Aboriginal knowledge partnerships for water planning and assessment in the Wet Tropics region

WARNING: This document may contain the names and images of deceased Aboriginal persons.
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EXECUTIVE SUMMARY

Australian governments, Aboriginal groups and research communities call for the development of governance mechanisms to appropriately and effectively respond to the water interests of Aboriginal Australians from northern Australia. This research assesses planning mechanisms established to provide decision-support for Aboriginal participation in integrated water management (IWM) in the Queensland Wet Tropics region to provide insight into which mechanisms best respond to the water interests of Aboriginal Australians. This research was undertaken as part of a one year activity for the Water for Healthy Country Northern Australia Indigenous water Management project.

A review of other assessments of IWM arrangements in Northern Australia showed that institutions with a focus on knowledge integration and support development of knowledge partnerships between Aboriginal Traditional Owners, scientists and planners provide effective decision-support for Traditional Owners to engage in water planning and management. Successful knowledge partnerships are able to navigate boundaries between science-based and Aboriginal knowledge systems. Boundary organisations (such as community reference groups) provide an important role in this interaction, boundary objectives (such as maps, focal species) serve as translators between different knowledge systems, and knowledge brokers facilitate this process.

Research with Aboriginal representatives from Girringun Aboriginal Corporation (Girringun), and some of the Aboriginal people they represent (whose traditional country is located in the southern part of the Wet Tropics region of far north Queensland) showed that Girringun uses a variety of knowledge partnerships to engage in IWM in the region. These include their own country-based planning partnerships, partnerships developed as a means to engage in water management on the protected area estate, and partnerships they use to engage in water planning via the Wet Tropics Water Resource Planning process.

Interviews with representatives from the Queensland Department of Environment and Resource Management and Terrain NRM highlighted that although the values, knowledge and water interests of Aboriginal people from the Wet Tropics region are
highly regarded as important for water resource planning and management, Aboriginal engagement to date has not been highly successful. This is mainly attributed to culturally inappropriate engagement strategies, and lack of knowledge of how better to engage.

Research participants were asked to rank existing IWM knowledge partnerships according to how they 1) supported Aboriginal articulation of water value, knowledge and interests, and 2) enables Aboriginal participation in water planning decision-making.

1. Knowledge partnerships that provided a forum for Aboriginal participants to contribute information in their own way and in a culturally appropriate setting were described as empowering and given a very high rank; compared with those partnerships characterised by an engagement processes that is pre-determined, culturally inappropriate may suits non-Aboriginal participants, but does not encourage Aboriginal participants to articulate their values and knowledge that were ranked low.

2. Knowledge partnerships described as facilitating empowering two way knowledge sharing processes via joint identification of problems, the use of new and relevant information to inform decision making, and, or through the production or negotiation of a culturally appropriate boundary object were ranked very high; compared to partnerships described as excluding Aboriginal people as genuine decision-makers (the consumptive water interests of groups from the southern Wet Tropics are not supported in Queensland), that required capacity to lobby government, and assumed all participants had equal access to resources and knowledge, that were ranked low.

The research showed that effective knowledge partnerships create a dialogue that crosses the boundary between different knowledge systems (using knowledge brokers and creation of culturally appropriate boundary objectives). Knowledge partnerships sometimes focus on consensus, where the values of different knowledge holders align; they can also handle conflict, where the values and aspirations of different knowledge holders may not complement (for example Girringun’s ongoing advocacy for cultural flow discussions and Indigenous water allocation aspirations). In the Wet Tropics region water values are diverse and contested and thus require robust knowledge partnerships to handle different knowledge contributions that pays due regard to Aboriginal water values.
1. **INTRODUCTION**

The focus on integrated water management (IWM) reflects the widespread view that institutional complexity, fragmentation and duplication impede efforts to effectively manage water resources. As other CSIRO Water for Healthy Country research has shown, integration can be achieved through deliberative and collaborative processes which enable the participation of non-state actors in environmental decision-making (e.g. Robinson et al. 2011; Wallington et al. 2010). In this way, integration enables stronger coordination of agendas and activities between formal (e.g. government agencies) and informal institutions (e.g. Aboriginal representative bodies) in order to promote more efficient and responsive management approaches for sustainability (Lane and Robinson 2009). Finally, integrated water management can enable knowledge to be shared between a diverse range of perspectives to inform and support effective water resource assessments and management decisions.

The research presented in this report assesses planning mechanisms established to provide decision-support for Aboriginal participation in **integrated water management** (IWM) in the Queensland Wet Tropics region. This research was undertaken as part of a one year activity for the Water for Healthy Country Indigenous water management project.

Australia’s commitment to IWM is embedded in the National Water Initiative (NWI). It requires Federal, State and Territory water planning agencies to ‘increase the efficiency of Australia’s water use, leading to greater certainty for investment and productivity, for rural and urban communities, and for the environment’ (NWI 2008). This includes the integration of diverse information sources and water values for more sustainable management solutions in Australia (NWI, para 36). The NWI makes specific mention of the imperative to recognise and increase the role of Aboriginal people and their values, knowledge and interest in IWM. Progress towards integrated water management in Australia has been slow and patchy (Jackson and Morrison, 2007), particularly in northern Australia.

Research findings from other assessments of IWM arrangements in Northern Australia have found that institutions that ensure Aboriginal and government agency planners to have adequate knowledge to make decisions about water management, and evaluate those decisions, are a critical attribute of a ‘healthy’ water planning system (Robinson...
et al. 2011). This is described as **knowledge integration** and refers to the planning mechanisms that provide effective decision-support for policy impact. **Knowledge partnerships** between Aboriginal Traditional Owners, scientists and planners are critical to this process and require effective decision-support for Traditional Owners to effectively engage in water planning and management (cf. Berkes 2009).

The assessment of knowledge integration mechanisms established to support Girringun Aboriginal Corporation’s (Girringun) efforts to integrate Aboriginal knowledge, values and interests into water planning objectives draws on the analytical framework developed by Robinson et al (2011). Girringun represents the nine Traditional Owner groups from the southern Wet Tropics (see Chapter 3). Relevant knowledge partnerships include those developed through Aboriginal-led country-based planning mechanisms, and also knowledge partnerships initiated by conservation and water resource planning processes.

The impetus for this research was twofold. First, Australian governments, Aboriginal groups and research communities call for the development of governance mechanisms that appropriately and effectively respond to the water interests of Aboriginal Australians from northern Australia (Jackson and Morrison 2007). Second, Girringun is interested in analysing the different decision-support opportunities and pathways available to them as part of their efforts to contribute to integrated water management activities on behalf of the Traditional Owners they represent.

### 1.1 Knowledge partnerships for integrated water planning and management

Indigenous and non-Indigenous Australians are increasingly coming together to negotiate how Australian watershed environments and natural resources can be managed. In the public policy domain IWM has become widely used as a comprehensive strategy to resolve multiple stakeholder agendas and manage complex and multi-tenured issues (McDonnell 2008; Lane and Robinson 2009). As researchers and practitioners engaged in planning have observed, the character of institutional interactions and the distribution of power in a planning context is a crucial determination as to how and if such integration strategies can be employed (Wallington et al. 2010a). In contexts in which power and control is highly centralized, institutional integration can be supported through regulatory modes of planning. In planning environments where management problems and solutions are complex, contested and
uncertain, the value of decentralised systems and processes that empower non-government actors to be involved in environmental decision-making has been highlighted (Healey 1997; Lane et al. 2009).

Australian policy makers are currently experimenting with a regional approach to achieve IWM. Basin and catchment plans are being devised by statutory bodies and government programs that define the planning space according to a watershed boundary. Regional institutions, such as Catchment Management Authorities or regional NRM bodies have been devised to coordinate a range of environmental policy instruments (Lane et al. 2009). Under these regional arrangements, traditional ‘top-down’ regulatory approaches to water planning are being replaced with hybrid modes of governance that engage the public in water decision-making and achieve multiple outcomes through a mix of regulatory, market-based, collaborative and community-based arrangements (e.g. Robinson et al. 2011).

Aboriginal Australians are also ‘scaling up’ their customary modes of environmental governance to embark on country-based planning amongst Aboriginal groups with shared cultural identity and common political or environmental management purposes. In the Australian context, country-based planning initiatives have been initiated to ensure Traditional Owners are able to express their views and aspirations about their estates, support their responsibilities and efforts to care for local ecosystems, support the economic well-being of local Aboriginal communities, and facilitate cooperation between neighbouring clans and language groups, for management of values of importance to them (e.g. Baker et al. 2001). Aboriginal Australians often use the term ‘caring for country’ to explain the philosophy behind such Aboriginal-led planning agendas and management practices. A range of county-based planning coalitions have emerged as part of Aboriginal community efforts to ensure state institutions recognise the need to ensure Aboriginal people are able to participate appropriately and effectively in environmental policy decisions (e.g. see review in Jackson and Robinson 2009).

Country-based planning initiatives also reflect the native title claims of Aboriginal Traditional Owners that assert the centrality of country to their culture and identity, and also their claims for self-determination and economic self-sufficiency (Hibbard et al 2008). Dimensions of ‘good’ governance are central to the achievement of such
country-based planning goals (Lane and Williams 2009). This includes a growing recognition of the important role Aboriginal institutions and leaders play in brokering relationships and negotiating decisions.

There has been considerable interest and attention on how water governance arrangements and processes can achieve IWM through democratic principles of negotiation and consensus-building. Less attention has been focused on the strategic issues that constrain the achievement of IWM for country-based planning processes and Aboriginal agendas. This research responds to this gap and investigates if and how IWM arrangements and strategies can appropriately respond to the knowledge contributions offered by Aboriginal people.

**Linking knowledge to water planning and assessment**

Increased interest in the connection between knowledge and practical (policy or management) action has led to a growing area of scholarship focused on how institutional structures and processes influence the use of different forms of knowledge for environmental planning purposes (Jacobs et al. in press). As Robinson and Wallington (in review) have argued, the development of Aboriginal, scientific and other knowledge systems within culturally different spheres of values create an opportunity for collaboration and social learning, but also a challenge (cf. Wohling 2009, Natcher et al. 2005). Both authors highlight the growing literature on the ‘co-production’ of knowledge, which has shifted from categorising and contrasting ‘Aboriginal’ or ‘local’ knowledge with ‘western’ science-based values and knowledge systems to focusing on how knowledge is shaped, to some degree, by the purposes of its practical uses (cf. Wallington et al. 2010). The practical understanding of how the interactions of science-based and Aboriginal knowledge systems can be managed through knowledge co-production practices have been examined in theories of ‘boundary work’ (Cash et al. 2003; Robinson et al. 2010; Wallington et al. 2011). This area of scholarship argues that knowledge exchange and sharing across the boundaries of science-based and Aboriginal knowledge systems requires an understanding of the ‘work’ of knowledge integration and translation undertaken by stakeholders, planners and planning organisations.

Studies have shown that the most successful boundary work practices involve two-way collaboration and communication between actors on each side of the boundary (Cash
An important role in this interaction is played by ‘boundary organisations’ or formal arrangements. This includes Steering Committees, and reference groups which serve to bring different knowledge systems together to discuss a common issue. Boundary work is also carried out through the co-production of ‘boundary objects’ (Fujimura 1992). Boundary objects include maps and focal species, which can serve as translators between different knowledge systems and enable joint knowledge production by stakeholders from both sides of the knowledge-action system boundary (Clark et al. 2010; Hill et al. 2010; Wallington et al. 2010). Finally effective boundary work relies on the role of individual ‘knowledge brokers’ who identify information needs and possible solutions by communicating and building relationships between knowledge holders and decision-makers (cf. Robinson and Wallington in review).

Institutional responses to build connections between knowledge and action for sustainable water management outcomes is also of theoretical interest, although methods to assess the performance of decision-support functions of planning systems is not well understood (Jacobs et al. in press). The integration of the many types of knowledge available to inform sound planning decisions, and the mechanisms of translation involved, have been the subject of intense research interest (e.g Wallington et al. 2010; Jackson et al. 2010; Robinson et al. 2011). This work highlights the complex and practical challenges of translating knowledge from a variety of sources to make a management decision which is simultaneously technically and democratically defensible (Wallington et al. 2011; Jacobs et al. in press). Such issues continue to challenge the decision-support underpinning the negotiation and delivery of water planning programs in many Great Barrier Reef catchments (Kroon et al. 2009; Robinson et al. 2011).

1.2 Water planning in the Wet Tropics

Water planning in the Wet Tropics region is governed through Aboriginal-led ‘country based planning’ activities, the Aboriginal and Government Indigenous Protected Area partnership, and also the Queensland State government-led Wet Tropics Water Resource Plan process. The decision-support mechanism provided by each planning model is the focus of our assessment.
Girringun use a variety of ‘internal’ partnerships within the Girringun community and also engage in external partnerships with government and non-government agencies and stakeholders engaged in IWM in the region. Of particular interest to this research are the internal knowledge partnerships which include the Girringun Board and informal community based networks established through country-based planning frameworks. External knowledge partnerships include the Indigenous Protected Area Steering Committee, the Girringun Indigenous Ranger Groups, and four mechanisms utilised to enable Aboriginal input into the Wet Tropics Water Resource planning process (see Fig 1).

**Figure 1:** Diagram showing the various knowledge partnerships that Girringun use to engage in integrated water planning and assessment in the Wet Tropics region
1.3 Report structure

The report is divided into 8 chapters. Chapter one is the introduction. Chapter two outlines the research approach and methods used to assess the various knowledge partnerships used in water planning and assessments in the Wet Tropics region. Chapter three provides insight into the water values, knowledge and management concerns of Girringun and the Traditional Owners they represent. Chapter four provides analysis of the country based planning mechanisms that Girringun uses to integrate the knowledge of the Aboriginal community it represents, to engage in water governance. Chapters five (protected area management) and six (Wet Tropics Water resource planning) analyse the external knowledge integration mechanisms that Girringun use to facilitate their role as water decision-makers in the southern part of the Wet Tropics region. Chapter 7 reviews the research analyses and the decision support mechanisms required to better integrate Aboriginal water values, knowledge and interests in water resource planning in the Wet Tropics. The report concludes with insights for IWM in Australia in Chapter 8.
2. RESEARCH APPROACH AND METHODS

The co-managed research approach used in this research was pursued to ensure that data gathering and analysis met the operational requirements of research partners, and also informed the research needs and interests of the CSIRO researchers (cf. Maclean and Cullen, 2009). The research focus and methodology was developed via a two-way partnership between the researchers and Girringun. The approach was supported by a collaborative research agreement negotiated with Girringun. It covers cultural protocol, the management and use of Intellectual Property, the taking and use of photographs in research reporting, as well as interviewee payment scales. A representative Aboriginal co-researcher was selected by Girringun to work closely with the CSIRO research team to ensure cultural and research protocols were clearly negotiated and followed. The co-researcher also acted as the first port of call for the evolution of the fieldwork.

2.1 Research phases and framework

The research evolved from three interconnected phases. These phases included the development of an analytical framework; participant assessment of the efficacy of knowledge partnerships available to integrate Aboriginal water values and knowledge into water assessments and decision-making; and a process in which the authors facilitated a knowledge partnerships for environmental flow assessment between two representatives of the Technical Advisory Panel (to the Queensland Government’s Department of Environment and Resource Management, tasked with the assessment of the environmental flow requirements of river catchments in the Wet Tropics) and Girringun Traditional Owners.

Aboriginal research participants were identified via a stakeholder analysis conducted with the Aboriginal co-researcher. Subsequent Aboriginal research participants included: the Aboriginal co-researcher and the Girringun support staff (Aboriginal and non-Aboriginal); representatives from the Aboriginal Rangers (Wild Rivers and Working on Country Ranger group); as well as Elders involved with Girringun Arts group. Non-aboriginal research participants were identified according to their role with the Government-led Wet Tropics Water Resource planning process. Interviews, focus groups and workshops were conducted at a location selected by the participants.
(government, non-government and Aboriginal participants), and ran from 15mins to 4 hours.

Knowledge partnerships were analysed using the framework developed by Robinson et al (2011) (see Table 1). This framework was used to design interview and workshop questions and analyse different knowledge partnerships available to integrate Aboriginal water values and knowledge into IWM in the Wet Tropics region.

<table>
<thead>
<tr>
<th>Collaborative decision-support for IWM</th>
<th>Governance arrangement integrates diverse knowledge</th>
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<tbody>
<tr>
<td></td>
<td>What is the efficacy of existing planning mechanisms to consider appropriate information to inform IWM decision making?</td>
</tr>
<tr>
<td></td>
<td>Governance arrangement brokers diverse knowledge</td>
</tr>
<tr>
<td></td>
<td>How robust is the water planning institution to be able to translate diverse knowledge for IWM strategies?</td>
</tr>
<tr>
<td></td>
<td>Governance arrangement facilitates adaptive governance and social learning</td>
</tr>
<tr>
<td></td>
<td>Does the IWM arrangement facilitate adaptive governance and social learning?</td>
</tr>
</tbody>
</table>

Table 1: Analytical framework to assess Aboriginal knowledge partnerships for IWM (Source: Robinson et al. 2011)

Phase two of the research used qualitative techniques to engage participants to assess the efficacy of the chosen water governance arrangements to provide for genuine integration of Aboriginal water values and knowledge. Five semi-structured interviews and one focus group were conducted with Aboriginal and non-Aboriginal stakeholders. The semi-structured interviews were guided by a serious of qualitative interview questions that the covered: the water planning governance arrangements they are
involved in to facilitate Aboriginal involvement; the mechanisms used to incorporate Aboriginal water values, knowledge and interests in these arrangements. Interviewees and focus groups were also requested to rank the different knowledge integration arrangements they had identified during the course of the interview/focus group. Participants were then asked to rank each of the identified mechanisms from 1-5 (where 1 = low, 5 = high) according to how they provide support to Aboriginal (and non-Aboriginal) people to articulate their water knowledge, values, interests; how they provide support to enable Aboriginal people to participate in water management decision making.

Phase three evolved from discussions with Girringun and two government employed representatives (scientists) from the Queensland Department of Environment, Resource Management’s Technical Advisory Panel (TAP), to enable a process for the integration of Aboriginal water knowledge and values into the TAP environmental flow assessment process. Phase three included two separate workshops.

The workshops were developed to ensure culturally appropriate engagement between Aboriginal participants and the government employed scientists. A framework to facilitate discussion was developed from information gathered from Phase two and other Aboriginal water knowledge and values research conducted in the Wet Tropics (see Maclean and Bana Yaralji Bubu Inc. 2011) (see Appendix 1).

The first workshop included 20 people: four Girringun support staff (GRIPA facilitator, the Girringun archaeologist and the Arts Manager and Co-ordinator), two young Aboriginal woman Rangers, a Girramay man (Traditional Owner of the wetland visited), his grandson, ten Girringun Artists and the two researchers. The workshop included a full day country visit to Gaynbul Wetland (the traditional country of the Girramay people) for a facilitated research and art workshop. The aim of the workshop was for Artists and young women Aboriginal Rangers to use Art as the medium through which to share water stories, values and knowledge. Participants were first asked to discuss their water values and knowledge (including special water places and important water dependant species). They used this discussion to guide their artwork (drawings and paintings). The workshop ended with each artist explaining the significance of the work they had produced. This workshop facilitated a knowledge partnership between Girringun, Artists, Rangers and the researchers. With the permission of the workshop
participants, the researchers used the discussion to populate the derived framework in preparation for the second day of the workshop.

The second workshop facilitated a knowledge partnership between Girringun support staff, the Girringun executive officer, the Girramay Traditional Owner who was involved in the Arts workshop, and the two TAP scientists. The TAP scientists explained the environmental asset selection process and shared information about 20 water dependant species selected as important indicators species for the wet tropics region. They also explained that these species were selected as useful to inform environmental flow as scientific knowledge shows they are vulnerable to changes in river flow. They also highlighted the knowledge uncertainty for the flow requirements of other species. They explained their wish to work with Aboriginal people to both determine their water values, and, where appropriate, to learn of their water knowledge to inform the environmental asset assessment. Girringun staff and Aboriginal participants shared relevant species and place knowledge with the TAP scientists. A book compiled by the TAP scientists facilitated discussion. This book included a selection of distribution maps and photographs of each of the selected 14 environmental assets. This discussion identified the need for additional country based interviews to inform the environmental flow assessment. A focal species, long-finned eel (*Anguilla reinhardtii*) was chosen by the Girringun participants from the list of 14. This species acted as the boundary object over which the scientists and the Aboriginal participants could share knowledge.

Six interviews were conducted with Girramay, Gulnay and Jirrabal Traditional Owners who were willing and able to share their water values and knowledge of the long-finned eel (*Anguilla reinhardtii*). These interviews were conducted during a visit to the traditional country of each interviewee. Maps and pictures of the long-finned eel (*Anguilla reinhardtii*) facilitated discussion.

Detailed notes were taken during all interviews, workshops and focus groups. All data was coded and the resulting themes provide the basis for the research analysis presented in Chapters 3 - 6.
2.2 Research ethics

This research project was passed by the CSIRO Social Science Human Research Ethics Committee. It recognised that informed and prior consent is an essential part of the research process. A research agreement was negotiated and signed by representatives of Girringun (see Appendix 2). Further, research participants were provided with a research information sheet that detailed the background, aims and expected outputs of the research; and were requested to sign a participant consent form (see Appendix 3).
3. ABORIGINAL WATER VALUES, KNOWLEDGE AND MANAGEMENT CONCERNS IN THE GIRRINGUN REGION

The water values, knowledge and management concerns of a selection of Traditional Owners from the Girringun region are presented in this chapter. These values, knowledge and concerns were shared by the Aboriginal research participants and the Girringun representatives during semi-structured interviews, focus groups and workshops. Each section starts with the general themes shared and ends with details shared about the Jaban, long-finned eel. Six research participants shared specific information about this species, as it was chosen by the Girringun Board and the TAP scientists as an important species about which to gather more detailed information.

3.1 Girringun Aboriginal Corporation

We conducted our research in partnership with Girringun Aboriginal Corporation (Girringun). Girringun is the representative voice for the nine Traditional Owner groups of the southern part of the Wet Tropics region (see Fig. 2). It is an active member of the regional natural resource governance landscape. It engages in this landscape as a means to enact the collective agendas and aspirations for country held by the nine Traditional Owner groups it represents.

The governance and management of fresh water country is integral to the work of Girringun. Several tropical rivers form part of ‘the Girringun region’. These rivers include: the Herbert, Tully, Murray, parts of the upper Burdekin and Hinchenbrook, Rivers. Traditional Owners of each part of these rivers are concerned with issues to do with decreasing water quality; river bank erosion; changes in hydrology due to infrastructure development; and river management in general. They also aspire to have their water rights recognised by the State of Queensland, via an Indigenous allocation (cultural flow – as discussed in detail in Chapter 6). Girringun engages in water and river management through their country-based planning efforts (see Chapter 4). They have begun to engage in discussions of cultural flow specifically via the Wet Tropics Water Resource Planning process.
Figure 2: The approximate extent of traditional country of the nine Traditional Owner groups represented by Girringun Aboriginal Corporation (source: Girringun, 2010).
3.2 Aboriginal water values in the Girringun region

Girringun and the Traditional Owners they represent articulate diverse water-related values. They articulate that water and water-related life is imbued with values that reflect their culture and provide social cohesion. These sentiments are expressed in following quote shared by a Girramay woman:

"Water is sacred. It is tied to language, to peoples’ story places and their name places […] Water connects people to their country, to their sites, to their culture, to their kinship, to their people […] Culture wouldn’t work if that river wasn’t there. [just as] the human body, wouldn’t work without that blood (Girringun 6.1)."

Water values also relate to the ability to engage in cultural practices. These cultural practices include: fishing, the collection of certain vegetation important for weaving and other artwork (in particular the river reed, *Lomandra hystrix* and the lawyer cane, *Calamus australis*), camping by the river with the younger generation for recreational pursuits and facilitating knowledge sharing between generations (see Fig 3). One Girramay Elder enthused:

"Water is a main resource for people, as in the old days people used to walk across the country carrying water in a little bucket (dilly bag) made from local vegetation. Water brings life to us and was essential when they used to walk across the country. They used to camp by creeks. It’s good to have water, we bring our grannies to these places, the kids love to be on the creek side and to swim around (even more than they like to be in the town) (Girringun W1.1)."

Three of the young Girringun Rangers spoke of their joy of spending time on country with the older women: [We often] go to collect lawyer cane with the Wigis (the old gals), we sit and weave with them […] and Auntie Dena teaches us about country (Girringun FG2.1) and one young Ranger lamented that she wished more of their Ranger work could be focussed on knowledge sharing at important places in the Girringun Region (see Fig 4).
Figure 3: Wigi Artist Ethel Murray shares her artwork which depicts a traditional shelter, fire hunting and fishing tools that the ‘old people’ would have used at that location (Gyambol Wetland) in the past.

Fish continue to be an important part of the diet of many Aboriginal people from the Girringun region. Indeed, one Jirrabal woman stated that Jabun (eel), Bugal (black breem), Bulgara (dew fish) and Bungaru (fresh water turtles) continue to be our main food, we hunt for it all the time (Girringun 5.1).
Other research participants noted that other important fish species include:

- Dalgun (silver breem) found in the mountain areas
- Yungal (red breem) found in fresh water.
- Yulgul-girama (barramundi)
- Moa (fresh water prawn)
- Yabbies
- Mud cod

Figure 4: Girringun Ranger Evelyn Ivey uses topographic maps of the Girringun region to show locations of water places on the protected area estate where the Rangers conduct their management work. She wishes more time could be spent on country with Elders learning about important water places. In the background the Wigis and others continue with their artwork (Wigi and Ranger workshop, Gyambol Wetland June 2011)

Research participants spoke about the important spiritual values of rivers, wetlands, lagoons, waterfalls and other water places. They mentioned that most rivers are comprised of important stories places and imbued with particular Cultural Protocol and Lore (as discussed in more detail in the next section). These rivers and water places are also important as they are closely related to individuals, for example, several Girramay youngers from the region are named after parts of a river, and are thus culturally responsible for the relevant water place. Further, other people are named
after particular aquatic plant and animal species, including the Jaban, the long-finned eel species.

3.2.1 Jaban (long-finned eel) related water values

Research participants explained that the Jaban is valued for its economic and health benefits, and in relation to its social, cultural, spiritual importance. The Jaban was described as a good food source, indeed as a main food source. Two research participants explained that it is also valued as a reliable food source as when river is low it is still possible to catch eels, as they burrow into the leaves and mud in the river bed. The Jaban is also highly valued for its medicinal properties. This was mentioned by all research participants. One Elder explained: [it’s] also good medicine for the body – when you eat certain food it has certain vitamins. We feed of it now and again (Girringun 2.1).

The social and cultural values ascribed to Jaban, are similar to those ascribed to all aquatic species. When fishing for the Jaban, they also spend time with their family and friends: they camp at the river as a family. At the same time as they teach the children how to catch the Jaban and how to the clean and cook it, they also share knowledge and stories on other water-related topics. One Elder explains the benefits of such trips: it’s good to get out of the house, back to country, to connect with country, and be peaceful (Girringun 4.2).

Girramay research participants spoke about the spiritual values of the Jaban. A significant Dreaming story for the Girramay people is about Girragural. Girragural, who was half man half eel, came from the south. He named different parts of the Girramay country, and gave the people their language.

3.3 Aboriginal water knowledge in the Girringun region

Traditional Owners from the Girringun region have detailed knowledge of water-related places, animals and plants (including knowledge of the ‘bush calendar’), Cultural Protocol, and past cultural practice. Research participants spoke of the important Dreaming stories of the Tully and Murray Rivers. One of these stories explains the stewardship role of the Kingfisher who ensures water continues to flow in the region.

Research participants spoke of several important fishing places along the Murray and Tully rivers. These are places where the ‘old people’ used to fish, and where the
research participants continue to fish and camp. Girringun representatives also provided information about important story places (in particular in relation to the Jaban, the long-finned eel). These places are not only of great cultural and social value to particular Aboriginal people from the Girringun region, they are also imbued with detailed knowledge of cultural protocol, lore and past practice.

Cultural Lore and Protocol dictates that water must be respected. The words of this Girramay Traditional Owner explain why his people have learnt to respect water.

*Water is important, if you don’t take it seriously it can drown you. For example, before you cross a river you must talk to the water for safe crossing. Some people think this is funny, but it’s important to us. My grandparents, my father and my nanna Lorna had stories about water. [For example] where the spring comes out, there is a rainbow. A rainbow serpent sits there to let the water out for the people to drink. It is the spirit of the water (Girringun W1.1).*

Cultural Lore and Protocol also directs appropriate social behaviour at special water places. One such Protocol relates to asking permission from the Rainbow Serpent to be at certain story places, and not taking too many fish from any one place. An Elder explains that if you don’t ask permission and, or if you’ve caught too many fish *he’ll get wild on you* (Girringun 4.1). Cultural Lore directs that pregnant woman should not visit certain water places as the rainbow serpent may kill the unborn baby. Pregnant women and young children should not eat certain fish species, as it will impact their health (for example, if a pregnant woman eats the Jaban, long-finned eel species, the baby will have ‘runny gut’ until it grows up).

Further, as is articulated in the following quote, Cultural Lore and Protocol provides Traditional Owners with explanation of changes in river flow:

*If there’s a stranger who goes to a special water place, the rainbow will follow them and the river will dry up and become silted. My father used to say “somebody has been here and taken the rainbow out of here” (Girringun W1.3).*

Many Girringun Elders have detailed knowledge of particular plant and animal species on their Traditional country (thus they have observed changes and resulting impacts upon the freshwater ecosystems over time). Five Elders spoke of their knowledge of the ‘bush calendar’. Bush calendar relates to what one Girramay Elder describes as *watching the wildlife and following the wildlife* (Girringun W1.1): that is, interconnected biophysical indicators.
Important bush calendar plant species include:

- Black bean (*Castanospermum australe*)
- Alexandra palm (*Archontophoenix alexandrae*)
- Blue Quandong (*Elaeocarpus angstifolius*)
- Leichart tree (*Nauclea orientalis*)
- River cherry (*Syzygium tieneyznum*)
- Golden penda (*Xanthostemon chrysanthus*)
- Candle nut (*Alenrites moluccaria*)
- Milky pine (*Alstonia scholaris*)
- Blue gum (*Eucalyptus tereticornis*)
- White bark river gum

The detailed water-related knowledge held by Girringun Traditional Owners and younger Aboriginal people, means that certain people have noticed changes in the fresh water country. They note that many of these changes result from changes in land use across the landscape.

### 3.3.1 *Jaban* (long-finned eel) related water knowledge

Research participants discussed their extensive knowledge of the *Jaban*. This knowledge relates to: the eels’ life cycle (they feed at night, they spawn at sea, and the young come up the rivers after the flood); their knowledge of different eels (the black and the silver bellied eel); seasonal fishing practices to catch the eel (certain techniques, locations in a river and certain places in the landscape); and who can eat the different parts of the eel.

### 3.4 Management concerns affecting Aboriginal water values

As is common across Indigenous Australia, Girringun and the Traditional Owners they represent do not separate the cultural, spiritual and socio-economic attributes of fresh water and related ecosystems from the environmental attributes. The term "caring for country" represents this conceptualisation of fresh water systems. In practice, Girringun aspire to care for their traditional freshwater country in ways that enable ongoing spiritual connection to country (enacted through cultural protocols such as fishing and hunting), building sustainable livelihood opportunities for their community and results for healthy fresh water ecosystems (see also Zurba, 2009; Maclean et al, in review).

Freshwater country is not homogenous, rather it is unique. Girringun freshwater country includes that of nine Traditional Owner groups (see Fig 2). The country of
each group is geographically and biophysically distinct from the next. For example, all nine Traditional Owners have fresh water interests, and six of those groups also have salt water country interests as well. Each landscape also represents diverse Aboriginal land use histories and associated/evolved cultural practice and protocols. Some places are regarded as having important spiritual significance, while other places are known as important fishing spots, and other locations are embedded with cultural importance, such as women only sites. The way that Girringun, and the Traditional Owners they represent, choose to manage these places reflect how Traditional Owner groups understand and articulate water values in relation to distinct locations on their country.

Girringun and Traditional Owners are deeply concerned with changes in water quality, river flow and aquatic life. Their concerns correspond to their cultural and spiritual obligation to care for their country and their ability to collect aquatic food resources to supplement their diet (in addition to their financial income). Not only do these changes impact particular places and freshwater ecosystems but Girringun Elders argue that they also impact the health of some members of the Aboriginal community as well as the mental and spiritual well-being of the older generation of Elders.

Girringun note these impacts have occurred with changes in farming practices and the development of specific infrastructure on particular rivers. The following quote from a different Girringun representative articulates how the infrastructure development associated with the Tully River Hydro Scheme has resulted in localised changes which have impacted both the health of the Tully river ecosystems and the local Traditional Owners.

*Tully Hydro Scheme which was built in the 80’s and [was built on] a very major spirit place [to the local Traditional Owners] and so is associated very much with a change in the dynamic of localised landscape, but when it comes to specific fish species and those food resources, they very much localised in the use of those resources and so consequently even localised impacts have the potential to disrupt the ability of Traditional Owners to gather resources for their private use. There are some studies around which suggest that certainly in more remote areas and Jumbun is classified as a remote community, remote areas of Queensland that kind of subsistence and supplementary food resource comprises around 40% of the household food income of those people (Girringun 1.3).*
Contemporary land tenure and related land use, dictate the extent to which Girringun and the Traditional Owner groups are able to access and thus care for their traditional country. Much of Girringun terrestrial country is held as freehold land given over to cane farming and in more recent times, forestry (see Figs 5, 6). Other land is held as state land and managed as State National Parks, and as part of the Wet Tropics World Heritage Area. The ability of Traditional Owners to both gain access to and care for their traditional country depends upon their relationship and ability to negotiate with the current landholders.

**Figure 5:** Girringun Ranger Penny Ivey explains that her artwork depicts the impacts of banana plantations on water quality, the flow regime and local aquatic life such as the platypus (Wigi and Ranger workshop, Gyambol Wetland June 2011).
Figure 6: Girramay Elder Claude Beeron, Traditional Owner of Gyambol Wetland (location of the Wigi and Ranger workshop), explains that his painting depicts the shape of the Gyambol waterhole, the black spot represents the location of a rock they played on as children, however 50 years later, that rock is no longer there and they do not know where it went. He also explained that as the local council road which afforded access in the past was damaged during Cyclone Yasi, his ability to visits his traditional country - Gyambol Wetland - is now dependant upon a local cane farmer allowing passage through his property (Wigi and Ranger workshop, Gyambol Wetland June 2011).
In many places, contemporary land use practice has altered traditional country substantially. A quote from a Girringun representative illustrates what the loss of cultural places means to Elders and the impacts it has upon their ability to care for their country.

We have] environmental obligations and spiritual obligations to our country and to our spiritual connections. That connection is what separates indigenous [people] from other people. For example, I took an Auntie back for the first time in years to her country [which includes] a waterhole. Unfortunately it was gone because of the cane fields and she was crying for it. Stories that have been shared and passed down are now cut because the places are no longer there. The story is now about “that used to be…” but the story will start to fade. (Girringun FG1.7)

This quote again demonstrates how place matters to the articulation of water values and management practices. Such locations are now referred to as ‘that used to be …’ places, unfortunately with the passing of time, stories and knowledge of these places have started to fade.

As mentioned in Section 1.2 Girringun and Traditional Owners are significant actors within the contemporary Wet Tropics environmental governance landscape. This enables them to articulate their water values, concerns and interests to the wider community, and improve the capacity of their community to care for their country. Chapter 4 provides analysis of the mechanisms Girringun use to engage in management of fresh water on their traditional country.
4. KNOWLEDGE PARTNERSHIPS ESTABLISHED THROUGH COUNTRY-BASED PLANNING

Country-based planning approaches and practice is negotiated between Aboriginal groups with shared cultural identity and common political or environmental management aims. It enables Traditional Owners to express their views and aspirations about their estates, exercise their rights and responsibilities to care for local ecosystems, support the economic well-being of local Aboriginal communities, and facilitate cooperation between neighbouring clans and language groups.

Girringun use a variety of country-based planning mechanisms to integrate and translate Aboriginal knowledge contributions into water planning and decision-making. This chapter provides an analysis of these Aboriginal-led mechanisms. The discussion starts with a description of each mechanism, includes the rank given to describe the efficacy of the decision-support provided by each mechanism (where 1=low, 5=high), and a discussion of this assessment. The review is derived from information collected via interviews and workshops conducted with Girringun and some of the Traditional Owners and Aboriginal people they represent (including three young Aboriginal Rangers, ten Girringun Artists, eight Elders).

The assessment focuses on the Girringun Aboriginal Corporation Governing Committee Board and also informal planning mechanisms which includes ongoing dialogue between Girringun Executive Officer (EO), Staff, and Board and the Elders and young Aboriginal people from the Girringun community.

4.1 Girringun Aboriginal Corporation Governing Committee Board

The Girringun Aboriginal Corporation Governing Committee Board (the Board) is the name given to a group of nine elected representatives (one from each of the Girringun nine Traditional Owner groups), plus an elected chair, who oversee the running of Girringun Aboriginal Corporation and make decisions on behalf of Girringun's membership (650 adult Traditional Owners from the nine groups). A Girringun research participant provided a rank of 3 to express how the Board handles the knowledge required for them to set water governance objectives. The participant explains that although the Board aims for a 5, its capacity to develop its own internal
governance structure and community support mechanisms (eg Ranger support) can still be improved. The Board continues to have a limited capacity to act - Girringun would like to extend the governing influence, financial and strategic capacity of the Board.

The Board uses a variety of governance approaches to handle the knowledge required for water governance. These approaches include: community engagement and information sharing for priority setting.

The community engagement approaches used to set priorities for planning objectives are participatory and holistic in nature. Each member of the Board is elected by one of the nine Traditional Owner groups. It is their responsibility to disseminate relevant information shared at Board meetings, to garner the opinions, concerns and interests of their respective community and to share community thoughts at Board meetings to inform decision making. Community workshops are also often used to this end.

The Board makes every effort to support and facilitate the involvement of Elders in workshops, forums and planning meetings held by government and non-government agencies including other Aboriginal groups. These forums are regarded as important for information sharing and to learn from others. Funding to attend these forums is limited as Girringun does not receive funding for its core governance business. However the Board supports the Girringun EO and staff members to source funding from existing project budgets and to budget for such expenses in prospective project bids. These costs include payments for peoples’ time, as this Girringun representative explains

[it’s] a core concern for us is to make sure that people are remunerated for their time and the advice that they give and the input that they provide (Girringun 1.6)

Diverse information sources are considered essential to assist in decision making for water governance priority setting. The Board, CEO, and staff source information from their partnerships with government and non-government agency representatives, researchers and other Aboriginal groups. This information is also provided to the wider community, via the representatives, and in community workshops where rigorous debate often results. It is anticipated the community will decide what information is relevant and use it to inform their decision making.
4.2 Informal networks within the Girringun community

Girringun Aboriginal Corporation including its EO and staff members provides many services for their community. These services include problem-solving assistance for Elders and Rangers in relation to a variety of themes including the management of important rivers and water holes. A Girringun representative gave a rank of 5 to the extent that these internal mechanisms integrate Aboriginal knowledge for water management decision making. She explains:

*The success of the organisation to handle knowledge for informal decision making is represented by the number of people who use it as the place where they feel they can report mis-haps (for example, unexpected fish deaths in rivers), can ask for advice on advocacy and ask for assistance for caring for country based problem solving and decision making (Girringun FG 1.1).*

The informal dialogues that occur between Girringun staff, Aboriginal Rangers, and Elders provide effective means for knowledge sharing for problem solving. As one Girringun representative explains:

*Girringun is a formal cultural network, there is protocol, exchange of information, sharing of knowledge about country to people whose country it is [...] TOs don’t only go to their own special places, but they also go to other areas, they ‘monitor’, [they then..] tell Girringun to take action via other TOs. (Girringun FG 1.5)*

Problems and issues are discussed and debated; new and relevant information is shared and priorities are set as part of the informal decision making process. These informal dialogues are fluid and occur between people who may not be part of any formalised governance structure but who are aware of contemporary land management activities and related impacts on particular parts of the region. They result in the communication of important information about, for example, the health of a particular water hole. This reporting often results in localised problem solving and related management action.

A pertinent example is the two-way knowledge exchange that occurs between and the wider community in relation to informal monitoring of waterways and aquatic ecosystems. One Gulinay man who spends a lot of time fishing in Tully river catchment
area is in frequent dialogue with Girringun about the health of these waterways. Whenever he observes extreme change in any of these waterways he requests Girringun provide time and resources to capture evidence of these changes. He recently observed unusual fish kills at Jones’ lagoon in the Tully and Murray rivers catchment area. He reported the death of many barramundi (up to 40cm in length) to Girringun EO and other staff members, requesting that a number of the Aboriginal Rangers accompany him to Jones’ Lagoon to photograph the dead fish and take water samples as first steps in determining why these events have occurred. In the following quote, he explains why informal monitoring is an important way to inform water planning objectives.

“We are always out on our country self monitoring. Can’t turn back the clock (for example many weeds have been introduced) but we can maintain and manage what we have now. It’s a sad thing to see changes, [but we must] talk about big picture, not small picture, walk around the country and see changes, [and] talk about the changes (Girringun FG 1.4)

Girringun, the staff and the Board use the information provided to them via informal monitoring to inform their discussions with other environmental governance agencies.
5. KNOWLEDGE PARTNERSHIPS ESTABLISHED THROUGH PROTECTED AREA MANAGEMENT PLANNING

This chapter analyses the external knowledge partnerships established through the Indigenous Protected Area planning process that Girringun use to facilitate their role as water decision-makers in the southern part of the Wet Tropics region.

5.1 Water and the Indigenous Protected Area Plan

The Australian Federal government has funded Girringun to conduct an Indigenous Protected Area (IPA) co-management consultation project (2009-2014) (for more information on IPA see SEWPC, 2011). Funding supports an IPA program facilitator and covers the costs associated with the development of a management plan. Water governance is central to the overarching goal of the Girringun Region Indigenous Protected Area Co-management Consultation Project (GRIPA): “the effective, sustained and meaningful longer term collaborative co-management of land and sea country situated within the contemporary protected area estate, and the increased participation of Traditional Owners in managing land and sea country within the Girringun region” (GAC, 2010:4).

Of particular interest to this research is the knowledge integration mechanisms used to facilitate the Girringun Indigenous Protected Area Co-management Consultation Project (GRIPA). These include a Project Steering Committee and the Girringun Aboriginal Ranger groups. The Project Steering Committee is the primary governance mechanism Girringun use to develop the GRIPA. Committee membership includes senior representatives from government and non-government agencies with whom Girringun wishes to establish collaborative co-management arrangements. As part of their planning, Girringun has negotiated MOUs with separate committee members. An MOU with Queensland Parks and Wildlife (QPWS) details a joint work plan between QPWS and Girringun Rangers for management on the protected area estate; and an MOU will soon be negotiated with Queensland Fisheries for joint management of 10 fisheries habitat areas located on the Tully and Murray rivers.

A group of young men and women have been employed since 2009 as part of the Girringun Aboriginal Ranger group. The funding for these Ranger positions comes from SEWPC Working on Country Regional Program and the DERM Wild River Ranger
Program. The Working on Country Regional Program is part of the Federal Government’s Caring for our Country initiative which has the objective to build on Indigenous knowledge to protect and manage land and sea country and provide funding for Indigenous people to deliver environmental outcomes to the Australian Government” (SEWPC, 2010). The Wild River Ranger program is part of the Queensland government’s ‘Looking after Country Together’ initiative that also aims “to improve Indigenous participation in the management of land and sea country” (DERM, 2010) with a particular focus on regulated Wild Rivers. Hinchenbrook River, Hinchenbrook Island, is the only declared Wild River in the Girringun region. Both Ranger groups are managed by a Ranger Coordinator, who is guided by and reports to the Girringun Board, EO and IPA facilitator.

Water assessment and management is central to the overarching goal of the Girringun Region Indigenous Protected Area Co-management Consultation Project (GRIPA). The knowledge integration partnerships utilised through the IPA for water planning include the Project Steering Committee; and the Girringun Aboriginal Ranger Groups. Each partnership was ranked (from 1-5, where 1=low, 5=high) and evaluated by Girringun representatives in relation to the extent to which each of these facilitate knowledge integration for water management decision-making on Girringun country. These evaluations are presented here.

5.2 The Indigenous Protected Area Project Steering Committee

The primary governance mechanism used to develop the GRIPA is a Project Steering Committee. Girringun regard the GRIPA Project as the way to action the country based plan (Girringun FG 1.3). Committee membership includes senior representatives from government and non-government agencies with whom Girringun wishes to establish collaborative co-management arrangements. Representatives include those from Queensland Government organisations including Queensland Parks and Wildlife Service, Queensland Fisheries, Department of Environment and Resource Management; representatives from Federal Government organisations including Department of Sustainability, Environment, Water, Population and Communities, Great Barrier Reef Marine Park Authority and the Wet Tropics Management Authority; as well as representatives from two non-government organisations: Terrain NRM, Burdekin
The Committee facilitates cross-agency discussion to guide the GRIPA in a way that satisfies all agency requirements.

<table>
<thead>
<tr>
<th>Partner</th>
<th>Rank</th>
<th>Explanation for rank as provided by interview respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Queensland Parks and Wildlife Service</td>
<td>4</td>
<td>• Proactive in supporting IPA planning; • first MOU for joint work plan development between Girringun Rangers and QPWS; • lease of QPWS infrastructure at Edmund Kennedy NP where Girringun Rangers will soon be based; • support to improve Aboriginal and QPWS Ranger relationships.</td>
</tr>
<tr>
<td>Queensland Fisheries</td>
<td>4(+)</td>
<td>• Draft MOU for joint management of identified fish habitat areas (including sea grass watch, water quality monitoring, water patrols), to provide training to Rangers; • Relationships with Fisheries staff are excellent, staff happy to look for alternative ways to do things; • Internal policy environment is limited.</td>
</tr>
<tr>
<td>Dept of Sustainability, Environment, Water, Population and Communities (Fed)</td>
<td>4</td>
<td>• Key funder of and contributor to IPA and Aboriginal Ranger program; • Very important in progression of IPA.</td>
</tr>
<tr>
<td>Department of Environment, Resources and Management (QLD)</td>
<td>4</td>
<td>• Significant investor and partner; • funder of the Wild Rivers Ranger program</td>
</tr>
<tr>
<td>Great Barrier Reef Marine Park Authority (GBRMPA)</td>
<td>4</td>
<td>• Provide resourcing for TUMRA facilitation and implementation</td>
</tr>
<tr>
<td>Wet Tropics Management Authority</td>
<td>3</td>
<td>• Lack of resourcing (and concerns about lack of follow through of the Regional Agreement), • Particular staff progress internal agency policy discussion</td>
</tr>
<tr>
<td>NRM bodies (Terrain, NQ Dry tropics)</td>
<td>3</td>
<td>• Instrumental in resourcing of early country based planning (the precursor to GRIPA Project)</td>
</tr>
<tr>
<td>World Wide Fund for Nature (WWF)</td>
<td>3,4</td>
<td>• Have an MOU that supports collaborative conservation management: the Girringun Rangers and the GRIPA.</td>
</tr>
</tbody>
</table>

**Table 2** Ranks and Rank Justification provided by Girringun research participants for the success of the GRIPA Steering Committee.
This knowledge integration mechanism spans two of the three dimensions of decision-making: knowledge integration and translation. A Girringun research participant, instrumental in the Steering Committee, ranked the relationship between each Committee representative and Girringun. These ranks reflect the extent to which the partnership integrates Aboriginal knowledge and values (see Table 2). As the GRIPA represents an articulation of Girringun’s values and knowledge, it was not considered necessary to rank.

Girringun holds regular committee meetings to ‘keep everyone in the loop’. Members provide government policy updates and detail what changes might mean for the development of the GRIPA. A Girringun representative explains how this cross-agency information sharing is central to the GRIPA management plan:

"the agencies have different requirements, [so] it’s even more important to share and exchange information at that Steering Committee table so that there is clarity on everyone’s behalf about how that’s progressing and we can identify and work towards synergies, where we can weave the threads closely together to make a stronger IPA (Girringun 1.8,9)."

Girringun progress the GRIPA draft management plan via voluntary agreements with government agencies, developed via the Steering Committee. A memorandum of understand has been signed with WWF and QPWS. The former support collaborative conservation management including the Girringun Rangers and the GRIPA; the latter supports and formalises protocol for the Girringun Rangers to work on the Queensland protected area estate. Girringun will develop similar agreements with Queensland Fisheries, GBRMPA (a conservation management agreement) and regional councils that will ultimately provide a support base for the IPA management plan.

The prospective MOU with Queensland Fisheries will set priorities for the co-management of 10 identified high conservation fisheries habitat areas that fall within the GRIPA. In particular those located at the head and mouth of the Tully and Murray Rivers, and in the wetlands on the lower Tully River). These areas are both environmentally significant as they provide Tully and nurseries for threatened fish species, and culturally important. They will negotiate a MOU with Queensland Fisheries. Girringun is providing operational management advice to Queensland Fisheries that relates to the role that Girringun Elders and the Girringun Aboriginal
Rangers could have in the management and policing of these nationally identified habitat areas. Girringun advises that Girringun Elders are interested to develop water quality indicators, and Girringun Aboriginal Rangers will soon have the accredited expertise to engage in water quality monitoring and the policing of fisheries. Activities would extend the work the rangers are currently doing with Queensland Fisheries (sea grass monitoring) to include water ecology sampling, patrolling of fishing areas and fisheries management.

5.3 Girringun Aboriginal Ranger Groups

The Girringun Ranger group has been established in partnership with government and non-government agencies and their work is guided and formalised through the MOUs. The MOU signed with QPWS provides the operational guidelines and protocol for the Rangers to deliver on-ground management action including riparian revegetation. An anticipated MOU with Queensland Fisheries will provide guidelines for the management of the 10 habitat areas that are located in the IPA region (at the mouth of the Tully and Murray rivers). Three Girringun research participants ranked the ability of the Girringun Rangers to implement the on-ground management work of the GRIPA. These ranks are presented in Table 3.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Explanation for rank as provided by interview respondents</th>
</tr>
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</table>
| 3    | • The Rangers are the movers of change, are incorporating traditional knowledge in the management of country.  
      • They are currently getting skilled up and developing capacity to implement IPA priorities (which include river management and monitoring, future management of fish habitat areas). |
| 5+   | • Traditional Owners are proud of the Rangers who they formally recognise as a successful Girringun initiative to implement caring for country aspirations. |
| 4,5  | • Public perception of Rangers and their work, which equates to public perception of Girringun, is high.  
      • The community now regards the Rangers as working for the wider community to implement environmental and cultural heritage management, not just the Traditional Owners. |

Table 3 Ranks and Rank Justification provided by Girringun research participants for the success of the Girringun Ranger Groups to implement GRIPA IWM objectives

Girringun representatives describe the Girringun Rangers as the drivers of IPA implementation. One interviewee elucidates that although it is early days for the
Rangers, who are still receiving training (including the Conservation Land Management Certificate for Land and Sea Cultural and Natural Management), they are instrumental to Girringun’s IPA aspirations. They are regarded as

the movers of change, they are getting skilled up, […] while the] leadership continues to speak about the big picture, the troops are being mobilised – they are the future and the change (Girringun FG1.5).

The Girringun EO, Board and staff members articulate how the Aboriginal Ranger groups and the funding made available to Girringun to both develop the capacity of young Aboriginal people to care for their traditional country, and to build partnerships for the implementation of their country-based planning, through the IPA management plan, represent a series of opportunities that only “come along once in a life time” (GW1.9). They express the tension between grasping these opportunities as a way forward for their ‘mob’, and managing the expectations of other Aboriginal groups in the region. One interviewee explains:

Everything [funding and support for the IPA and the Indigenous Ranger groups] is firming up now, therefore we need to seize opportunities now but [there is] pressure on Girringun by other Aboriginal groups to deliver ground breaking stuff. For example, Wild Rivers is a huge opportunity if handled well/properly. But given what was going on on Cape York, we may lose the opportunities. It’s a juggling act to take advantage of all the opportunities, and it’s a huge task to prioritise because all the opportunities are here right now (Girringun FG1.9).
6. **KNOWLEDGE PARTNERSHIPS ESTABLISHED THROUGH THE QUEENSLAND GOVERNMENT WET TROPICS WATER RESOURCE PLANNING PROCESS**

Catchment-based water resource plans are at various stages across Queensland. Completed water resource plans set the parameters for the management of the surface water (rivers, lakes, springs, dams) as well as groundwater for each catchment. The aim of these plans is to ensure water use efficiency into the future, this is operationalised via water licences, allocations and guides for water trading. These plans are reviewed every 10 years.

The Wet Tropics Water Resource Planning process relates to two specific and separate geographic areas in far north Queensland (see Fig 7). The northern area includes two river catchments: the Daintree and Mossman. The larger southern area that encompasses five river catchments: Mulgrave-Russell, Johnstone, Tully, Herbert and Murray coincide with much of the Girringun region. Water resource planning in both the northern and southern parts of the legislated Wet Tropics region is conducted according to the Queensland *Water Act 2000* that guides state wide water planning. As the northern area is geographically located in the southern part of the Cape York Peninsula, all water resource planning is also directed by the Queensland *Wild Rivers Act 2005* and the inter-related *Cape York Peninsula Heritage Act 2007*. The additional legislation in the northern area may result in a legislated Indigenous water allocation.

The Wet Tropics the Draft Wet Tropics Water Resource Plan – Information Report (DERM, 2010) was prepared to guide the Wet Tropics communities through the water planning process. It states that “a robust water allocation and management framework is needed to balance the needs of agriculture, industry and town supplies with environmental, social and indigenous water needs” (DERM, 2010: ii). The Wet Tropics Water Resource Plan area includes seven river catchments (Daintree, Mossman, Mulgrave–Russell, Johnstone, Tully River, Murray and Herbert rivers). Each catchment may be subject to specific water allocation and management strategies. These strategies are developed from information provided by the community consultation (community reference panel, community-wide engagement and Aboriginal-specific engagement processes) and technical assessment panels. All information provided by the community and the technical assessment panels is
provided to the Minister who makes the final decision about water allocation and management strategies.

Figure 7: Proposed area for the Wet Tropics Water Resource Plan
(Source: DERM, 2010:7)
Wet Tropics Water planning will progress through five stages:

1. The announcement of a moratorium on new water infrastructure development, release of the Wet Tropics the Draft Wet Tropics Water Resource Plan – Information Report and invitation extended to the wider community to provide submissions;
2. A period of priority setting, which includes environmental, social and economic, and hydrological assessments, community consultation, to inform the development of the draft plan;
3. Release of the draft plan and invitation for community submissions;
4. Development of the Resource Operations Plan (the rules for the implementation of the plan);
5. Plan review in 10 years time.

At present the WTWR planning process is in the priority setting phase. Our research focuses upon the knowledge integration mechanisms that DERM uses to engage Aboriginal people from the Wet Tropics in this priority setting activity.

As signatory to the National Water Initiative (NWI) the Queensland State Government has committed to recognise Aboriginal needs, and ensure planning processes, water plans and water trading rules acknowledge potential impacts on Aboriginal water values. There mechanisms are used to engage with Aboriginal Australians from the Wet Tropics. These include:

- Community submission process to the Draft Plan
- The Community Reference Panel
- An Aboriginal engagement process; and as facilitated by our research
- Water resource assessment process conducted by the Technical Advisory Panel.

Research participants (from DERM, Girringun and Terrain NRM) identified four mechanisms used in this phase to integrate Aboriginal knowledge into water resource assessment. These included: invited submissions to the Draft Wet Tropics Water Resource Plan – Information Report; a community reference panel comprised of industry, community and Aboriginal representatives; an Aboriginal engagement process (facilitated by Terrain NRM Ltd); and input to the environmental assessment process (to determine environmental flow of the many rivers in the region) as
encouraged by DERM's Technical Advisory Committee. To date Girringun representatives have been involved with each of these planning avenues.

Research participants from DERM and Terrain NRM commented upon the aspects of Aboriginal knowledge, values and interests that they consider important for water resource assessment. A discussion of these comments follows. Further, representatives from Girringun, DERM and Terrain NRM ranked (from 1-5, where 1=low, 5=high) and evaluated each of the knowledge integration mechanisms according to: the extent to which it supports Aboriginal people to articulate their water values, knowledge and interests; and the extent to which it enables Aboriginal people to participate in water management decision making in the Wet Tropics. These ranks are provided for each knowledge integration mechanism (apart from Girringun’s submission to the Draft Plan). These evaluations are presented in a selection of Tables that explains the justification for each rank (Sections 6.1.2 - 6.1.4).

Translating Aboriginal knowledge, values and interests into water resource assessments and objectives

All research participants from DERM and Terrain NRM (five participants in total) articulated that Aboriginal Australians from the Wet Tropics region have an important role to play in setting water resource planning objectives, particularly in environmental flow assessments. Four participants stressed that Aboriginal knowledge and values that can be directly linked to environmental flow is of great importance for two main reasons. First, there is not sufficient scientific knowledge available to make a completely comprehensive assessment of environmental flows for all rivers and related aquatic ecosystems in the Wet Tropics region. TAP scientists estimated that there is only sufficient knowledge of 14 out of 255 environmental assets selected by the panel with assistance from other individuals with knowledge of Wet Tropics aquatic systems, to inform decisions about appropriate environmental flow for the region. More often than not, the amount of ecological knowledge of any species or ecosystem correlates to both the status of any given species/ecosystem (vulnerable, threatened or endangered), and, or the extent to which it has been considered an ‘attractive’ or relative ‘easy’ species/ecosystem to research (and has thus received funding). Second, TAP scientists stressed that the choice of which ecological assets were chosen to
inform environmental flow decision-making is also based upon the value judgements of scientists and society as a whole (for example, scientists receive more funding to research certain species but not others; society often values more charismatic species).

Participants highlighted that Aboriginal knowledge of: the life cycle of flow dependant plant and animal species; ‘water places’ (such as wetlands) that still exist and places that have been impacted by changes in flow; as well as any knowledge of the ‘natural’ (pre-European) flow regime is of great importance to water resource assessment as it can reduce existing knowledge uncertainty. One participant enthused:

> at the moment [environmental asset assessments] rely primarily on scientific published articles, experts and their particular knowledge of the region and the species and also departmental research that has been specifically collected. But there is no reason why we couldn’t also incorporate Indigenous knowledge [for example] history of a particular species or particular wetlands (DERM 3.2).

Participants also highlighted that Aboriginal values related to flow dependant species and places are important to water assessment decision making. This is for two reasons, first, as already articulated, water assessment decisions are determined by value judgements; and second, if ecological values can be reinforced by cultural values the ecological values are even more likely to be used as the basis of decision-making. Participants thought values (and related knowledge) may include, but not be limited to: plants (fibre, medicinal purposes, eating), fish and molluscs (eating), cultural and recreational sites and values related to the Dream time.

The economic values that Aboriginal Australians from the Wet Tropics ascribe to water were acknowledged by participants. One participant recognised that economic values are closely related to water rights. He expressed that:

> Indigenous values will be more than just links to the environment. For example, the individual community, [may value water] to support their market gardens or their home gardens, or even to lease to someone [..where the water], might have some commercial value to them. The Wild River area provides water for the benefit of the Indigenous community whether they want to use it for irrigation or just keep it there so the waterhole stays full, because that’s where the kids go to swim (DERM 2.18).
The same participant also acknowledged that, under current Queensland Government Law, Aboriginal people whose traditional country coincides with the southern part of the Wet Tropics will not benefit from strategic Indigenous reserve, as they do not fall under the *Wild Rivers Act 2005* or the *Cape York Cultural Heritage Act 2007*.

Despite the great importance placed on Aboriginal water knowledge, values and interests by these research participants, they acknowledge that Aboriginal engagement remains a challenge. One participant expressed that

> We don’t always get [Aboriginal water knowledge and values] information. [In] some [Queensland water resource] plan areas it has been almost impossible to get any information from the Indigenous party, even to get their engagement can be difficult at times (DERM 2.13).

Another participant elucidated that the engagement process itself requires improvement: *certainly the engagement process has not been clear so that’s why we’re keen to examine better ways to do that and be more active in it* (DERM 3.2).

The remainder of this chapter presents the participant evaluations of the knowledge integration mechanisms used by the WTWRP for Aboriginal engagement in the Wet Tropics.

### 6.1 Formal submission to Wet Tropics Water Resource Planning process

In response to the first Wet Tropics Water Resource Planning process (WTWRP) phase of community engagement - Girringun provided a written submission to DERM regarding the impending WTWRP planning process. Girringun responded to DERM’s call for comment on the proposed WTWRP with a submission on behalf of the Traditional Owner groups they represent. Through the submission they provided expert advice to inform priority setting and policy development. Their advice highlights the important environmental and cultural flow aspects of water resource planning and management to both ensure improved management of local and regional water bodies and their catchments and the sustainable livelihood development of Traditional Owners from the region. Girringun articulate the importance of planning for water management on a whole of catchment and cross catchment basins that acknowledges the interconnectedness of all water supply sources (waterways, surface water,
underground water, marine). They also advised that water should be afforded value according to the quadruple bottom line costs of use (to avoid excessive use by end users which results impacts upon natural and cultural environments).

Cultural flow is a mechanism that Girringun has begun to use to assert the cultural, environmental, economic, and livelihood relationships they have with their traditional country in away that corresponds to western planning language, yet recognises their customary law and approach to ‘caring for country’. Aboriginal Australians from northern Australia have used the terminology ‘cultural flow’ as a means to advocate for similar water interests (see Jackson and Robinson, 2010; Robinson and Jackson, 2010; Jackson and Morrison, 2007), and in the Murray Darling Basin (see Jackson et al, 2010; Atkinson, 2009; Weir, 2009; Birckhead et al, 2008; Morgan M, Strelein L and J Weir 2004).

Girringun highlighted the need for Wet Tropics Water Resource Plan to consider a cultural flow allocation from the proposed consumptive use allocation. They explained how a cultural flow allocation is not the same as an environmental flow allocation. Cultural flow allocation would enable Traditional Owners to engage in their own right as water resource users, and would provide additional community economic resources. The success of this submission, and related knowledge integration and translation, is yet to be determined.

Girringun research participants explained that to them cultural flow includes both non-consumptive and consumptive water. They articulated that in the Wet Tropics, what constitutes cultural flow is still evolving, and thus care must be taken when using the term. They explained how on one hand, cultural flow means that water bodies have enough flow to enable Traditional Owners to carry out cultural activity as stipulated by their traditional lore and, in some cases, as recognized under native title. As such it is important to recognize the cumulative impact of water extraction upon cultural responsibilities and native title. However, on the other hand, cultural flow relates to the ability of Traditional Owners to develop economic enterprises connected to their water allocation rights. Economic benefits could result from water trading. Girringun representatives pointed out that potential water trading could become a moral issue and would require careful consideration of the place and location where water should go to potential buyers.
The following sections focus on the mechanisms used by the Queensland State Government Department of Environment and Resource Management (DERM) to engage Aboriginal people in water assessments and priorities. The analysis comes from information collected via interviews with representatives from: DERM’s Water Planning North Policy team and Water Planning Ecology team, Terrain NRM’s Aboriginal engagement for water governance in the wet tropics team, and Girringun. A description of the identified mechanism is followed by a discussion of the ranks given by interviewees to each mechanism (where 1=low, 5=high). This includes, first the extent to which the mechanism enables Aboriginal people to articulate their water values and knowledge in water resource planning; and second, the extent to which the mechanisms enables Aboriginal people to participate in water resource decision making in the region.

6.2 Wet Tropics Water Resource Planning Community Reference Panel

The aim of the Wet Tropics Water Resource Planning Community Reference Panel (CRP) is two fold. It is a forum in which community elected representatives can voice the opinions and interests of their interest group, and it is a forum through which DERM can provide all relevant information to the community (details of the planning process, specific hydrological model scenarios, water resource assessments, the social and economic assessment). Membership of 23 people includes representatives from industry (Qld Seafood Industry Organisation, Qld Dairy Organisation, AgForce, Australian Banana Growers Council, Innisfail Pawpaw Growers Association, Australian Cane Farmers Association, Growcom, Nursery and Garden Industry Australia, Tropical Exotic Fruit Australia), commerce (Hinchinbrook Chamber of Commerce, Cairns Region Chamber of Commerce), environmental groups (Cairns and Far Nth Environment Centre, Qld Conservation Council), recreational groups (Sunfish), local government (Far Nth Qld Regional Organisation of Councils), natural resource management groups (Johnstone River Catchment Management Association, Qld Water and Land Carers), tourism (a representative for nature based tourism) and two Aboriginal representatives.

As it is a non-consensus forum all views and opinions voiced must be recorded and later shared with the Minister who then uses this information to inform her final decision making. As such it has potential as an effective knowledge integration and translation
mechanism. Two community reference panels have been held to date. Research participants explained that the first panel addressed the purpose of the panel and submissions to the WTWRP to date; the Social and Economic assessment was presented at the second panel, as was the Technical Advisory Panel’s environmental assessment identification and selection process, and a discussion on the hydrological modelling process.

Tables 4 and 5 show the ranks and evaluations provided by research participants. Important to note, as one participant explained, Aboriginal representation was not originally guaranteed on the panel: *DERM targeted the industry groups and other stakeholder groups but didn’t initially indicate they wanted Indigenous representatives (Girringun 1.2)*. A submission to DERM by Girringun articulated the need for Aboriginal representation from both the northern and southern part of the Wet Tropics. Girringun was clear that given the number of Aboriginal groups in the region, the role of the two elected representatives would be as information conduits to the community, rather than representatives who could articulate the shared views of the Aboriginal groups from across the Wet Tropics.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Explanation for rank as provided by interview respondents</th>
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<tbody>
<tr>
<td>0</td>
<td>• The rigid format does not always encourage or facilitate vocal Aboriginal engagement. Format needs to be more flexible to suit a variety of communication and personality types.</td>
</tr>
<tr>
<td>1</td>
<td>None</td>
</tr>
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| 2    | • Industry (consumptive interests) is well represented by members from a variety of interest groups, representation from other groups (predominately non-consumptive interests) are not so well represented.  
• Process has historically been focussed on water allocation and some sectors are more experienced than others in lobbying the government to their desired ends.  
• The government process knowledge and experience of other members can be intimidating for less experienced members. |
| 3    | • A useful forum but is dominated by industry groups  
• Difficult for Aboriginal people to engage in a forum where the engagement process is pre-determined (and not culturally appropriate)  
• Original CRP stakeholder analysis did not include Aboriginal interest  
• Results depend on commitment to fully represent their constituents and their capacity to present their argument to the forum  
• Limited timeframe to develop trust and partnerships  
• To date, few details about values or knowledge have been shared (by any members) |
| 4    | None |
| 5    | None |

Table 4: Knowledge integration achieved by the Community Reference Panel
As shown in Table 4, the ranks given by research participants to indicate the extent to which the Community Reference Panel has supported Aboriginal people to articulate their water values, knowledge and interests range from 0 (very poor) to 3 (limited success to date). Most participants suggest this limited success is due to two inter-related factors. The Community Reference Panel is described as having a rigid and pre-determined format/process that is culturally inappropriate and thus excludes rather than encourages genuine Aboriginal engagement. A case in point is the tension between the Aboriginal members regarding their role as community educators (as discussed above), and the other members being in a position to act as representatives of their constituents. The second factor relates to what is described as effective industry representation: most research participants depicted the forum as dominated by industry groups who have extensive experience in lobbying the government, and whose knowledge and experience of government process may be intimidating for members with less experience.

One research participant expressed that the limited support provided by the Community Reference Panel for Aboriginal knowledge integration highlights the limited capacity of government to facilitate culturally appropriate engagement and of Aboriginal people to engage in fixed, predetermined government processes. She explained that

*The way the government has driven this process is so removed from the lives of Traditional Owners. The fact that Girringun exists and that there is someone at Girringun who knows how to write planning submissions [is the only reason] that they were able to engage in this process (Girringun1.8).*

Similar capacity issues are outlined in the ranks given by research participants regarding the extent to which the Community Reference Panel has enabled Aboriginal people to participate in water management decision making to date. These ranks are shown in Table 5.
<table>
<thead>
<tr>
<th>Rank</th>
<th>Explanation for rank as provided by interview respondents</th>
</tr>
</thead>
</table>
| 1    | • Aboriginal people are excluded as genuine decision-makers in this process:  
> o Aboriginal consumptive water interests are not supported in Queensland.  
> o Aboriginal people are considered as community stakeholders who can provide input into their non-consumptive, cultural interests.  
• It is difficult for any community group, not supported by a lobby group, to participate in decision-making about water allocation.  
• Process assumes 'one size fits all' but is not the case.  
• Groups do not have equal access to resources and knowledge (eg planning and hydrological modelling) to enable them to construct arguments of equal weight. |
| 2    | None |
| 3    | • Water allocation interests of industry groups have dominated discussions to date.  
• CRP does not have power to change government policy on Indigenous allocation. |
| 4    | • The institution is set up so that everyone member has an equal opportunity to comment on the policy options, all comments must be shared with the Minister.  
• Level of participation often depends on personality (and capacity) of representative to articulate interests in a forum that includes mixed personalities and groups. |
| 5    | • Non-consensus forum, all information discussed must be shared with the Minister (who makes the final decision).  
• The opportunity to participate is high. |

**Table 5: Translating available knowledge through the Community Reference Panel**

Table 5 provides the ranks given by research participants about how the Community Reference Panel has enabled Aboriginal people to participate in water management decision making to date. Participants ranked success to date from 1 (low: Aboriginal people are excluded from the decision-making process) to 5 (high: the opportunity to participate is high). Participants who ranked the CRP as 1 or 3 believe that the Panel does not enable knowledge translation. They explained that as the Queensland Government has no mechanism (in the southern wet tropics) to support Indigenous water allocation, and as the CRP does not have the power to change this policy, Aboriginal ability to genuinely participate in decision making via the CRP is low. One interviewee explained the tension between the expectation that Aboriginal people will provide information about their non-consumptive water interests (to support environmental flow allocation models) and yet they are disempowered by the Panel as their consumptive water interests are not recognised in policy:
Aboriginal groups [in the southern part of the Wet Tropics] are not recognised by the Queensland government as having an economic interest, yet the whole process is driven by economics. [...] so any group considered to have only non-consumptive interests, including the recreational fishers and the conservation sector, feel just as disempowered by the process [as the Aboriginal groups]… (Girringun 1.7).

A rank of 4 or 5 was given by participants who believe the Panel affords everyone an equal opportunity to comment on policy options (including water allocation scenarios) and to provide information that will be shared with the Minister (who makes the final decision). Although these interviewees explain that the opportunity to participate is high, they recognise that the level of participation depends upon the personality and capacity of any representative to articulate their interest within a forum of mixed personalities and interest groups. It is for this reason that a separate Aboriginal engagement process was developed. As this interviewee explains

we offer [the Aboriginal community] a choice of whether they want to be involved with the CRP along with all the others and, or have a separate consultation process. A separate consultation process, plus representation on the CRP is happening in the Wet Tropics (DERM 2.5).

6.3 Aboriginal engagement through Terrain NRM

Terrain NRM is the regional body for the Wet Tropics region and was contracted by DERM to facilitate the community engagement process of the WTWRP. Terrain petitioned DERM to be contracted to lead this process, as they felt they could provide better support to the community given their already extensive and strong community networks. As part of this process, Terrain approached Aboriginal leaders from the region to determine whether they would like an Aboriginal specific engagement process. An Aboriginal engagement strategy was developed in partnership via the three Aboriginal corporations in the region (Girringun as the representative from the southern Wet Tropics, Central Wet Tropics Aboriginal Corporation, as the representative body for the central Wet Tropics; Jabalbina Aboriginal Corporation as the representative for the northern Wet Tropics).

Tables 6 and 7 show the ranks and evaluations of this engagement process provided by three of the five research participants. Two participants felt they were not in a position to comment as they were not yet aware of the results of the process.
Table 6: Knowledge integration through Terrain’s Aboriginal engagement process

Table 6 shows the ranks given by the research participants that describe the extent to which they think the Aboriginal engagement process has supported Aboriginal people to articulate water values, knowledge and interests. Participants ranked success to date from 2 (low) to 4 (medium). All participants articulated that attendance at meetings has been low, and that Aboriginal attendees have provided little or no information on their water values, knowledge and interests. As such, one participant ranked the success of this process to support knowledge integration as low (2), while the other two ranked the success of the process as medium (3, 4).

The participant who gave the process a rank of 3 articulated that the potential for knowledge integration was reduced because the forums have followed a ‘very western’ format which has been culturally inappropriate. The forums have been held in conference rooms, government representatives have used the meetings to share information via one way presentations, and little time or space has been provided for community-led discussions.

The participant who ranked the knowledge integration of the process as 4 explained that although Aboriginal participation at forums has been low, Terrain representatives have used their comprehensive community networks to inform Aboriginal groups of the wider community engagement process. In effect, Terrain representatives have worked to broker knowledge between the government and Girringun representatives. Although this brokering role may not have resulted in highly successful knowledge integration via
the Aboriginal engagement process, it is still regarded by this participant as important to enable increased Aboriginal participation in the WTWRP process. The ranks describing the success of the Aboriginal engagement process to enable Aboriginal participation, as genuine knowledge translation, in water management decision making are further elucidated in Table 7.

<table>
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<tr>
<th>Rank</th>
<th>Explanation for rank as provided by interview respondents</th>
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<tr>
<td>1</td>
<td>None</td>
</tr>
<tr>
<td>2</td>
<td>- Quality of information coming out of the forums is lacking – planners have very little Aboriginal water values information to inform planning decision making.</td>
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</tbody>
</table>
| 3    | - Ability of Aboriginal groups to engage in the decision making is limited (not the fault of Terrain).  
     - Terrain provides water resource planning information to Aboriginal groups which in turn enables these groups to be more strategic in their regional lobbying.  
     - Meeting format to date has been very western – so participation in decision making has been low. |
| 4    | None                                                     |
| 5    | None                                                     |

Table 7: Knowledge translation through Terrain’s Aboriginal engagement process

This Table (Table 7) shows the ranks provided by three research participants to explain the extent to which they believe Terrain’s Aboriginal engagement process has enabled Aboriginal people to participate in water management decision making to date. The ranks indicate that knowledge translation for decision making has been low to medium (2-3). A rank of 2 (low) reflects what was also articulated in Table 7 in relation to knowledge integration. Aboriginal participants have not provided information about their water values, knowledge or interests in the forums and thus the ability of government planners to be able to use Aboriginal values, knowledge and interest to inform water management decision-making is limited.

A rank of 3 was provided by two research participants who articulated that genuine Aboriginal participation in water management decision-making was constrained by the forum format (very western), and their capacity to engage. Also, as expressed in relation to the CRP, participation is constrained by the reality that while the non-consumptive knowledge, values and interests of Aboriginal people from the Wet Tropics is regarded by Queensland Government as highly important for the WTWRP process, the consumptive knowledge, values and interests are excluded from the decision-making process. The research participant acknowledged that the ability of
Aboriginal groups to genuinely participate in consumptive water management decision-making is not the fault of Terrain. The brokering role of Terrain representatives enables Aboriginal groups to be more strategic in their lobbying of the Queensland government to consider Aboriginal consumptive interests in future water management decision making.

6.4 Aboriginal Knowledge Partnership with the Technical Advisory Panel

The knowledge integration that resulted from a partnership developed between the authors, Girringun representatives and the TAP scientists included three mechanisms (the first two were ranked and evaluated by research participants): the Wigi and Ranger workshop, the CSIRO facilitated asset assessment workshop which was followed by a series of six Traditional Owner interviews.

The Wigi and Ranger Arts workshop was an Aboriginal led workshop to which the authors were invited to broker knowledge contributions. The aim of this workshop was to engage with participants in a culturally appropriate way so as to distil their water values, knowledge and concerns. This workshop preceded and informed the CSIRO facilitated asset assessment workshop. Participants gave consent for the authors to share the water values and knowledge derived from the workshop with the TAP scientists the following day. All participants were invited to attend the CSIRO facilitated asset assessment workshop to be held the following day.

The CSIRO facilitated asset assessment workshop included TAP scientists and Girringun representatives. The focus of this workshop was for Aboriginal participants to share their knowledge of the environmental assets that had been identified by the TAP scientists as important indicators species to inform environmental flow assessments. The TAP scientists used a book they had compiled earlier to facilitate knowledge sharing and discussion. This A5 book included distribution maps and photographs of each of the 14 environmental assets that have been selected (out of a total of 255).

The workshop aimed to find areas of consensus between the ecologists and Girringun representatives, to inform the asset assessment process. Workshop participants formulated a methodology that would facilitate Aboriginal knowledge integration and translation pertaining to the identified species. This included a series of six interviews
conducted with Traditional Owners of the Murray and Tully river catchments to collate knowledge about and values of the long-finned eel (*Anguilla reinhardtii*). This species was selected by both TAP scientists and Girringun Traditional Owners at the asset assessment workshop as an important focal species for environmental flow assessments, and a species of great cultural and social importance. This species acted as a boundary object to facilitate knowledge integration and translation between the TAP scientists and the Traditional Owners. Interviews, conducted by the lead author, were coded and important values, species knowledge and place knowledge was shared (with consent from the Traditional Owners) with the TAP scientists to inform their asset selection process.

**Water resource assessments**

Environmental flows are defined in the Brisbane Declaration as the “quantity, timing and quality of water flows required to sustain freshwater and estuarine ecosystems and the human livelihood and well-being that depend on these ecosystems”. This definition is used by a variety of international environmental flow scientists (see Poff et al, 2010) as central to their work to develop environmental flow assessments for the management of rivers and wetlands in many locations around the world.

DERM’s Technical Advisory Panel (TAP) (comprised of five aquatic ecologists) are tasked with the development of the environmental flow assessments for the management of rivers in the Wet Tropics region. They provide their assessment and related information to hydrological modellers who in turn develop water resource use models to inform decision making about water allocations for the region (consumptive and non-consumptive). Part of the mandate of the TAP is to integrate the water-related values held by the community, in their assessments. The TAP scientists also draw on the water-related knowledge of the wider community, to inform their assessment.

The integration of social and cultural values into environmental flow assessment is of high importance in Australia and internationally (see King and Brown, 2006, 2010; Finn and Jackson, forthcoming). Some research has been conducted in Australia to consider ways to understand the relationship between what is termed ‘aquatic ecological assets’ with ‘water related cultural and social values’ (see Story, 2006; Venn and Quiggan, 2007).
Environmental flow assessment models reviewed for this research include the
- *Benchmarking Methodology*, previously used by the Queensland State Government to guide water resource planning and management (see Brizga et al, 2002)\(^1\);
- the *Kruger Strategic Adaptive Management approach*, used in Kruger National Park, SA to guide the management of rivers and related ecosystems (see Biggs and Biggs 2003), and
- the *Ecological Limits of Hydrological Alteration (ELOHA)* is advocated by a collection of international scientists (see Poff et al, 2010) as a new framework to assess environmental flow needs.

Of these three models, the *Benchmarking Methodology* made no mention of ways to integrate social and cultural values into assessments; the *Kruger approach* argued for the incorporation of a range of social values relating to how the park, rivers and so on should be managed as fundamental to management; and the *ELOHA framework* explicitly recognises that societal needs and values will define the ecological goals applying to the management of each river. Both the *Kruger approach* and the *ELOHA framework* recognise ecological values are socially derived.

Research into ways to integrate Indigenous social and cultural values into environmental flow assessments in Australia is limited to the work of Finn and Jackson (forthcoming). Finn and Jackson (forthcoming) outline the limitations of current environmental flow determinations in their capacity to assess and protect indigenous instream values. They draw on research conducted in northern Australia to suggest ways to include Indigenous values in the ecological limits of hydrological alteration framework (see Poff et al 2010) as a means to increase the likelihood that indigenous interests are met by flow allocations. In the Wet Tropics, Bohnet et al (2007:3) documented and analysed “local community’s [including Aboriginal] uses and values of waters in the Tully-Murray catchment, which inform the drafting of water quality objectives (WQO) and the setting of water quality targets (WQT) for the development of the Tully Water Quality Improvement Plan”. Tsatsaros (inpress) builds on this work to refine Water Quality Objectives in the Tully River Catchment using a community based approach. Although this research does not focus upon environmental flow assessments community values and uses are given high priority in the determination of environmental values upon which WQO and WQT are based.

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\(^1\) The Queensland Government no longer uses this method.
The environmental flow assessment used by the TAP is shown in Fig. 8. The red circle shows the stage at which the Panel aspire to integrate the social and cultural values held by the wider community; the blue circle indicates the stage at which the Panel aspire to integrate the wider community’s water related knowledge. We use the word ‘aspire’ as to date very little social and cultural information has been shared with the TAP. This is due to ineffective knowledge integration mechanisms to date.

The Aboriginal knowledge partnership developed with the TAP to inform environmental asset selection to inform environmental flow assessments included two workshops. The first workshop was Aboriginal-led and facilitated by the CSIRO authors. The Wigi (Elder women) and Ranger workshop was conducted on the traditional country of a Girramay, who was also present at the workshop. Art was used as the boundary object to share water values and knowledge. The second workshop was also facilitated by the CSIRO authors. This workshop used a list of 14 environmental assets selected by the TAP scientists (in partnership with other experts) as the boundary object to facilitate dialogue between the TAP scientists and the Girringun representatives about Aboriginal water values and knowledge. Tables 8 and 9 show the rank and evaluation provided by five of the research participants (DERM, Terrain, Girringun) for the knowledge integration mechanisms. The research participants were involved in at least one of the two workshops.
Figure 8: Water Resource Planning Ecological Assessment Process used by Technical Advisory Panel (source: McGregor, pers com, 2011)
**Wigi and Ranger Workshop**

Only one research participant was privy to this workshop, and thus able to rank and evaluate it (see Table 8). Given the workshop focus was upon knowledge sharing, the rank relates to the extent to which this mechanism supported Aboriginal participants to articulate their water values, knowledge and interests.

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<tr>
<th>Rank</th>
<th>Explanation for rank as provided by interview respondents</th>
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<tr>
<td>1</td>
<td>None</td>
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<tr>
<td>2</td>
<td>None</td>
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<tr>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>4</td>
<td>None</td>
</tr>
</tbody>
</table>
| 5    | - Arts workshop was an empowering process (despite limitations of WTWRP process to enable Aboriginal people to engage in consumptive water allocation discussions).  
  - Country visit provided way to focus on what is important.  
  - Provided forum for participants to contribute information in their own way.  
  - Negotiated research agreement means that participants trusted researchers to respect their intellectual property (IP), and for Girringun to use their IP in appropriate ways to inform water governance strategy. |

**Table 8: Knowledge integration achieved by the Wigi and Ranger Workshop**

The research participant described the success of this mechanism to support Aboriginal people to articulate their water values, knowledge and interests as 5 (high). The workshop is described as an empowering process despite the actual limitations of the WTWRP to enable Aboriginal people to engage in discussions about their consumptive water interest (also discussed in relation to the CRP and Terrain’s Aboriginal engagement process). Aboriginal participants felt they could articulate their water values, knowledge and interests because the process was culturally appropriate and it was explained to them that their intellectual property (in particular any resulting art work) would be protected by a research agreement, already negotiated between Girringun and CSIRO. The workshop was conducted on the traditional country of one of the workshop participants, who welcomed everyone to his country and voiced his support for the workshop. Art was promoted as the mechanism through which individuals could contribute information in their own way. The workshop ended with each participant describing the message they wished to convey in their art work. The art work became the boundary object through which participants could share their values and knowledge with the CSIRO authors, and with each other.
**CSIRO facilitated asset assessment workshop**

Five research participants were privy to this workshop (two as observers). The workshop is ranked according to the extent to which it enabled Aboriginal people to participate in environmental asset selection to inform decision making for environmental flow. Important to note is that all participants recognised that this mechanism is not about consumptive values and interests. Ranks and evaluations appear in Table 9.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Explanation for rank as provided by interview respondents</th>
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<td>1</td>
<td>None</td>
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</table>
| 2 | • The workshop between TAP scientists and GAC provides a mechanism to consider different values (however is too late in the process to extend beyond the Eel interviews).  
  • Workshop provided a good mechanism, however would be strengthened by higher attendance of Elders (in particular more women). |
| 3 | • Workshop between TAP scientists and GAC was a successful mechanism.  
  o However it was only possible because of the relationships, networks and skills of the CSIRO scientists to broker the workshop.  
  o What about the other Aboriginal groups in other parts of the Wet Tropics, will there be similar engagement with them? |
| 4 | None |
| 5 | • Workshop between TAP scientists and GAC was a valid and empowering two way process.  
  o Important for TOs to articulate their values to the scientists, to learn of the water assessment process.  
  o Follow up Eel interview process is essential way to provide future input to the plan (when it is reviewed).  
  • Choice of a focal species (long-finned eel) which exists throughout the Wet Tropics has the potential to provide knowledge integration and translation benefits for Aboriginal people from across the whole region.  
  • Will try to use a similar process with the other Aboriginal Corporations.  
  o The TAP environmental asset list provides a concrete way to facilitate discussion on important species and places.  
  o Methodology provides a good way to link scientific knowledge with Aboriginal knowledge. |

**Table 9:** Knowledge translation via the CSIRO facilitated asset assessment workshop

Ranks given to the knowledge translation enabled by the asset assessment workshop ranged from 2 (low) to 5 (high). All participants noted the workshop provided a good mechanism to facilitate knowledge sharing, integration and translation between the TAP scientists and Girringun representatives (including Traditional Owners).
Individuals who gave the workshop a low rank (2,3) explained the relationship would have been strengthened if the workshop had occurred earlier in the WTWRP process (current timelines precluded more extensive engagement), if more Elders had been present, and if a similar process had been developed with other Aboriginal groups from the region. Two participants articulated that the mechanism had only been possible because of the brokering role played by the CSIRO team who also had culturally appropriate skills. They explained:

*it only happened because [the CSIRO team] organised it and [the TAP scientists] were able to take advantage of that. [the TAP scientists] wouldn't have been able to do that themselves: they don't have the skills or the network. I think that [the reason] why people don't want to [engage with Aboriginal people] is because [their approach] can easily upset people […] as they] don't understand the local politics […] scientists and ecologists are not skilled in those techniques necessarily. It's not part of their normal training (DERM 3.16).*

Participants who ranked the extent to which the workshop enabled Aboriginal people to participate in water management decision making as medium (4) and high (5) explained that the process, which included the environmental asset book as a boundary object, facilitated good two-way knowledge sharing, and thus has the potential to facilitate genuine participation in decision making about environmental flow assessments. Participants explained that this process has the potential to facilitate future knowledge integration and translation for two main reasons. First, a similar process may be used to facilitate knowledge integration and translation with two other Aboriginal Corporations who represent the interests of different Aboriginal groups in the Wet Tropics (Jabalbina Aboriginal Corporation and the Central Wet Tropics Aboriginal Corporation). Second, the information gathered from interviews conducted with six Traditional Owners from the Tully and Murray river catchment areas, about the long-finned eel (*Anguilla reinhardtii*) (identified by both the TAP scientists and the Girringun Traditional Owners as an important focal species for environmental, cultural and social health of the Wet Tropics), has been translated in such a way as to directly inform DERM's environmental asset selection process.

One participant acknowledged that although this knowledge integration and translation process had occurred towards the end of the environmental asset selection process, and thus potential for greater input was limited, progress to date was still worthwhile. She expressed that
regardless of how the plan pans out, all the work done now has the opportunity to be validated in the next carnation of the plan (in 10 yrs time) (Girringun 1.9).

Another participant commented further on this. She explained that as the timeframes now left for Aboriginal input into the environmental asset selection process, are limited, there is great promise for the long-finned eel (*Anguilla reinhardtii*) knowledge that was shared by the six Traditional Owners, to inform the environmental asset selection process across the Wet Tropics region. This is because the long-finned eel (*Anguilla reinhardtii*) occurs throughout the Wet Tropics region. She acknowledges that Aboriginal knowledge and values are very much tied to place, yet she is hopeful that this eel species is recognised and valued by all Traditional Owners across the region.
7. **DISCUSSION**

Similar to other Aboriginal Australians, Girringun and the Traditional Owners they represent, value the environmental, spiritual, cultural and socio-economic attributes of fresh water. These diverse values contest the historical tendency of government agencies to conflate Aboriginal water values and associated interests with the management category of environmental water. Certainly, Girringun value healthy river ecosystems (good water quality, healthy aquatic life, stable river banks) and feel responsible for the maintenance of these ecosystems on their traditional country, but they also place a strong emphasis upon maintaining the spiritual and cultural attributes of these ecosystems, and, at the same time, deriving socio-economic value from them (through job creation and river related subsistence).

Although the water values and knowledge of Traditional Owners from the southern Wet Tropics region are regarded as highly important for water resource assessment by government water planners and ecologists, Aboriginal engagement to date has not been very successful. Government processes have not been able to facilitate Aboriginal engagement in a successful way; and the processes used to date have not been culturally appropriate. This research shows that some knowledge partnerships are regarded by Aboriginal, government and non-government research participants as more effective than others in supporting Aboriginal people to articulate their water values, knowledge and interests, and in enabling their participation in water resource decision making. This raises the question of why.

Knowledge partnerships were ranked according to how they support Aboriginal people to articulate their water values and knowledge to inform water planning priorities. The partnerships were ranked from 0 (poor) to 5 (empowering). Explanation of these ranks follows.

- Partnerships described as providing a forum for Aboriginal participants to contribute information in their own way and in a culturally appropriate setting were described as empowering and given a **very high** rank.

- Partnerships depicted as using established processes to provide information to Aboriginal groups outside of the meeting setting were ranked **high**.
• Partnerships (internal Girringun) that use culturally appropriate mechanisms to engage with Aboriginal people to guide internal decision making yet have limited governing influence beyond its own internal membership, and limited financial and strategic capacity to act on behalf of its members were ranked as medium.

• Partnerships characterised by an engagement processes that suits non-Aboriginal participants, but does not encourage Aboriginal participants to articulate their values and knowledge were ranked as low and very low.

• Partnerships where the Aboriginal engagement process is pre-determined and culturally inappropriate were ranked very low.

Knowledge partnerships were also ranked according to how they enable Aboriginal participation and knowledge translation for water asset assessments. These partnerships were ranked from 1 (exclusive) to 5 (empowering). Explanation of these ranks follows.

3. Partnerships that were described as facilitating empowering two way knowledge sharing processes were ranked very high. This may be facilitated by joint identification of problems, the use of new and relevant information to inform decision making, and, or through the production or negotiation of a culturally appropriate boundary object such as an MOU or a book.

4. Partnerships described as providing an equal opportunity to all (regardless of levels of participation) were ranked high. For example, the Community Reference Panel provides every member to the equal opportunity to comment on policy options, however the opportunity to participate may be high, but the level of participation depends on the capacity of the representative to articulate their interests.

5. Partnerships whose success was perceived to rely on knowledge brokers were given a medium rank as this success would be limited if those brokers do not facilitate similar processes will facilitate participation with other Wet Tropics groups.

6. Partnerships that provided information to Aboriginal groups to enable them to be strategic in their regional lobbying were given a medium rank.

7. Partnerships described as not having the power to change government policy were given a medium rank. For example, one interviewee lamented that the Community
Reference Panel does not have the power to change government policy on Indigenous water allocation.

8. Partnerships regarded as excluding Aboriginal people as genuine decision-makers (the consumptive water interests of groups from the southern Wet Tropics are not supported in Queensland) were ranked as low, as were partnerships that use engagement processes that assume ‘one size fits all’.

9. Partnerships that were perceived as requiring capacity to lobby government, and those that assume all participants have equal access to resources and knowledge, were ranked low.

The research shows that institutions that provide collaborative decision-support in the form of knowledge partnerships and acknowledge consumptive as well as the non-consumptive Aboriginal water values through support for cultural flow discussions (cf. Morgan M, Strelein L and J Weir 2004; Jackson and Morrison, 2007; Atkinson, 2009; Weir, 2009; Birckhead et al, 2008; Jackson and Robinson, 2010; Robinson and Jackson, 2010; Jackson et al, 2010) and the provision of Indigenous water allocations are more likely to enable Aboriginal engagement in water decision-making.

Knowledge partnerships that use knowledge brokers and support the development of boundary objects are more likely to enable Aboriginal participation in water decision-making. These knowledge partnerships are more likely to develop culturally appropriate engagement processes that will support Aboriginal people to articulate their water knowledge and values, and enable them to participate as genuine decision-makers, rather than just as interested stakeholders. Culturally inappropriate processes will lead to low rates of Aboriginal attendance and result in very little articulation of values and knowledge.

Knowledge brokers are individuals with a skill set that enables them to communicate and build relationships between knowledge holders and decision-makers. They have a genuine interest and commitment to identify the information needs of Aboriginal decision makers, and their government/non-government counterparts, and thus can facilitate problem solving between knowledge groups. These relationships are best facilitated via the development of boundary objects.
Boundary objects include objects such as MOUs, artwork, and focal species. These objects provide a way for Aboriginal and non-Aboriginal decision-makers to talk about a particular issue with the aim of joint problem solving. Problem solving may occur through knowledge sharing or knowledge co-production. For Aboriginal people, involvement in the development of boundary objects enables them to share information in a way that best suits them.

Knowledge integration mechanisms that acknowledge the consumptive as well as the non-consumptive Aboriginal water values and interests will facilitate better articulation of the water knowledge and values of Aboriginal people, and enable them to participate as genuine decision-makers, rather than just as interested stakeholders. The notion of cultural flow (as more than environmental flow requirements) is gaining recognition across Australia. Recognition of Aboriginal consumptive water values and interests will begin to pave the way for the provision of an Indigenous water allocation, and recognition of Aboriginal Australians as genuine decision makers and managers of fresh water country.
8. CONCLUSION

This research has identified and assessed the three governance arrangements that Girringun Aboriginal Corporation use to engage in water planning and decision making, on behalf of the nine Traditional Owner groups they represent, in the southern Wet Tropics. These governance arrangements include knowledge partnerships established through country-based planning, protected area management and the Queensland Government Wet Tropics water resource planning. The efficacy of each of these partnerships to support Aboriginal articulation of water values and knowledge (does the governance arrangement integrate diverse knowledge) and, to enable Aboriginal participation in water related decision-making (does the governance arrangement broker diverse knowledge) were ranked by research participants.

The research critiqued the collaborative decision-support requirements for IWM in the Australian Wet Tropics region, and can provide insight into the collaborative decision-support requirements for IWM in Australia. Effective knowledge partnerships create a dialogue that crosses the boundary between different knowledge systems. Development of such knowledge partnerships takes time, requires trust building between actors (knowledge broker, knowledge holders). Certain skill sets are necessary to bridge the knowledge boundary and to facilitate the creation of appropriate boundary objectives.

Knowledge partnerships sometimes focus on consensus, where the values of different knowledge holders align. The partnership that evolved between Girringun and the Technical Advisory Panel highlights how scientific and Aboriginal values can combine to inform environmental asset selection for water resource assessments. However, knowledge partnerships can also handle conflict, where the values and aspirations of different knowledge holders may not complement. Girringun's ongoing advocacy for cultural flow discussions and Indigenous water allocation aspirations do not align with current government water policy for the southern Wet Tropics, a reality highlighted in their formal submission to DERM, and their inability to participate as genuine decision-makers through the Community Reference Panel.
This research has applied a framework (Robinson et al, 2011) to assess the capacity of Aboriginal and Government brokers and networks to manage the ‘boundaries’ between different types of knowledge and between knowledge and action. As highlighted above, central to these capabilities are the ability to integrate different sources of information and a capacity to appropriately translate that information. Knowledge support functions for integrated decision-making provides a particularly useful suite of attributes to judge the efficacy of IWM structures and processes in contexts characterized by different knowledge, values, and interests. In the Wet Tropics region these values are diverse and contested and require robust knowledge partnerships to handle different knowledge contributions that pays due regard to Aboriginal water values.
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Do We Provide the Knowledge to Support Truly Integrated Thinking?


APPENDIX 1

Framework to facilitate discussion between Girringun Traditional Owners and government employed Ecologists from the Technical Advisory Panel

<table>
<thead>
<tr>
<th>INDIGENOUS WATER VALUES (Girringun country)</th>
<th>LOCATION OF THESE SPECIES, THESE PLACES</th>
<th>WATER RESOURCE REQUIREMENTS (how much water do these species, places need to stay healthy? Is the water requirement seasonal?)</th>
<th>KNOWLEDGE PARTNERSHIPS (what is needed for TOs and scientists to be able to work well together?)</th>
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APPENDIX 2

Girringun Aboriginal Corporation and CSIRO Indigenous Regional Water Planning Project Agreement

This document seeks the consent of the Girringun Aboriginal Corporation to collaborate with the CSIRO research team with the Indigenous regional water planning Project. All aspects of this document are open to negotiation.

The Parties

This Project Agreement is between [name] who confirms that he is authorised to enter into this agreement on behalf of Girringun Aboriginal Corporation and The CSIRO.

1. CSIRO Project Manager

The project will be managed by Dr Catherine Robinson, Senior Scientist, Social and Economic Sciences Program, CSIRO.

2. CSIRO Project Team

The project team will comprise Dr Kirsten Maclean, Scientist, Social and Economic Sciences Program, CSIRO.

3. The Representative Co-researcher on behalf of [name of Indigenous organisation]

[Name] the Representative Co-researcher will work with the Project Manager and Project Team to plan and guide the research process, in particular to ensure it is culturally appropriate.

4. Project Objectives (to be negotiated with Co-Researcher partners)

- Assessment of how knowledge partnerships established through regional water planning activities can provide the necessary decision-support for Traditional Owners to articulate their water values and participate more equitably in water management decisions and resulting implementation.

- Identification of mechanisms to enable different types of knowledge to be integrated into planning objectives and identification of associated gaps.

- Translation of research outcomes to inform strategic decision making and feed back into adaptive action.

5. Anticipated Outcomes of the Project Partnership

- Enhanced capacity of the Girringun community to plan and implement environmental management and community development projects, in particular those related to water resource planning.
• The sharing of knowledge between the project team, Representative Co-researcher and the Girringun community.

• A selection of journal articles to be published in the international sphere.

• A report regarding the issues and challenges facing Indigenous regional water planning and management in the Wet Tropics region.

• Enhancement of the CSIRO contributions to knowledge and understanding of the issues and challenges facing Indigenous regional water planning and management in the Wet Tropics region.

6. Free, Prior and Informed Consent

The aim of this agreement is to ensure that both Parties enter into this project partnership with informed consent, agree about the nature of the partnership, and are supportive of the partnership. All individuals who are interviewed for the project will be requested to sign a prior and informed consent form. This form ensures they are aware of their rights to participate in the project and they are aware that they can withdraw without prejudice from the project during or after interviews or prior to the final analysis of the research. This form also informs participants that once the research has been analysed and written up, it will not be possible to withdraw from the project. The form provides that you agree that intellectual property rights in the data collected during the research process, as well as photographs taken will remain the property of the Girringun Aboriginal Corporation. All data that results from the research will remain the property of the CSIRO research team.

7. Permission to Interview Relevant Individuals, Groups and to take photographs.

On the basis of Traditional Owner free, prior and informed consent, Girringun Aboriginal Corporation agrees that groups from the community may be interviewed and photographed during the course of the research project. Girringun Aboriginal Corporation agrees to the prior informed consent form that all individuals from the community must sign to be interviewed and photographed for the project. This form protects the rights of individuals to accept or refuse participation and to withdraw without prejudice from the project during or after interviewing or prior to the final analysis of research data. This form also informs participants that once the research has been written up and published, it will not be possible to withdraw from the project.

The Representative co-researcher agrees to provide guidance as to when the Project Manager and Project Team can take photographs the Project. Photographs may include for example, country, meetings and performances. The Representative Co-researcher accepts responsibility to provide guidance as to whether these photographs should be included in the final project report. The Representative researcher understands that once the report has been released it will not be possible to delete these images.

8. Sensitive information and privacy

There will be no sensitive, private, confidential or restricted information included in the research reports and/or publications. The Representative Co-researcher accepts
responsibility to provide guidance as to whether research findings should be included in the final research report and subsequent publications.

The Representative Co-researcher agrees to advise the Project Manager and Project Team if an issue is sensitive and identify appropriate ways of dealing with it.

9. Storage of Information

The CSIRO Project Team will keep all digital information and computer files will be stored on password protected laptops, back up information will be stored on external hard drives kept in locked filing cabinets at CSIRO, St Lucia. All paper copies of reports and participant consent forms, will be stored locked filing cabinets at CSIRO, St Lucia. When in the field, all digital data will be stored on a password protected laptop, all paper copies will be kept in the locked research vehicle.

10. Intellectual Property, Data Ownership and Publications

Girringun Aboriginal Corporation and community members involved with the research will retain ownership of any traditional knowledge, cultural practices and traditions that are shown to the CSIRO Project Manager and Project Team. Confidential information will not be published unless agreed by the Representative Co-researcher.

Girringun Aboriginal Corporation and the CSIRO Project Manager and Project Team agree that the CSIRO Project Team will be able to reproduce (non-sensitive) information from the research project in other places or for other purposes (e.g. on the internet) without asking for new permission.

The CSIRO Project Manager and Project Team may speak about the project in undergraduate and postgraduate teaching, University seminars, conferences and workshops.

Each party agrees that all Project partners will be acknowledged in all publications/presentations. Girringun Aboriginal Corporation will be recognised as co-authors on publications on which they have given direct input.

11. Dispute Resolution

We sincerely hope disputes will not arise, but need to make provision in case they do.

The Parties will co-operate with each other and do their best to resolve any differences between them relating to the Research Project and this Agreement, by mutual agreement.

Every attempt will be made to resolve any dispute among ourselves first. Should this not be possible, both parties have recourse to the following steps:

(a) the party alleging the dispute must notify the existence and nature of the dispute to the other Party (or parties) within 30 days of the dispute arising;

(b) on receiving a notification of dispute the parties must ask their authorized representatives or their nominees to resolve the dispute;

(c) if the dispute is not resolved in this way within 30 days of receiving the notification then any party may refer the dispute to mediation. They must do so before starting any proceedings in a court or tribunal to resolve the dispute;
(d) the parties may agree on a suitable mediator, or agree to refer the dispute to The Institute of Arbitrators and Mediators Australia (“IArbA”) to be conducted in accordance with the Mediation Rules of IArbA; and

(e) if the dispute is not resolved within 60 days of referral to mediation any party is free to begin proceedings in a court or tribunal in respect of the dispute.

Comments on or concerns with the research process can be made in the first instance to:

- **Dr Kirsten Maclean, Social and Economic Science Program, CSIRO Ecosystem Sciences**, 306 Camody Rd, St Lucia, QLD 4076 Tel: 0428871475; Fax: 07 3214 2900; Email: Kirsten.Maclean@csiro.au

Alternatively:

- **Dr Catherine Robinson, Social and Economic Science Program, CSIRO Ecosystem Sciences**, 306 Camody Rd, St Lucia, QLD 4076 Tel: 07-3214 2328 ; Fax: 07 3214 2900; Email: Cathy.Robinson@csiro.au

This study has been reviewed and approved in accordance with the National Statement on Ethical Conduct on Human Research Ethics, and CSIRO’s Human Research Ethics Policy. Whilst you are free to discuss your participation in this study with project staff at any time, if you have any concerns or complaints about the conduct of this research you may contact:

**[name]**
Manager, Social Responsibility and Ethics
CSIRO Sustainable Ecosystems

Queensland Bioscience Precinct, 306 Carmody Road, St Lucia QLD 4067, Australia
Ph: +61-7-32142905 M: +61-409-441-055 Fax: +61-7-3214 2308
**Girringun Aboriginal Corporation** will request and hereby authorise [name] to act as their contact person in the case of disputes. He/she can be contacted on:

I have read and agree to the terms within this Project Agreement having discussed it as I feel necessary. Signed by the parties as an agreement:

Signed by the CSIRO

Signature......................................................

Date.........................................................

Contents of this agreement read and acknowledged by the CSIRO Project Manager:

Name............................................................

Signature......................................................

Date.........................................................

On behalf of Girringun Aboriginal Corporation

Name............................................................

Signature......................................................

Date.........................................................

Name............................................................

Signature......................................................

Date.........................................................

Name............................................................

Signature......................................................

Date.........................................................

The Agreement will take effect on and from the date on which the last party signs the agreement.
Participant Consent Form

CSIRO Project: Indigenous Regional Water Planning

Project Team: Cathy Robinson and Kirsten Maclean

I ____________________________ have read the information sheet, and I agree to be interviewed. I also know I may change my mind and stop at any time during or after the interview and/or group discussion. I also know that once the research information has been analysed and reports have been written, I will not be able to withdraw my information from the project.

I understand that all information that I share will be treated as confidential and will not be released by the research team.

I understand that research information gathered for this study may be published, and that my name and other information which may identify me or the people that I talk about will not be used (unless I agree).

Please tick one or more boxes.

☐ I give my permission to be interviewed.

☐ I give my permission for the interview to be tape recorded.

☐ I give permission to be photographed in relation to this project.

☐ I give permission for my name and / or position to be included in the research acknowledgements.

Name: ____________________________  Signature: ____________________________

Date: ____________________________
Research information Sheet

CSIRO Project: Indigenous Regional Water Planning

A team of researchers from CSIRO is conducting a Water for a Healthy Country research project to investigate how Indigenous Traditional Owners in far north Queensland engage in water planning partnerships, programs and on-ground management actions to care for water on their traditional country. The research is carried out in partnership with Girringun Aboriginal Corporation (GAC) and will run from 2010 to 2011.

The project team will use qualitative research methods to critically assess if and how knowledge partnerships established through regional water planning activities can provide the necessary decision-support for GAC Traditional Owners to articulate their rights, interests and responsibilities for water on their country, and to effectively participate in water management decisions.

The research uses a co-managed approach. This ensures that data gathering meets the operational requirements of research partners, and also informs the development of governance theory by the CSIRO researchers. A case study will be developed with GAC. It draws upon workshops; semi-structured interviews and focus groups with key stakeholders (GAC, government and non-government representatives involved in partnerships with GAC). We will also conduct transect walks and country visits with interested individuals; participant observation at relevant planning meetings and analysis of secondary data. The case study will consider how GAC uses the available regional integrated water planning and management arrangements to engage in integrated water management on their traditional country. We will also use a governance evaluation framework to evaluate the decision support and adaptive mechanisms used by these existing and emerging governance arrangements to engage with the water rights, interests and responsibilities of Indigenous Australians in the far north Queensland.

For more information about the project please contact
Cathy Robinson E: Catherine.Robinson@csiro.au or
Kirsten Maclean E: Kirsten.Maclean@csiro.au.

If you have any concerns about the project, you may contact the CSIRO Human Ethics Officer [name].