforest refugia and hotspots of plant genetic diversity in the Wet Tropics and Cape York Peninsula
- ☐ Project 3.3: Targeted surveys for missing and critically endangered rainforest frogs in ecotonal areas and assessment of whether populations are recovering from disease
- ☐ Project 3.4: Monitoring of key vertebrate species
- ☐ Project 4.1: Tracking coastal turbidity over time and demonstrating the effects of river discharge events on regional turbidity in the GBR
- ☐ Project 4.2: The chronic effects of pesticides and their persistence in tropical waters
- ☐ Project 4.3: Ecological risk assessment of pesticides, nutrients and sediments on water quality and ecosystem health Part 1
- ☐ Project 4.4: Hazard assessment for water quality threats to Torres Strait marine waters, ecosystems and public health
- ☐ Project 5.1: Understanding diversity of the GBR: Spatial and temporal dynamics and environmental drivers
- ☐ Project 5.2: Combined water quality and climate effects on corals and other reef organisms
- ☐ Project 5.3: Vulnerability of seagrass habitats in the GBR to changing coastal environments
- ☐ Project 6.1: Maximising benefits of mobile predators to GBR ecosystems: the importance of movement, habitat and environment
- ☐ Project 6.2: Drivers of juvenile shark biodiversity and abundance in inshore ecosystems of the GBR
- ☐ Project 6.3: Critical seabird foraging locations and trophic relationships for the GBR
- ☐ Project 7.1: Fire and rainforests
- ☐ Project 7.2: Invasive species risks and responses in the Wet Tropics
- ☐ Project 7.3: Climate change and the impacts of extreme events on Australia's Wet Tropics biodiversity
- ☐ Project 8.1: Monitoring of ecological effects of the GBR zoning plan on mid and outer shelf reefs
- ☐ Project 8.2: Assessing the long term effects of management zoning on insure reefs of the GBR
- ☐ Project 8.3: Significance of no take marine protected areas to regional recruitment and population persistence on the GBR
- ☐ Project 9.1: Decision support tools for the GBR to identify and map bleaching resistant areas within the GBRWHA
- ☐ Project 9.2: Design and implementation of management strategy evaluation for the GBR
- ☐ Project 9.3: Prioritising management actions for GBR islands
- ☐ Project 9.4: Conservation planning for a coastal zone
- ☐ Project 10.1: Social and economic long term monitoring program (SELTMP)
- ☐ Project 10.2: Socioeconomic systems and reef resilience
- ☐ Project 11.1: Building resilient communities for Torres Strait futures
- ☐ Project 11.2: Improved approaches for the detection and prevention of wildlife diseases in the Torres Strait
- ☐ Project 12.1: Indigenous peoples and protected areas
- ☐ Project 12.2: Harnessing natural regeneration for cost effective rainforest restoration
- ☐ Project 12.3: Relative social and economic values of residents and tourists in the WTWHA

- ☐ Project 12.4: Governance, planning and the effective application of emerging ecosystem service markets: climate change adaptation and landscape resilience
- ☐ Project 13.1: The eAtlas

Thank you for completing the survey.
To see more about the NERP Tropical Ecosystems Hub and the research outputs, visit www.nerptropical.edu.au