

# SHARING STORY WITH THE REEF

## GENUINE PARTNERSHIPS WITH REEF TRADITIONAL OWNERS AND CROWN-OF-THORNS STARFISH RESEARCH & MANAGEMENT

Vincent Backhaus<sup>1</sup>, Stewart Lockie<sup>1</sup>, Ty'a Dynevor<sup>1</sup>, (Vale) Marie Shipton<sup>2</sup> and Malcolm Mann<sup>3</sup>

1. The Cairns Institute, James Cook University
2. Dabu Jajikal Aboriginal Corporation
3. Darumbal Enterprises Pty, Ltd.



Final Report  
COTS Control Innovation Program

# Sharing Story with the Reef: Genuine partnerships with Reef Traditional Owners and Crown-Of-Thorns Starfish (COTS) research and management

Vincent Backhaus<sup>1</sup>, Stewart Lockie<sup>1</sup>, Ty'a Dynevor<sup>1</sup>, (Vale) Marie Shipton<sup>2</sup> and Malcolm Mann<sup>3</sup>

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**COTS Control Innovation Program** | A research and development partnership to better predict, detect and respond to crown-of-thorns starfish outbreaks

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Great Barrier  
Reef Foundation



**Inquiries should be addressed to:**

Dr Vincent Backhaus

The Cairns Institute, James Cook University

vincent.backhaus@jcu.edu.au

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**Traditional Owner Acknowledgement**

**This report is dedicated to (vale) Aunty Marie Shipton, Dabu Jajikal Traditional Owner**

The COTS Control Innovation Program extends its deepest respect and recognition to all Traditional Owners of the Great Barrier Reef and its Catchments, as First Nations Peoples holding the hopes, dreams, traditions, and cultures of the Reef.

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## Acronyms and Abbreviations

AIATSI	Australian Institute of Aboriginal and Torres Strait Islander Studies
AMPTO	Association of Marine Park Tourism Operators
ARC	Australian Research Council
AWP	Annual Work Plan
CARE	Collective Benefit, Authority to Control, Responsibility, Ethics
CoP	Community of Practice
COTS	Crown-of-thorns starfish
CCIP	Crown-of-thorns starfish Control Innovation Program
CIEHF	Centre of Excellence for Indigenous and Environmental Histories and Futures
CPUE	Catch Per Unit Effort
CRA	Cultural Research Assistant
DCCEEW	The Department of Climate Change, Energy, the Environment and Water
DETSI	Department of the Environment, Tourism, Science and Innovation
DJAC	Dabu Jajikal Aboriginal Corporation
FAIR	Findable, Accessible, Interoperable, and Reusable
FPIC	Free Prior Informed Consent
GBRF	Great Barrier Reef Foundation
GBR / Reef	Great Barrier Reef
GBRMPA / Reef Authority	Great Barrier Reef Marine Park Authority
GPS	Global Positioning System
HDR	Higher Degree by Research
HREC	Human Research Ethics Committee
ICIP	Indigenous Cultural and Intellectual Property
IDG	Indigenous Data Governance
IHEG	Indigenous Heritage Expert Group
IPM	Integrated Pest Management Framework
IRAC	Indigenous Reef Advisory Committee
IK	Indigenous Knowledge
JCU	James Cook University
LTSP	Long Term Sustainability Plan
MTR	Mid Term Review
QPWS	Queensland Parks and Wildlife Service
RA	Research Assistant
RHIS	Reef Health and Impact Survey

RIMReP	The Reef 2050 Integrated Monitoring and Reporting Program
RRAP	Reef Restoration and Adaptation Program
RRAS	Reef Restoration Adaptation Science
RTOG	Reef Traditional Owner Group
RTO	Reef Traditional Owner
SLO	Social License to Operate
TK	Traditional Knowledge
TEK	Traditional Ecological Knowledge
TO	Traditional Owner
TOAG	Traditional Owner Advisory Group
TOIP	Traditional Owner Implementation Plan
TOPCOTS	Traditional Owners Program for Crown-of-Thorns Starfish
TORR	Traditional Owner Rights and Responsibilities
TOTWG	Traditional Owner Technical Working Group
TUMRA	Traditional Use Marine Resource Agreements
UNESCO	United Nations Educational, Scientific and Cultural Organisation

## EXECUTIVE SUMMARY

Building relationships is foundational to Great Barrier Reef Traditional Owners' understanding of people, Land and Sea Country. Seeing the world from relational reference points supports and guides engagement and respectful connections across time and across communities, knowledges, people, and Country. Being aware of how relationships are formed and maintained supports sustainable connections that contribute to long-term benefits shared by all in the community and for the betterment of healthy Country. In program and research contexts, time to build relationships can be a challenging element with which to negotiate and realise impact and outcome when organisational and institutional milestones don't understand or ignore the importance of relationship-building with First Nations people. In the context of working with Great Barrier Reef (Reef) Traditional Owners, the aspiration for meaningful engagement rests on the capacity of organisations to meet at the table where Reef Traditional Owners sit so that the health of the Reef and its economic, ecological, and cultural values and benefits can be explored and understood together.

Crown-of-thorns starfish (COTS) research and management can play an important role in this process:

- Economically, by ensuring that funding for COTS research and management continues to allocate at least 10% of funds to support Reef Traditional Owner capacity and involvement and echoed by the Traditional Owner Implementation Plan (2022).
- Ecologically, by identifying better ways to invest in the co-production of reef science in collaboration with Aboriginal and Torres Strait Islander people and with a view to strengthening Traditional Ecological Knowledge and addressing Reef Traditional Owner priorities.
- Culturally, by developing better relationships with Reef Traditional Owners and supporting self-determination agendas that empower Reef Traditional Owners to govern, manage, control, and transmit Sea Country values and benefits across the Great Barrier Reef and determine how those values and benefits are protected, maintained, and shared across generations.

This project (CCIP-R-09) set out to understand Reef Traditional Owners' aspirations in relation to COTS management and research, the ways in which Traditional Owners seek to engage with research and management agencies, and opportunities to support the co-production and co-management of knowledge and the Reef respectively.

The project developed a qualitative baseline understanding of Reef Traditional Owner values aligned with community priorities and needs to achieve CCIP-R-09 project aims. This was achieved through face-to-face workshops, face-to-face interviews, and discussions online and in person. The project drew on feedback from Reef Traditional Owner groups including 41 participants attending workshops in three regions across the Great Barrier Reef (Far Northern, Northern and Southern regions). In doing so, it highlighted the importance of ensuring such research is accompanied by proactive measures to develop conditions for meaningful participation (particularly when the intent is to involve Traditional Owners in co-design of research). In this project, such measures included the provision of workshop and information sessions for Reef Traditional Owners to understand more about the existing COTS reef prioritisation, research impact pathways and allied Indigenous reef advisory roles that govern existing COTS research and management.

The project developed four foundational pillars through pilot engagement with Reef Traditional Owners to guide meaningful partnerships between COTS stakeholders and Traditional Owner groups. The foundational pillars emerged through working with a pilot group of Reef Traditional Owners over a series of informal meetings, online discussions, and workshop presentations. These included:

- **Succession Planning** - Preparing the next generation for Sea Country governance through COTS research and management, ensuring intergenerational knowledge transfer and capacity building.
- **Principles of Co-Research** - Establishing core values including integrity, transparency, honesty, respect, awareness, acknowledgement, connection, and benefit that underpin genuine engagement.
- **Cultural Agreement Protocols** - Developing place-based frameworks for genuine partnerships that recognise the importance of knowing and understanding the right story about Sea Country.
- **Community and Institutional Readiness** - Ensuring both Traditional Owner communities and research/management institutions are prepared and equipped for meaningful two-way engagement.

Analysis of workshop discussions and interviews with 41 participants revealed 13 key themes that Traditional Owners identified as critical for developing meaningful relationships with COTS research and management. These themes—ranging from data sovereignty and benefit sharing to succession planning and embedding Story of Sea Country—formed the foundation for localised engagement protocols. Each theme represents areas where Reef Traditional Owners seek substantive change in how research and management activities are conducted across their Sea Country, emphasising the need for genuine partnerships, visibility in decision-making, respect for traditional knowledge, and support for self-determination.

A critical finding from this project is the fundamental mismatch between the scale at which COTS management operates and the scale at which Reef Traditional Owners exercise their responsibilities. While COTS research and management is conceptualised and delivered as a Reef-wide program covering over 2,300 kilometres of coastline, the 70+ Reef Traditional Owner groups operate at local, place-based scales with specific protocols, priorities, and relationships to their Sea Country. This scaling challenge means that a single, standardised approach to engagement cannot adequately respect the diversity of Traditional Owner governance systems, cultural protocols, and community needs across the Great Barrier Reef.

To address this challenge, the project developed localised, place-based engagement protocol handbooks that serve as practical tools for building genuine partnerships between COTS stakeholders and individual Reef Traditional Owner groups. These protocols are designed to:

- **Guide initial engagement** - Provide COTS researchers and managers with specific cultural protocols and expectations before entering Sea Country.
- **Structure ongoing relationships** - Establish frameworks for decision-making, benefit sharing, and knowledge exchange throughout project lifecycles.
- **Enable assessment and evaluation** - Include rating scales that allow both parties to assess the quality of engagement and identify areas for improvement.

- **Support operational planning** - Be used during annual work planning, reef prioritisation processes, and when COTS control activities are scheduled for specific Sea Country areas.

The protocols would be activated whenever COTS research, surveillance, or control activities are planned for a Traditional Owner group's Sea Country—from initial project design through to implementation and evaluation. They provide COTS managers with clear, locally relevant guidance on permissions, cultural considerations, data sharing agreements, and partnership expectations specific to each Traditional Owner group.

Through this project, draft protocols have been co-developed with two Reef Traditional Owner groups as proof-of-concept exemplars. The Yadaba (*Respect*) Protocol for Darumbal Country and the Ngana Muruk Junkurrjiku Janay (*Standing up together very strong*) Protocol for Dabu Jajikal Country demonstrate how place-based approaches can bridge the gap between Reef-wide program delivery and local Traditional Owner governance. While these two protocols share common themes identified through the broader engagement process, each is uniquely tailored to reflect the specific cultural values, operational priorities, and capacity of their respective Traditional Owner groups.

These case studies provide templates and learnings that other Reef Traditional Owner groups can adapt to develop their own protocols, ultimately building toward a network of place-based engagement frameworks that collectively support meaningful Traditional Owner participation across the entire COTS program while respecting local autonomy and self-determination.

Other project outcomes included employment and business opportunities for Aboriginal and Torres Strait Islander people. Dedicated Indigenous positions at senior postdoctoral and research assistant levels provided both meaningful career development opportunities for the incumbents in those positions and a clear signal to Reef Traditional Owners participating in the project of commitment to Indigenous research capacity-building. An Indigenous artist was also commissioned to design culturally valued and relevant illustrations to story project methods and outputs.

Implications to arise from this project for COTS management and research include:

- A need for greater awareness of the kinds of relationships currently embedded in business-as-usual approaches to management and research and the limitations this places on relationship-building with Reef Traditional Owners. Moving beyond business-as-usual and surface-level interpretations of good relationships will require deeper understanding of what good relationships mean from Reef Traditional Owners' perspectives.
- Providing culturally safe learning experiences by embedding employment opportunities for Indigenous researchers, research and undergraduate students, and cultural research assistants in COTS research and management should be prioritised.
- Regional awareness of COTS research, surveillance, and control activities will be enhanced by considering how place-based understanding of Sea Country held by Reef Traditional Owners complements and strengthens Reef-wide dashboard communication strategies and information sharing approaches.
- Meaningful relationships with Reef Traditional Owners will also be enhanced by implementing assessment and evaluation frameworks that support the development of holistic approaches to management and support local, placed-based community priorities and needs.

The current and potential impacts of COTS predation, climate change and other pressures on the Great Barrier Reef are encouraging substantial innovation in Reef science and management. Reef Traditional Owners stand in a unique position of knowing and relating to environmental changes across millennia. Adaptation and responsible approaches to care for Country have accounted for the resilience of Traditional Knowledge and its ability to respond to changes affecting People, knowledge, and community across the Great Barrier Reef and adjacent landscapes.

COTS research and management has a special opportunity to contribute a novel species-based exemplar of how to support the development of meaningful relationships with Reef Traditional Owners through economic, social and cultural capital building processes. The value and strength of Reef Traditional Owner knowledge, people and communities will be invaluable in guiding COTS science through a changing and complex future of coral reef protection, restoration and adaptation.

Reef Traditional Owners believe that when relations with the Reef are nested within a network of respectful relationships everyone can begin to see the Reef differently. The Reef becomes family, and the ways we live and work with the Reef are fully accountable to the shared health of people, communities and knowledge:

The Reef is Country. The Reef is our Heart, and the water is the lifeblood that connects us all. She is our Family. The Reef is an extension of Us, and we are an extension of Her.

The Reef looks after us, feeds and protects us, and keeps us healthy. She's the keeper of our stories, our Lore. Without her we will suffer irreversible effects to our identity (Heart of the Reef – A call for healing, 2021).

# 1. INTRODUCTION

## 1.1 Building with the legacy of Reef Traditional Owners

The Great Barrier Reef Marine Park extends from the low water mark on the Queensland coast to the outer edge of the continental shelf, and from near Bundaberg in the south of Queensland to Cape York in the north. Within these boundaries, the Great Barrier Reef Marine Park Authority (Reef Authority) acknowledges that management of the park includes upwards of 70 Reef Traditional Owners (RTOs). The Great Barrier Reef (GBR or Reef), however, extends beyond the spatial boundaries of the park into the Torres Strait Islands and beyond the temporal boundaries of the Reef Authority with Traditional Owners involved in the care and protection of the Reef for millennia. This care and protection, embedded in ways of being, ensured relationships between people, animals, plants, land, sea, and air have all benefitted from care delivered through a complex understanding of storylines, language lines, songlines, and trade, guided by lore (Atkinson 2002; Langton 2006; Kerwin 2010). This legacy continues to be the foundation of traditional knowledge (TK) / traditional ecological knowledge (TEK) that guides and supports Reef Traditional Owners to participate, contribute and guide others to think about how they engage, care, and protect the Reef in more recent histories and developments of environmental research (Mauro & Hardison 2000; Brown et al. 2018;; Robinson et al. 2021).

The Reef Traditional Owner voice has been a part of the Reef 2050 Long-term Sustainability Planning process since its inception more than a decade ago (Dale et al. 2018). Reef Traditional Owners have been central in highlighting the interests and priorities of Traditional Owner groups and communities across numerous Reef reporting agendas (Appendix A). These reports articulate an operational framework for understanding Traditional Owner priorities across the Reef. They identify opportunities to develop strategic alignment between research and management activities, ensuring coordination across programs and demonstrating substantive action on Traditional Owner concerns. Demonstrating engagement and co-production of outcomes and impact realises a key aspect of The United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) *Article 29, 32* (United Nations 2007), regarding environmental management and benefit sharing redress.

## 1.2 Planning and adapting for Reef Traditional Owner Legacies

The continuing legacy of Reef Traditional Owners guiding and sharing knowledge and understanding of Sea Country rests on the priority of intergenerational knowledge sharing. The importance of care and management of Country by Traditional Owners is part of the broader responsibility and accountability shared across successive generations (Langton 2006; Woodward et al. 2020). Sharing knowledge intergenerationally contributes to capacity building and readiness of successive generations to take on the responsibility of caring and managing Country at the right time. When successful, this intergenerational process ensures the continued care and management of peoples, communities, and knowledges. It fosters a consistent and continuous approach to maintaining values, contexts for learning, and knowledge systems across time (Langton 2006; Woodward et al. 2020; Janke et al. 2021;).

Connecting to the legacies of Reef Traditional Owners empowers the next generation as they are guided to follow in the footsteps of Reef Elders and continue to respond to a changing scientific understanding and a changing environment (Nakata et al. 2014; Janke & Sentina 2018; Janke et al. 2021). An adaptive response requires the contribution of developing Indigenous-led research

undertaken by Aboriginal and Torres Strait Islander researchers (Peters et al. 2018). Traditional research has often followed a 'participation and extractive model' where Indigenous peoples are invited to contribute to pre-determined research agendas and science extracts knowledge from data collection settings but limits control over research design, methods, or outcomes. Moving beyond this model, new approaches emphasise genuine engagement, power sharing, and collective action, where Indigenous peoples lead and shape research priorities from inception to implementation (Peters et al. 2018; Colbourne et al. 2020; Moewaka Barnes et al. 2021; Robinson et al. 2022).

Adopting these approaches provides scope for research to be supported and guided by Reef Traditional Owners and Indigenous researchers with the aim of maintaining intergenerational approaches to knowledge transmission and translation to grow and nurture the next generation (Peters et al. 2018; Shibasaki et al. 2019).

### **1.3 Meaningful GBR engagement with Reef Traditional Owners**

Engagement with Reef Traditional Owners across research and management agendas of the GBR continues to be a key objective echoed across multiple state, federal, and research bodies inclusive of broader partner Reef stakeholders. The demonstration of meaningful engagement by Reef stakeholders with Reef Traditional Owners has been and continues to vary in quality and purpose. The world-first Reef 2050 Long-Term Sustainability Plan (Reef 2050 Plan) initiated engagement with Reef Traditional Owners across a 35-year period beginning with the development of the collaborative plan in 2015.

In its development, however, the Reef 2050 plan did not partner with Reef Traditional Owners. Further, the top-down approach of the Reef 2050 plan assigned delegatory roles to Reef Traditional Owners and tasked their contributions with fulfilling a predetermined strategic direction (Dale et al. 2018). This highlights the complex and challenging task of determining how state, federal and existing Reef stakeholders understand meaningful engagement with Reef Traditional Owners. It also reveals a general lack of consistent understanding across the multiple jurisdictional and organisational bodies responsible for the future protection, health, and wellbeing of the GBR.

Responding to these challenges, the Reef 2050 Long Term Sustainability Plan Indigenous Targets, sought to redress the concerns held by Traditional Owners regarding the development of the Reef 2050 plan (Commonwealth of Australia 2015). The response provided an opportunity for Reef stakeholders to consider how best to demonstrate what meaningful engagement in the future with Reef Traditional Owners constituted. The seven themes from the Reef 2050 plan are: ecosystem health, biodiversity, heritage, water quality, community benefits, economic benefits, and governance. The project team worked with Reef Traditional Owners to reinterpret these government-defined themes through an Indigenous lens, exploring how each theme connected to Traditional Owner values, priorities and knowledge systems. This process involved workshops and discussions where Traditional Owners articulated what these broad categories meant within their own frameworks of Sea Country management, cultural responsibilities, and community wellbeing, thereby creating a more holistic and culturally grounded understanding of Reef management priorities.

## 1.4 The importance of building genuine long-term relationships

Indigenous people have long understood the significance and importance of good relationships with all things (Kawagley 1995; Mosby 1998; Langton 2006; Archibald 2008; Backhaus et al. 2020). Relationships for Indigenous peoples are the foundation for understanding all the necessary demonstrations of meaning Indigenous people navigate, understand and value (Backhaus et al. 2020). Environmentally, this is accomplished as part of living with the environment and the ways the environment lives with Indigenous peoples as co-constructions of meaning and form through inherent rights of respecting and acknowledging one and *each* other. Traditional ecological knowledge (TEK) is thus understood as inclusive of peoples' relationships with the environment and with the myriad beings that inhabit it. TEK is eco-centric, holistic, and layered (see **Figure 1**) (Ito 2017; Robinson et al. 2021). This approach suggests relationships build *with* each other rather than *on top* of each other (Ito 2017).

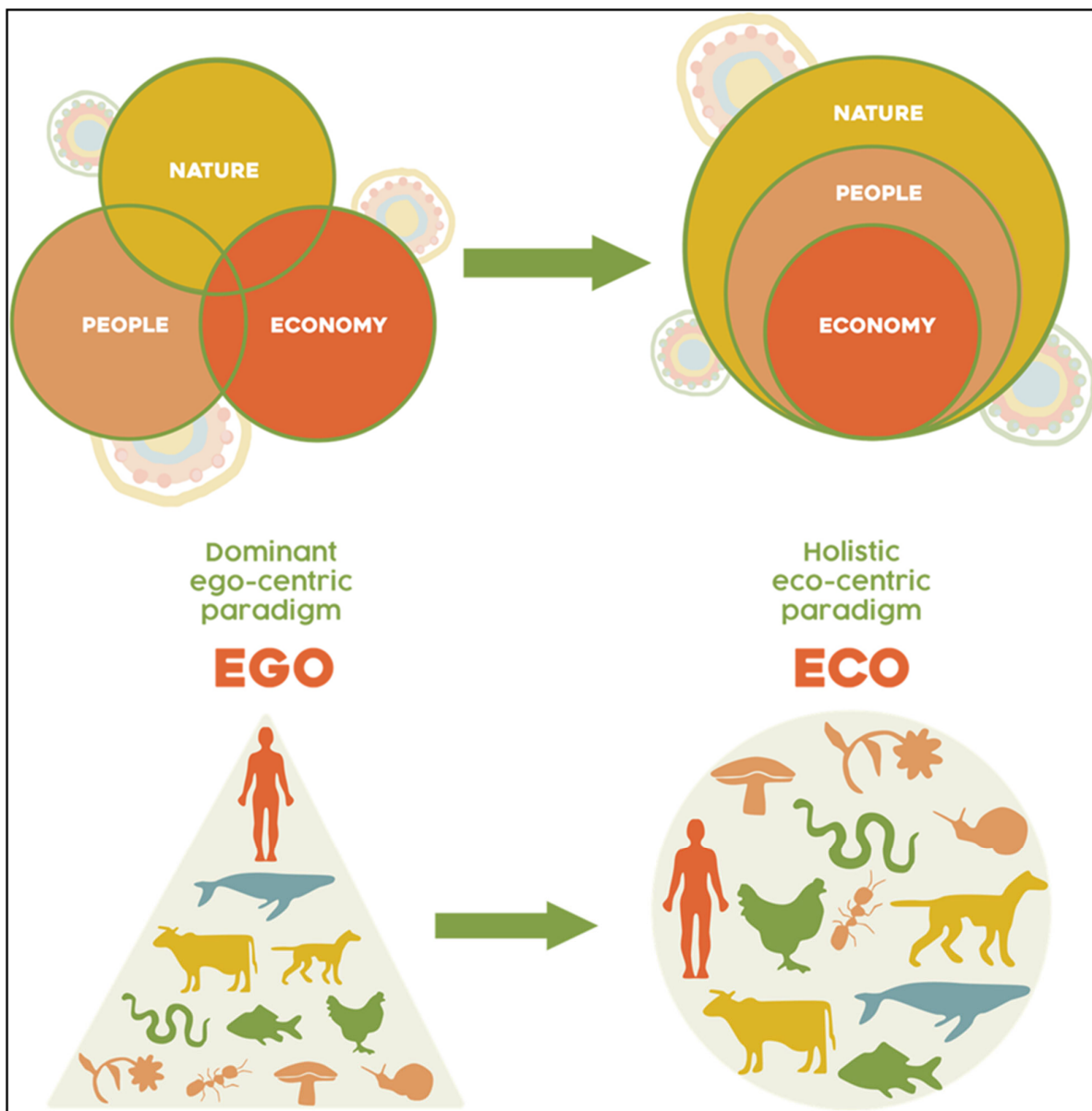
For Indigenous research or working with Indigenous peoples, relationships form the core foundation of what is built as an eventual project or delivered as an outcome. Conversely, relationships also impact what is *not* built in meaningful ways when they remain surface-level interpretations of good relationships. Without good relationships as a starting point, projects will fail to realise meaningful engagement or impact and will not support the aspirations of Indigenous peoples and communities.

Traditional participatory research approaches, while valuable, are often insufficient on their own. They typically focus on including community members (Dudgeon et al. 2021) and recognising that 'community' is about family relationships (Taylor et al. 2008, 2012). However, deeper relationship-building now requires more transformative approaches, including:

- Developing Communities of Practice (CoP) – networks where Traditional Owners, researchers, and managers regularly share knowledge, learn together, and develop shared approaches to Reef management (Shibasaki et al. 2019; Cheer et al. 2020).
- Supporting pluralistic knowledge traditions – recognising that Indigenous and Western knowledge systems are equally valid and finding ways to weave them together rather than forcing one into the framework of the other (Hill et al. 2012; Tengö et al. 2017).
- Implementing co-design methodologies (Te Morenga et al. 2018; Mark & Hagen 2020; Anderson et al. 2022; St John & Akama 2022).
- Fostering meaningful and equitable interactions between Indigenous knowledge systems and western frameworks (Moyo 2023).

Co-design approaches to research attempt to achieve steps towards deeper, more meaningful Traditional Owner participation across Reef management and governance.

Co-design describes a process of engagement focused on how (we work together) rather than 'what' we do as project team members, each with existing capacities and unique contributions.



**Figure 1.** Top panel: the rights-of-nature paradigm versus current model of sustainability (adapted from Ito 2017); and bottom panel: ego- versus eco-centric views of nature from (Robinson et al. 2021). Artwork by Barkindji, Malyangapa Designer Jasmine Craciun.

Co-design supports both theoretical (Chambers et al. 2021) and practical understanding of engagement. The following reference points on co-design emerged from a workshop discussion led by Reef Traditional Owners wishing to provide a series of points for program managers and researchers to understand when considering co-design interactions with Reef Traditional Owners (Great Barrier Reef Traditional Owners 2019). Participants advised that research processes should involve five levels of co-design, each representing a different step in the continuum of working towards Traditional Owner aspirations for engagement, partnerships, leadership, and autonomy:

1. **Empowering voices:** is about **how** we work together, no matter what the issue is, and provides a structured approach to do so.

2. **Brokering power:** recognises that different Reef 2050 and Partnership projects would sit at different places in the continuum, and these could be mapped.
3. **Reframing power:** provides a framework for continuous improvement including tools to support improvement. Targets could be set to monitor progress towards improved co-design practices.
4. **Navigating differences:** stages would be defined by a suite of characteristics including practices and behaviours. This is important as principles alone are not enough – they often don't translate into actions.
5. **Reframing agency:** would be led by Traditional Owners, working together with GBR research and management agencies.

The five levels of co-design identified by Reef Traditional Owners can be aligned, moreover, with engagement principles embedded in the *AIATSIS Code of Ethics for Aboriginal and Torres Strait Islander Research (AIATSIS Code of Ethics 2020)*.<sup>1</sup> Applied to GBR research, these include:

### *Stage 1 Inform*

Characteristics: One-way communication where partners share information about decisions already made or projects already designed. Traditional Owners are recipients of information rather than contributors.

Practices/behaviours:

- Presentations to TOs about predetermined plans without further engagement.
- Consultation occurs late in project cycles, if at all with limited input by TOs.
- TO knowledge treated as "input" to validate existing approaches to knowledge extraction.
- Timelines set by partner organisations.
- Success measured by partner-defined metrics.

### *Stage 2 Consult*

Characteristics: Traditional Owners are invited to provide feedback, but decision-making authority remains with partners. Consultation may influence minor adjustments but doesn't reshape fundamental project design.

Practices/behaviours:

- Seeking TO perspectives at defined consultation points.
- Feedback collected but filtered through partner priorities.
- Some adaptation of language or framing, not substance.
- TO time compensated, but relationship remains transactional.
- Partners retain control of research questions, methods, and outputs.

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<sup>1</sup> <https://aiatsis.gov.au/whats-new/news/aiatsis-code-ethics>

### *Stage 3 Involve*

Characteristics: Genuine two-way dialogue where Traditional Owner perspectives meaningfully shape project design and delivery. Power begins to shift, though partners often still hold structural control.

Practices/behaviours:

- TOs engaged early in project conception.
- Joint working groups with TO representation.
- Some TO priorities incorporated into project scope.
- Shared ownership of some outputs.
- Cultural protocols acknowledged and followed.
- Emerging recognition of TO expertise alongside Western science.

### *Stage 4 Collaborate (True Co-design)*

Characteristics: Shared power and joint decision-making. Projects emerge from negotiated priorities between TOs and partners. Resources, governance, and benefits are distributed equitably.

Practices/behaviours:

- Co-governance structures with TO authority embedded.
- Research questions developed together from the outset.
- TO knowledge systems treated as equally valid.
- Shared control of budgets and resource allocation.
- Joint intellectual property arrangements.
- Two-way capacity building (partners learn from TOs, not just reverse).
- Flexible timelines that respect cultural obligations.
- Success defined collaboratively, including TO-determined indicators.

### *Stage 5 Self Determination*

Characteristics: Traditional Owners hold decision-making authority and leadership. Partners provide support, resources, and technical assistance as requested. Projects serve TO aspirations and are accountable to TO governance.

Practices/behaviours:

- TO-controlled governance and decision-making.
- Partners invited in as needed, on TO terms.
- Resources flow to TO-controlled entities.

- TO methodologies and knowledge systems drive approach.
- Partners support TO capacity rather than building parallel structures.
- Accountability runs to TO communities and governance.
- TO ownership of data, intellectual property (IP), and outputs.
- Long-term relationship beyond project cycles.
- Success measured against TO-determined outcomes for Country and community.

The co-design models are seen as an important contributor for COTS research and management activities and an important guide towards developing opportunities for Reef Traditional Owners to contribute to decision making frameworks in use across the COTS program.

## 1.5 Crown-of-Thorns Starfish Research and Management

Crown-of-thorns starfish (COTS; *Acanthaster* spp., excluding *A. brevispinus*) research and management on the GBR has evolved and developed since the 1960s (Pratchett et al. 2017). Indeed, COTS are one of the most studied organisms on tropical coral reefs (Millican et al. 2024). This has been in response to the ability of COTS to feed on coral and devastate coral reef ecosystems through successive waves of outbreaks that spread across the GBR (Matthews et al. 2024). The first COTS outbreak was recorded in 1962, and was followed by three successive outbreaks each lasting 10–15 years resulting in significant coral losses (Matthews et al. 2024). Preventing and/or containing COTS outbreaks, is considered one of several key management responses to reduce rates of coral mortality (Nakamura et al. 2016; Great Barrier Reef Marine Park Authority 2017; Condie et al. 2018).

The development of the COTS Strategic Management Framework (Great Barrier Reef Marine Park Authority 2020) supported operationalisation of strategies that improved ways to control COTS populations in order to protect the Reef from the impact of COTS predation (Babcock et al. 2014, 2016; Great Barrier Reef Marine Park Authority 2017; Condie et al. 2018). The framework acknowledged that effective COTS management required a holistic approach combining long-term management actions to prevent outbreaks with tactical response actions aimed at minimising coral mortality and promoting recovery when outbreaks are underway (Great Barrier Reef Marine Park Authority 2020).

## 1.6 Reef Traditional Owners and COTS research and management

Traditional Owner participation in COTS activities began with diver training facilitated by the Association of Marine Park Tourism Operators (AMPTO) and Gempearl Pty Ltd (the AMPTO 'Blue Army Project') (Jarvis et al. 2020). The current Reef Authority agreement with on-water COTS Control operators: Blue Planet Marine, INLOC, and Pacific Marine Group continues this tradition through similar COTS trainee internships for Aboriginal and Torres Strait Islander participants inclusive of Reef Traditional Owners (Great Barrier Reef Marine Park Authority 2023). Allied reporting also lists COTS diver employment and training reflections (Dale et al. 2016; Great Barrier Reef Marine Park Authority 2017). More recent trends have seen Reef Traditional Owners participate in limited and short term advisory roles on Steering Committees and membership of Traditional Owner Working groups administered through the Great Barrier Reef Foundation (GBRF 2024a, 2024b).

The Reef Authority, COTS partners and COTS contractors all value engagement, partnership, and increased participation of Aboriginal and Torres Strait Islander communities in COTS Control Program governance, strategic planning, and operations. However, on the ground demonstrations of this value have been limited to formal and informal dialogue regarding future planning of Reef Traditional Owner participation strategies on COTS management, integration of Reef Traditional Owner voices into prioritisation decision making workshops as well as broad understanding of investment support for Reef Traditional Owner concerns and priorities regarding COTS control (Great Barrier Reef Marine Park Authority 2023). Recent government contributions for the COTS Control Program funded by the Reef Authority, total \$161.5 million of the Reef Protection Package to support activities during the period 2024–2030. In the COTS Control Program's 2023–2024 Annual Work Plan (AWP), Traditional Owner engagement is listed as a funding priority; however, there is limited information elaborating on how and what investment projections and engagement strategies could be guided in consultation with direction from the Traditional Owner Implementation Plan (TOIP) for large scale reef wide projects. (Great Barrier Reef Marine Park Authority 2023).

## 1.7 CCIP-R-09 Research context

CCIP-R-09 is a co-funded investment between the Crown-of-thorns starfish Control Innovation Program (CCIP), Reef Trust Partnership, and James Cook University (JCU). Additional in-kind contributions emerged during the life of CCIP-R-09 from Dabu Jajikal Aboriginal Corporation and Darumbal Enterprises. The project is nested in the CCIP Response subprogram of the overall CCIP program logic and provides specific focus for the Program on Traditional Owner engagement, understanding and supporting Traditional Owner interests and values, and assessing the social, cultural and economic impact of COTS. The CCIP-R-09 project and related project CCIP-R-08 (Paxton et al. 2025) were forecast to provide new knowledge of cultural and social perspectives and views to support more efficient and effective operational responses and improve Traditional Owner benefits from COTS research and management (**Figure 2**). The original project workplan identified four aims. However, as the project progressed, significant relationship-building was required to establish the trust and connections necessary for meaningful engagement with Reef Traditional Owner groups—many of whom had limited prior involvement with COTS research and management. This foundational work, combined with iterative co-design processes with interested Reef Traditional Owner groups, led the project to evolve in response to community priorities and needs. The aims, as realised through the project, were to:

1. Establish trust and build meaningful relationships with Reef Traditional Owner groups to create the foundation for genuine partnerships in COTS research and management.
2. Co-design participatory research methods with Reef Traditional Owners that centre community priorities and needs while supporting project objectives.
3. Develop a qualitative baseline understanding of Reef Traditional Owner values, perceptions, and aspirations regarding COTS research and management.
4. Co-produce place-based engagement protocols with interested Reef Traditional Owner groups to guide future COTS research and management partnerships on their Sea Country.
5. Facilitate Reef Traditional Owner involvement in CCIP research and implementation, including building Indigenous research capacity through dedicated employment opportunities.

In practice, Aims 2 and 3 were addressed in an integrated manner through the project's qualitative methodology. The workshop discussions and semi-structured interviews were

designed to elicit both Reef Traditional Owner perceptions of current COTS management practices (Aim 2) and their aspirations for future involvement (Aim 3). These two dimensions proved to be inherently interconnected in participants' responses—perceptions of existing engagement gaps and limitations directly informing aspirations for improved relationships, governance structures, and benefit sharing arrangements. The 13 themes that emerged from thematic analysis (Section 3.4) therefore capture both current perceptions and future aspirations as interwoven elements of Reef Traditional Owner perspectives on COTS research and management. For example, themes such as "Genuine Partnerships" and "COTS Governance" simultaneously reflect participants' critiques of current practice and their vision for meaningful engagement.

While this integrated approach precluded collection of quantitative baseline data on the distribution of social, cultural, and economic outcomes it yielded rich qualitative insights that provide a foundational understanding for future assessments. The place-based engagement protocols developed with Darumbal Enterprise and Dabu Jajikal Aboriginal Corporation (Sections 3.5.1 and 3.5.2) initially included assessment scales that could support more systematic data collection on these outcomes in subsequent projects. This however through participatory methods of co-design with Traditional Owner groups, resulted in the development of guideline protocols for more substantive relational accountability outcomes between researchers and the specific Traditional Owner groups in question (Section 3.5.3).

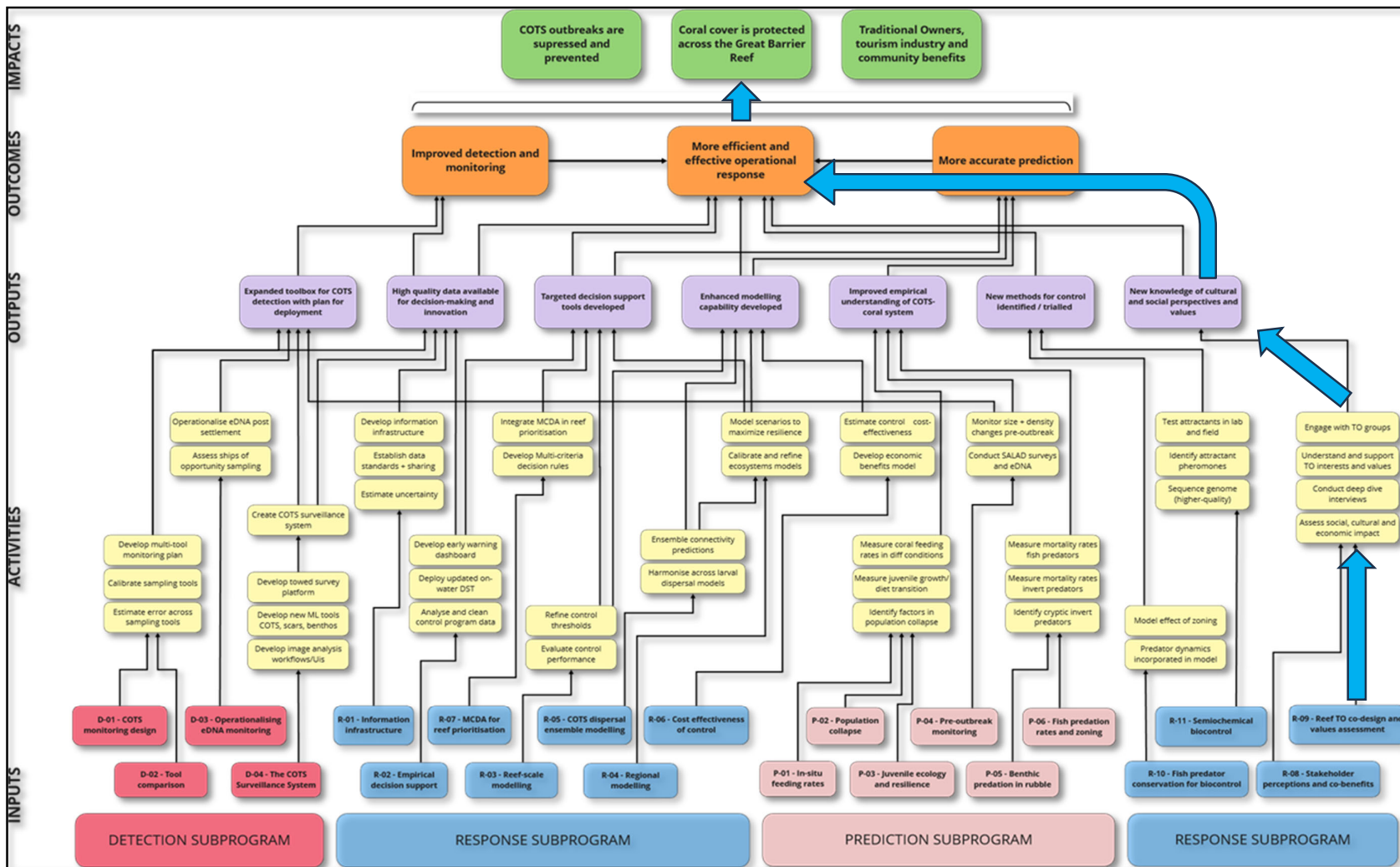


Figure 2. CCIP-R-09 nested pathway to impact in CCIP program logic.

CCIP-R-0'



## 2. METHODS

### 2.1 Participatory approaches for the right method for CCIP-R-09

Initial project workplan methodology detailed a three-phase development of sub-regional (Far Northern, Northern, Central and Southern GBR) Communities of Practice (CoP) deployed across the GBR. A Community of Practice refers to a group of people who share a common concern or interest and who deepen their knowledge and expertise through regular interaction (Wenger 1998). In Indigenous research contexts, CoPs have been proposed as mechanisms for facilitating ongoing knowledge exchange between researchers and Indigenous communities, supporting two-way learning and collaborative problem-solving (Shibasaki et al. 2019; Cheer et al. 2020).

The original project design envisaged three phases:

- **Phase 1** was intended to establish three sub-regional CoPs (Far Northern, Central, and Southern GBR) by identifying and convening interested Reef Traditional Owner representatives alongside COTS researchers and managers. This phase assumed that existing networks and relationships could be leveraged to identify participants and establish group membership.
- **Phase 2** would see these CoPs meet regularly (online and face-to-face) to share knowledge about COTS research and management, identify Reef Traditional Owner priorities and concerns, and co-develop resources and guidelines for improved engagement.
- **Phase 3** aimed to consolidate learnings across the three sub-regional CoPs into Reef-wide guidance documents and establish sustainable governance structures for ongoing CoP operation beyond the project's conclusion.

This approach proved challenging for several reasons. First, it assumed a level of pre-existing awareness about COTS research and management among Reef Traditional Owner communities that did not exist as many communities had limited knowledge of COTS programs operating across their Sea Country. Second, the model assumed that project team members had established relationships with Reef Traditional Owners that could facilitate rapid recruitment to CoPs when, in practice, these relationships needed to be built from the ground up. Third, the CoP model implicitly assumed that Reef Traditional Owners would be willing to participate in a structure designed by researchers, rather than co-designing the engagement approach itself.

These challenges reflect broader lessons for future projects seeking to engage with Reef Traditional Owners:

1. **Do not assume pre-existing awareness.** Projects should budget significant time for information sharing and relationship building before substantive research activities can commence.

2. **Do not assume relationships exist.** Unless project team members have demonstrated, long-standing relationships with specific Reef Traditional Owner groups, engagement will require foundational trust-building work.
3. **Do not predetermine engagement structures.** The form of engagement (whether CoPs, workshops, advisory groups, or other mechanisms) should itself be a product of early dialogue with Reef Traditional Owners, not an assumption embedded in project design.
4. **Build in methodological flexibility.** Project workplans and funding agreements should allow for adaptive approaches that can respond to community priorities and the realities of relationship-based research.

The project team subsequently undertook 12–18 months of relationship building, information sharing, and community discussions to identify and align the project with community priorities and needs, gauge interest from Reef Traditional Owners wishing to participate, and identify relevant Reef Traditional Owners willing to contribute support for the overall project.

## 2.2 Scope of Traditional Owner Engagement

Over the life of the project, the research team directly engaged with 21 Reef Traditional Owner groups and Aboriginal Corporations across the GBR region (**Table 1**). Engagement occurred at multiple levels: from initial awareness-raising and information sharing through to formal research participation, with a subset progressing to deeper co-design partnerships.

**Table 1.** Traditional Owner groups engaged through CCIP-R-09.

Region	Traditional Owner Groups/Entities
Torres Strait/Far Northern	Dabu Jajikal Aboriginal Corporation, Lama Lama, Wuthathi, Eastern Kuku Yalanji, Jabalbina Yalanji Aboriginal Corporation, Yuku Baja Muliku, Eastern TSI & Northern GBR incl. Raine Island
Northern	Gimuy-Walubara Yidinji, Mandingalbay Yidinji, Gunggandji, Yirrganydji, Mamu Aboriginal Corporation, Dyrribarra Bagirbarra, Wulgurukaba,
Southern	Darumbal, Woppaburra, Gooreng Gooreng, Butchulla, Port Curtis Coral Coast

Depending on group capacity and interest, some groups were able to develop relationships with the project team during the relationship-building phase: Dabu Jajikal, Yirrganydji, Eastern Kuku Yalanji, Gooreng Gooreng, Giringun, Woppaburra, Lama Lama, and Nywaigi. From these, two groups - Dabu Jajikal Aboriginal Corporation (Far Northern region) and Darumbal Enterprises Pty Ltd (Southern region) – supported partnership as co-design collaborators, contributing to the development of place-based engagement protocol guides presented as proof-of-concept exemplars in Appendices C and D.

### 2.2.1 Patterns of Interest and Engagement

The project documented over 100 participant engagements across all activities, with 41 individuals contributing directly to data collection through workshops and interviews. Regional participation in formal research activities is summarised in **Table 2**.

**Table 2.** Regional distribution of interested Traditional Owners in workshops and interviews.

Region	Workshop Participants	Interview Participants
Torres Strait Islands	0	3
Far Northern GBR	20	2
Northern GBR	4	1
Central GBR	0	0
Southern GBR	10	1
<b>Total</b>	<b>34</b>	<b>7</b>

The absence of Central region participants reflects engagement challenges encountered during the project. While initial informal discussions were held with Central region Traditional Owners, these conversations did not progress to formal research participation within the project timeframe. Contributing factors included competing community priorities and the extended relationship-building required before communities were prepared to commit to formal research activities. This pattern underscores a key finding of the research: that meaningful engagement cannot be accelerated without first establishing foundational trust and demonstrating genuine commitment to community-identified priorities.

## 2.2.2 Indigenous Research Capacity Building

In alignment with JCU's Aboriginal and Torres Strait Islander Workforce Strategy and the project's commitment to Indigenous-led research, CCIP-R-09 piloted The Cairns Institute Aboriginal and Torres Strait Islander Cadetship Program. Through paid research placements, the program enables Aboriginal and Torres Strait Islander undergraduate students at JCU to gain employment experience while earning credit towards accredited work-integrated learning subjects. Cadets are employed one day per week for the duration of their placement, receive reimbursement for study expenses, and gain credit toward degree completion through relevant work integrated learning subjects. One Indigenous Research Assistant completed a Work Integrated Learning placement of 130 hours between 30 June and 3 October 2023. The cadet contributed to data analysis processes and provided reflection on benefit sharing strategies with Indigenous participants, informing the final report deliverables on ways to incorporate such strategies into future COTS research.

## 2.2.3 Broader Awareness-Raising

Beyond direct research participation, the project reached a significantly larger audience through strategic communication activities. Radio interviews conducted via BBM Indigenous Radio 98.7 FM's "Talk Black" program were simulcast across regional centres including Gordonvale, Kuranda, Atherton, Mareeba, Port Douglas, Mossman, and Yarrabah, as well as nationally through the National Indigenous Radio Service. This approach recognised that building awareness of COTS research and management opportunities across the broader Reef Traditional Owner community is a necessary precursor to future engagement.

## 2.3 Reef Traditional Owner engagement phases

The project method evolved through three iterative phases of engagement with Reef Traditional Owners, each building upon the previous phase to establish the conditions for genuine partnership and co-production of knowledge.

- **Phase 1: Listening** – Building project relevance and trust through dialogue, relationship development, and alignment with community priorities and needs. This phase involved significant outreach including radio interviews, conference presentations, and engagement through GBRF Traditional Owner working and advisory groups.
- **Phase 2: Exploring** – Co-design for two-way knowledge sharing, including development and testing of a pilot framework centred on four pillars (Succession Planning, Principles of Co-Research, Cultural Agreement Protocols, and Community and Institutional Readiness) through workshops with interested Reef Traditional Owner groups.
- **Phase 3: Maintaining** – Co-creation for genuine partnerships, resulting in the development of two place-based engagement protocol handbooks with Dabu Jajikal Aboriginal Corporation and Darumbal Enterprises as proof-of-concept exemplars.

### 2.3.1 Phase 1: Listening for project relevance and building trust

This phase spanned approximately 12 to 18 months (early 2022 through mid/late 2023), commencing when the Indigenous-identified researcher joined the project team in January 2022. The extended duration reflected the project's position as the first COTS-related initiative to specifically engage with Reef Traditional Owners, meaning the team operated from a baseline of limited pre-existing relationships rather than established partnerships.

Listening and sharing in dialogue over time with interested Reef Traditional Owner Groups (RTOGs) and broader advice from Reef Traditional Owners in general enabled the core research team members to explore, re-evaluate, and develop approaches not considered within the original workplan, design document, and scope of existing expertise of the project team (**Figure 3**). Relevance of COTS research and management to interested Reef Traditional Owners was a key priority of this phase as part of a knowledge translation between research aims and objectives and RTOG priorities and needs.

#### *Building trust, reidentifying priorities, partners and interest*

**Phase 1** revealed that building trust with Traditional Owners required concurrent, overlapping engagement activities rather than discrete, sequential steps. Over the 12 to 18 month Listening phase, GBRF governance participation, industry partner workshops, conference presentations, and on-Country relationship building operated simultaneously and reinforced one another. Through these interconnected activities, the project team and Reef Traditional Owners established a shared understanding of COTS research and management while reidentifying priorities and potential partners. **Figure 4** illustrates these key components and their interconnections, with the smaller circles representing the various groups engaged through each activity.

## *Outreach approaches and activities*

The project team employed multiple strategies to socialise the project and initiate dialogue with Reef Traditional Owners while building trust:

- **Radio engagement:** Four interviews were conducted via BBM Indigenous Radio 98.7 FM's "Talk Black" program, simulcast across regional centres (Gordonvale, Kuranda, Atherton, Mareeba, Port Douglas, Mossman, and Yarrabah) and nationally through the National Indigenous Radio Service.
- **Conference and workshop participation:** The team delivered 12 presentations during 2022, including at the Australian Marine Sciences Association (AMSA) conference, AMSA Indigenous Workshop, Social Science Symposium, CCIP Action Workshop, and COTS prioritisation workshops. These forums enabled initial conversations with Traditional Owner representatives attending as delegates.
- **GBRF governance engagement:** Regular presentations and discussions through the COTS/Reef Restoration Adaptation Science (RRAS) Traditional Owner Technical Working Group (TOTWG) provided a platform for information sharing about COTS activities across the Reef and enabled the project to seek advice and counsel from sitting Traditional Owner members.
- **Industry partner engagement:** Site visits and workshops with COTS Control contractors (INLOC, Pacific Marine Group, Blue Planet Marine) facilitated connections with Traditional Owners already involved in COTS training and diving programs.
- **On-Country relationship building:** Participation in Kul-bul workshops run by Yirrganydji Land and Sea Rangers and Dawul Wuru Aboriginal Corporation built foundational relationships for future collaboration.

## *Reach and engagement numbers*

Through these combined activities, awareness-raising efforts reached an estimated 100+ participants during Phase 1, with 50–100 individuals engaging through conference presentations and workshops alone. Eight Reef Traditional Owner groups developed meaningful working relationships with the project team during this phase: Dabu Jajikal, Yirrganydji, Eastern Kuku Yalanji, Gooreng Gooreng, Giringun, Woppaburra, Lama Lama, and Nywaigi. These relationships formed the foundation for the co-design partnerships developed in subsequent phases.

## *Team capacity development*

Assessing the capability and cultural capacity of the research team resulted in the recruitment of a female undergraduate student as a Research Assistant in support of the male Aboriginal and Torres Strait Islander research team member. This ensured a balance of traditional knowledge understanding could be facilitated with RTOGs. The significance of having two direct Indigenous researchers supporting the whole-of-project engagement with interested Reef Traditional Owners fostered a whole-of-project understanding of how to research with traditional knowledge, people, and communities. This led the whole-of-project design to shift towards and grow into a respectful Indigenous-led research design,

empowering the Indigenous project team members to creatively design and frame research parameters to expand and leverage the project to support allied Reef Traditional Owner priorities.

### 2.3.2 Phase 2: Exploring co-design for two-way knowledge sharing

Phase 2 continued building relationships and trust between Reef Traditional Owner groups and the research team. This was achieved through a series of structured informal and formal face-to-face engagements with co-design partners, progressing from initial introductions through to collaborative framework development. The importance of ensuring a continued and consistent genuine and meaningful connection was maintained between all co-research team members as part of a co-designing experience.

#### *Co-design partnership activities*

During early 2023, the project team worked intensively with Dabu Jajikal Aboriginal Corporation to develop and test a co-design approach. The project team also presented findings to members of the COTS/RRAS TWG and Traditional Owner Advisory Group (TOAG). Feedback from these advisory members informed further refinement of the approach. Activities included:

- **January 2023:** Initial introductory meetings to showcase the CCIP-R-09 project, build rapport, and understand community priorities and needs.
- **March 2023:** A series of workshops held on the Nguma Bada and Bada Jali JCU campuses (Cairns) to develop a partnership strategy and discuss research assumptions alongside Traditional Owner co-design partner assumptions regarding community priorities and CCIP pathway-to-impact priorities.
- **March 2023:** A consolidating workshop to refine the co-design pathway-to-impact framework, ensuring alignment between project deliverables and community aspirations.
- **April 2023:** A preparatory workshop to support active participation in COTS research and management, including planning for the CCIP Integration workshop.

These workshops and feedback opportunities assisted in the substantive development of guidelines and processes for exploring the intersection between Traditional Owner community priorities and needs and researcher/research project priorities and needs. The workshops also supported the development of trust and integrity in the research process and fostered meaningful engagement between Traditional Owners, CCIP-R-09 co-leads, and the broader pathway to impact for CCIP.

#### *Developing the pilot framework*

Phase 2 also supported the development of a pilot framework that could respond to community values and aspirations around COTS research and management, while also identifying how COTS research and management could respond to community priorities and needs. This involved listening to Traditional Owners to understand the different types of participation they sought, how the project could support their community to build capacity in

understanding COTS research and management, how benefits could be shared, and how Reef Traditional Owner groups could participate in supporting decisions made for COTS control across their respective Sea Country.

Ongoing discussions between co-design partners and TOTWG members during 2023 identified potential workshop locations across four regions (Far Northern, Northern, Central, and Southern) to extend the co-design process to a broader group of Reef Traditional Owners. A one-day workshop agenda was developed collaboratively with co-design partners, and additional TOTWG members were invited to participate in workshop delivery as part of meaningful Traditional Owner co-leadership and co-research contributions.

### *Pilot Study*

Through informal discussions with Reef Traditional Owners over a 6–9-month period, a preliminary model was developed to present to additional Reef Traditional Owner groups and the CCIP program for feedback and review. This process involved Traditional Owners advising across COTS/RRAS TWG, TOAG and Traditional Owners within co-design partnerships with the project. The development of the four principle-based pillars drew on two complementary knowledge sources: (1) iterative dialogue with Reef Traditional Owners during the relationship-building phase of the project, and (2) existing literature on Indigenous engagement frameworks.

The pillars were informed by established principles in Indigenous research methodologies, including the importance of succession and intergenerational knowledge transfer (Smith 2012; Kovach 2019), the centrality of relational accountability in co-research (Wilson 2008), place-based cultural protocols (Muller 2014), and the need for institutional readiness to engage meaningfully with Indigenous communities (Hunt 2013). These literature-derived concepts were then grounded through dialogue with Reef Traditional Owners, who shaped the pillars to reflect local priorities, values, and aspirations specific to Sea Country governance and COTS management contexts.

The four pillars that emerged from this process were:

- **Pillar 1. Succession Planning:** Preparing the next generation for Sea Country governance through COTS research and management. This captures the teachings of understanding where Sea Country starts and finishes, knowing the story and knowledge places and finally, following the right pathway of the story from start to finish.
- **Pillar 2. Principles of Co-Research:** The second pillar captures a set of foundational principles identified by Reef Traditional Owners as essential for researchers and managers seeking to work respectfully across Sea Country. These principles emerged directly from dialogue with Reef Traditional Owners during the pilot phase, who articulated what meaningful, ethical engagement looks like from their perspective. The principles are not externally imposed standards but reflect Reef Traditional Owner expectations for how relationships should be conducted when operating in the GBR catchment (Reef Traditional Owner Groups' Sea Country).

The connection to co-research is central: genuine co-research requires more than technical collaboration—it demands that researchers embody values that Traditional

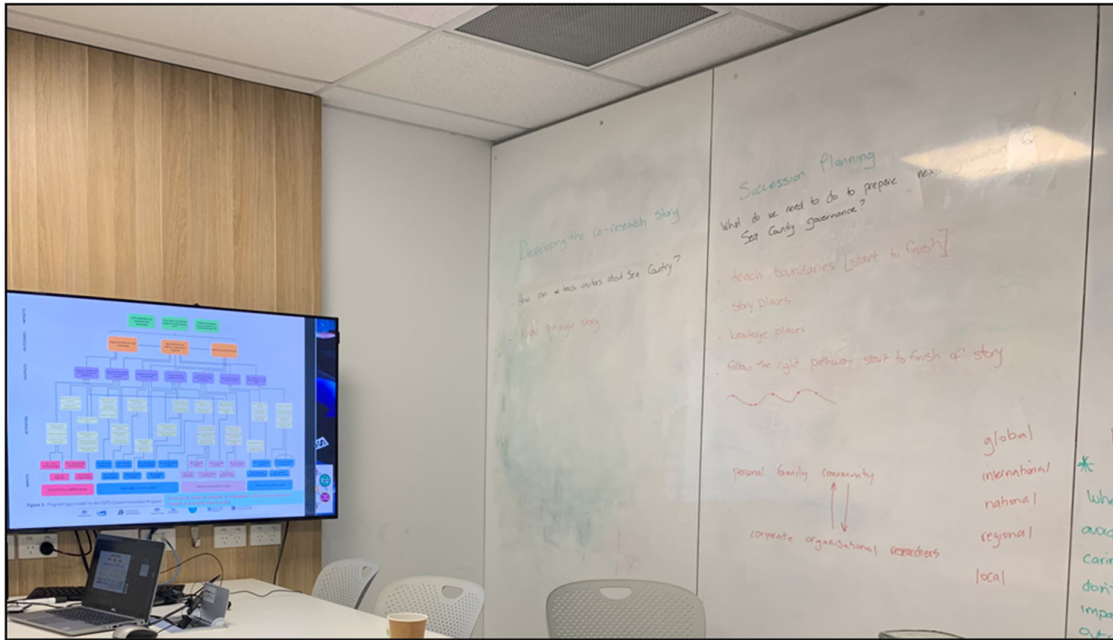
Owners recognise as foundational to trustworthy relationships. Without these principles in practice, engagement risks becoming extractive or tokenistic rather than genuinely collaborative. The eight principles identified were:

- **Integrity** — Acting consistently and ethically, ensuring that commitments made to Reef Traditional Owners are honoured throughout and beyond the project lifecycle.
- **Transparency** — Being open about research intentions, methodologies, funding sources, timelines, and how findings will be used and shared.
- **Honesty** — Communicating truthfully about what the research can and cannot achieve, including limitations and uncertainties.
- **Respect** — Recognising Reef Traditional Owners as knowledge holders and decision-makers for their Sea Country, not merely as participants or informants.
- **Awareness** — Demonstrating understanding of cultural protocols, historical context, and the ongoing impacts of colonisation on Reef Traditional Owner communities.
- **Acknowledgement** — Formally and meaningfully recognising Reef Traditional Owner contributions, knowledge, and authority in all outputs and communications.
- **Connection** — Building and maintaining genuine relationships that extend beyond transactional project requirements, including ongoing communication and presence.
- **Benefit** — Ensuring that research outcomes provide tangible, equitable benefits to Reef Traditional Owner communities, not solely to researchers or institutions.

These principles were presented in subsequent workshops and interviews to explore whether they resonated with a broader group of Reef Traditional Owners and to identify any additional principles or differing interpretations (see Results Section 3.4).

- **Pillar 3. Cultural (Place-Based) Agreement Protocol for Researchers and Managers:** Understanding what informs a genuine partnership between COTS research and management and Traditional Owner Values. The key component is teaching visitors about Sea Country through recognising the importance of knowing and understanding the right story about Sea Country.
- **Pillar 4. Community and Institutional Readiness:** Ensuring institutional and organisational visitors are aware and prepared to follow the right protocols when visiting the GBR catchment (Reef Traditional Owner Groups' Sea Country), while also allowing community to learn and know what is required when engaging with institutional and organisational stakeholders.

These four pillars were then developed into a one-day workshop agenda for interested Reef Traditional Owner Groups to discuss, critique, contribute new understanding, and evaluate the relevance and utility of the preliminary framework. The outputs of this pilot engagement process, including the refined engagement model, are presented in Results Section 3.1.



**Figure 3.** Workshop discussion to develop preliminary model for pilot study.

### 2.3.3 Phase 3: Maintaining co-creation for genuine knowledge co-production

The need to develop and maintain meaningful relationships with interested Reef Traditional Owner groups necessitated extensive communication and engagement across news media, radio, and conference participation with Reef Traditional Owners. COTS research and management currently deployed across the GBR has had limited engagement with Reef Traditional Owners as part of decision making for annual workplans or benefit sharing. Consequently, CCIP-R-09, being the first COTS related project to specifically identify and engage with Reef Traditional Owners, operated from a baseline of deficit relationships as opposed to strength-based relationships. By developing trust, maintaining consistent and genuine relationships and protecting the conditions for knowledge co-production to occur, the project ensured knowledge sharing by participants was relevant, relatable and respectful to project and community priorities and needs.

#### *Workshop Design and Structure*

Three one-day workshops were arranged with Reef Traditional Owners across the Far Northern (n = 20), Northern (n = 4), and Southern (n = 10) GBR regions between September and November 2023. Workshop locations and timing were negotiated with participating communities to accommodate local schedules, cultural events, and community availability, while aligning with research project deliverables.

The four pillars developed during the pilot phase (Succession Planning, Principles of Co-Research, Cultural Agreement Protocols, and Community and Institutional Readiness) provided the foundational structure for the workshop agenda. Each pillar was presented to

participants not as fixed findings but as preliminary propositions to be discussed, challenged, refined, or rejected based on participants' own knowledge and experience. This approach positioned Traditional Owners as active evaluators of the research rather than passive respondents, ensuring the research remained accountable to place-based perspectives.

The one-day workshop structure was organised as follows:

**Table 3.** Outline of one day workshop schedule.

Session	Focus
Opening	Welcome to Country; introductions; project overview and positioning within CCIP
Morning Session 1	Sea Country context; presentation of preliminary model ( <b>Figure 8</b> ); discussion of relevance to participants' Sea Country
Morning Tea	Informal conversation; opportunity for private discussions
Morning Session 2	Genuine Partnerships—exploring what meaningful engagement looks like; discussion of engagement levels
Lunch	Relationship building; continued informal dialogue
Afternoon Session 1	Succession Planning and Principles of Co-Research—discussing next-generation preparation and validating the eight co-research principles
Afternoon Session 2	Community and Institutional Readiness—identifying what Traditional Owners need from institutions and vice versa
Closing	Summary of key themes; discussion of interest in developing place-based engagement protocols; next steps

This structure enabled Traditional Owners to hold the research team accountable for respectful engagement with place-based knowledge systems. Unlike conventional research and management programs that operate across multiple Sea Country boundaries using standardised approaches, the workshop design explicitly acknowledged that each Traditional Owner group holds distinct relationships with, and responsibilities for, their own Sea Country.

### *Protocol Development Process*

The development of each place-based engagement protocol followed a collaborative, iterative process led by the respective Traditional Owner group with support from the research team. The process was intentionally adaptive, allowing the form and function of the protocols to evolve in response to ongoing feedback, reflection, and community consultation. The stages of development are outlined below.

#### **Stage 1: Expression of Interest**

During workshops, participating Traditional Owner groups were invited to indicate their interest in developing a place-based engagement protocol for their Sea Country. Dabu Jajikal Aboriginal Corporation and Darumbal Traditional Owners both expressed strong interest, and they committed to ongoing collaboration with the research team to co-develop protocols that would guide research and management engagement on their Sea Country. This stage established that the protocols would be community-led tools, grounded in Traditional Owner priorities rather than externally imposed research requirements.

## **Stage 2: Review of Workshop Themes**

Thirteen themes identified through thematic analysis of workshop and interview data (Engagement Protocol, Genuine Partnerships, Benefit Sharing, Data Management, Visibility, Succession Planning, Access to Sea Country, Unlearn, Embedding Story of Sea Country, Consent, COTS Governance, Seeking Permission, and Gender) were presented to each Traditional Owner group for review. Each group was invited to confirm which themes reflected their community priorities and Sea Country values, identify themes requiring modification or reframing, add additional themes specific to their cultural, geographic, or governance context, and prioritise themes according to their current and future needs. This ensured the protocols reflected place-based governance and lived experience rather than a standardised framework derived from aggregated data.

## **Stage 3: Development of Reflective Statements**

For each confirmed theme, the research team worked closely with Traditional Owner representatives to develop a set of reflective statements intended to prompt discussion about alignment between proposed research or management activities and community priorities. These statements were developed collaboratively, with Traditional Owners guiding appropriate language and cultural framing, boundaries around consent, access, and authority, and the types of behaviours and commitments expected of researchers. At this stage, the statements were not conceived as compliance measures but as conversation starters designed to slow down decision-making and encourage accountability in how projects engage with Sea Country and community governance.

## **Stage 4: Initial use of a Rating Scale as a developmental tool**

In the early phases of protocol development, a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree) was adopted alongside the statements as a transitional tool. The scale was introduced to help researchers unfamiliar with community expectations reflect on alignment, provide a structured prompt for discussion during early engagement, and signal when further conversation with Traditional Owners was required (particularly when low scores were recorded). Importantly, the scale was always accompanied by space for qualitative discussion and was explicitly framed as a tool to support dialogue rather than determine approval.

## **Stage 5: Emergence of the Guideline through feedback and consultation**

As the protocols were reviewed, trialled, and discussed further with Traditional Owners, it became increasingly clear that while the scale had been useful in the early stages of development, it was not the most appropriate mechanism for sustaining meaningful, long-term relationship accountability. Through continued feedback and community consultation, Traditional Owners identified that relationship quality, consent, governance authority, and cultural responsibility are not matters of degree but of conditions, thresholds, and ongoing negotiation; that numerical ratings risked being interpreted by researchers as measures of adequacy or compliance rather than prompts for deeper engagement; and that the scale could unintentionally shift focus from listening and adaptation toward scoring and documentation.

In response, the protocol evolved from a scale-based assessment tool to a guideline-based framework. The guideline format was recognised as better able to hold conditional and place-based decision-making, foreground Traditional Owner authority and governance, support iterative dialogue over the life of a project, and provide flexibility for decision-making in complex and changing contexts such as COTS research and management on Sea Country. This shift represents a key participatory outcome of the research: the method itself changed in response to community guidance.

### Stage 6: Contextualisation and cultural framing

Each guideline was then fully contextualised to the relevant Traditional Owner group, including Country boundaries and culturally significant areas, existing governance arrangements (e.g. Traditional Use of Marine Resources Agreements (TUMRAs)), priorities articulated in Country Plans and related documents, cultural protocols for engagement, consent, and access, and appropriate points of contact and decision-making pathways. This ensured the guideline could be applied flexibly while remaining grounded in clear cultural authority.

### Stage 7: Naming and Assertion of cultural authority

Each Traditional Owner group determined the name of their protocol in their own language: *Ngana Muruk Junkurrjiku Janay* ("Standing up very strong together") for Dabu Jajikal Country and *Yadaba* ("Respect") for Darumbal Country. Naming the protocols in language was a deliberate assertion of cultural authority and ownership, reinforcing that these guidelines are community-governed resources, not research instruments owned by external institutions.

### Stage 8: Review, Endorsement, and Ongoing Evolution

Draft guideline documents were circulated for review by Elders and senior knowledge holders, relevant governance bodies, and community meetings where appropriate. Feedback informed further refinement, and final versions were prepared for inclusion in handbook-style resources. The guidelines are recognised as living documents, intended to evolve alongside community priorities, governance arrangements, and experiences with research and management engagement. At the time of reporting, this process remains ongoing, reflecting the commitment to maintaining relevance, authority, and relationship integrity over time.

### Participants in Protocol Development

The protocol development process involved sustained engagement with representatives from each Traditional Owner group:

**Table 4.** Traditional Owner participants in protocol development.

Protocol	Traditional Owner Group	Region	Participants in Development
Ngana Muruk Junkurrjiku Janay	Dabu Jajikal Aboriginal Corporation	Far Northern	4 Dabu Jajikal Elders and community representatives
Yadaba Darumbal	Darumbal Traditional Owners	Southern	4 Darumbal Elders and community representatives

The research team's role was to provide methodological support, drafting assistance, and coordination—not to determine content. Decision-making authority over protocol content rested with the Traditional Owner groups throughout the process.

### *Intended Use of Protocols*

The protocols are designed to be used by COTS researchers and managers (and other Reef stakeholders) when planning activities on their respective Sea Countries. The intended use involves:

1. **Pre-engagement self-assessment:** Researchers or managers complete the rating scale prior to approaching the Traditional Owner group, identifying areas where their project aligns well with community priorities and areas requiring further discussion.
2. **Facilitated dialogue:** The completed assessment is shared with the Traditional Owner group as a starting point for conversation about the proposed activity. Low scores highlight areas where additional negotiation or project redesign may be needed.
3. **Ongoing evaluation:** At project milestones and conclusion, the assessment can be repeated to track whether the project has delivered on its commitments and to inform future collaborations.
4. **Capacity building:** The protocols serve as educational tools, helping researchers and managers understand what matters to Traditional Owner communities and what genuine partnership looks like in practice.

The protocols are not intended as compliance instruments or gatekeeping mechanisms. Rather, they operationalise the relational accountability principles underpinning the research by providing a structured framework for dialogue that centres Traditional Owner priorities.

### *Replicability for Other Traditional Owner Groups*

While the two protocols are specific to Dabu Jajikal and Darumbal Sea Countries, the methodology is designed to be replicable. Other Reef Traditional Owner groups wishing to develop their own engagement protocols could follow a similar process:

1. Review the 13 themes and confirm relevance to their context.
2. Develop place-based assessment statements reflecting their priorities.
3. Contextualise with Country-specific information.
4. Name and assert cultural authority over the protocol.
5. Establish governance arrangements for protocol use and revision.

The existence of two exemplar protocols from different regions demonstrates that the methodology can accommodate diverse community contexts while maintaining a consistent underlying structure. This provides a foundation for scaling place-based engagement across the Reef without imposing standardised approaches.

## 2.4 Sampling Strategy

### *Participant Selection*

Criterion sampling (Kovach 2019) was employed to identify Reef Traditional Owners with capacity and interest to engage with the research aims. Selection criteria included:

1. **Connection to Sea Country within the GBR catchment:** Participants were required to identify as Traditional Owners with cultural authority and connection to Sea Country within the GBR region. This ensured participants held the cultural standing to speak about their Sea Country and its relationship to COTS research and management.
2. **Interest in engaging with COTS research and management:** Participants needed to express interest in discussing how COTS programs intersect with Traditional Owner priorities and Sea Country values. This interest-based criterion ensured that participation was voluntary and that contributors were genuinely motivated to engage with the research questions.
3. **Capacity to participate:** Participants needed to be available to attend a one-day workshop or participate in a face-to-face or online interview within the project timeframe. This practical criterion acknowledged that many Traditional Owners hold multiple community, cultural, and professional responsibilities that may limit availability.
4. **Willingness to have contributions recorded and reported:** Participants were required to provide informed consent for their contributions to be recorded (via audio recording and written notes) and for de-identified findings to be reported in project outputs.

The screening and selection process was carried out by the project lead in collaboration with co-design partners (Dabu Jajikal Aboriginal Corporation), and with guidance from the COTS/RRAS Traditional Owner Technical Working Group (TOTWG). This collaborative approach to participant identification ensured that selection was informed by existing relationships and community knowledge rather than solely by researcher networks. Traditional Owner members of the TOTWG and co-design partners advised on appropriate individuals and groups to approach and, in some instances, facilitated introductions.

The research adopted an inclusive approach that did not seek to exclude interested Traditional Owners. No interested Traditional Owners were excluded from participation based on selection criteria. All individuals who expressed interest and were available within the project timeframe were invited to participate. Rather than screening out participants, the project team worked to accommodate all interested individuals by offering flexible participation options (workshop attendance or individual interview; face-to-face or online).

One-day workshops were held between September and November 2023 in the Far Northern, Northern, and Southern GBR regions. Interviews lasted a maximum of 60 minutes and were conducted either face-to-face or online depending on participant preference and location. Any interested participants who requested follow-up after the workshop or interview were provided with options to link with researchers online, ensuring that engagement could continue beyond the formal data collection period. This approach supported the relational foundations of the research by maintaining connection with participants rather than concluding contact once data had been collected.

The sampling approach prioritised relationship and trust building over representativeness. Given the historical context of extractive research practices and the limited pre-existing relationships between COTS programs and Traditional Owner communities, the project team recognised that willingness to participate was itself a significant indicator of engagement capacity. Attempting to impose additional selection criteria beyond those listed above would have risked undermining the relational foundations essential to the co-design approach.

### *Gender Responsive Sampling*

Gender balance was also prioritised throughout the research process. Of the 41 participants, 24 were women, representing 59 percent of the total sample. The research team included a female Indigenous research assistant who conducted private interviews with women participants and facilitated sideline conversations during workshops. While women-only sessions were not explicitly structured into the research design, opportunities for women to speak separately emerged organically as part of the culturally informed approach taken by the male and female Indigenous co-leads of the project. This natural emergence reflected the research team's cultural awareness and attentiveness to creating safe spaces for all participants to contribute.

### *Human Research Ethics*

Building trust and respect with Reef Traditional Owner participants was a major consideration for the project and this accounted for extended periods of relationship-building prior to seeking formal ethical approval and sharing of information about the project with Traditional Owners as the project sought permissions and consent. This extended period also accounted for transparency of what the project could achieve and how the project made visible Reef Traditional Owner interests such as aligning community priorities and needs. Once interested Reef Traditional Owner groups were satisfied with appropriate alignment between research priorities and community priorities, letters of support were generated to contribute evidence of pre-existing good and respectful relationships between researchers and Reef Traditional Owner participants. JCU human ethics approval was granted on 19 September 2023 (approval number H9194).

### *Data Analysis*

Utilising thematic analysis (Boyatzis 1998; Braun & Clarke 2006), written notes and transcripts from workshops and interviews were analysed for key themes. Thematic analysis aids in identifying, analysing, and reporting patterns (themes) within data, and was selected as an appropriate method for capturing the diversity of perspectives shared by Reef Traditional Owners across different regions and community contexts.

The analysis process involved multiple stages. First, workshop and interview transcripts were reviewed to identify recurring concepts, concerns, and aspirations articulated by participants. Key themes were then written up, with illustrative utterances from workshop and interview notes identified to support the contextual reasoning for the description and interpretation of each theme. This iterative process ensured that themes remained grounded in participant voices rather than researcher assumptions.

## *Member Checking and Feedback*

Consistent with the relational accountability principles underpinning the research, preliminary themes were shared with Traditional Owners through multiple feedback mechanisms to ensure findings accurately reflected participant perspectives and to provide opportunities for refinement, clarification, or challenge.

**Post-workshop dialogues:** Key themes were discussed with participants as part of post-workshop follow-up conversations, providing an initial opportunity for member checking and ensuring that interpretations aligned with participant intent.

**Co-design partner feedback:** Draft themes and interpretations were shared with co-design partners from Dabu Jajikal Aboriginal Corporation and Darumbal Traditional Owners for detailed review. These partners provided critical feedback on the accuracy of theme descriptions, the appropriateness of language used, and the relevance of findings to their community priorities. This feedback informed revisions to theme descriptions and ensured that place-based perspectives were accurately represented.

**Traditional Owner Advisory Group (TOAG):** Findings were reported to TOAG as part of broader accountability to Reef Traditional Owner governance structures. This provided an opportunity for Traditional Owner leaders to review emerging findings and offer guidance on their interpretation and application.

**COTS/RRAS Traditional Owner Technical Working Group (TWG):** Themes and preliminary findings were shared with the COTS/RRAS Traditional Owner Technical Working Group, enabling feedback from Traditional Owners with specific expertise in COTS research and management contexts. This ensured that findings were reviewed by those with direct experience of the issues being discussed.

**Reef Social Science Symposiums:** Emerging findings were presented and discussed with Reef Traditional Owners attending Reef Social Science Symposiums, providing additional opportunities for peer review and feedback from a broader network of Traditional Owners engaged in reef research and management.

This multi-layered approach to member checking ensured that the research remained accountable to participants and to the broader Reef Traditional Owner community throughout the analysis and reporting process.

## *Application of Findings*

The validated themes informed the development of two place-based engagement protocols (Ngana Muruk Junkurrjiku Janay Research and Management Protocol and Yadaba Darumbal Protocol for Research and Management) co-developed with Dabu Jajikal and Darumbal Traditional Owners respectively. These themes also continue to inform the development of appropriate assessment and evaluation survey scales (Appendix C and D) for Reef Traditional Owner and COTS research and management engagement dialogues in future collaborations. The iterative feedback process described above ensures that these

applied outputs reflect Traditional Owner priorities and have been validated by the communities they are designed to serve.



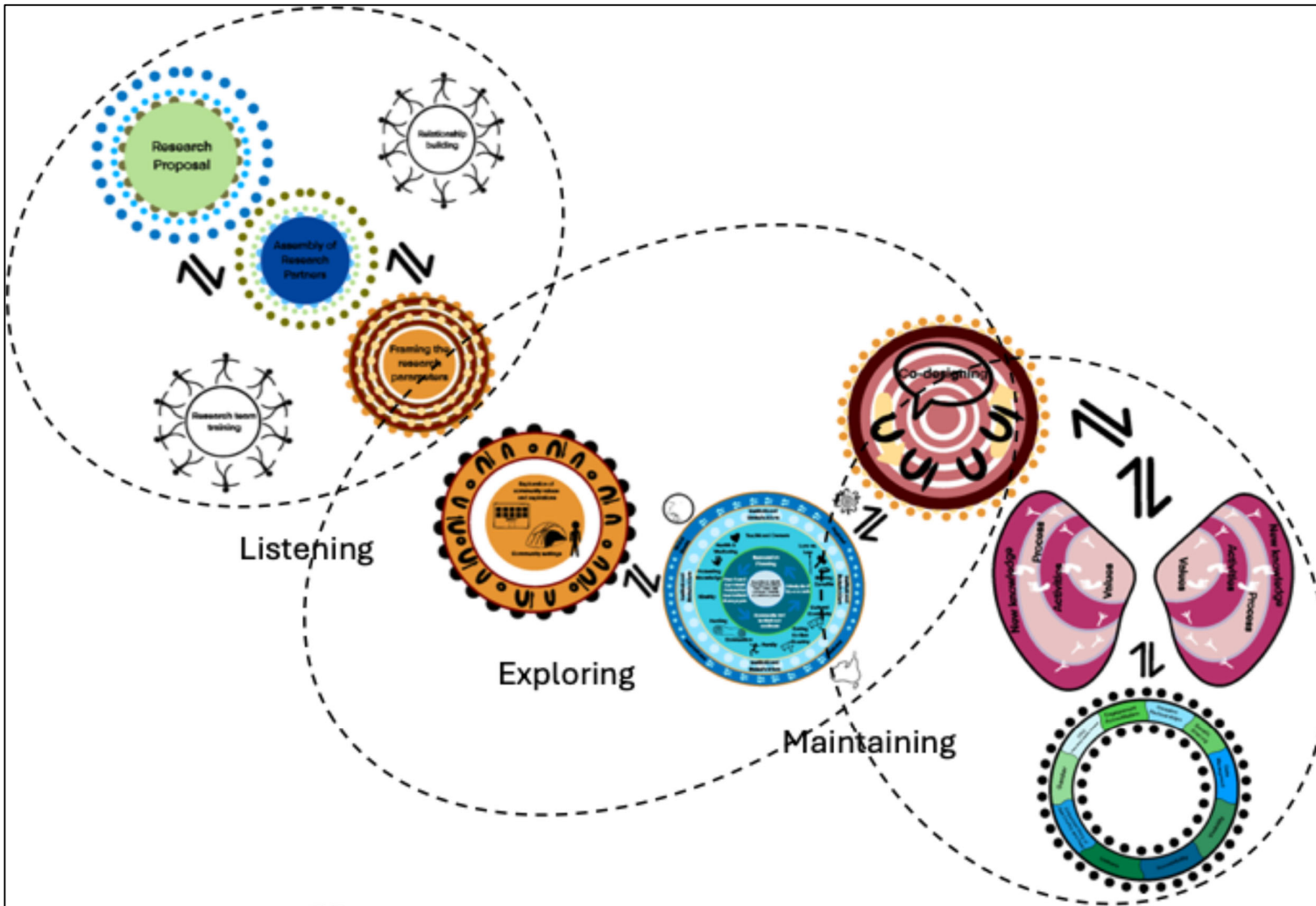
### 3. RESULTS

In **Figure 4** below the infographic rearticulates the co-design methods developed through CCIP-R-09. The Traditional Owner developed representation illustrates how institutional researchers and Reef Traditional Owners came together to co-create the conditions for genuine partnerships. The infographic captures the iterative and relational nature of the engagement process, organised around the three interconnected phases: Listening, Exploring, and Maintaining.

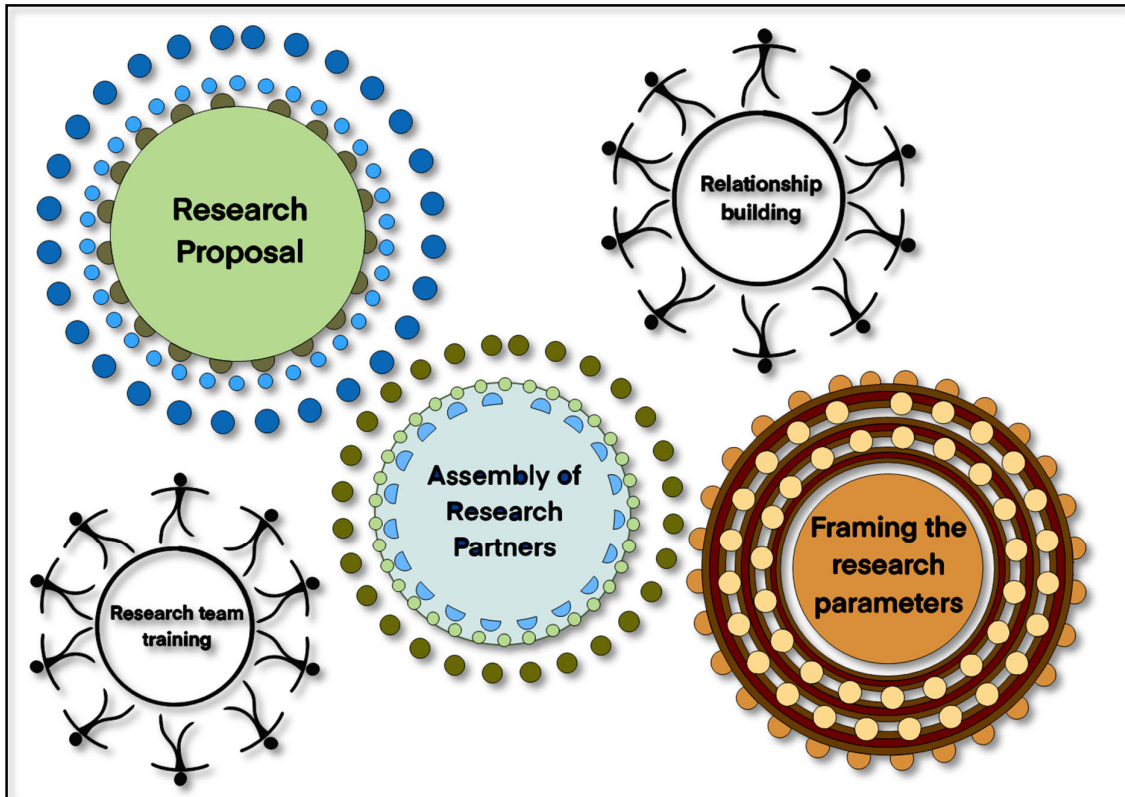
The **Listening** phase focused on building trust and assessing project relevance through dialogue with Reef Traditional Owner groups (**Figure 5**). This phase prioritised knowledge translation between research aims and Traditional Owner priorities, creating space for the project design to be reshaped by community guidance. The **Exploring** phase progressed to co-designing frameworks that could respond to community values and aspirations around COTS research and management, while examining how such activities might reciprocally support community priorities and needs (**Figure 6**). This included pilot study development and engagement with wider advisory bodies for clarity and refinement (**Figure 7**). The **Maintaining** phase emphasised the ongoing work required to sustain genuine partnerships and co-create conditions for self-determination, recognising that relationship-building is not a discrete project milestone but a continuous commitment (**Figure 8, Figure 9**). This also included responding to changes through feedback with community on final deliverables inclusive of the placed-based protocols (Section 3.5). The visual elements surrounding the three phases represent how the key themes, changes and final deliverables for the project emerged from workshop discussions with Reef Traditional Owners.

#### 3.1 Pilot Study Outputs

The pilot study of CCIP-R-09 generated several key outputs that subsequently informed the broader workshop and interview program. They were developed during the **Exploring** phase of co-design. These outputs represent the foundational frameworks, tools, and resources developed through early engagement with Reef Traditional Owners and are presented here as research findings rather than methodological inputs.



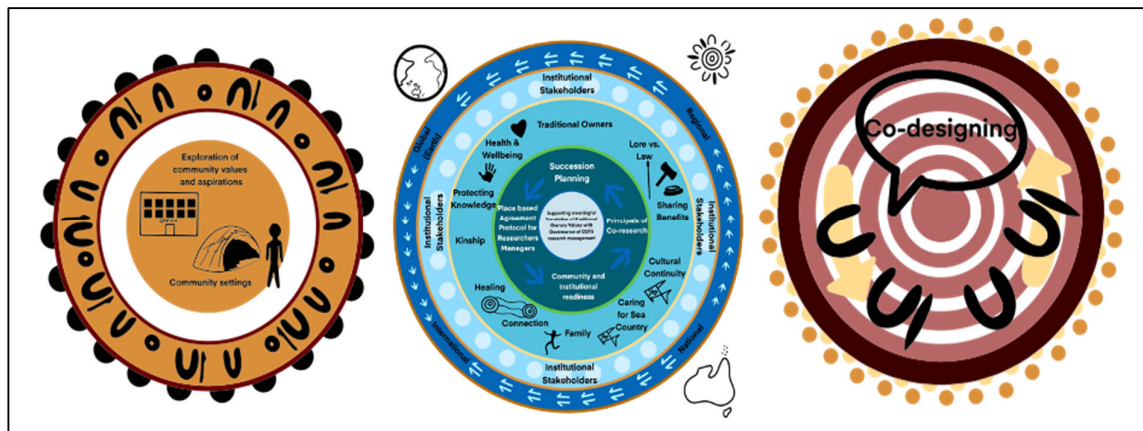
**Figure 4.** Three phases of the co-design storyline for CCIP-09 research methods.



**Figure 5.** Phase 1 Connecting project and people to a shared understanding of COTS research and management.

### 3.1.1 Co-design Framework Development

Through the engagement process of Phase 2, a co-design approach was iteratively developed to guide engagement between COTS researchers and managers and Reef Traditional Owner groups (**Figure 6**).

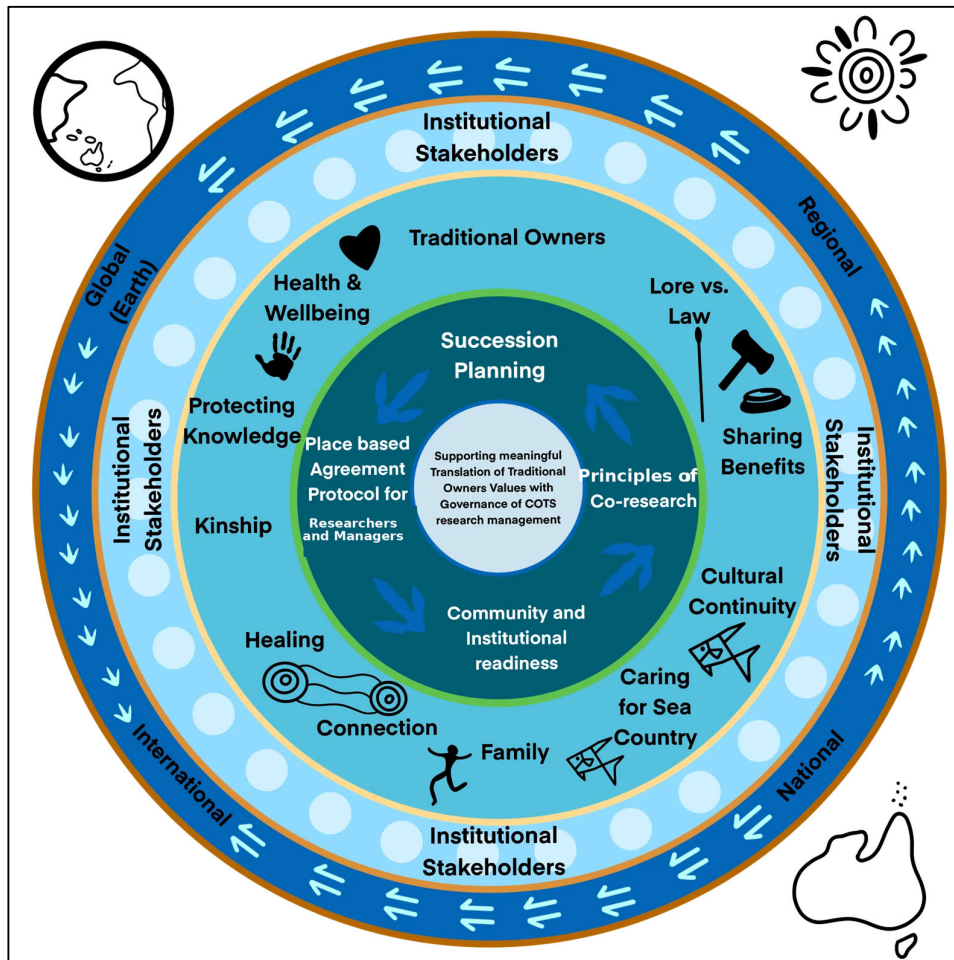


**Figure 6.** Phase 2 pilot evaluation and co-design approach for CCIP-R-09.

### 3.1.2 Preliminary Engagement Model

This approach to co-design emerged from Phase 2 activities and represents an output of the collaborative design process, illustrating the evaluation and co-design pathway adopted for CCIP-R-09. This was achieved through informal discussions with Reef Traditional Owners during the pilot phase, a preliminary model was developed describing the significant relationships between community priorities and needs and COTS program stakeholders across the GBR (Figure 7). These informal discussions involved over 10 Traditional Owners from the Far Northern, Northern and Southern GBR regions over a period of 6 months, during which time the research team continued to build relationships and listened to community perspectives on how COTS research and management could better align with Traditional Owner priorities.

This preliminary model was presented subsequently to additional Reef Traditional Owner groups through three workshops and validated through seven face-to-face interviews. Workshop participants were invited to discuss, reject, contribute new understanding, and evaluate the relevance and utility of the model.



**Figure 7.** Preliminary pilot model describing significant relationships between community priorities and potential stakeholders across the GBR including COTS programs.

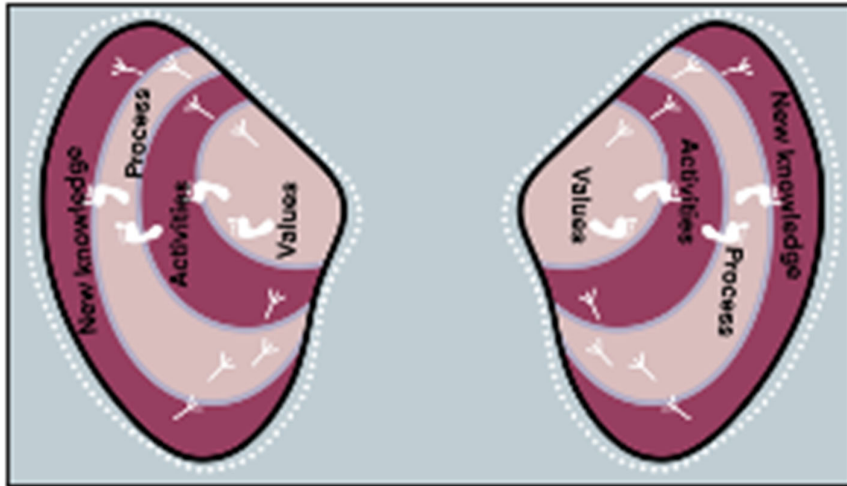
The model positions Reef Traditional Owner community priorities and needs at its centre, with the four foundational pillars (Succession Planning, Principles of Co-Research, Cultural Agreement Protocols, and Community and Institutional Readiness) connecting to the broader on water and research agendas of COTS researchers and managers. The pillars were developed through an iterative process combining Reef Traditional Owner knowledge with relevant literature on Indigenous engagement and co-design.

### *Protecting Growing Relationships Through Co-Design: The Pipi Shell design*

To ensure the workshop outputs were meaningful and supportive of both Reef Traditional Owners and COTS research and management priorities, the project aimed to develop a safe and trusting environment for Reef Traditional Owner discussions to elaborate on the ways research and management engages with Sea Country and Reef Traditional Owner perspectives on caring for Country. By respecting this process, the assumptions of project and project team members with Reef Traditional Owners and Country establish the conditions for co-design to occur. This process highlighted, to deliver outputs, co-design cannot be rushed or assumed into existence. One of the most significant findings from this research is that **genuine co-design requires deliberate attention to the conditions that enable it to begin** - conditions that are often overlooked in research timelines driven by funding cycles and institutional deliverables. Without these foundational conditions, what is labelled "co-design" risks becoming a superficial exercise that extracts Indigenous knowledge without building the relationships necessary for ethical, reciprocal research.

Drawing on the pipi shellfish that exist in intertidal and subtidal surf zones across Australia's coastline, as a Traditional Knowledge metaphor, the design of its lifecycle and the creation of its shell halves can be seen, as a way, to understand the process of co-design. The pipi shell requires the right environmental conditions to grow - clean water, the right substrate, the rhythms and energy of the tidal zone where sea meets land - so too do co-design relationships require nurturing conditions before they can develop. The protective shell does not appear fully formed; it grows gradually as the organism within it grows, each strengthening the other over time. Attempting to force open a shell, or to harvest before conditions have allowed for growth, destroys the very thing sought. The pipi shell was chosen as a culturally meaningful image that communicates the protective and relational nature of genuine co-design. Just as the two halves of a *pipi* shell must come together to protect the life within, the conditions for co-design must bring together different knowledge systems, values, and accountabilities to protect the relationships that make meaningful research possible.

The metaphor speaks to relational accountability - the understanding that research relationships, like all relationships, require ongoing care, protection, and mutual responsibility. In First Nations knowledge systems, relationships are not instrumental means to research ends; they are foundational to how knowledge is created, shared, and protected. The *pipi* shell model (**Figure 8**) positions relationship protection at the centre of the research process, recognising that without healthy relationships, knowledge cannot be exchanged safely or ethically.



**Figure 8.** Pipi Shell co-design process for Reef Traditional Owners and COTS researchers and managers.

Each half of the shell represents a distinct but interdependent set of values, principles, and accountabilities:

**The Traditional Owner shell half** represents Reef Traditional Owners as co-researchers who bring their own knowledge systems, protocols, and obligations to the research relationship. This includes:

- Authority over how knowledge about Sea Country is produced, shared, and protected.
- Responsibility to Elders, ancestors, and future generations for the safe transmission of knowledge.
- Cultural protocols that govern who can speak for Country and under what conditions.
- The right to determine what knowledge is appropriate to share and what must be kept protected.

**The researcher/manager shell half**, represents COTS researchers and managers who bring their own accountabilities, including:

- Institutional ethics requirements and Free, Prior and Informed Consent (FPIC) obligations.
- Scientific integrity and methodological rigour.
- Accountability to funding bodies, employing institutions, and the broader scientific community.
- Responsibility for how research findings are used and communicated.

The space where the two shells come together—the protected interior—is where co-design occurs. This space is characterised by several key features:

- **Knowledge sharing requires protection:** Traditional knowledge is not public domain information to be extracted and disseminated. The co-design space must be sufficiently protected for knowledge holders to feel safe determining what can be shared.
- **Trust must be earned and maintained:** Historical experiences of extractive research have created justified wariness among Traditional Owner communities. The protective conditions of co-design acknowledge this history and create structures for rebuilding trust through demonstrated accountability.
- **Different ethics systems must be honoured:** Western research ethics frameworks (such as FPIC and institutional ethics approval) operate alongside, but do not replace, Indigenous ethics systems that govern knowledge sharing. Genuine co-design requires space for both systems to inform the research process.
- **Relationships outlast projects:** Research projects have defined timelines, but relationships with Country and community are enduring. The co-design conditions recognise that research relationships must be maintained beyond project completion, and that accountability does not end when funding concludes.

The pipi shell design thus represents more than a partnership framework; it represents a commitment to relational accountability that places the protection of relationships at the centre of research practice.

### 3.1.3 Preliminary Themes from Workshops and Interviews

Analysis of data collected during the three workshops resulted in an initial ten thematic areas (**Figure 11**). These preliminary themes captured Reef Traditional Owners' priorities and aspirations for engagement with COTS research and management:

1. Engagement Protocol
2. Genuine Partnerships
3. Benefit Sharing
4. Data Management
5. Visibility
6. Succession Planning
7. Accessibility
8. Unlearn
9. Embedding Story of Sea Country
10. Consent

These themes were further discussed with seven Traditional Owners in semi-structured interviews. The interviews surfaced three additional thematic areas that expanded upon and deepened the workshop findings:

11. COTS Governance
12. Seeking Permission
13. Gender

Together, these thirteen themes represent the range of considerations Reef Traditional Owners identified as essential for meaningful engagement in COTS research and management on their Sea Country. Each theme is described and interpreted in Section 3.4. From the three workshops, interested Reef Traditional Owners also requested the development of engagement protocol handbooks to support ongoing capacity building around research and management engagement; draft versions of two such handbooks are discussed in Section 3.5.

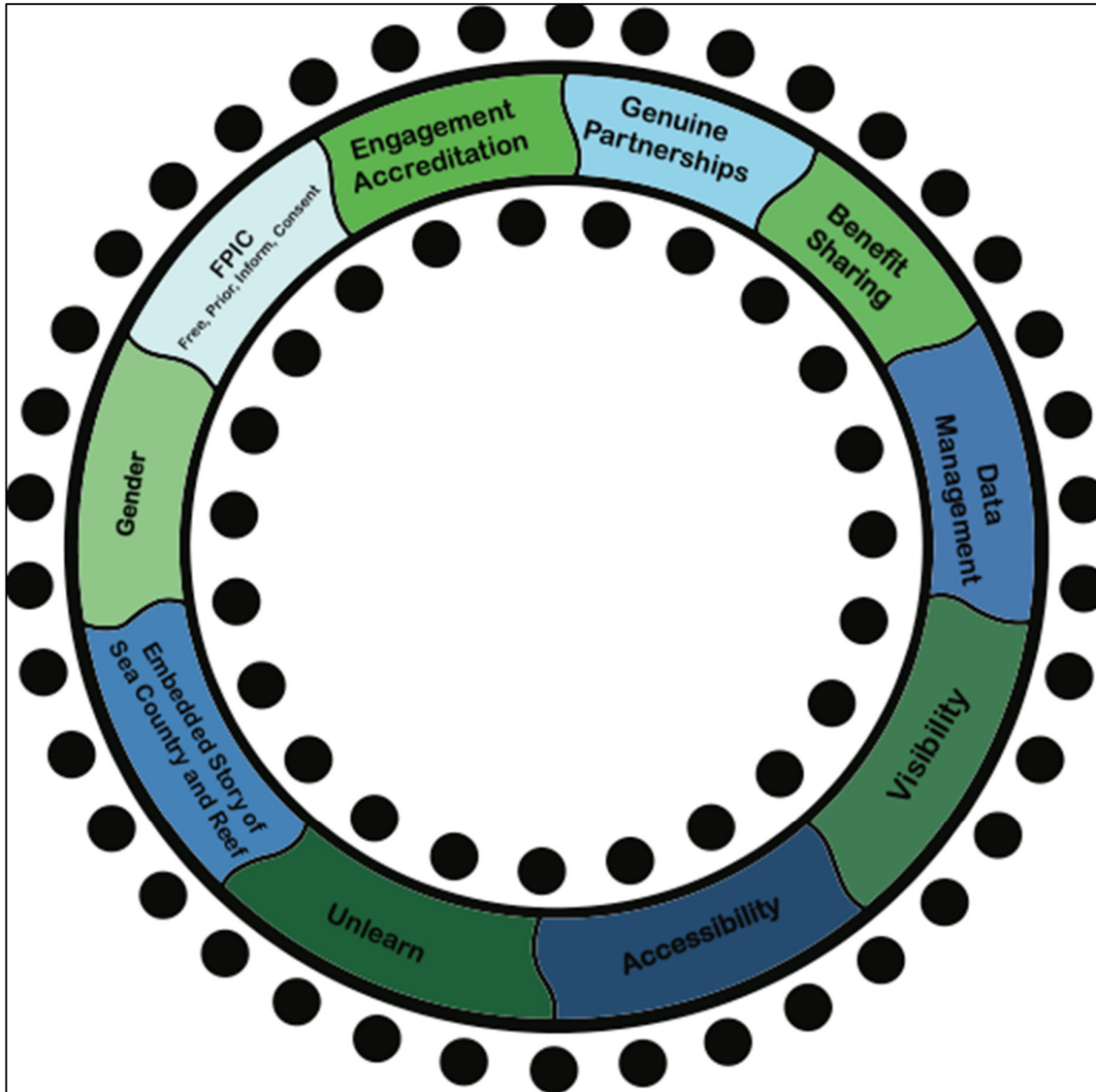


Figure 9. Workshop and face-to-face interview preliminary themes.

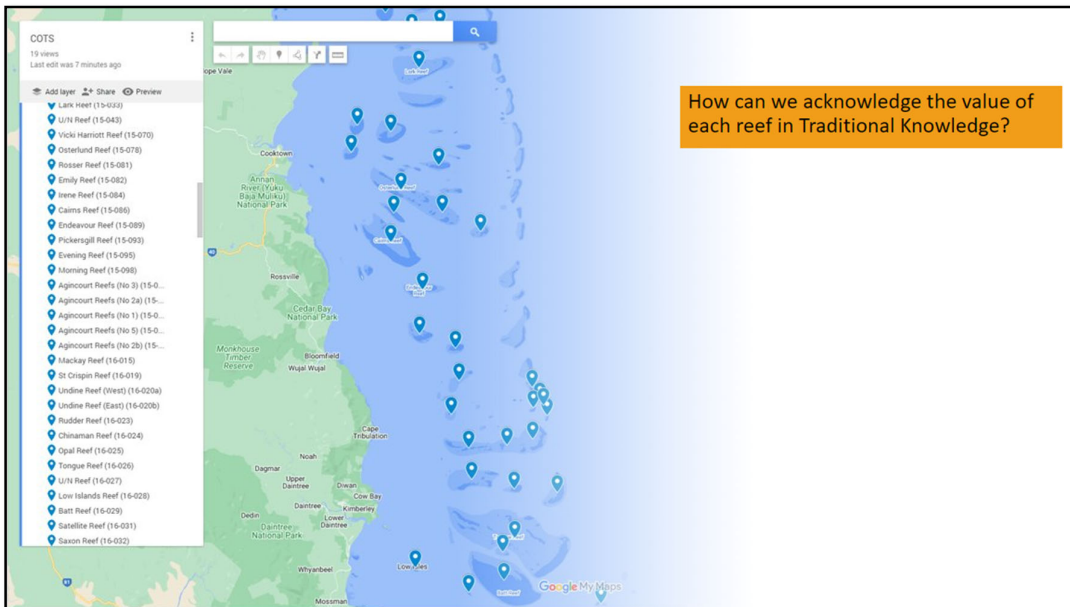
### 3.1.4 Annual Work Plan Data Gaps and Sea Country Mapping

To explore how COTS operational systems could better support Reef Traditional Owner engagement, the research team analysed the data structure of the COTS Control Program's Annual Work Plan (AWP) and developed visualisation tools to facilitate workshop discussions. This analysis revealed a significant gap in how reef sites are documented: the AWP reef prioritisation data (Figure 7) lists sites by scientific and management names alongside GIS coordinates, but contains no corresponding fields for Sea Country boundaries, Traditional Owner group affiliations, or Indigenous place names. As a result, COTS control operations are planned and executed without systematic information about whose Traditional Sea Country each reef is located within.

In addition, a Google Map data visualisation (**Figure 11**) was developed showing AWP 2023–2024 target reefs across the GBR to facilitate workshop conversations about the relationship between Sea Country and where on water COTS research and management activities occur.

MgmtArea	ReefName	Traditional Owner Sea Country	Traditional Reef Name	Bioregion	Longitude
				EXAMPLE	
Far Northern	Monsoon Reef (11-029)	Sea Country?	Traditional Reef Name?	RC2 Far Northern Protected Mid Shelf Reefs and Shoals	143.25291
Far Northern	Parsons Reef (11-036)	Sea Country?	Traditional Reef Name?	RC2 Far Northern Protected Mid Shelf Reefs and Shoals	143.19757
Far Northern	U/N Reef (11-042)	Sea Country?	Traditional Reef Name?	RC2 Far Northern Protected Mid Shelf Reefs and Shoals	143.19627
Far Northern	Turning Point Patches (No 1) (11-048a)			RC2 Far Northern Protected Mid Shelf Reefs and Shoals	143.40556
Far Northern	U/N Reef (11-049)			RC2 Far Northern Protected Mid Shelf Reefs and Shoals	143.33546
Far Northern	U/N Reef (11-162)			RC2 Far Northern Protected Mid Shelf Reefs and Shoals	143.29081
Far Northern	Middle Banks (11-222a)			RC2 Far Northern Protected Mid Shelf Reefs and Shoals	143.50505
Far Northern	Mason Reef (12-003a)			RC2 Far Northern Protected Mid Shelf Reefs and Shoals	143.4773
Far Northern	Nomad Reef (12-007)			RD Far Northern Open Lagoon Reefs	143.37467
Far Northern	Tilou Reef (13-028)			RA2 Outer Barrier Reefs	143.95910
Far Northern	U/N Reef (13-074)			RA2 Outer Barrier Reefs	144.05264
Far Northern	Ogilvie Reef (13-076)			RC2 Far Northern Protected Mid Shelf Reefs and Shoals	143.79095
Far Northern	U/N Reef (13-077)			RC2 Far Northern Protected Mid Shelf Reefs and Shoals	143.85205
Far Northern	U/N Reef (13-093b)			RC2 Far Northern Protected Mid Shelf Reefs and Shoals	143.96170
Far Northern	U/N Reef (13-117b)			RA2 Outer Barrier Reefs	144.09568
Far Northern	Creach Reef (North) (13-118a)			RA2 Outer Barrier Reefs	144.10391
Far Northern	Wilson Reef (13-129)			RA2 Outer Barrier Reefs	144.40107
Far Northern	Davie Reef (13-130)			RA2 Outer Barrier Reefs	144.4548
Far Northern	Tydeman Reef (13-133)			RA2 Outer Barrier Reefs	144.52000
Far Northern	Grub Reef (14-003)			RC2 Far Northern Protected Mid Shelf Reefs and Shoals	143.98217
Far Northern	Clack Reef (14-017)			RC2 Far Northern Protected Mid Shelf Reefs and Shoals	144.24232
Far Northern	Jewell Reef (14-079)			RA2 Outer Barrier Reefs	145.35128
Far Northern	Crescent Reef (14-082)			RG1 Sheltered Mid Shelf Reefs	145.08926

**Figure 11.** Reef Prioritisation Annual Work Plan (AWP) 2023–2024 data table. Sea Country boundaries are not currently included as a data field.



**Figure 12.** Google data mapping showing COTS Control Program AWP 2023–2024 target reefs across GBR.

When presented with these tools in workshops, Reef Traditional Owners identified the absence of Sea Country information as a significant barrier to meaningful engagement.

Participants noted that without Sea Country data integrated into operational planning, there is no systematic mechanism to notify relevant Traditional Owner groups when COTS activities are scheduled for their Country, seek appropriate permissions, or facilitate Traditional Owner participation in control activities on their own reefs.

*Tell my story [of Sea Country], if you [...] operator – don't tell our story [it will] – backfire.*

*When you tell other people's story [of Sea Country] – you get sick – them Elders are still listening.*

*Thinking about how we acknowledge the story places [on Sea Country] because we know where COTS goes. The COTS boats go [...], there are story places out there.*

Participants expressed strong support for integrating Sea Country boundaries and traditional place names into COTS operational systems, drawing on precedents such as K'gari (Fraser Island), Woppa (Great Keppel Island) and Konomie (North Keppel Island). However, participants also emphasised that language and place name information is culturally sensitive and must be shared according to appropriate protocols (see Section 3.4.4 Data Management). The implications of these findings for COTS program operations are discussed further in Section 4.

## 3.2 Protocol Development Outcomes

From the three workshops, interested Reef Traditional Owners requested the development of engagement protocol handbooks that could support ongoing development of Sea Country capacity around research and management engagement. Two place-based protocols were co-developed as proof-of-concept exemplars:

1. **Ngana Muruk Junkurrjiku Janay** (Standing up very strong together) Research and Management Protocol – developed with Dabu Jajikal Traditional Owners
2. **Yadaba Darumbal Respect Protocol for Research and Management on Country** – developed with Darumbal Traditional Owners

These protocols operationalise the thirteen themes identified through the research, providing practical assessment frameworks for evaluating alignment between COTS research and management activities and community priorities and needs. A detailed description of these protocols is presented in Section 3.5, with full versions provided in Appendices C and D.

## 3.3 Validation of Co-Research Principles

The eight principles of co-research identified during the pilot phase (Integrity, Transparency, Honesty, Respect, Awareness, Acknowledgement, Connection, and Benefit) were presented to a broader group of Reef Traditional Owners through three workshops and seven face-to-face interviews to assess their relevance, resonance, and completeness.

Workshop participants broadly validated the eight principles while emphasising several critical refinements and additions. Most notably, participants distinguished between *cultural awareness* and *cultural appreciation*, arguing that researchers must move beyond superficial acknowledgement toward genuine appreciation of Traditional Owner knowledge systems and governance structures. As one participant articulated: "*Don't know how much you know until we know how much you care.*"

The principle of **Respect** was strongly reinforced, with participants emphasising reciprocity and equality in research relationships. Traditional Owners expressed frustration with tokenistic engagement practices, noting that substantive respect requires researchers to "*sit down with us and then plan together*" from project inception rather than seeking involvement retrospectively.

**Transparency** emerged as particularly significant in relation to data management and research outcomes. Participants raised concerns about historical instances where researchers collected information without returning findings to communities, with one example cited of research conducted "*fifteen or twenty years ago*" where data was never shared back with the contributing Traditional Owner group.

The principle of **Benefit** was expanded to encompass economic, social, and cultural dimensions. Participants articulated the need for genuine benefit-sharing arrangements, including employment opportunities, co-authorship, and capacity building for the next generation. Discussion of benefit sharing led to the articulation of a tiered partnership model (bronze, silver, gold, and platinum levels) that distinguishes between superficial acknowledgement and genuine partnership.

Several additional principles emerged from the workshops and interviews that participants considered essential but missing from the initial framework:

- **Accountability:** Participants questioned what consequences exist for researchers who fail to engage appropriately with Traditional Owners, noting that without enforcement mechanisms, guidelines remain optional.
- **Time and Patience:** Relationship building requires sustained investment over years, not project-driven "*sugar hits*" of engagement. Participants critiqued the mismatch between research funding timelines and the time required to build genuine trust.
- **Self-determination and Sovereignty:** Rather than waiting for external parties to design engagement frameworks, Traditional Owners expressed preference for developing their own protocols and presenting these to researchers: "*We design it ourselves... Here it is.*"
- **Cultural Accreditation:** Participants proposed that researchers working on Sea Country should complete cultural training programs prior to engagement, similar to requirements observed in other jurisdictions.
- **Emotional and Spiritual Connection:** Traditional Owners emphasised that their relationship to Sea Country encompasses emotional and spiritual dimensions that extend beyond the scope of conventional research ethics frameworks. As one Elder explained: "*We have an emotional and a spiritual contact to our land and also to the sea country... when you talk about things like COTS out there, it's not just figures... it hurts.*"

These findings indicate that while the pilot study principles provide a sound foundation, effective engagement protocols must additionally address accountability mechanisms, temporal dimensions of relationship building, Traditional Owner sovereignty in research design, and recognition of the holistic connections between people, knowledge, and Country.

### 3.4 Thematic Findings

The following sections present the thirteen thematic areas identified through thematic analysis of workshop notes and interview transcripts. Each theme is described and interpreted with illustrative quotations from Reef Traditional Owner participants.

#### 3.4.1 Engagement Protocol

Reef Traditional Owners emphasised the need for COTS researchers and managers to have a deeper understanding of how to demonstrate collaboration through respectful relationships. This protocol was acknowledged as a standard practice element when working with Reef Traditional Owners as part of starting a relationship, maintaining one and continuing beyond the conclusion of a project. The engagement was also suggested to extend beyond the usual 'office hours' mindset that some researchers and managers have across the Reef. One Reef Traditional Owner shared the following as a useful example from the perspective of how to work with Traditional Owners:

*... the process where we then sit down and have this tiered approach – there's bronze, silver, gold, platinum... bronze is just looking at around, saying "G'day" and acknowledging the Traditional Owners with a satellite picture... silver starting a partnership... gold is a genuine partnership, where you are telling us what to do...the platinum, we are looking for that and it's...and there are groups that are capable of this, where they come to us and tell us what they want. How they want to do it and they run the program and their research. So, they get what they need out of the program.*

Importantly, the engagement theme was expanded to incorporate the development of two place-based guidelines for research engagement with Country (refer to Appendices C & D).

#### 3.4.2 Genuine Partnerships

Genuine partnership describes a level of engagement Reef Traditional Owners aspire to with Reef researchers and managers. Genuine partnerships are a significant aspiration which sets out standards of engagement and benefit sharing in projects and programs. Genuine partnerships acknowledge a level of awareness in approaching Reef Traditional Owners with respect, trust, integrity, transparency, honesty, awareness, acknowledgement, connection, and benefit that is shared equitably and valued. Reef Traditional Owners highlighted that working in genuine partnerships meant the contributions of Reef Traditional Owners are valued and supported meaningfully. Illustrative comments from Reef Traditional Owners include:

*Building good partnerships.*

*You know, when someone ... when a government organisation won't say yes to a partnership with TOs on the Reef...where's [the] ethic?*

*I don't think CCIP know ... they don't have an understanding, quick to get a photo with you and post it up because that's what they do, but they don't really have a genuine understanding about working with TOs and how to ... [CCIP don't know] what the research means to us.*

*A lot of these things – co-research. They want to do racial profiling, condescending. Something that is always unacceptable. Treat us as equals. If we are going to do research, they have to respect us for what we are. Respect for each other. Don't just judge me for the colour of my skin. I'm not here as a tokenistic person – to take this position. If you have respect for me, I will show respect to you.*

### 3.4.3 Benefit Sharing

Benefit sharing with Reef Traditional Owners through formal and informal agreement structures highlighted the sharing of resources contributed to building relationships and trust and projects and programs supporting Reef Traditional Owners in building capacity. Reef Traditional Owners identified multiple dimensions of benefit that they expected from research and management partnerships:

- **Employment and economic opportunities:** Paid positions as cultural research assistants, Indigenous rangers supporting COTS activities, and employment in on-water operations.
- **Resource access:** Funding for vessels to enable Traditional Owners to access and care for Sea Country independently.
- **Training and succession pathways:** Access to COTS diver training programs, cadetships, and education pathways that prepare the next generation for careers in Reef research and management.
- **Co-authorship and recognition:** Substantive involvement in research outputs including co-authorship on publications and acknowledgement as knowledge holders.
- **Data access and control:** Return of research data collected on Sea Country, with authority to manage how that data is stored, shared, and used.
- **Capacity building:** Support for community-led cultural accreditation programs that researchers must complete before working on Sea Country.

*There are zero consequences. So, they [researchers] can just research without Traditional Owners and still get control [and benefit].*

*They provide us with TUMRA but don't support us to invest in further resource to allow us to be on our Sea Country.*

### 3.4.4 Data Management

Reef Traditional Owners highlighted a lack of consistent awareness and understanding around how data are collected and used. This concern encompassed two distinct but related

dimensions: data that Traditional Owners have directly contributed to research (such as traditional ecological knowledge, cultural site information, or interview responses), and data collected by researchers and managers operating on Sea Country (such as COTS population surveys, reef health monitoring, and ecological assessments). For both types of data, participants reported having no awareness of where data are stored, who manages and controls access, and how data informs decision-making about their Sea Country.

This finding aligns directly with Aim 1 of the project: to develop guidelines and processes for data sharing that provide Reef Traditional Owners with ongoing control over information provided to CCIP. Participants articulated that data management frameworks ought to allow Reef Traditional Owners to have legal and ethical rights and authority to access their contributed work, control access, and derive benefits from data they collect and share. These aspirations align with emerging Indigenous data sovereignty frameworks, particularly the CARE Principles (Collective Benefit, Authority to Control, Responsibility, Ethics) that complement existing FAIR (Findable, Accessible, Interoperable, Reusable) data management standards.

Historical experiences of data extraction without return contributed to ongoing mistrust. Participants recounted instances where researchers collected information from their Sea Country and communities but never reported findings back or shared data in accessible formats. One participant described research conducted fifteen to twenty years prior where the researcher *"took it and never come back,"* illustrating how short-term engagements without data return undermine trust and willingness to engage with future research.

*We want data, [to know] what we are doing, getting the recognition. Looking at the data – there should be recognition.*

*The cloud, collecting information, it's very hard to get a company to share data.*

*[They should be] sharing the right information, what they do with our data.*

### 3.4.5 Visibility

Reef Traditional Owners experienced and observed a level of invisibility in broader research and management across the Reef as much as the specific contexts of COTS research and management. Reef Traditional Owners generally don't speak with or are approached on Country about COTS activities occurring across their Sea Country or communication strategies don't account for place-based understanding held by Traditional Owners. Connection to Sea Country is localised as much as it is relational. So, making visible the meaningful connections to Sea Country allows Reef Traditional Owners to be actively heard and acknowledged.

The absence of Sea Country information from COTS operational systems such as the Annual Work Plan (see Section 3.1.4) exemplifies the systemic invisibility Reef Traditional Owners experience. Without Sea Country data integrated into planning systems, Traditional Owner connections to specific reef sites remain invisible to program operations.

*But they haven't set the table by their side – sit down with us ... set the table at the start before you draw up your plan ... before you talk to your big people ... sit down with us and then plan together because they don't think to talk while we have this issue with programs when we first wrote up our Traditional Owner policy program ... their program been going for two years before they decided to talk about Indigenous people ... we just minding our business ... there is a million-dollar infrastructure out there waiting for [TO] to give approval ... and yet left it to last ... that's a big risk, that's a big dollar, just big business.*

### 3.4.6 Succession Planning

Reef Traditional Owners see a lack of consistency and career development with COTS training programs. While COTS training develops dive capacity, additional skill development is limited. COTS training programs were sometimes seen as unsafe, leading to anxiety and concern about supporting and sending the next generation of Reef Traditional Owner training candidates into culturally unsafe training environments. Reef Traditional Owners discussed the need for ownership of training programs to support the next generation.

*I think it [COTS training programs] would come down to it not being a cultural program to start with, and, you know, perhaps the wrong [Registered Training Organisation] running that program, you know, because they're definitely coming from a money-making point of view, as opposed to, you know, skilling people, young people up for a future industry. So, I think, was one of the things with the other traineeship that's sitting inside [a different RTO], why do you think that this will be better? [...] because it's us, you know, yeah, Traditional Owners looking after our young people and wanting the best for them.*

Succession Planning was also seen as preparing the next generation for Sea Country Governance by supporting Reef Traditional Owner communities to deliver "Cultural accreditation [programs]" to COTS researchers and managers.

### 3.4.7 Accessibility

Accessibility for Reef Traditional Owners held multiple meanings throughout the workshops, encompassing both physical access to Sea Country and access to the institutional spaces where knowledge about Sea Country is produced, held, and used in decision-making.

#### *Access to Sea Country*

Traditional Owners have cultural obligations to access Sea Country, to be visible out on the water as part of their responsibilities to care for Country. However, participants described a common experience of being unable to fulfil these obligations due to lack of resources. Many Traditional Owners watch researchers and managers depart from the coastline to work on their Sea Country while lacking the means to join them or independently care for their waters.

*I'd love them to fund us with some boats. GBRMPA is pathetic. Probably got millions of dollars. They give Traditional Owners a TUMRA without any funding for a vessel. Well how's that supposed to work?*

*Visibility and accessibility, we have obligation as mob.*

*We have an emotional and a spiritual contact to our land and also to the sea country... when you talk about things like COTS out there, it's not just figures... it hurts.*

### [Access to Institutional Spaces](#)

Traditional Owners also identified a need to access institutional spaces—such as universities, government agencies, and research organisations—to understand what knowledge about their Sea Country these institutions hold, how that knowledge is valued and prioritised, and how it informs research and management decisions.

*Having accessibility. There are jobs where [we need to] understand what the challenges are, like GIS space.*

*There are opportunities that are at large, accessibility – we can see ourselves like see inside the University, the life experiences, the gaps in our workforce.*

### [Connecting Physical and Institutional Access](#)

These two dimensions of accessibility are interconnected. Without physical access to Sea Country, Traditional Owners cannot collect their own data, monitor reef health, or participate meaningfully in on-water research activities. Without access to institutional spaces, they cannot understand how knowledge collected on their Sea Country is being used or ensure that their perspectives inform decision-making. Together, these barriers reinforce a cycle of exclusion where Traditional Owners are neither present on their waters nor represented in the institutions that govern them.

Addressing accessibility requires investment in both dimensions: resourcing Traditional Owners to access and care for Sea Country independently and creating pathways for Traditional Owners to participate in and influence the institutional spaces where knowledge about their Sea Country is produced and used.

*We want data, [to know] what we are doing, getting the recognition. Looking at the data – there should be recognition*

### **3.4.8 Unlearn**

Reef Traditional Owners discussed the clear lack of awareness researchers and managers held in their approaches to engage and connect. Traditional Owners expressed a need for individuals to put aside existing assumptions about how to engage and learn to listen and be present. Far too many times, researchers and managers enter Sea Country without permission or consent and expect and assume engagement or access or contribution without

any pre-existing relationships or awareness of protocols when working across Sea Country. Example comments include:

*What they need to do – need to re-do – start over again ... Unlearn ... that's what I say – Migaloo [white person] – starting from scratch ... that's closing the gap ... we know their story – what about our story?*

*Scientists aren't learning how to engage ... no sorry, scientists are not including TOs. Now it's like we need to teach them how to engage with TOs. So, it's like they put it part of the curriculum and be like "Oh – so when you work on reef you gonna do work with TOs," so they put that in the curriculum now. But now we need to actually tell them – well this is how you actually engage – here are the guidelines on how to engage.*

*I think that sometimes, researchers and these people should have some cultural accreditation, so we know they do the right thing when they talk to people, well not just uhh walking over the top of people they don't know about these things [working on Country].*

*Learn from Country first.*

*People like us have the skill – we are the experts.*

*They need to listen first – listen and understand culture – culture is very important. We can teach the same thing to tourism.*

### 3.4.9 Embedding Story of Sea Country

Reef Traditional Owners emphasised that researchers and managers must listen, know, and understand the story of Sea Country where they operate. The Story of Sea Country is embedded in Traditional Knowledge and guides how knowledge is produced, shared, and protected. Understanding this story is not merely cultural protocol—it is foundational to conducting research and management activities appropriately and safely.

*Mob up north, you talk to some of the mob up north, in XXX area they too have stories around COTS you know, cultural stories around COTS.*

*We have knowledge there that help with the COTS.*

*Know the right story of [Sea Country].*

*If you [...] operator – don't tell our story. Without permission – backfire. When you tell other people's story you get sick. Them Elders are still listening.*

### 3.4.10 Consent

Reef Traditional Owners discussed consent as a theme aligned with institutional approaches to seeking and obtaining agreement for research activities. In research contexts, this is often framed as Free, Prior and Informed Consent (FPIC)—a principle derived from the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) that establishes the right of Indigenous peoples to give or withhold consent for activities affecting their lands, territories, and resources.

FPIC requires that consent is:

- **Free:** Given voluntarily, without coercion, manipulation, or pressure.
- **Prior:** Sought sufficiently in advance of any activities, allowing adequate time for community decision-making processes.
- **Informed:** Based on full disclosure of relevant information about the proposed activity, its purpose, scope, duration, potential impacts, and benefits.

In the context of COTS research and management, FPIC would require that Traditional Owners are informed about planned activities on their Sea Country, have adequate time to consider and discuss proposals within their governance structures, and have genuine opportunity to grant, withhold, or negotiate conditions for consent before activities commence.

However, participants expressed frustration that despite growing institutional recognition of FPIC requirements, Sea Country continues to be accessed without proper consent protocols. Researchers and managers often assume that institutional ethics approval or permits from government agencies constitute sufficient authorisation, without recognising that Traditional Owner consent operates through separate governance structures and cultural protocols. One participant asked:

*What about that Reef? Don't go to it. Yeah, that's important. So, you've got that awareness of which reefs you just don't go to, and which reefs you do that COTS control on and all that sort of stuff. Why not that reef?*

This comment illustrates that consent is not a blanket authorisation but is place-specific and may vary across different reef sites within a Traditional Owner group's Sea Country. Some sites may be culturally sensitive, ceremonially significant, or subject to seasonal or gender-based access restrictions that external consent frameworks do not capture.

Participants also raised concerns about the lack of consequences when consent protocols are not followed:

**TO participant 1:** *My thought is...umm...what are the consequences if researchers don't engage with TOs?*

**TO participant 2:** *Zero \*hand gesture indicating the number zero\**

**TO participant 1:** *So, there's zero consequences. So, they can just research without TOs and still get control...what's the incentive of...them missing out all these researchers...what's...with us, it's sort of lost with...why would they do it?*

**TO participant 2:** *Yeah*

This highlights a gap between stated commitments to FPIC and actual practice. Without accountability mechanisms, consent protocols remain optional rather than obligatory, and Traditional Owners have limited recourse when their Sea Country is accessed without appropriate permission.

## Consent and the Place-Based Engagement Protocols

The engagement protocols developed through CCIP-R-09 (Ngana Muruk Junkurrjiku Janay and Yadaba Darumbal) provide a practical mechanism for operationalising consent at the place-based level. By requiring researchers and managers to engage in dialogue with Traditional Owners before commencing activities, the protocols create a structured process for seeking consent that is:

- **Place-specific:** Tailored to the governance structures and priorities of each Traditional Owner group.
- **Relationship-based:** Embedded within ongoing dialogue rather than treated as a one-off approval.
- **Accountable:** Documented through the engagement process and subject to follow-up review.

The protocols do not replace institutional FPIC requirements but complement them by providing Traditional Owner groups with their own tools for managing consent on their terms.

### 3.4.11 COTS Governance

Improving Indigenous representation in management and governance highlighted for Reef Traditional Owners the challenge of working between two systems and the general lack of respect and understanding or limited agency to enact authority and management accordingly. Lack of meaningful involvement in Reef governance was experienced by Traditional Owners as a continuing process of dispossession. They argued that:

*Government keep taking it back (referring to Country and Sea Country) ... give back something (referring to Government, researchers, and scientists).*

*Can't keep taking ... Government.*

Reef Traditional Owners expressed willingness to work in partnership with government agencies but scepticism regarding the willingness of government to work in genuine partnership with them. They stated:

*Nah, I think they view it from a threat perspective rather than a solution or opportunity ... our strategic engagement plan which has tried to ... by partners but the government organisations where DCCEEW, DES and GBRMPA to partake in Traditional Owner processes but they wouldn't do it because one of the reasons was because if we add ethic to the agreement they won't agree.*

*So, no-more playing Mr. nice-guy. We're not out here to participate, I guess, we are here to take over. You know, and then when they are ready then come – we'll still work with you. At this stage, we're not gonna be looking for assistance for that partnership, I guess.*

Reef Traditional Owners called for mutual respect, support, and the opportunity to demonstrate the value of their caring for Country to all Australians. For example:

*Respect both ways...Government.*

1) *Capacity building, 2) compliance and 3) permits as part of a genuine management strategy with equal authority.*

*Leadership and ecosystem management ... governance.*

*Prove to the government – we can look after your Country.*

### 3.4.12 Seeking Permission

While Consent (discussed above) relates primarily to formal, institutional processes for obtaining agreement to conduct research—such as Free, Prior and Informed Consent (FPIC) and ethics approval—Seeking Permission operates at a different register. Seeking Permission refers to the cultural protocols and relational courtesies that govern how visitors should approach and enter Sea Country. It is grounded in respect, relationship, and acknowledgement of Traditional Owner authority over Country, rather than in institutional compliance requirements. The distinction can be understood as follows:

**Table 5.** Distinction characteristics between Consent and Seeking Permission.

Consent	Seeking Permission
Formal, institutional process	Cultural protocol and relational practice
Often documented through signed agreements or ethics approvals	Enacted through communication, acknowledgement, and relationship
Typically sought once at project commencement	Ongoing practice each time Country is entered
Focused on agreement to participate in specific activities	Focused on respect, courtesy, and recognition of Traditional Owner authority
Governed by institutional frameworks (FPIC, HREC approval)	Governed by cultural lore and community expectations
Absence may breach institutional policy	Absence may cause cultural harm and spiritual consequences

Seeking Permission reflects the understanding that Sea Country is not empty space awaiting research activity but is cared for Country with custodians who hold responsibility for all who enter. Researchers and managers who enter Sea Country without seeking permission—even if they hold institutional consent—fail to acknowledge this custodial relationship. As one participant explained:

*We are responsible for all of you when you come on our Country, when you come let us know so we can protect you and prepare Country to receive you ... We feel no good if bad things happen on our Country.*

This comment illustrates that Seeking Permission is not merely about courtesy but about enabling Traditional Owners to fulfil their own obligations. When visitors arrive unannounced, Traditional Owners cannot prepare Country to receive them or ensure their safety. The consequences of failing to seek permission extend beyond offence—they may include

spiritual and cultural harm to both the visitor and the Traditional Owners responsible for that Country.

Participants emphasised that Seeking Permission should be an ongoing practice, not a one-off approval. Each time researchers or managers plan to enter Sea Country, they should communicate with the relevant Traditional Owners—letting them know what is planned, seeking guidance on appropriate protocols, and acknowledging their authority over that place. This contrasts with institutional consent processes that typically occur once at project commencement and may not be revisited as activities unfold.

*I think that sometimes, researchers and these people should have some accreditation, so we know they do the right thing when they talk to people, well not just walking over the top of people that don't know about these things.*

*The wrong peoples telling the story. Start getting recognition – Government starting to look at Traditional Owners, respect for us (Traditional Owners) and need to be recognised. Showing respect on the behalf of my family, who are the rightful Traditional Owners of this Sea Country.*

Participants also noted that Seeking Permission involves knowing who holds the right to speak for particular places. Sea Country governance is place-specific, and the appropriate person or group to seek permission from may vary depending on which reefs or waters are being accessed. Researchers and managers who assume that permission from one Traditional Owner group covers all of their activities may inadvertently enter Country belonging to neighbouring groups without appropriate acknowledgement.

*So, there's zero consequences. So, they [researchers] can just research without TOs and still get control ... what's the incentive of ... them missing out all these researchers ... why would they do it?*

As with Consent, participants highlighted that without accountability mechanisms, Seeking Permission remains optional. Researchers and managers face no formal consequences for entering Sea Country without acknowledgement, which undermines the cultural authority that Traditional Owners hold over their waters.

### *Relationship Between Consent and Seeking Permission*

Consent and Seeking Permission are complementary but distinct. A research project that has obtained FPIC and ethics approval has secured institutional consent but may not have enacted the cultural protocols of Seeking Permission. Genuine engagement requires both:

- **Consent** ensures that Traditional Owners have formally agreed to research activities, with full information about what is proposed and genuine opportunity to grant, withhold, or negotiate conditions.
- **Seeking Permission** ensures that the relational and cultural dimensions of entering Sea Country are honoured—that Traditional Owners are acknowledged as custodians, that Country is prepared to receive visitors, and that ongoing communication maintains the relationship throughout the project.

The place-based engagement protocols developed through CCIP-R-09 address both dimensions. By embedding both requirements within a single engagement framework, the protocols support researchers and managers to understand that institutional compliance alone is insufficient—respectful engagement with Traditional Owners requires attention to both the formal and relational dimensions of working on Sea Country.

### 3.4.13 Gender

Valuing First Nations women in Reef conservation is an important foundation for research and management. A long legacy of Reef Traditional Owner women standing up for and with the Reef exists, yet this contribution often remains invisible. Land and Sea Ranger programs tend to foreground male-dominated ranger experiences, highlighting the need to make visible the important ongoing work women contribute to holding the story of Sea Country and the Reef.

In this research, women comprised the majority of participants (24 of 41, or 59%). The female Indigenous research assistant conducted private interviews with women and facilitated informal conversations alongside workshop activities, providing opportunities for women to share perspectives in contexts where they felt comfortable.

*It's important that women are involved in that job and it's not just a male dominated thing.*

*Stories you know things that women have done or the way we have women rangers that are heavily involved in the room. Nothing much is said about women, everyone just assumes it's mainly men who will, well the majority are men, but no one thinks that there are women involved.*

*We have to listen more to those different perspectives of women's experiences and cultural identity.*

## 3.5 Place-Based Protocol Case Studies

A key output of CCIP-R-09 was the co-development of two place-based engagement protocols with Reef Traditional Owner groups. These protocols emerged directly from participant requests during the workshops for practical tools that could support ongoing engagement with COTS research and management on their Sea Country. The protocols operationalise the 13 themes identified through thematic analysis into structured assessment frameworks that facilitate dialogue between researchers/managers and Traditional Owners.

Each protocol was developed collaboratively with the respective Traditional Owner group following the stages described in the Methods (Section 2.3.3). Full versions of each protocol are provided in Appendices C and D.

### 3.5.1 Ngana Muruk Junkurrjiku Janay Research and Management Protocol

The *Ngana Muruk Junkurrjiku Janay* ("Standing up very strong together") protocol was co-developed with Dabu Jajikal Aboriginal Corporation for their Sea Country in the Far Northern GBR region.

**Development context:** Dabu Jajikal expressed strong interest during the Far Northern workshop in developing a protocol that would provide clear guidance to researchers and managers seeking to work on their Sea Country. The protocol development process involved four senior Traditional Owners over a 12-month period, with iterative review and refinement occurring through community meetings and direct consultation with Elders and senior knowledge holders.

**Protocol structure:** The protocol takes the form of a guideline-based handbook organised around the 13 themes validated through the research. For each theme, the protocol provides contextual explanation of why this theme matters to Dabu Jajikal and their Sea Country, guidance statements that articulate expectations for researchers and managers, and prompts for discussion designed to encourage reflection on alignment between proposed activities and community priorities.

**Intended applications:** The protocol is designed for multiple uses including:

- Pre-engagement self-reflection: Researchers and managers review the guideline before approaching Dabu Jajikal.
- Facilitated dialogue: The guideline serves as a structured conversation tool during initial engagement discussions.
- Ongoing project accountability: The guideline provides a reference point for checking alignment throughout the project lifecycle.
- Researcher preparation: The protocol can be shared with researchers as a resource for understanding expectations before engagement begins.

**Cultural authority:** The protocol name, determined by Dabu Jajikal in their own language, asserts community ownership and governance over the document. The protocol is a community-governed resource that Dabu Jajikal can share with researchers at their discretion, not a research instrument owned by external institutions.

### 3.5.2 Yadaba Darumbal Protocol for Research and Management

The *Yadaba* ("Respect") protocol was co-developed with Darumbal Traditional Owners for their Sea Country in the Southern GBR region, encompassing waters extending from Shoalwater Bay to the Capricorn Bunker Group.

**Development context:** Darumbal Traditional Owners expressed interest in protocol development during the Southern region workshop. The protocol was developed through ongoing consultation with Darumbal representatives, with particular attention to the distinct governance context of the Southern Reef region and existing engagement mechanisms including Traditional Use Marine Resource Agreements (TUMRA).

**Protocol structure:** Like the Ngana Muruk Junkurrjiku Janay protocol, the Yadaba protocol is structured as a guideline-based handbook organised around the 13 research themes. However, the protocol reflects Darumbal-specific priorities and governance arrangements.

Each theme is framed within the context of Darumbal Country, with guidance statements and discussion prompts tailored to reflect Darumbal priorities and cultural protocols.

**Intended applications:** The *Yadaba* protocol serves similar functions to the Ngana Muruk Junkurrjiku Janay protocol, providing a practical tool that Darumbal Traditional Owners can share with researchers and managers seeking to work on their Sea Country.

**Cultural authority:** The name *Yadaba* (Respect) was selected by Darumbal Traditional Owners to reflect the foundational principle they wish to foreground in all research and management relationships on their Sea Country. This naming reinforces that respect is not a procedural checkbox but a foundational condition for genuine partnership.

### 3.5.3 Evolution from Scale to Guideline: A Participatory Outcome

The transition from a rating scale to a guideline represents a significant participatory outcome of this research. During the early stages of protocol development, a five-point Likert scale was introduced as an engagement process for dialogue between research and management and Traditional Owner groups. The scale was seen as a tool to help articulate expectations and prompt reflection by all involved in the development of projects. However, through continued feedback and consultation, Traditional Owners identified that numerical ratings risked being interpreted as measures of compliance rather than prompts for deeper engagement.

In response to this community feedback, both protocols evolved from scale-based assessment tools to guideline-based frameworks. The guideline format was identified by Traditional Owners as more appropriate for sustaining meaningful, accountable relationships because it:

- **Foregrounds** Traditional Owner authority and governance rather than researcher self-assessment.
- **Supports** iterative dialogue over the life of a project rather than one-off compliance checking.
- **Provides flexibility** for decision-making in complex and changing contexts.
- **Holds conditional and place-based decision-making** that cannot be reduced to numerical scores.

This methodological evolution demonstrates that genuine co-design requires researchers to remain responsive to community guidance, even when this necessitates fundamental changes to planned approaches. The protocols presented in this report are the product of that responsiveness.

### 3.5.4 Status and Future Development

Both protocols are recognised as living documents intended to evolve alongside community priorities, governance arrangements, and experiences with research and management engagement. At the time of reporting, both protocols had been reviewed by Elders and

relevant governance bodies, with final versions prepared for inclusion in handbook-style resources (Appendices C and D).

Ongoing interest has also been expressed by other Traditional Owner groups across the GBR in developing similar place-based protocols for their Sea Country. Should such development occur, the potential of exploring the steps involved in the seven-stage process documented in this research, provides a template that could be adapted to each group's specific context, priorities, and governance arrangements.



## 4. DISCUSSION AND OUTPUTS

### 4.1 Gender-Responsive Engagement

Achieving gender balance in engagement with Reef Traditional Owners requires deliberate but culturally sensitive approaches. In this research, women comprised most participants (24 of 41), and the inclusion of a female Indigenous research assistant enabled private interviews and informal sideline conversations that provided space for women to contribute outside of mixed-group workshop settings. Rather than imposing externally designed women-only sessions, the research team's approach allowed gender-specific spaces to emerge organically, guided by community input and the cultural awareness of the male and female Indigenous co-leads.

Future COTS research and management engagement should consider the following strategies to support gender-inclusive participation:

- Ensure research teams include female Indigenous researchers or cultural research assistants who can facilitate conversations with women participants in culturally appropriate settings.
- Remain attentive to opportunities for informal, smaller-group, or one-on-one conversations where women may feel more comfortable contributing, rather than relying solely on large workshop formats.
- Acknowledge that women's knowledge of Sea Country, including specific ecological knowledge and governance responsibilities, may be shared in different contexts than men's knowledge, and design engagement processes with this flexibility in mind.
- Recognise and make visible the contributions of women rangers, Elders, and knowledge holders in research outputs, co-authorship, and public communications.

CCIP-R-09 demonstrates that gender balance need not require rigid structures that conflict with community practices. Rather, it can be achieved through culturally informed research design led by Indigenous researchers.

### 4.2 Co-design foundations for the development of partnerships

Co-design approaches for COTS research and management are an important foundation that enable stakeholders and Reef Traditional Owners to work towards meaningful engagement, partnerships, and leadership opportunities. Co-design describes the opportunity for rethinking how research and programs can be empowering, collaborative, creative, promote positive societal impact and capacity build within Indigenous communities (Butler et al. 2022). Indeed, when done well, co-design can be a unique culturally grounded participatory design practice shaped by and with people in place and offers the potential for improved community well-being (Mark & Hagen 2020).

Co-design with Aboriginal and Torres Strait Islander Peoples and communities also prioritises the expression of inherent rights of Indigenous peoples to self-determine and self-govern (United Nations 2007). The approach allows stakeholders to reflect on existing and traditional approaches to research and program delivery and to focus on shared decision making, creating time and space and governance structures for learning, power sharing and reciprocity. Delivering on co-design extends the approach beyond simply ‘involving’ Indigenous participants to allowing for structural changes to how policy, and programs are maintained and delivered (Mark & Hagen 2020). As the co-design continuum suggests, the approach is about how we work together, no matter what the issue is, and provides a structured approach to achieve the desired outcomes (Great Barrier Reef Traditional Owners 2019).

### 4.3 Holistic Approaches to Genuine Partnership

Reef Traditional Owners continue to value and care for the Reef in ways that support traditional knowledge and the continuity of the next generation of Reef Traditional Owners (Dale et al. 2016, 2018). COTS research and management has a key role to play in supporting this continuity of Sea Country values held by Reef Traditional Owners. Holistic approaches to forming genuine partnerships with Reef Traditional Owners acknowledge their capacity as protectors of the Reef (Department of Climate Change, Energy, the Environment and Water 2024).

The holistic interpretation highlighted the need for genuine partnerships and agreements that align with and benefit Reef Traditional Owner community priorities and needs. Additionally, participants emphasised the need for COTS research and management to reflect on existing approaches to developing engagement, partnership agreements, and co-management of reef prioritisation strategies. Current approaches that aim to protect and maintain the health of the Reef must be evaluated for the extent to which they genuinely include Traditional Owner perspectives and support Traditional Owner aspirations for Sea Country governance (Great Barrier Reef Marine Park Authority 2023).

Indigenous peoples are very much aware that community-led approaches to self-determine and self-govern Country must operate within systems and structures that configure power imbalances that limit or restrict these community-led approaches to caring for Country (Wolf 1999; Freeman et al. 2021). In some instances, through environmental protected area strategies, Traditional Owners have been expelled from traditional lands and/or restricted in their use, care, accountability and responsibility towards natural resources (Watkin Lui et al. 2016). As one Reef Traditional Owner said:

*We are responsible for all of you when you come on our Country, when you come let us know so we can protect you and prepare Country to receive you ... We feel no good if bad things happen on our Country.*

Genuine partnerships allay concerns and mistrust of existing institutional systems and governance structures that frustrate progress and development toward self-determining how care of Sea Country ought to be approached. Another Reef Traditional Owner argued:

*I'd love them to fund us with some boats. GBRMPA is pathetic. Probably got millions of dollars. They give Traditional Owners a TUMRA without any funding for a vessel. Well, how that supposed to work? You know, we're always hiring but they always paying other third parties who want to get to the place where we want to have ownership of that. I said, it's ridiculous. How can you have Traditional Owners with marine resources and not have a vessel or, you know, there's only like 17 TUMRAs up and down the northeastern coastline right now? You know, the amount of money they put into the COTS Programme - \$161 million? Yeah. And they're servicing five existing huge vessels. They put it out, they're going to be looking for tender for Traditional Owners to put in there, saying all the good things. But there's, they say it, but we don't have resources. We just don't have the resources. You know, they are saying the things on paper. But we can't.*

Reef Traditional Owners are unable or are severely restricted in their capacity to self-manage and care for Sea Country through community-driven priorities and needs. Invariably, the systems and structures deployed to support Reef Traditional Owner participation prolong stages, limit achievement, or delay progressive moves led by community towards self-determination (Babidge et al. 2007; Freeman et al. 2021). The key priority of developing genuine partnerships centres the legitimacy of community-led approaches to caring for Sea Country as well as shared authority of Reef Traditional Owners to meaningfully participate in COTS research and management.

#### **4.4 Traditional Knowledge and COTS Research and Management**

Indigenous or traditional knowledge (TK) can be understood as “a system of classification, a set of empirical observations about the local environment, and a system of self-management that governs resource use” (Moyo 2023, p. 146). Enhancing relationships between TK and COTS research and management working together is a priority step in developing better knowledge claims and activities across the Reef. This process also leads to better engagement outcomes for Reef Traditional Owners. TK exists across Land, Sea and Sky as a multidimensional and multi-relational body of knowledge made up of stories, language lines, songlines, trading routes and lore that is mediated by the relationships Indigenous people have to Land, Sea and Sky (Langton 2006; Kerwin 2010; Milroy & Revell 2013). These relationships extend to include the ways Indigenous people navigate responses to the everyday realities of decision-making across settler colonial systems and structures governing settler states (Wolf 1999; Nakata 2007; Benson et al. 2023).

The complexity of TK can lead non-Indigenous researchers, managers and the knowledge claims they create and share, to miscalculate, overlook and dismiss the value of TK as non-essential (Robinson et al. 2021). These instances have resulted in TK being deployed in tokenistic and symbolic ways for the sake of reporting, restricting or even avoiding engagement altogether with TK and a reluctance to speak with or share time with the holders and custodians of the knowledges themselves (Robinson et al. 2021; Samuel 2020; Moyo 2023). As one Reef Elder noted when researchers and stakeholders would visit their Country and not speak with them:

*You have to know the right story of Sea Country, if you don't go to the right people, you will hear the wrong story from the wrong people and you will do the wrong thing in your work.*

Rethinking the role of TK in research and management requires moving beyond the discourse of integration and inclusiveness (Peters et al. 2018; Moewaka Barnes et al. 2021; Moyo 2023) to include assessment and evaluation of the real impact of co-management through co-production strategies (Robinson et al. 2022), and ensuring that research and management leads towards Indigenous sovereignty and self-determination reflected in Indigenous-led decision-making, knowledge contributions, and policy-making choices (Peters et al. 2018; Colbourne et al. 2020; Moewaka Barnes et al. 2021; Robinson et al. 2022). Problematically, not engaging in genuine partnerships and co-production frameworks with Reef Traditional Owners runs the risk of diluting TK into existing assumptions and reaffirming existing exclusionary behaviours and structures across institutions and organisations (Samuel 2020; Robinson et al. 2021; Moyo 2023).

CCIP-R-09 was able to consider overall project design and shift towards Indigenous-led research and project management approaches. The strength of Indigenous-led research and management highlighted the significant impact of empowering Indigenous researchers working with Reef Traditional Owners to realise long term benefits (Peters et al. 2018; Colbourne et al. 2020; Moewaka Barnes et al. 2021; Robinson et al. 2022).

## 4.5 Limitations in Addressing Data Sharing Guidelines

While Aim 1 of this project sought to develop guidelines and processes for data sharing that provide Reef Traditional Owners with ongoing control over information provided to CCIP, this objective could not be fully realised within the project timeframe. Data management emerged as a significant theme during workshops and interviews (Section 3.4), with Reef Traditional Owners expressing strong concerns about lack of awareness regarding how data are collected, stored, and used, as well as a desire for legal and ethical rights to access and control data they contribute.

However, to move from identifying these concerns to developing operational data sharing guidelines, future projects must undertake foundational work that was beyond the scope of CCIP-R-09. Specifically, establishing data governance protocols necessitates:

- 1) Sustained engagement with multiple Reef Traditional Owner groups to understand diverse place-based requirements.
- 2) Negotiation with institutional data custodians across research organisations and government agencies.
- 3) Alignment with emerging Indigenous Data Governance frameworks, including the CARE Principles (Collective Benefit, Authority to Control, Responsibility, Ethics).

The significant time invested in relationship-building during Phase 1 of this project—essential for establishing the trust required for any meaningful data governance discussions—meant that insufficient time remained to co-develop specific data sharing protocols. This remains a critical priority for future work. The qualitative baseline established through CCIP-R-09,

particularly Reef Traditional Owner perspectives on data sovereignty and management (Section 3.4), provides a foundation for subsequent projects to develop place-based data sharing agreements that respect Indigenous Data Governance principles and support Reef Traditional Owner authority over information pertaining to their Sea Country.

## 4.6 Progressing Data Governance for Traditional Owner Engagement

While CCIP-R-09 confirmed that data management is a significant concern for Reef Traditional Owners, the project also identified practical pathways to progress this issue. The place-based protocols developed with Dabu Jajikal and Darumbal Traditional Owners include data management assessment statements that provide a structured framework for researchers and managers to discuss data sharing arrangements prior to commencing activities on Sea Country. These statements prompt consideration of:

- Whether the project supports sharing data management responsibilities with Traditional Owners.
- Whether data will be used in ways that benefit the Traditional Owner community.
- Whether Traditional Owners will have access to data collected on their Sea Country.
- How data will be stored, controlled, and shared.

This place-based approach to data governance enables each Traditional Owner group to negotiate data arrangements according to their specific priorities and capacities, rather than imposing standardised data sharing agreements that may not reflect community preferences. However, the protocols represent only a first step toward comprehensive data governance. System-wide implementation of Indigenous data sovereignty principles across COTS research and management programs remains an area requiring further development. This would include:

- Adoption of CARE Principles alongside FAIR Principles in COTS data management policies.
- Development of mechanisms for Traditional Owners to access data collected on their Sea Country.
- Establishment of protocols for return of research findings in accessible formats.
- Consideration of Traditional Owner authority in decisions about data publication and sharing.

Future research should explore how place-based data governance arrangements developed through protocols like those piloted in CCIP-R-09 might be scaled and integrated into broader COTS program data management systems, while maintaining the flexibility required to accommodate diverse Traditional Owner preferences and governance structures.

## 4.7 Engagement Protocols for COTS Research and Management

Developing guidelines for COTS researchers and managers to seek and develop meaningful and genuine partnerships with Reef Traditional Owners has been an overarching output for the project. Co-design is a continuing foundation of this process supporting Reef Traditional Owner involvement, influence and delivery across current and future programs (Dale et al. 2018). The challenge for COTS research and management is identifying ways to acknowledge and be guided by place-based Sea Country protocols when program deliverables and research claims are conceptualised as Reef wide and aggregated (Hill et al. 2012, 2020; McLean et al. 2023).

Developing place-based guidelines responds to these challenges (Hill et al. 2020; Latulippe & Klenk 2020; OECD 2020; Janke et al. 2021) by supporting:

- Localised approaches to capacity development for Reef Traditional Owners.
- Meaningful relationships with local decision-makers.
- Greater awareness of how COTS research and management can advance self-determination rights for Aboriginal and Torres Strait Islander peoples.
- Information sharing about local decisions affecting Sea Country health.
- Meaningful contributions to decision-making by Reef Elders.
- Dialogue among Reef Traditional Owner groups about Sea Country management and succession planning.

Guidelines that clearly articulate pathways to impact and benefit for Reef Traditional Owner groups can support the development of genuine partnerships between Traditional Owners, Reef program managers, research institutions, and state and federal bodies. Such partnerships enable Reef Traditional Owners to move beyond decision-support roles and engage with caring for the Reef as decision-makers, empowered to care for Sea Country (Snow et al. 2016; Talbot 2017; Ford et al. 2020; Janke et al. 2021; Paksi & Kivinen 2021). According to one Reef Traditional Owner:

*I think it should be the health out there of the Reef, as far as big outbreaks are concerned, we need to understand why? The question is understanding why cause the value [COTS control activities] for us is different when it comes to COTS.*

## 4.8 Final Outputs

### 4.8.1 Output 1: New knowledge on the values and interests of Traditional Owner groups in COTS research and management

Thematic analysis of three workshops and seven interviews with 41 Traditional Owner participants from 21 groups across the Torres Strait/Far Northern, Northern, Central, and Southern regions yielded 13 key themes describing Traditional Owner priorities for engagement with COTS research and management. These themes—Engagement Protocol, Genuine Partnerships, Benefit Sharing, Data Management, Visibility, Succession Planning,

Accessibility, Unlearn, Embedding Story of Sea Country, Consent, COTS Governance, Seeking Permission, and Access to Sea Country—provide foundational knowledge for designing culturally appropriate, place-based engagement approaches for Reef management programs.

This new knowledge also informed conceptual contributions to the collaborative CCIP-R-08/09 publication: *A social license to operate theory for lethal control of crown-of-thorns starfish on the Great Barrier Reef* (Bartelet et al. 2025). The paper developed a grounded theory distinguishing between social license to operate (SLO) and Traditional Owner Rights and Responsibilities (TORR), recognising that Reef Traditional Owners hold unique rights beyond those shared with other community members. The TORR framework identifies four domains critical to Traditional Owner support for COTS management: aspirations for involvement in Sea Country management; incorporation of Indigenous knowledge within COTS programs; consent protocols for entering Sea Country; and early engagement and co-management in decision-making processes.

#### **4.8.2 Output 2: Place-based engagement protocols for COTS research and management**

Two engagement protocol handbooks were co-developed with Traditional Owner groups to operationalise the 13 themes into practical assessment and evaluation tools:

- *Yadaba* (Respect) Protocol for Darumbal Country (Appendix C).
- *Ngana Muruk Junkurrjiku Janay* (Standing up together very strong) Protocol for Dabu Jajikal Country (Appendix D).

These protocols provide 13-item assessment scales designed to facilitate dialogue between researchers, managers, and Traditional Owner groups. The scales enable evaluation of project alignment with community priorities and Sea Country values, supporting ongoing negotiation and relationship building between COTS programs and the Traditional Owners on whose Sea Country research and management activities occur.

#### **4.8.3 Output 3: Uplift in Indigenous research capacity through employment and business opportunities for Aboriginal and Torres Strait Islander people**

CCIP-R-09 demonstrated practical approaches to building Indigenous research capacity and supporting Indigenous-owned enterprises through four initiatives:

*Project leadership:* The project was led through a dedicated Indigenous Senior Postdoctoral Research Fellow position, enabling Indigenous-led research design, culturally grounded relationship building with Traditional Owner communities, and informed interpretation of findings.

*Student cadetship program:* The project successfully piloted The Cairns Institute Aboriginal and Torres Strait Islander Cadetship Program, integrating paid employment with accredited work integrated learning. One Indigenous Research Assistant completed a 130-hour placement, contributing to data analysis and reflection on benefit sharing strategies for future

COTS research with Indigenous participants (see Methods: Indigenous Research Capacity Building).

*Indigenous creative contributions:* Culturally valued and relevant illustrations were commissioned from an Indigenous designer to visually communicate project methods and outputs, ensuring research stories were told in ways that resonated with Traditional Owner communities (Figures 4 to 9).

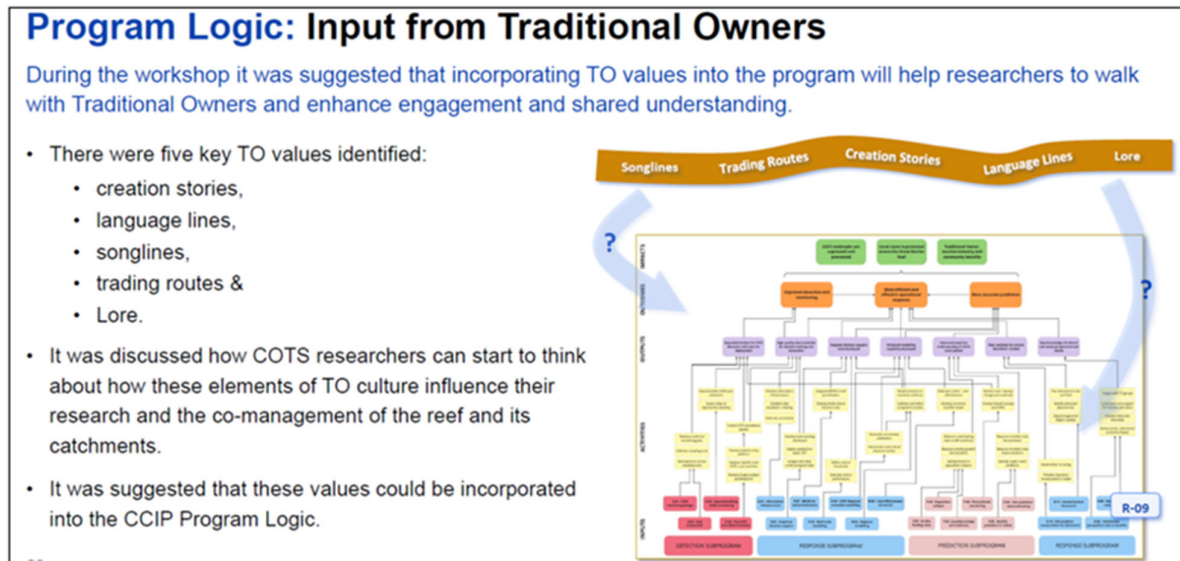
*Indigenous media production:* ReefCast Productions (<https://reefcast.com.au/>), an Indigenous-owned production company, was engaged to develop video content communicating community and research engagement outcomes. The production features Dabu Jajikal and Darumbal Traditional Owners discussing the place-based engagement protocols developed through the project, amplifying Traditional Owner voices and ensuring research outputs were shared in culturally appropriate and accessible formats.

Together, these initiatives modelled the benefit sharing approaches identified as priorities by Traditional Owner participants, directed resources to Indigenous-owned businesses, and established practical pathways for succession planning in Reef research.

## 5. RESEARCH SYNERGIES AND NEXT STEPS

Synergies between CCIP-R-09 and other CCIP projects and allied Reef programs were broad in engagement and centered on opportunities for information sharing and new knowledge conceptualisations to support individual project aspirations to embed meaningful participation of Reef Traditional Owners.

Discussions within CCIP workshops, particularly the Integration Workshop (**Figure 13**), highlighted significant design limitations in the whole-of-program logic approach to Traditional Owner engagement. The CCIP Integration workshop (May 2023) revealed a fundamental gap in the existing CCIP program logic: the absence of coherent Traditional Owner involvement from initial planning stages through to project completion and beyond. This gap manifests across multiple dimensions of program design and delivery, limiting the capacity of Traditional Knowledge to inform both whole-of-program logic and individual project design.



**Figure 13.** Knowledge recommendation to re-think design logic implemented across all CCIP projects. (CCIP Integration Workshop, May 2023).

Reef Traditional Owners participating in these discussions wanted to understand how projects were initially assessed. They asked:

- Did project proposal designs request from project applicants an evaluation of how substantive demonstrations of engagement with Reef Traditional Owners would occur across the life of a project timeline?
- Did project proposal designs assist researchers and program managers to evaluate specifics of Sea Country where photos, field trips, and data collection were undertaken?
- Did project proposal designs support researchers and program managers to assess and evaluate how project knowledge creation, knowledge attribution, and delivery of

outcomes supported engagement with Reef Traditional Owner participants (AIATSIS 2020)?

These questions point to a need for CCIP to fundamentally redesign its program logic to embed Traditional Owner involvement as a continuous thread from project conception through to legacy planning. Current program structures treat Traditional Owner engagement as an activity to be incorporated within individual projects rather than as a foundational element of program architecture. This approach creates inconsistent engagement experiences for Traditional Owners, limits opportunities for Traditional Knowledge to shape research directions at formative stages and fails to establish pathways for ongoing relationships beyond project completion.

Addressing these questions will require systemic and structural changes to the ways programs are designed and how they can foster and guide individual researchers and program managers to embed steps that support self-determination for Reef Traditional Owners (Austin et al. 2020; Moyo 2023; Hunter et al. 2024). A redesigned program logic would need to consider:

- Pre-proposal consultation requirements that demonstrate existing relationships with relevant Traditional Owner groups.
- Mandatory assessment criteria for Sea Country identification and Traditional Owner notification in project design.
- Staged review processes that include Traditional Owner evaluation of project progress and alignment with community priorities.
- Legacy planning that articulates how relationships and knowledge sharing will continue beyond funded project timelines.
- Program-level coordination to prevent consultation fatigue and ensure Traditional Owner groups are not approached by multiple projects without coherent communication.

## 5.1 Further research priorities

Outcomes from this project demonstrate the importance of considering how research questions are identified and prioritised, who is involved in research design and execution, and how findings are communicated throughout the full lifecycle of research programs. The following priorities distinguish between areas requiring further research to inform future directions and areas where sufficient evidence exists to support immediate implementation through program design and resourcing decisions.

The following priorities require further investigation to generate the knowledge base necessary to inform future program and management decisions.

### 5.1.1 Research Priority 1: Document and develop Traditional Knowledge for COTS research and management

Reflecting the status of the Reef as a biocultural system, it is critical to address this priority in a manner that is inclusive of linguistic, cultural and ecological knowledge and which respects

the authority of Traditional Owners in determining what knowledge can be shared, how it is used, and how it can be further developed. This includes developing guidelines and processes for data sharing that provide Reef Traditional Owners with ongoing control over information provided to CCIP—an aim that could not be fully delivered within the scope of this project but remains a priority for future research. Specific research activities include:

- Participatory research with Reef Traditional Owners to identify language names for reefs and key reef species and to determine priorities for language use including, but not limited to, naming of sites through COTS and other management programs.
- Participatory research with Reef Traditional Owners to develop a database of culturally significant reef sites to inform management activities including, but not limited to, the prioritisation of COTS control.
- Research to understand how Traditional Knowledge can inform COTS outbreak prediction, prevention, and response strategies.

### **5.1.2 Research Priority 2: Develop methodologies to measure and model cultural value within Integrated Pest Management frameworks**

Current IPM Framework evaluation of priority reefs is based on ecological and economic value. Discussions during CCIP-R-09 highlighted that management processes do not currently account for Traditional Owner participation, access, and control of data related to culturally valued priority reefs. Research is needed to:

- Develop culturally appropriate indicators and methodologies for measuring cultural value of reef sites.
- Investigate how cultural value data can be integrated with ecological and economic criteria in reef prioritisation processes.
- Examine governance models that support Traditional Owner control over how cultural value data is collected, stored, and shared.

### **5.1.3 Research Priority 3: Evaluate effectiveness of place-based engagement protocols**

The engagement protocols co-developed with Darumbal and Dabu Jajikal Traditional Owners require longitudinal evaluation to assess their effectiveness and inform refinement. Research activities include:

- Monitor implementation of protocols across COTS research and management activities to assess uptake and identify barriers.
- Evaluate outcomes for Traditional Owner communities, including capacity building, benefit sharing, and self-determination.
- Document lessons learned to inform development of protocols with other interested Reef Traditional Owner groups.

## 5.2 Program and Management Priorities

The following priorities can be actioned through program design and resourcing decisions based on evidence generated through CCIP-R-09 and aligned research.

### 5.2.1 Program Priority 1: Embed guidelines and principles for partnerships with Reef Traditional Owners in all program and project planning

Sufficient evidence now exists to implement structural changes to how programs engage with Reef Traditional Owners. Actions include:

- Extend opportunity to develop local engagement protocols to other interested Reef Traditional Owner groups.
- Develop guidelines for all research projects in future CCIP programs that support local protocols including those co-produced with Darumbal Enterprise (Appendix C) and Dabu Jajikal Aboriginal Corporation (Appendix D).
- Implement Reef Traditional Owner-led assessment and evaluation of all research and service-provision applications across research and management programs.
- Require project proposals to demonstrate substantive engagement with relevant Traditional Owner groups as a condition of funding.

### 5.2.2 Program Priority 2: Create employment and training pathways for Aboriginal and Torres Strait Islander people in COTS research and management

CCIP-R-09 demonstrated effective models for Indigenous employment and capacity building that can be scaled across the program. Actions include:

- Visit Traditional Owner communities to share information and discuss COTS diver training delivered across various Reef contractor partnerships (QPWS, Reef Tourism operators, INLOC, Pacific Marine Group).
- Provide cultural support to Aboriginal and Torres Strait Islander candidates undertaking COTS diver training through INLOC TOPCOTS program, Pacific Marine Group Diver training initiative, and Blue Planet Marine.
- Employ Indigenous Cultural Research Assistants through fractional employment loading, with Indigenous Rangers nominated as local COTS representatives in support of place-based Ranger groups and communities.
- Build on the Aboriginal and Torres Strait Islander Student Cadetship Program piloted through CCIP-R-09 by directly funding projects capable of demonstrating appropriate university links and provision of supportive, culturally inclusive environments for undergraduate students undertaking Work Integrated Learning.
- For example, CCIP-R-09 supported the invitation of Reef Traditional Owners to attend CCIP workshops, with one project (CCIP-P-05 Benthic predation of COTS in rubble, Wolfe et al. 2025) translating this opportunity into on-the-ground engagement with Reef Traditional Owners in the Southern Reef region.

### 5.2.3 Program Priority 3: Build cultural capability across the COTS research and management community

Organisational and individual capacity to engage respectfully and effectively with Reef Traditional Owners can be enhanced through immediate investment in training and guidelines. Actions include:

- Provide opportunities for COTS researchers and managers to undertake cultural accreditation with Reef Traditional Owner groups to understand why whole-of-Reef perspectives impact place-based understanding of Sea Country values for individual Reef Traditional Owner groups.
- In conjunction with cultural capability guidelines (Appendix B) and discussions with COTS Cultural Research Assistants, identify with local Reef Traditional Owners appropriate cultural accreditation requirements for COTS researchers and managers operating across Sea Country.
- Incorporate organisational guidelines and training (Queensland Government 2024a) to build cultural awareness and establish culturally safe workplaces across on-water operations.
- Support Reef Traditional Owners to deliver cultural accreditation programs, building community capacity while ensuring training content remains under Traditional Owner control.

## 6. MANAGEMENT IMPLICATIONS AND IMPACT

### 6.1 Governance, Engagement and Communications

#### 6.1.1 Improving regional awareness of COTS research, surveillance, and control activities

A Reef-wide approach to information sharing, governance, and engagement is unable to account for place-based understanding embedded in Traditional Knowledge and Sea Country values. Improving the relevance of COTS at the sub-regional level (Torres Strait Islands, Far Northern, Northern, Central, Southern GBR) elevates meaningful participation from Traditional Owners who are invested in the care of their Sea Country and the reef sites where COTS research, surveillance, and control activities are undertaken. A regional focus enables relevant near-neighbour Reef Traditional Owners to contribute and discuss together, fostering knowledge exchange and collaborative approaches to shared management challenges.

#### 6.1.2 Building Indigenous research and employment capacity

Strengthening Traditional Owner involvement in COTS governance requires dedicated investment in Indigenous employment pathways and research capacity. Creating these opportunities serves multiple purposes: it builds two-way knowledge sharing between COTS programs and Traditional Owner communities; develops a skilled Indigenous workforce with expertise in both scientific and cultural dimensions of reef management; and establishes trusted relationships that support ongoing engagement and information flow. The following actions align with Program Priority 2 (Section 5.1.2):

- Develop fractional or full-time opportunities for community members and Rangers to act as Cultural Research Assistants (CRAs) to facilitate connections between COTS information, data, and planned activities and the decision-making required for in-situ, place-based Sea Country governance models working in conjunction with Reef Traditional Owner Land and Sea priorities.
- Design into future COTS projects fractional or full-time employment opportunities for Indigenous researchers, assistants, and program facilitators to ensure Traditional Owner perspectives are embedded throughout project lifecycles.
- Seek interest from Indigenous undergraduate students wishing to become Research Assistants, building on the Aboriginal and Torres Strait Islander Student Cadetship Program piloted through CCIP-R-09.
- Develop pathways for Higher Degree by Research (HDR) level qualified Indigenous researchers to contribute to Traditional Owner-led research approaches across COTS, supporting long-term career development and research leadership.

### 6.1.3 Strengthening assessment and evaluation of engagement

Improved assessment and evaluation techniques are needed to understand the depth of relationships between COTS research and management and Reef Traditional Owner priorities and needs. The place-based engagement protocols developed with Darumbal and Dabu Jajikal Traditional Owners (Appendices C and D) provide a foundation for this work, offering 13-item assessment scales that can be adapted and extended to other Traditional Owner groups. As outlined in Research Priority 3 (Section 5.1.3), longitudinal evaluation of these protocols will inform refinement and broader application across COTS programs.

## 6.2 Crown-of-thorns starfish Strategic Management Framework

The Crown-of-thorns starfish Strategic Management Framework (GBRMPA 2020) makes no mention of the importance of engagement with Reef Traditional Owners, traditional knowledge, or Sea Country values. Designing a strategic management framework that is explicit in mapping and accounting for the targets set in the Reef 2050 Traditional Owner Implementation plan would be supportive of rethinking how COTS research and management can demonstrate substantive engagement and co-production of knowledge with Reef Traditional Owners.

## 6.3 Annual Reef Prioritisation Process

Reef Traditional Owners during CCIP-R-09 workshops discussed the 2023–2024 Annual Workplan (AWP) highlighting they were not visible in the process of identifying high value priority reefs targeted for manual control. Information in the AWP 2023–2024 did not identify Sea Country entered by vessels. Designing how information is shared and sharing that information appropriately to make links between management decisions for target reefs with Sea Country and region will be important next step.

## 6.4 Integrated Pest Management (IPM) Framework

The current IPM Framework (Westcott et al. 2021) evaluation of priority reefs is based on ecological and economic value to identify high value priority reefs targeted for COTS control. Discussions during CCIP-R-09 regarding data to support measured or modelling cultural value for priority reefs highlighted current management processes do not account for Traditional Owner participation, access and control of data related to culturally valued priority reefs. An IPM framework that supports resource allocation for Traditional Owners to collect, monitor and control how data related to cultural value is measured and modelled and shared would provide opportunities for co-production management of high value priority reefs in a respectful and trusted IPM framework.

## 6.5 On-water Operations and Data Collection

### 6.5.1 Building culturally safe workplaces

Improving engagement with Indigenous staff and trainees deployed across on-water operations is a key priority. Incorporating organisational guidelines and training (Queensland Government 2024a) to build cultural awareness and establish culturally safe workplaces (Appendix B) is an important outcome for future COTS on-water operations. This includes ensuring that Indigenous crew members and trainees are supported by colleagues and supervisors who understand cultural protocols, recognise the significance of working on Sea Country, and can respond appropriately to the diverse needs of Aboriginal and Torres Strait Islander staff.

### 6.5.2 Connecting data collection with Sea Country governance

Data collection practices present a significant opportunity for meaningful engagement with Reef Traditional Owners. The COTS Control Program generates three primary data streams through on-water operations (Great Barrier Reef Marine Park Authority 2024):

- *Manta Tow Surveillance Data* capture reef-wide estimates of COTS density and outbreak status, COTS feeding scar observations, and coral cover assessments. These surveys are conducted at each Target Reef visit and repeated at intervals ranging from six weeks to twelve months depending on management mode.
- *COTS Cull Data* record the number and size class of COTS removed (distinguishing adults  $\geq 15$  cm from juveniles  $< 15$  cm), diver effort in minutes, and catch-per-unit-effort (CPUE) calculations used to determine when ecological thresholds have been achieved at each cull site.
- *Reef Health and Impact Survey (RHIS) Data* document coral cover, benthic community composition, and cumulative impacts including physical damage, coral bleaching, and coral disease. GPS coordinates are recorded for each survey site to enable repeat monitoring over time.

Currently, these data are not systematically tagged with Sea Country identifiers or shared with relevant Traditional Owner groups. Designing processes that identify where data are collected in relation to Sea Country boundaries would enable Traditional Owners to access information about activities occurring on their Country and contribute to decisions about how those data are used.

Engaging with Reef Traditional Owners about what data are collected and where in Sea Country begins a process of building bridges and establishing trusted relationships. CCIP-R-09 identified several approaches to sharing COTS operational data in culturally appropriate ways:

- Providing summary reports of manta tow surveillance, cull outcomes, and RHIS findings to relevant Traditional Owner groups following COTS control activities on their Sea Country, using accessible language and formats.

- Including Sea Country and traditional place names alongside scientific reef identifiers in data management systems and the Contractor Dashboard.
- Establishing protocols for Traditional Owner review and input prior to publication of research findings that relate to specific Sea Country.
- Supporting Traditional Owners to access raw surveillance and cull data where requested, with appropriate guidance on interpretation of CPUE thresholds and reef health indicators.
- Developing visual and multimedia formats for sharing COTS information that align with oral and storytelling traditions, potentially incorporating the video content developed by ReefCast Productions.

Sharing data through these approaches supports Traditional Owners to make informed decisions about how management activities on their Sea Country align with existing Sea Country values and priorities for reef sites visited by COTS control vessels.

## 7. CONCLUSION

CCIP-R-09 demonstrates that meaningful engagement between COTS research and management and Reef Traditional Owners requires a fundamental shift from Reef-wide operational approaches toward place-based partnerships that respect Sea Country governance systems. The 13 themes identified through this research, and the four foundational pillars of Succession Planning, Principles of Co-Research, Cultural Agreement Protocols, and Community and Institutional Readiness, provide a framework for researchers and managers to develop genuine partnerships with Traditional Owner groups.

Central to this framework is recognition that Reef Traditional Owners hold inherent rights to self-determine and self-govern Sea Country. Historically, environmental management strategies across the GBR have operated within systems and structures that configure power imbalances, restricting Traditional Owners' capacity to care for Sea Country through community-driven priorities and limiting their role to advisory or symbolic participation.

This research demonstrates that rethinking engagement requires moving beyond discourses of integration and inclusiveness toward Indigenous sovereignty reflected in Indigenous-led decision-making, knowledge contributions, and policy choices. Place-based protocols offer a pathway for Traditional Owners to move from providing decision support to exercising authority as decision-makers over research and management activities on Sea Country.

The co-development of the *Ngana Muruk Junkurrjiku Janay* and *Yadaba Darumbal* protocols as proof-of-concept exemplars illustrates that place-based approaches can bridge the scale mismatch between reef-wide COTS programs and localised Sea Country governance. These protocols emerged from the co-design process represented by the pipi shell—where Traditional Owner knowledge systems and institutional research accountability came together to protect the relationships necessary for meaningful collaboration.

Future COTS research and management must commit to structural changes in how programs are designed and delivered. The foundational conditions for genuine partnership - trust, mutual understanding, and shared accountability - require time that often exceeds institutional funding cycles and program timelines. This research confirms a critical truth: co-design cannot be rushed if Traditional Owner participation is to progress toward substantive self-determination over Sea Country.

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## Individuals

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## **DATA ACCESSIBILITY**

Data accessibility is governed by James Cook University's Code for the Responsible Conduct of Research and the CARE Principles for Indigenous Data Governance. Access to data is conditional. Users must seek permission from both the associated Reef Traditional Owner research participants and James Cook University.

For further information on CARE (Collective Benefit, Authority to Control, Responsibility, Ethics) and FAIR (Findable, Accessible, Interoperable, Reusable) principles in Indigenous research contexts, see the Global Indigenous Data Alliance: <https://www.gida-global.org/care>.

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## APPENDIX A – ENDORSED REEF TRADITIONAL OWNER REPORTS REEF 2050 PROCESS

(<https://reefto.au/resources/>)

### 1. Long Term Sustainability Plan Indigenous Targets Project Report (2014)

*Indigenous Sea Country Policy Group and the Cape York Turtle and Dugong Taskforce Steering Committee*

This report captures the key outcomes of the project established to develop LTSP Indigenous targets. The project capitalised on the work done by TOs, over a significant period, in Sea Country planning and management. As such, the project has a responsibility to those people to ensure that they are informed about the way in which the product of the effort has been utilised. Furthermore, they should also have easy access to that information, provided in a format that is unambiguous in its documentation of the project, the processes and approaches used in its management, and the deliverables produced. This is the primary purpose of this report.

URL: [https://reefto.au/wp-content/uploads/2022/10/2014\\_LTSP-Indigenous-Targets-Project-Report.pdf](https://reefto.au/wp-content/uploads/2022/10/2014_LTSP-Indigenous-Targets-Project-Report.pdf)

### 2. Traditional Owners and Sea Country in the Southern Great Barrier Reef – Which Way Forward? (2016)

*The Cairns Institute, James Cook University*

This project aims to detail a coordinated Indigenous framework and show how Indigenous participation in Sea Country management can be increased to address these gaps. The project has facilitated consultations with Traditional Owners and their key partners to analyse, further develop and support the parallel development and subsequent implementation of a sector specific (Indigenous) implementation plan under Reef 2050 (Department of the Environment 2015).

URL: <https://www.cairnsinstitute.jcu.edu.au/traditional-owners-and-sea-country-in-the-southern-great-barrier-reef-which-way-forward/>

### 3. Reef 2050 Long Term Sustainability Plan – Indigenous Implementation Plan (2016)

*Australian and Queensland Governments*

The Reef 2050 Plan sets out the way in which the Australian and Queensland governments will manage, protect, and improve the condition of the Great Barrier Reef for current and future generations. A collaborative effort with Traditional Owners, local government, industry, and the community are crucial for the Plan's successful delivery and to ensure that the best available knowledge and expertise underpins decision making. This is part of a long-term

process to make improvements to the health of the Reef and will be a very challenging and difficult task.

URL: <https://www.dcceew.gov.au/parks-heritage/great-barrier-reef/publications/reef-2050-indigenous-implementation-plan>

#### **4. Great Barrier Reef Blueprint for Resilience (2017)**

*Great Barrier Reef Marine Park Authority*

This blueprint signals a change in the future management of the Great Barrier Reef. Like all reefs globally, accumulated pressures, in particular those related to climate change, are impacting the Reef's resilience and we are witnessing dramatic system-wide declines in its condition.

URL: <https://elibrary.gbrmpa.gov.au/jspui/bitstream/11017/3287/1/GBRMPA%20Blueprint%20for%20Resilience%20-%20Low%20Res.pdf>

#### **5. Traditional Owners of the Great Barrier Reef: The Next Generation of Reef 2050 Actions (2018)**

*The Reef 2050 Traditional Owner Aspirations Project*

This report is intended to support Traditional Owners to celebrate and document their achievements in securing a more "joined-up" approach to governance and management across the GBR. Based on the extensive engagement undertaken, it seeks to distil their core aspirations and plans regarding the governance and management of Sea Country.

URL: <https://www.rrrc.org.au/wp-content/uploads/2019/08/Reef-2050-4pp-Summary-Brochure-Upload.pdf>

#### **6. Traditional Owner Theory of Change for the Great Barrier Reef (2018)**

*Great Barrier Reef Traditional Owners*

This Theory of Change is designed to support Traditional Owner work as part of the Reef 2050 Framework and the subsequent review of the Plan in 2020. It aims to do this by providing clarity for implementation and by capturing critical thinking around the outcomes that Traditional Owners want to see in the Reef.

URL: [https://reefto.au/wp-content/uploads/2022/10/2018\\_GBR-Traditional-Owners-Program-Logic\\_ToC-Workshop-Final-Report.pdf](https://reefto.au/wp-content/uploads/2022/10/2018_GBR-Traditional-Owners-Program-Logic_ToC-Workshop-Final-Report.pdf)

#### **7. Monitoring Indigenous Heritage within the Reef 2050 Integrated Monitoring and Reporting Program (2018)**

*Indigenous Heritage Expert Group*

The Indigenous Heritage Expert Group (IHEG) was created to advise on the design of the Indigenous heritage theme of the Reef 2050 Integrated Monitoring and Reporting Program (RIMReP) in a context where it has been recognised that the most striking gap in socio-economic monitoring was the absence of monitoring pertaining to Traditional Owner use, dependency, and wellbeing.

URL: [https://reefto.au/wp-content/uploads/2022/10/2018\\_Indigenous\\_heritage\\_expert\\_group\\_report.pdf](https://reefto.au/wp-content/uploads/2022/10/2018_Indigenous_heritage_expert_group_report.pdf)

## **8. Reef 2050 Mid-Term Review: The Reef 2050 Traditional Owner Project (2018)**

*Reef and Rainforest Research Centre*

The Reef 2050 Mid Term Review (MTR) (March 2018) advised that no Traditional Owner driven Actions were identified as able to be consolidated; easily simplified; or reworded without broad scale consultation with GBR Traditional Owners. It was also recognised that the current actions, while not comprehensive or highly implementable, do target key interests of Traditional Owners.

URL: [https://reefto.au/wp-content/uploads/2022/10/2018\\_RRRC\\_Aspirations\\_mid-term-Review-Report.pdf](https://reefto.au/wp-content/uploads/2022/10/2018_RRRC_Aspirations_mid-term-Review-Report.pdf)

## **9. Reef 2050 Great Barrier Reef Traditional Owner Workshop Reef-wide Forum (2018)**

*Great Barrier Reef Traditional Owners*

The Reef 2050 Traditional Owner Aspirations project is led by Traditional Owners to better understand and reflect aspirations for the protection and management of the GBR and provide this input to improve the Reef 2050 Plan.

URL: [https://reefto.au/wp-content/uploads/2022/10/2018\\_RRRC\\_Final-Reef-2050-Report\\_aspirations-report.pdf](https://reefto.au/wp-content/uploads/2022/10/2018_RRRC_Final-Reef-2050-Report_aspirations-report.pdf)

## **10. Reef Trust Partnership Investment Strategy (2018)**

*Great Barrier Reef Foundation*

The purpose of this document is to outline a high-level roadmap for the Partnership to deliver on each of the priority Components included in the Grant Agreement. The Investment Strategy includes core pillars around which all Components will revolve; key challenges and opportunities; and major themes to inform the next layer of work.

URL: [https://reefto.au/wp-content/uploads/2022/10/2018\\_RTP\\_InvestmentStrategy.pdf](https://reefto.au/wp-content/uploads/2022/10/2018_RTP_InvestmentStrategy.pdf)

## **11. Reef Trust Partnership – Summary Workshop Report (2019)**

*Great Barrier Reef Traditional Owners*

The purpose of the workshop was to seek Traditional Owner input on activities to be delivered under the Reef Trust Partnership. The workshop was structured around activities designed to inform: (i) The development of the Partnership's first annual work plan (2019–2020) and five-year forward plan (2019–2024), and (ii) A concept for a Reef-wide co-design framework to guide program delivery.

URL: [https://reefto.au/wp-content/uploads/2022/10/2019\\_FINAL-Traditional-Owner-Workshop-Report-July.pdf](https://reefto.au/wp-content/uploads/2022/10/2019_FINAL-Traditional-Owner-Workshop-Report-July.pdf)

## **12. Strong Peoples Strong Country (2019)**

*Great Barrier Reef Marine Park Authority*

This report presents the key elements of the Indigenous heritage monitoring framework for the GBR: Strong peoples – Strong country. This summary has been extracted from the Indigenous Heritage Expert Group report, which outlines a proposed design for monitoring of the Indigenous heritage theme under the Reef 2050 Integrated Monitoring and Reporting Program.

URL: [https://reefto.au/wp-content/uploads/2022/10/2019\\_Strong-Peoples-Strong-Country.pdf](https://reefto.au/wp-content/uploads/2022/10/2019_Strong-Peoples-Strong-Country.pdf)

## **13. Traditional Owner Communique on Targets and Indicators (2019)**

*Great Barrier Reef Traditional Owners*

The document reports on a Traditional Owner workshop convened to revise targets and indicators for incorporation into the updated Reef 2050 Long-Term Sustainability Plan, ahead of its presentation to the UNESCO World Heritage Committee in July 2020.

URL: <https://share.google/IOqixOGGy5ODVpEhX>

## **14. Reef 2050 Traditional Owner Implementation Plan (2022)**

*Traditional Owner Steering Group*

The Plan builds on a strong history of Traditional Owners articulating their priorities for the Reef and provides an operational platform to strategically coordinate and advance the delivery of actions to achieve our aspirations. To get on with the job of doing. Of working together to help our Reef and People get healthy again.

URL: [https://reefto.au/wp-content/uploads/2023/09/DES\\_GBR\\_TO-Report\\_WEB.pdf](https://reefto.au/wp-content/uploads/2023/09/DES_GBR_TO-Report_WEB.pdf)

## **15. Reef 2050 Traditional Owner Steering Group Agreement to Partner (2023)**

*Traditional Owner Steering Group, Commonwealth of Australia, Queensland Government*

The Agreement to Partner with the Commonwealth and the Queensland governments is a significant milestone in our journey for recognition of our rights and interests in the GBR as articulated in the Reef 2050 Traditional Owner Implementation Plan.

URL: <https://reefto.au/wp-content/uploads/2023/11/151123-Reef2050-TO-Implementation-Plan-Agreement-to-Partner-signed.pdf>

## 16. Media Release: Agreement to Partner (2023)

*Traditional Owner Steering Group*

Read our media release about the Agreement to Partner with the Commonwealth and the Queensland governments.

URL: <https://reefto.au/wp-content/uploads/2023/11/ReefTO-Media-Release-Agreement-to-Partner-16-November-2023.pdf>

## APPENDIX B CULTURAL CAPABILITY RESOURCE

The Queensland Government Cultural Capability Resource (Queensland Government 2024a) is recommended as a source of information for COTS program contractors seeking to understand the scope of approaches that support the development of internal cultural capability guidelines. This resource was developed to support Queensland businesses aspiring to develop more meaningful relationships and engagement with First Nations Peoples across Queensland.

The resource provides detailed information on cultural capability activities, with suggested actions for businesses at various stages of their cultural capability journey. COTS program contractors are encouraged to access the full resource directly at:

<https://www.publications.qld.gov.au/dataset/cultural-capability-resource>

Key areas addressed in the resource include:

- Know and acknowledge what Country your business is on
- Include an Acknowledgement of Country on your website and/or in your communications
- Develop a Reconciliation Action Plan
- Build relationships with local Traditional Owner groups
- Create culturally safe workplace policies and practices
- Support Indigenous employment and procurement opportunities

These examples are not exhaustive; the full resource provides comprehensive guidance for organisations at all stages of developing their cultural capability.

# APPENDIX C

## NGANA MURUK JUNKURJIKU JANAY RESEARCH ENGAGEMENT GUIDE

### Summary Overview

### Ownership, Intellectual Property and Access

*Ngana Muruk Junkurrjiku Janay – Standing Up Together Very Strong: Research Engagement Guide* is the intellectual property of Dabu Jajikal Aboriginal Corporation (DJAC). The full document is not publicly available in order to protect commercial rights and assert Traditional Owner authority over research engagement processes on Dabu Jajikal Country.

Access to the complete Research Engagement Guide, including detailed protocols, templates, and implementation tools, requires formal agreement with DJAC. Researchers and institutions seeking to work on Dabu Jajikal Country must engage directly with DJAC to negotiate access, consent, and partnership arrangements.

*This summary is provided for reference purposes only and does not constitute permission to conduct research on Dabu Jajikal Country. All research requires Free, Prior and Informed Consent through DJAC governance structures.*

### About the Guide

The research engagement guide provides a culturally grounded, academically robust framework for ethical research partnerships on Dabu Jajikal Country. It integrates the *Ngana Muruk Junkurrjiku Janay* protocol with the Dabu Jajikal Healthy Country Plan 2026–2030.

The guide was developed in partnership with the Dabu Jajikal community through a research collaboration with The Cairns Institute, James Cook University, funded by the Reef Trust Partnership through the Great Barrier Reef Marine Park Authority. Guide development was also supported by work undertaken within the Australian Research Council (ARC) Centre of Excellence for Indigenous and Environmental Histories and Futures (CIEHF). It draws on principles from the AIATSIS Code of Ethics, UN Declaration on the Rights of Indigenous Peoples, Nagoya Protocol, and Maïam nayri Wingara Indigenous Data Sovereignty Communique.

### Country Context

Dabu Jajikal people are the Jalunji (sea) clan, one of three clans comprising the Eastern Kuku Yalanji native title determination (2007). Dabu Jajikal Country extends across interconnected cultural landscapes: Bubu (Land), Jalun (Sea), Kulji (Reef), Madja (Rainforest), Bana (Waterplaces), Jukar (Sand Country), and Mangkurru (Mangrove Country). These environments cannot be separated from cultural identity, wellbeing, and the responsibilities held by Dabu Jajikal Elders and families.

### Thirteen guiding themes

The guide establishes thirteen themes that guide ethical research practice. These themes provide principles for how researchers must walk, listen, act and remain accountable when working with Dabu Jajikal Research Leads:

1. Genuine Partnerships

2. Data Management and Sovereignty
3. Visibility and Recognition
4. Succession Planning
5. Accessibility
6. Unlearning
7. Embedding Story of Sea Country
8. Free, Prior and Informed Consent (FPIC)
9. Governance and Decision-Making
10. Seeking Permission
11. Benefit Sharing
12. Gender Considerations
13. Communication

## Key Elements

The full Guide addresses the following key areas:

### Foundations of Engagement

Principles ensuring research is community-led, culturally grounded, collaborative and accountable, and strengthening Country and people.

### Research Engagement Protocol

Required processes including FPIC, cultural protocols, governance structures, data sovereignty, and benefit sharing arrangements.

### Working Together

Co-design principles, community-driven timelines, cultural safety, accessibility, gendered knowledge considerations, and shared roles and responsibilities.

### Research on Country

Fieldwork protocols specific to different Country types (Reef and Sea, Rainforest and Waterplaces, Coastal and Mangrove Country), environmental and cultural safety protocols, and equipment and method requirements.

### Capacity Building and Succession

Requirements for building community capability, supporting intergenerational knowledge transfer, and creating pathways for young people.

### Monitoring, Review and Reporting

Processes ensuring accountability, milestone reviews, reporting requirements, community review of findings, and legacy planning.

### Accessing the Full Guide

Researchers and institutions wishing to access the complete *Ngana Muruk Junkurrjiku Janay Research Engagement Guide* and companion training resource must contact Dabu Jajikal Aboriginal Corporation to initiate formal engagement. Access is subject to agreement on research purpose, consent processes, and partnership arrangements.

**Contact:** Dabu Jajikal Aboriginal Corporation, 2719 Rossville Bloomfield Road, QLD 4895

## Acknowledgement

We acknowledge the leadership of Dabu Jajikal Elders, Rangers, and community members in developing these protocols for caring for Jalun (Sea Country) and Kulji (Reef). We pay respect to Elders past and present, whose leadership shapes the foundations of this Guide and the relationships it seeks to support.

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# APPENDIX D

## YADABA PROTOCOL GUIDE

*For Research and Management Engagement with Darumbal Country*

*Summary Overview*

### Ownership, Intellectual Property and Access

The *Yadaba (Respect) Protocol Guide* is the intellectual property of Darumbal Traditional Owners. The full document is not publicly available in order to protect Indigenous Cultural and Intellectual Property (ICIP), commercial rights, and assert Traditional Owner authority over research and management engagement processes on Darumbal Country.

Access to the complete *Yadaba Protocol Guide* and companion *Yadaba Protocol Implementation Workbook* requires formal agreement with Darumbal Traditional Owners. Researchers, institutions, and management agencies seeking to work on Darumbal Country must engage directly with the appropriate Darumbal cultural authority holders to negotiate access, consent, and partnership arrangements.

*This summary is provided for reference purposes only and does not constitute permission to conduct research or management activities on Darumbal Country. All work requires Free, Prior and Informed Consent obtained through appropriate Darumbal governance structures.*

### About the Guide

The *Yadaba (Respect) Protocol* provides a comprehensive framework for ethical, respectful, and mutually beneficial research and management engagement with Darumbal Country. The Guide integrates international best practices, Indigenous Data Sovereignty principles, and community-identified priorities.

The Protocol is built on two complementary frameworks: **seven core principles** that provide foundational values and aspirations, and **thirteen themes** that offer practical, operational guidance for achieving those principles through everyday actions and decisions.

The thirteen themes emerged from extensive consultation with Reef Traditional Owners and address the realities of research engagement. Guide development was supported by work undertaken within the Australian Research Council (ARC) Centre of Excellence for Indigenous and Environmental Histories and Futures (CIEHF). The Protocol draws on principles from the UN Declaration on the Rights of Indigenous Peoples, AIATSIS Code of Ethics for Aboriginal and Torres Strait Islander Research, Maïam nayri Wingara Indigenous Data Sovereignty Communique, and the Nagoya Protocol on Access and Benefit-sharing.

### Darumbal Country Context

Darumbal People are the Traditional Custodians of the Rockhampton and Capricorn Coast Area. Their traditional boundaries extend from the Styx River in the north to Raglan Creek in the south, west to Westwood and Mt Morgan Range, with Sea Country extending to the outer Reef including Shoalwater Bay and TUMRA areas.

Darumbal Country priorities include weed management and cultural fire application, Crown-of-Thorns starfish control and marine protection, seagrass, mangrove and water quality

monitoring, Sea Country values mapping for Cultural Resilience Strategy, TUMRA compliance and traditional practices education, and Country and community healing through Darumbal knowledge.

## Seven Core Principles

The guide establishes seven core principles that must guide all aspects of research and management engagement with Darumbal Country:

1. Projects That Benefit Community and Country
2. Community-Driven Timelines
3. Working Together
4. Sharing Centre Resources
5. Working with Country, for Country
6. Control Over Data
7. Sharing Our Knowledge

## Thirteen operational themes

The guide provides thirteen themes offering practical guidance for implementing the seven core principles:

1. Engagement Protocol
2. Genuine Partnerships
3. Benefit Sharing
4. Data Management
5. Visibility
6. Succession Planning
7. Accessibility
8. Unlearn
9. Embedding Story
10. Consent
11. COTS Governance
12. Seeking Permission
13. Gender

## Key Elements

The full Guide addresses the following key areas:

### Implementation Framework

A three-phase approach (Preparation, Implementation, and Completion) with specific actions guided by the Seven Principles and Thirteen Themes.

### Evaluation and Accountability

Success measures against the Seven Core Principles and Thirteen Themes, with evaluation conducted collaboratively with Darumbal representatives. Includes accountability mechanisms for ongoing relationship maintenance.

### Common Implementation Challenges

Guidance on navigating institutional versus community timelines, addressing power imbalances, reconciling data sovereignty with open data requirements, and managing academic publication pressures.

### Critical Success Factors

Requirements for early and authentic engagement, adequate resourcing, shared power and decision-making, cultural competency and humility, flexibility and adaptability, and long-term commitment.

## Core Commitments

The Protocol represents a fundamental shift in how research and management is conducted on Indigenous Country. Implementation requires commitment to centering Darumbal priorities, sharing power and resources genuinely, respecting Darumbal sovereignty over Country, data and knowledge, building relationships that extend beyond individual projects, and ensuring research benefits Darumbal community and Country first.

*Listen before speaking. Learn before teaching. Respect before expecting respect. Build relationships before requesting participation. Centre Darumbal priorities, not institutional agendas.*

## YADABA – RESPECT

### Accessing the full guide

Researchers, institutions, and management agencies wishing to access the complete *Yadaba Protocol Guide* and companion training resource must contact recognised Darumbal cultural authority holders to initiate formal engagement. Access is subject to agreement on research or management purpose, consent processes, and partnership arrangements.

### Acknowledgement

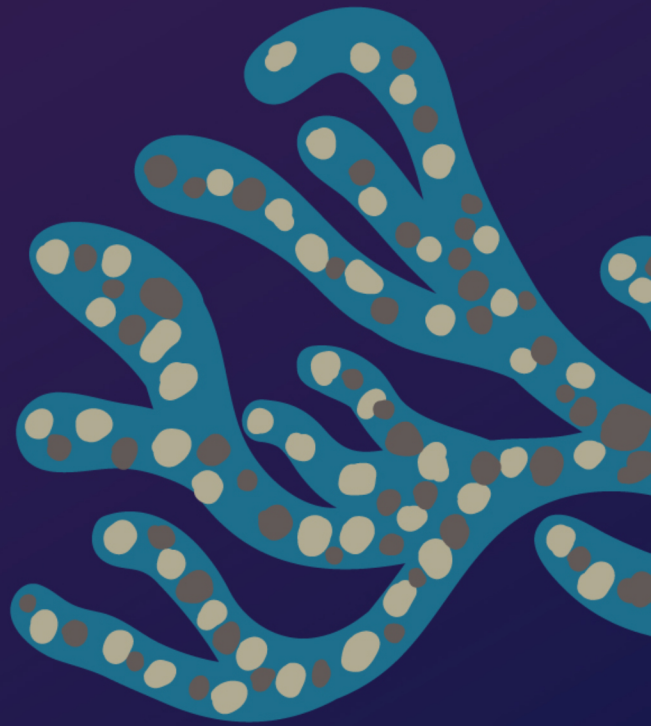
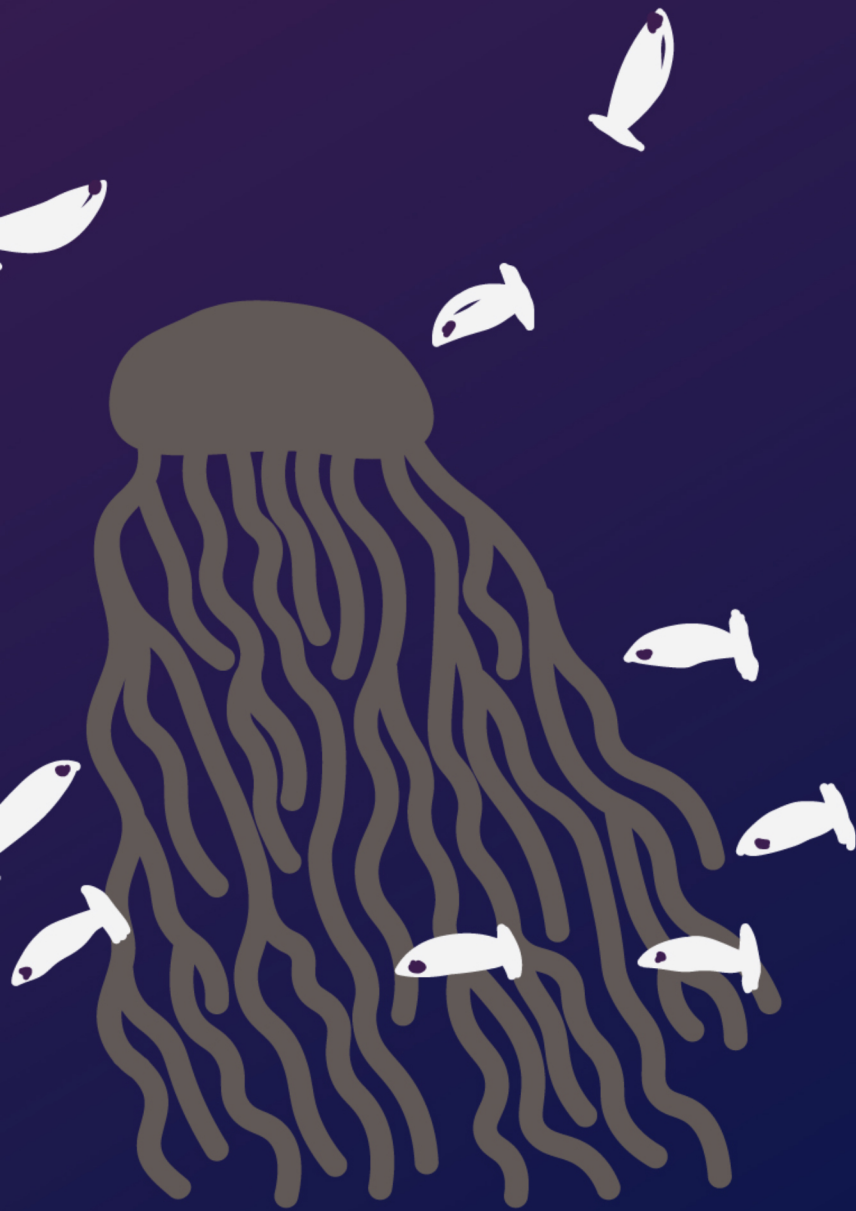
We acknowledge the Darumbal People as the Traditional Custodians of the land and sea country on which this work focuses. We recognise their continuing connection to Country and pay respect to Elders past, present, and emerging. We acknowledge that sovereignty was never ceded, and that Darumbal People maintain their rights, responsibilities, and authority over their Country.

We thank the Reef Traditional Owners who participated in consultation workshops. Their insights, experiences, and wisdom form the foundation of the Thirteen Themes and inform the entire protocol framework.

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T 07 4232 1889 T(INT'L) +617 4232 1889  
E [vincent.backhaus@jcu.edu.au](mailto:vincent.backhaus@jcu.edu.au)

Nguma Bada campus, JCU Cairns, Building D3  
14-88 McGregor Rd. Smithfield, Cairns. Qld. Australia



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COTS Control Innovation Program | A research and development partnership to better predict, detect and respond to crown-of-thorns starfish outbreaks.



Great Barrier  
Reef Foundation

