FRDC

FISHERIES RESEARCH &
DEVELOPMENT CORPORATION

Development of the East Arnhem Fisheries Network Training Framework

Final report

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November 2016

FRDC Project No 2012/403

Development of the East Arnhem Fisheries Network Training Framework

2012/403

2015

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In submitting this report, the researcher has agreed to FRDC publishing this material in its edited form.

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Figures

Acknowledgments

The project team would like to acknowledge the following organisations for their contributions and partnership through this project.

Crocodile Island Rangers	CDU Office of Learning and Teaching
Yagbani Aboriginal Corporation	Research Institute for Environment and Livelihoods
Darwin Aquaculture Centre	Northern Land Council
Fisheries Division of the Department of Primary Industry and Fisheries	Northern Aboriginal and Islander Land and Sea Managers Alliance
CDU School of Primary Industries, Aquaculture	Northern Territory Seafood Council
Australian Centre for International Agricultural Research (ACIAR)	Department of Education (NT)
North Australia Marine Research Alliance (NAMRA)	Department of the Chief Minster. Northern Australian Development office
Territory Natural Resource Management (TNRM)	
Tasmanian Seafoods	
East Arnhem Indigenous Fisheries Network	

Acronyms Used

CDU	Charles Darwin University
DAC	Darwin Aquaculture Centre
DPIF	Department of Primary Industries and Fisheries
FRDC	Fisheries Research Development Corporation
NAMRA	Northern Australian Marine Research Alliance
ACIAR	Australian Centre for International Agricultural Research
TNRM	Territory Natural Resource Management
RPL	Recognition of Prior Learning
IT	Information Technology
OTJ	On The Job
CDP	Community Development Program
RD&E	Research, Development and Evaluation
NAILSMA	Northern Australia Indigenous Land and Sea Management Alliance
VTP	Vocational Training Package
TAS	Training and Assessment Strategy
CIR	Crocodile Island Rangers
R&D	Research and Development
LLN	Language, Literacy and Numeracy
RIEL	Research Institute for Environment and Livelihoods
NT	Northern Territory

Executive Summary

Development of the East Arnhem Fisheries Network Training Framework

A team from Charles Darwin University worked with Aboriginal people involved in the fishing industry and the NT Department of Primary Industries and Fisheries (DPIF) to develop the East Arnhem Indigenous Fisheries Network Training Framework. This framework provides a set of exemplary policy, training and practice initiatives which demonstrate flexible and The framework utilises a suite of e-learning tools, skills and processes to create high-impact, integrated, flexible and engaging teaching, learning and assessment experiences. The National Fishing and Aquaculture RD&E Strategy notes the ongoing challenge in engagement with Indigenous peoples and identifies gaps in capability in regional extension. Indigenous owned and run seafood enterprises require a foundation of meaningful and locally relevant skill development. Over the past 3 years teams have worked with Indigenous peoples in the development of the training and workforce development framework and material specific to Indigenous seafood industries in East Arnhem Land. The outcomes are

1. The development of a training framework for sustainable seafood based enterprises for Indigenous people

2. Accreditation of a Vocational Training Programme for Indigenous Seafood based Enterprises at Charles Darwin University using Nationally Endorsed Units of Competence

3. Exemplars of contextualised training and assessment plans and materials in English, Maung and Yolngu Matha, and additional material available on a shared website which includes extension project work as other Aboriginal groups involved in aquaculture have joined the project.

The result of this project has been a tool for all stakeholders and underpins the training and a Vocational Training Package at Charles Darwin University recognising students' competence and support engagement with training bodies. The tool consists of several sections aligned with the needs of stakeholders. These are reflected on the Indigenous Fisheries Training Framework WordPress website: https://indigenousfisheriestrainingframework.wordpress.com and includes;

- Background information on the East Arnhem Indigenous Fisheries Network to provide other stakeholders with context of the support for the training framework, and the context in which the training is designed.

- A glossary of VET– specific terms to help navigate VET course rules and documentation with a link to a web-based document that is more comprehensive.

- Example Resources containing a list of exemplar resources which use similar approaches to training and learning that will be used in this framework's materials and outlines principles underpinning the training framework. Resources developed through this project have been maintained within the relevant organisation as they were not ready to release them publically while they are developing their expertise.

- Training Package Rules and Implementation guides for imported units.

- Processes for Recognition of Prior Learning (RPL) to outline how trainees can have their experience recognised as skill sets already achieved towards their qualifications.

- Continuous Improvement Cycle for evaluation and improvement of training resources including the accreditation process and links to institutional support documents.

- Employability Skill Summary outlining skills required in the industry.

The website also has information on:

- Career pathway Links to Seafood Council Site

- Business Models for Growth

- Helpful resources from Others: Boat Notes, PreVET

- Additional Elective Units / Skill Sets (IT, Finance, Governance,)

- Mapping Templates

- Learning Options and Decision Tree for Personal Learning

- Relevant Literature

- Core Unit Information

The East Arnhem Indigenous Fisheries Network Training Framework project has assisted in developing a one stop shop for Indigenous fisheries training that aligns with learners and industry needs, provides [exemplar resources](#) made by Indigenous people, identifying other useful resources and establishing a model for negotiating relevant training. The project has supported Aboriginal people to develop their own resources and direct training for their needs; ensuring teaching and learning delivery is more inclusive and far-reaching given online access to education resources, social media and mobile/audio-visual technology. In addition, the resources showcase the skills of the role models as having a direct audience (co-workers) and could enhance the motivational factor of the learning regarding audience. The project has given trainees authentic tasks and adds to a student's motivation to persevere. Given the use of skills in workplaces as training material, this framework and associated resources can contribute motivational On the Job (OTJ) / RPL materials for remote Indigenous learners. The project has worked to meet learners where they are, and acknowledging the skills they possess can lead to more collaborative recognition of prior learning negotiations with training providers, such as the provision of literacy and numeracy skills, work integrated learning practices, e-resources and training.

The impact has been seen through extension of this project to multi-sector collaboration in aquaculture research, monitoring and training initiatives at Warruwi, South Goulburn Island. A number of multi-media learning materials were produced by local Community Development Program (CDP) employees participating in aquaculture training. This project extension is mentioned later in this report. The development of these resources, in line with the principles mentioned above, act as exemplary materials that have manifested from the framework development over the course of the project. Participant-led learning and situated practice, recorded and used as training materials both formally and as study records for trainees have strong impact on the ownership and motivation of the participants and showcase the progress they've made thus far in developing Aquaculture on their Country.

Introduction

The National Fishing and Aquaculture RD&E Strategy makes note of the ongoing challenge in engagement with stakeholders with specific reference to Indigenous peoples and identifies gaps in capability in regional extension. In areas managed and owned by Aboriginal people, the potential for Indigenous owned and run seafood enterprises is yet to be fully realised. The NT Department of Primary Industry and Fisheries (DPIF) has identified the need for a more coordinated and better resourced support service for Indigenous seafood-related businesses is seen as a positive step towards increased participation by Yolngu in the seafood industry. This is a pilot initiative that may be extended.

Previous work has highlighted the pivotal roles of engagement, training development and workforce skill development. The need to develop a program of coordinated education and training in seafood and small business skills has been identified as one of the objectives in this process. The research team has extensive experience in developing Indigenous training frameworks and materials that support the negotiation and implementation of training that is Indigenous led, taught or reinforced in Aboriginal languages, contextualised locally and incorporates multimedia to ensure knowledge is recorded, translated and kept in the community. The current delivery of seafood related training and materials to support enterprise development are not coordinated, the delivery methods are patchy and the areas of study relevant to the enterprise development are not contextualised and often not available in an appropriate mode.

The project scope of training frameworks, standards and knowledge structures also contribute to the research, development and evaluation priorities from the perspective of Indigenous peoples as listed in FRDC Theme 12: Workforce Development. This project has been developed in response to discussions with two sets of stakeholders; Aboriginal communities and the Northern Territory DPIF. The work undertaken since 2005 with Aboriginal people and organisations in the Northern Territory by the researchers has focussed on understanding the key elements of Aboriginal workforce and microenterprise development in remote locations. Some examples are the Thamarrurr Aboriginal Corporation Enterprise Facilitator and team, Laynhapuy, and Marthakal senior sea managers/Traditional owners. This work has identified the importance of developing models of workforce development that align with the realities of enterprise development and management in remote locations. Many of the Aboriginal people involved have asked for better material to make decisions about the development of their enterprise and training models, and to negotiate the training they want. The keys elements of this training that Aboriginal people have identified is that it engages and respects senior people and their knowledge, is offered in first language and on country, can be recorded and used for refreshing knowledge regularly, helps Aboriginal people to become self-sufficient, and includes high level content and technical information.

This project aligns with the NT Government's Indigenous Fisheries Development Strategy 2012–2014 and work being undertaken to develop a network to support and enhance the establishment of Indigenous seafood related businesses in the East Arnhem region. The overall objectives of the East Arnhem Indigenous Fisheries Network Program https://dpif.nt.gov.au/__data/assets/pdf_file/0006/258792/indigenous-fisheries-development-strategy.pdf are to:

1. Facilitate the establishment of a network, endorsed by East Arnhem Traditional Owners, dedicated to assisting Yolngu people to become involved in the seafood (commercial fishing and aquaculture) industry in the East Arnhem region.

2. Produce a 3 year strategic plan and a work plan for the development of fisheries and aquaculture in the East Arnhem region.

3. Develop a program of coordinated education and training in seafood and small business skills that is available to the East Arnhem community.

4. Assist the establishment of at least three Yolngu owned seafood businesses within three years.

5. Increase the supply of locally produced seafood from Yolngu fishing businesses in the East Arnhem region.

This project has been negotiated with the Manager of Fisheries Indigenous Development Unit and aligns to the third objective. Through partnership with the DPIF, links would be made to their partners: Northern Land

Council, Department of Education, Employment and Workplace Relations, Traditional Owners, and relevant Aboriginal organisations in the region. Other linkages included the NT Seafood Council, Department of Education and Training, Department of Local Government, Housing & Regional Development, Indigenous Business Australia and the East Arnhem Shire.

This project directly addresses FRDC Program 3: Communities; Theme 10 *Resilient and Supportive Communities* and the RD&E priorities focused on resilience and community perceptions related to Aboriginal people and organisations working in Indigenous seafood related business in the East Arnhem region and their partnerships with the Northern Territory DPIF to develop and sustain the workforces in those businesses and negotiation with Registered Training Organisations. The project scope of a training framework, standards and exemplar materials would also contribute to the RD&E priorities from the perspective of Indigenous peoples as listed in FRDC Theme 12: Workforce Development. (FRDC RD&E Plan 2010-2015)

Objectives

This project aimed to engage with Indigenous peoples in the development of a training and workforce development framework and material specific to Indigenous seafood industries in East Arnhem Land. The project includes;

1. The development of training frameworks for sustainable seafood based enterprises for Indigenous people
2. Accreditation of a Vocational Training Programme for Indigenous Seafood based Enterprises at Charles Darwin University using Nationally Endorsed Units of Competence
3. Exemplars of contextualised training and assessment plans and materials in English, and Yolngu Matha, in paper and electronic formats.

Method

This project is enquiry driven; a cyclical research process that frequently returns to the participants to ensure meanings were understood and interpreted correctly, and that the project is progressing appropriately. The stages are: question, act (or collect data), analyse the outcomes, reflect and proceed to the next action. This will be integrated into appropriate Indigenous epistemologies that recognise and respect Indigenous authority and governance structures

The stages are as follows;

Stage 1. Work with DPIF East Arnhem Fisheries consultation process, Aboriginal people and organisations to identify the key elements of and the skills required to develop and sustain viable seafood based Indigenous enterprises in remote areas.

Stage 2. Map the skills to existing competencies from the Seafood Industry, Conservation and Land Management and Business Training Packages.

Stage 3. Register the competencies as a skill set.

Stage 4. Develop a series of learning objects that exemplify the way training and assessment can be planned, undertaken using print and electronic means.

Stage 5. Develop a decision making tree to support workforce development for seafood based enterprises.

Stage 6. Trial the course and the learning objects through the consultation process

Stage 7. Collate the responses from rangers and facilitators.

Stage 8. Refine the training programme and learning objects and gain permission to share the objects.

Stage 9. Release the learning objects through the Northern Institute website.

Results

The results are discussed below with reference to each stage of development.

Needs Analysis and Training Framework Development

The development of the East Arnhem Fisheries Training Framework was conducted in partnership with teams from different systems, experience, knowledge and power bases. The project team worked with the knowledge and experience of Indigenous community members, industry expertise and government support to utilise the National Training System to develop an effective and sustainable programme.

The project has been developed through extended engagement with NT Fisheries and the Indigenous Fisheries Mentor (who provides on-country training in fishing practices and supports economic participation in the seafood industry), trainers and relevant staff and groups who will support the implementation of the outcomes.

1. Northern Land Council
2. Northern Australian Indigenous Land and Sea Management Alliance (NAILSMA)
3. Northern Territory Seafood Council
4. Department of Business (NT)
5. Department of Education (NT)
6. Northern Australian Development Office
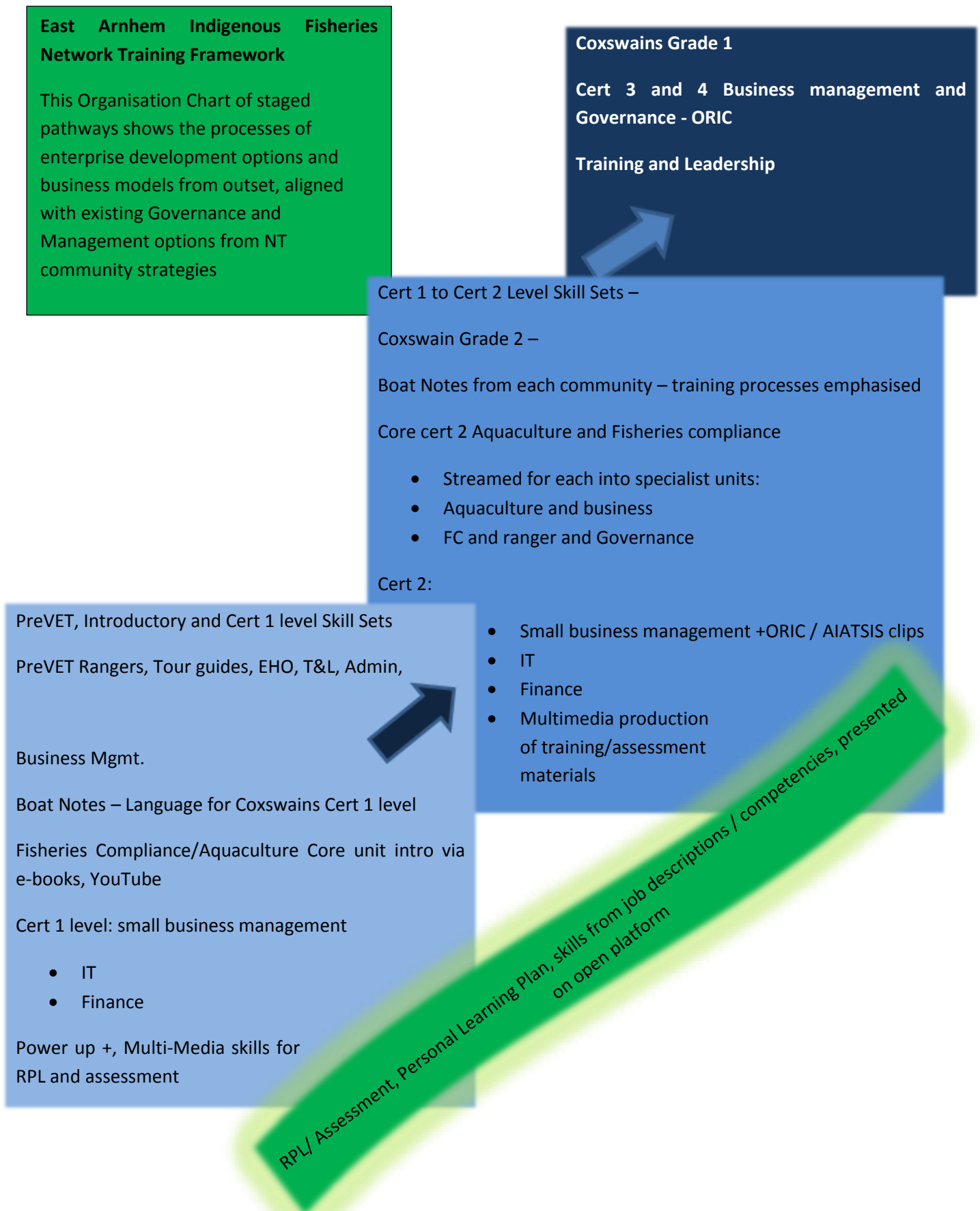7. Department of the Chief Minster.

As noted previously, the project Steering Committee was formed by the East Arnhem Fisheries Network Steering Committee and the Northern Territory government's Indigenous representative with the committee, (Senior Manager Indigenous Policy at Department of Primary Industry and Resources (NT) - Department of Primary Industry and Resources (NT) has kept the Steering group updated. While attempts were made to include a representative from the NT Seafood Council this was not possible. The Senior Manager Indigenous Policy at Department of Primary Industry and Resources (NT) - Department of Primary Industry and Resources (NT) (Bo Carne represented progress on the project to the Committee and the project leader met with him to ensure he was well briefed. He also provided feedback on the comments about priorities and needs.

Discussions with representatives from NAILSMA, Department of Education, CDU and DPIF supported the implementation plan as it developed and this plan for development and linkages the identified potential allies for future developments. Such allies are

- those working on the Warruwi project through the FRDC
- Thor Saunders, Principal Research Scientist DPIF and his work developing Indigenous Fisheries Training
- Simon Xuereb who has moved from Customs to NT Fisheries and has been working on the development of an Indigenous Marine Ranger Cert II in Sampling and Measurement MSL20109 that could be aligned to the framework
- NTG-CDU Land and Fisheries working group which contributed to the development of the GrowNORTH initiative which will address issues of Indigenous workforce development through agricultural and aquaculture development

The project team working with Aboriginal fisheries experts identified three broad stages (Figure 1) identified in skill development associated with developing aquaculture and fisheries businesses in remote Indigenous Communities in the framework. The project developed in alignment with this model of growth in communities.

Figure 1: Aboriginal Aquaculture business growth model

East Arnhem Indigenous Fisheries Network Training Framework

This Organisation Chart of staged pathways shows the processes of enterprise development options and business models from outset, aligned with existing Governance and Management options from NT community strategies

Coxswains Grade 1

Cert 3 and 4 Business management and Governance - ORIC

Training and Leadership

Cert 1 to Cert 2 Level Skill Sets –

Coxswain Grade 2 –

Boat Notes from each community – training processes emphasised

Core cert 2 Aquaculture and Fisheries compliance

- Streamed for each into specialist units:
- Aquaculture and business
- FC and ranger and Governance

Cert 2:

- Small business management +ORIC / AIATSIS clips
- IT
- Finance
- Multimedia production of training/assessment materials

PreVET, Introductory and Cert 1 level Skill Sets

PreVET Rangers, Tour guides, EHO, T&L, Admin,

Business Mgmt.

Boat Notes – Language for Coxswains Cert 1 level

Fisheries Compliance/Aquaculture Core unit intro via e-books, YouTube

Cert 1 level: small business management

- IT
- Finance

Power up +, Multi-Media skills for RPL and assessment

RPL/ Assessment, Personal Learning Plan, skills from job descriptions / competencies, presented on open platform

NT Fisheries Indigenous development unit staff have noted the value of using digital resources similar to those in the e-backpack for Conservation Land Management courses. In addition, a member of the research team presented to the Agrifood Skills Council analysis of Northern Australian workforce development needs and the Northern Territory Government Indigenous Resources Symposia which developed from Bo Carne and Ruth Wallace's plans to share best practice across government teams. These events grew further opportunities for linkages and support for the project.

The results of this project approved for release by participants have been a tool for a range of stakeholders in the seafood industry and underpins the training and a Vocational training Programme (a set of nationally endorsed standards and qualifications for recognising and assessing people's skills. It does not include the resources made with Aboriginal communities who were not ready to share their materials while they are developing their expertise. Additional resources developed through projects with additional funding are shared to demonstrate the principle and approach. The Vocational Training Program (VTP 228 Remote Aquaculture and Fisheries: now part of the normal CDU quality and accreditation process) differs from complete training packages which offer full qualifications in that it is tailor made for a specific need such as Remote Indigenous Fisheries skill sets that are region-relevant, to recognise students' competence and support engagement with training bodies. The tool consists of several sections aligned with the needs of stakeholders. These are reflected on the Indigenous Fisheries Training Framework WordPress website https://indigenousfisheriestrainingframework.wordpress.com/ and includes;

- Background information on the East Arnhem Indigenous Fisheries Network to provide other stakeholders with context of the support for the training framework, and the context in which the training is designed.

- A glossary of VET– specific terms to help navigate VET course rules and documentation is listed with a link to a web-based document that is more comprehensive.

- Example Resources contains a list of exemplar resources which use similar approaches to training and learning that will be used in this framework's materials and outlines principles underpinning the training framework.

- Training Package Rules and Implementation guides for imported units.

- Processes for Recognition of Prior Learning (RPL) to outline how trainees can have their experience recognised as skill sets already achieved towards their qualifications.

- Continuous Improvement Cycle for evaluation and improvement of training resources produced includes the accreditation process and links to institutional support documents.

- Employability Skill Summary outlines skills required in the industry.

The website also has information on:

- Career pathway Links to Seafood Council Site

- Business Models for Growth

- Helpful resources from Others: Boat Notes

- Additional Elective Units / Skill Sets (IT, Finance, Governance)

- Mapping Templates

- Learning Options and Decision Tree for Personal Learning

- Relevant Literature

- Core Unit Information

Trial of Framework and Learning Objects

The subsequent stage was to trial the framework with NT Fisheries and CDU trainers working with the East Arnhem Fisheries Network to identify any changes that needed to be made and develop the resources. The process included:

1. Meeting with NT Fisheries staff and trainers to assess the framework structure, elements and presentation and adapt as required. Seek the commentary of the Indigenous Reference group

2. Establish suitable sites in consultation with the Indigenous Fisheries Mentor to test the framework and develop the materials.

3. Spend a week in each site with NT Government fisheries experts, land management staff from Crocodile Island Rangers, and community members in East Arnhem, teaching them how to make the resources and develop the resources on site.

4. Negotiate the level of public availability that the Crocodile Island Rangers members want for their resources.

5. Develop a portal to upload the resources and the training videos so Crocodile Island Rangers members and future participants in the use of the framework can update materials over time

6. Negotiate with each site a process to verify and approve the materials for release.

Footage and exemplar Resource Production

Ruth Wallace and Johanna Funk visited the Crocodile Islands Rangers (CIR) at Milingimbi in North East Arnhem land during the week of July 13th, 2015, at the recommendation of NT Fisheries personnel.

The purpose of this trip was to collect footage of training in skill sets to then convert into exemplar training resources for the reporting to the FRDC. It was also to present a method of making training videos to the rangers for their own training purposes.

On the first morning, Ruth presented an example of the kind of film produced in recent work, emphasising to the group that this would be their footage to be used for their purposes and would not be used without their permission. Consensus was sought from the group, including senior rangers, about willingness to proceed with the filming and production of clips. The team then joined the rangers and Fisheries trainer on the boat to film footage of collecting fish for research processing the following day.

The next morning, the fish collected were processed for otolith extraction and as this was a highly technical process, it was filmed for training clip production as well. That morning's briefing with the CIR group revealed the Milingimbi Community would benefit from a Boat Safety Video produced by rangers which was developed with rangers. Part of the rangers fisheries work is otolith extraction and they prioritised the

development of an otolith extraction training video to support their fishing business development. / During the otolith extraction filming, the data collected the previous day (and that morning, subsequently) was then renamed and transferred to the CIR drop box. Footage for the safety video was then selected by rangers that volunteered to make videos and lined up in the software they had used previously. The process of collecting footage about skills they had learned and then authoring a peer training video was emphasised over producing clips especially for the training programme, as that content was more relevant to community and staff learning on that preliminary visit. The process can be reproduced with different content as part of the training programme which was developed after this visit.

Extension work at Warruwi produced 10 videos and some accompanying instructional power points relevant to the training package as exemplars.

After the briefing that morning, it was decided the team would depart a day early as the CIR team had much to complete that week and had endured a number of high-level official visitors and delivered associated outputs the previous week. Given that the CIR groups had been under external pressure from visitors and contract commitments, the team felt it prudent to not pressure the newly formed relationship in this case.

A member of the Miyalk (women's) Ranger group had previously used the ranger station's Mac and iMovie software to make videos with her group. She then taught her colleagues from the men's ranger group who volunteered how to use the software. The product was the first safety video. The footage from the otolith extraction process was then selected for the next day's production.

On the same day (final day), the voiceovers were then added to both the safety video and then the otolith extraction video. A final piece of footage of otolith extraction was exchanged for a better one, and this took a while to sync into the CIR drop box given slow and intermittent internet access, leading to the final version not being able to be completed before the team left for the airport.

It was agreed the footage be viewed by the group and permission would be sought once the CIR group and senior community members had given approval.

Development of the Skill Set

A skill set is a set of units that come from a full certificate but meet the immediate and short term training needs of a cohort of learners. As the training framework recommends using units across a number of packages, a Vocational Training Programme (VTP) has been established at CDU to enable Indigenous people to enrol in 2015, Semester 2. The format can be used by any RTO to duplicate or offer sections of the program. This offers the flexibility of offering on-scope units of competency as a stepping stone to as full qualification. These units are the most relevant to the remote fisheries and aquaculture skills being developed and required in remote Arnhem Land communities interested in developing their sea country enterprises.

The process outlined below is adapted from the CDU Office of Learning and Teaching website http://www.cdu.edu.au/olt/vetqms/operationalcycle.html.

The following document outlines the final step undertaken: the mapping of the levels of the potential work and roles to the National Quality Framework levels to support the skill sets, transition points and the overall structure of the training framework.

Potential work	VTP units	NQF level	Relevant Clip
Collect sea cucumbers and oysters from ranch / farm	Harvest cultured or held stock	Cert level 2	Gail's oyster story Maurice's Trepang Story Big Trepang for kids
Fixing long lines, cleaning baskets, Repairing clips on baskets	Maintain stock culture, holding and other farm	Cert level 2	How to Fix a long line

	structures		
collecting stock for processing processing stock	Handle stock	Cert level 2	Gail's Trepang Story Maurice Trepang Story
Collecting stock for breeding program Packing stock for shipping to breeding program	Collect brood stock and seed stock		Gail's Oyster story
Measuring growth, water quality, salinity, plankton and bacteriology sampling	Monitor stock and environmental conditions	Cert level 2	Measuring growth Water Sampling Water Bacteriology Methods Measuring Salinity Plankton Methods

Teaching PowerPoint slide shows were also prepared for the following units:

SFIAQUA217B Maintain stock culture and other aquaculture operations structures

SFIAQUA216B Harvest Aquaculture Stock

SFIAQUA215B Carry out on-farm post-harvest operations

A portfolio of evidence samples that guide students and staff in developing their own evidence for assessment and Recognised Prior Learning have been developed as well from the field using existing and easily accessible information and communication technologies, tasks required in the workplace as well and the requirements of the regulatory bodies. There is clearly a need to move away from traditional text based learning using work books to using the literacies that are required in the job roles and the emerging digital age, i.e. visual and digital literacies.

After a meeting in January 2016 with CDU vocational Aquaculture course staff regarding the training framework, it was agreed a set of resources would be most useful for their training delivery purposes in the Vocational Training Program. As an extension to this work, NI staff, Darwin Aquaculture Centre staff of NT Fisheries and CDU Aquaculture recorded materials about the ongoing research and monitoring at Warruwi and employing local CDU Aquaculture trainees to learn and perform these skills as part of the NAMRA-funded project "Developing Indigenous capacity to conduct research and monitoring to support marine based enterprises".

Supplementary and extension work was completed at Warruwi as original groups were hesitant to share their materials. The collaboration with stakeholders required materials be produced and existing networks were reticent to be forthcoming about exhibiting their knowledge. As demanding that they participate would damage relationships and be inherently unethical in practice, as well as highlight groups that were not prepared regardless of the reasons, other partners requiring materials to be made were forthcoming about a site. Although in West, not East Arnhem, members of the relevant community were extremely enthusiastic about resource production.

Network with DAC, NT Fisheries, NAMRA, ACIAR and TNRM regarding this reinforced research collaboration and consortia and offered multiple layers of expertise to the outcomes.

A number of Aquaculture projects have been in operation at Warruwi since 2009:

Oyster-Focussed Projects:
- NAMRA - Further Developing Indigenous Capacity to Conduct Research Monitoring to Support (2014-2016)
- TNRM Tropical rock oyster R&D - heavy metals (2015-2016)
- Tropical Rock Oysters R&D - knowledge exchange (2015)
- FRDC 2012/223 - Assessment of heavy metals in tropical rock oysters (black lip and milky) and implications for placement into the Australian seafood market and for Indigenous enterprise development in the NT (Department of Primary Industry and Fisheries)
- Tropical Rock Oyster R&D (DPIF- Internal) (2012-current)

Trepang-Focussed Projects:
- ACIAR Sea Cucumber (Phase 1: 2009-2012, Phase 2: 2013-2017)
- Seafood CRC 2009/744 Propagation and sea-based grow out of Sea Cucumber stocks in the Northern Territory
- FRDC 2013/218 Indigenous Fishing Strategy (Ridge Partners)

Aquaculture development:
- FRDC 2010/205 Identifying the key social and economic factors for successful engagement in aquaculture ventures by indigenous communities (CDU)

These projects provided a firm foundation on which local participants could stand as they created the learning materials. It was agreed that during the Oyster and Trepang work, the CDU and DAC skills training that are aligned with the five suggested units in 'Remote Aquaculture and Fisheries' Skills Set VTP in this report would be recorded and converted into training materials.

Yagbani Aboriginal Corporation trainees in CDU Vocational Education and Training's Remote Delivery of Aquaculture Training were instrumental in creating the ten clips and narrating them. These clips act as training materials for CDU staff, in conjunction with more power points and clip adaptations as well as knowledge and learning records for specific skill sets for Yagbani trainees and staff to use as they continue with commercial trials on their own.

This process is highly dependent on the commitments of the communities and timing of certain activities on which the videos are based. The project worked best when the team worked with a group who were undertaking fishing related activities on their country which could lead to viable additional work in the East Arnhem Fisheries Network. This negotiation is being discussed but due to territorial, clan and political arrangements may not be resolved prior to finalisation of this report.

The Indigenous Fisheries Training Framework was updated with the material developed on site. Participants were happy to share within their own teams but did not want to be seen as the exemplar for other sites as they are learning how to do the work well. Feedback about the audience for the framework was been taken

into account and the wording and information contained on the website has been altered to accommodate this.

These Arrayi (Black Lip Oysters) are almost ready to harvest.

We put them all back in the cages and put them back on the long line to grow a little bit more.

Recognition of Prior Learning (RPL)

Enabling the recognition of existing skill sets is intended to increase speedy access to skill sets and qualifications. Supporting trainees through this process can be achived by streamlining the processes involved. In recognition of the wide range of skills already possessed by the trainee cohort, a process for RPL has been devised to enhance access to qualifications. The links are provided in the online resource.

The AQF defines RPL as:

> *'Recognition of prior learning is an assessment process that involves assessment of an individual's relevant prior learning (including formal, informal and non-formal learning) to determine the credit outcomes of an individual application for credit. This is underpinned by the AQF definition of credit as follows: Credit is the value assigned for the recognition of equivalence in content and learning outcomes between different types of learning and/or qualifications. Credit reduces the amount of learning required to achieve a qualification and may be through credit transfer, articulation, recognition of prior learning or advanced standing.'*

From Recognition of Prior Learning: AQF: An Explanation

Federal Education Department toolkit: http://education.gov.au/recognition-prior-learning-toolkit

CDU RPL Applicant's guide: http://www.cdu.edu.au/sites/default/files/cdu-vet/docs/guild-rpl.pdf

Establishment of the VTP (Vocational Training Program)

A Vocational Training Program (VTP) is a CDU developed program, consisting of one or more nationally recognised unit(s) of competency. NI and CDU Aquaculture staff met to discuss the accreditation options for a flexible learning program that remote trainees could pursue, which collaborated with their experience and was also locally relevant.

It was decided the units being offered by CDU remote training team would form the basis for a VTP, as their regular delivery at homeland and township communities across East and West Arnhem Land had established that these were the skill sets that were in most demand and addressed the business models of participant organisations.

These units cover the basics of entry- level' certificate 2 and provide a foundation for the range of aquaculture development skills needed to develop further and participate in fishing business activities. They are:

- SFIAQUA201C Collect brood stock and seed stock
- SFIAQUA206C Handle stock
- SFIAQUA213C Monitor stock and environmental conditions
- SFIAQUA216B Harvest cultured or held stock
- SFIAQUA217B Maintain stock culture, holding and other farm structures

The VTP application is submitted to the CDU office of learning and teaching for processing as part of normal CDU quality and accreditation processes. All the units in the proposed VTP are on scope and nationally accredited, which makes the VTP's processing less delayed than with other new course offerings. This VTP enables a 'step up' into more extensive certificate pathways. The VET development team are facilitating this ongoing process in line with the regular accreditation and reaccreditation continual improvement process at CDU.

Continuous Improvement Cycle

The following is the developmental evaluation model that embeds stakeholder feedback and formative evaluation in the project's development as it proceeded. Previously used in the development of PreVET resources, this proved to be a highly successful and rigorous method for engaging and embedding stakeholder perspectives and needs in the program.

Adapted from 'Using evaluation and participatory action research methods to develop an eLearning resource' (Funk, Worthington and Winter, 2015):

Figure 2: Continuous improvement cycle in VET course accreditation
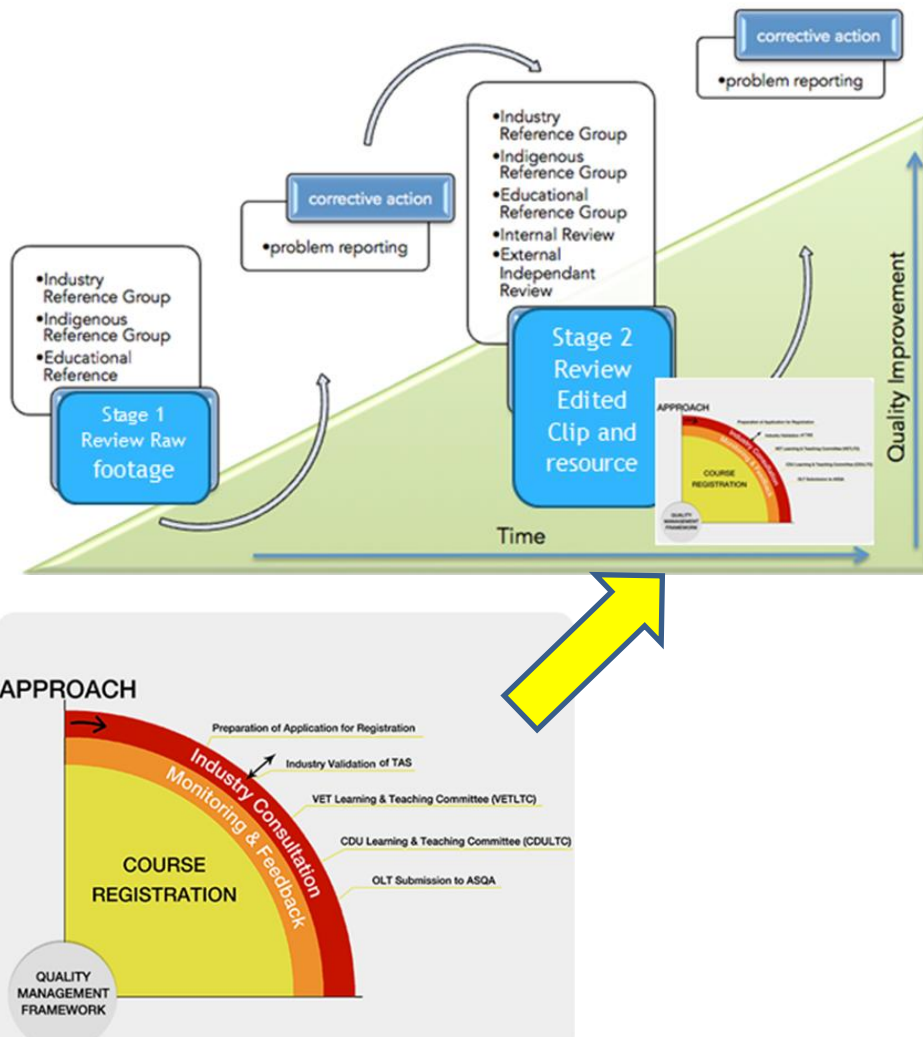
Resources mapped to units

This template was also used to map Training Videos back to units and ensure the skill sets are covered in the footage. The videos act as records of training and processes for participants to return to as learning reminders and study aids and could in part be used as RPL and assessment.

These videos were shown multiple times to participants to see what preferences, corrections and adaptations were required. Senior traditional owners enjoyed them and approved of them as well. Trainees were all given a copy for their own use.

Figure 3: Example Resources Possible for Extension in East Arnhem Communities:

Email statements from DAC / DPIF about working with NI:

Below are some feedback from research partners regarding the development of materials for the framework, illustrating how this process built skills of trainers to delivery in a more end user focused way, as well as how it brought together various parties to discuss needs and collaborative approaches that were community focussed, through following guidance and currency of research needs and collaborations which developed as part of responding to stakeholder needs over following initial intentions of the project (i.e. not doggedly chasing Garngirr and CIR before they were prepared or the relationship was ready and pursuing g more ethical development of training for fisheries businesses which involved more enthusiastic partners.

- *NI researchers engaged with the community in an open and friendly matter, they stood back and observed how things ran, without being intrusive or overpowering. I believe this approach allowed community members to feel comfortable and trusting when they eventually worked with the researcher. One important distinction in the way NI works with communities is by allowing the people to direct and lead their own work. Researchers give options but not direction or rules. This allows the outcome of the project (especially relating to the short videos we produced) to be authentic and gives the producer (community members) ownership.*

- *The NI's approach to research allowed and aided us in our own work. It did this by allowing the community members a place to 'show-off' all the hard work they were doing and to take pride in their achievements. It also provided them an opportunity to document their own knowledge on the aquaculture venture and for us to assess the success of our trainings.*

- *Also the videos are awesome!*

Email statement from CDU training staff on working with NI:

- *Great meeting yesterday – very glad to see Northern Institute getting on board with us.*
- *Looking forward to go forward with Aquaculture training at Warruwi.*

- *As what we were discussing yesterday about what we need from the students when delivering an aquaculture unit – the performance criteria are very broad and we can teach/ train students in a holistic delivery.*

- *That's fantastic news. Dan and myself would like to be a part of the harvest. Happy to work with Northern Institute on capturing this harvest on camera in a manner that can be used for future training on country. Happy to discuss this opportunity before we head out to their.'*

- *Your video footage and photos are brilliant – looking forward to utilise these resources with the training at Warruwi.*

- *Thanks Sam for organising the trip, I was very impressed with the Trepang harvesting/processing and looking forward to support the project with training.*

- *Thanks again for taking the pics and videos, I feel this is a missing link with my delivery and I'm very happy to have you on board. Very excited to work more with yourself and Northern Institute.*

- *Great news that you are able to help build resources for Cert II Aquaculture. I've spoken to Dan; he is also very excited to hear the news.*

- *Is it possible we can catch up on Thursday or Friday, so we can look at what we have and how we can pool all our information/content into a resource that can be used on country? We are both looking forward to work with you. Thank you Ruth for allowing this to happen.*

- *Thanks for coming down yesterday – I believe this could be a huge winner towards remote training.*

- *The video was great and a great learning tool for the next student that needs to learn this procedure with limited resources. These videos can very much be used for learning resources. Well done.*

- *Great having you there today – so glad Sam thought of inviting you.*

- *We can ALL work together towards supporting communities with whatever industry is needed on their country. We can make a big difference if we all work together. Great times ahead I believe.*

Email statement from Aboriginal Corporation facilitator:

- *Great news on all fronts. I have passed the story on to a number of people here and all are very excited to be moving to taking this long awaited step.*

Discussion

In this project, researchers from CDU's Northern Institute worked with seafood education industry representatives, vocational educators, ranger facilitators and Indigenous rangers in East Arnhem to develop an e-learning approach in the 'Certificate II' course comprised of relevant Aquaculture and Fisheries Compliance skills. The Seafood Industry representative body was briefed and supportive of the project but did not have the capacity to engage on the ground.

There are many challenges to the effective delivery of training and professional development for remotely located Indigenous learners;

- High levels of staff-turn over mean trainers and facilitators often have limited experience of working in remote Indigenous community contexts, and of workplace training per se.

- The experience, knowledge and skills of students vary widely. Although they usually speak several Aboriginal languages as well as English, students generally have low levels of English literacy and numeracy.

- The oft-used traditional training models of experiential English-based learning supported by paper workbooks are inflexible and ill-suited to remote Indigenous contexts. They don't support students to access and demonstrate deeper understanding, and provide minimal opportunity for the meaningful integration of Indigenous knowledge, cultural land and sea management practices and remote work-place learning.

The East Arnhem Indigenous Fisheries Network Training Framework approach utilises a suite of e-learning tools, skills and processes to create high-impact, integrated, flexible and engaging teaching, learning and assessment experiences.

- Making the trainee cohorts the authors of teaching and learning makes delivery more inclusive and far-reaching given online access to education resources, social media and mobile/ audio-visual technology. This can further motivate learners to engage in training which use this technology. The fact these resources will showcase the skills of the role models as having a direct audience (co-workers) could enhance the motivational factor of the learning regarding audience.

- Giving trainees authentic tasks, adds to a student's motivation to persevere. Given the use of skills in workplaces as training material, this framework and associated resources can contribute motivational OTJ / RPL materials for remote Indigenous learners.

- Acknowledging the range of proficiency in Literacy and Numeracy skills (LLN) skills leads to a supportive approach, given the use of technology and mobile learning devices to record audio-visual demonstrations of skills. Using the technology in this way enables trainers and trainees to 'self-scaffold' the learning, meeting the trainee at the level they are capable of and comfortable with. This approach, it is hoped, will enhance efficient, collaborative relations between trainees and training providers.

- Meeting learners where they are, and acknowledging the skills they possess can lead to more collaborative recognition of prior learning negotiations with training providers, such as the provision of literacy and numeracy skills, work integrated learning practices, e-resources and training that fits with the needs, roles and future pathways of the people involved

The training framework assumes Indigenous partners, participants and contexts are core in defining the knowledge and skills sets, the evidence to be collected and pedagogy for training delivery. Extensive consultation with stakeholders in NT Fisheries, CDU, Customs and the FRDC Indigenous Reference group identified the key areas the training framework needed to address as;

- The elements of existing courses that meet participants' needs

- The lack of materials for working with specific species of seafood that are accessible to Indigenous people

- Adaptations to licences (e.g. coxswains) that reflect the type of work that will be undertaken

- Business development skills to manage a small enterprise within the relevant guidelines

- Governance training to manage a fisheries licence and establish appropriate processes

- Computer skills for reporting

- Embedded relevant literacy and numeracy training that facilitates progress through the levels

- Recognition of cultural knowledge and management of seafood and related resources

- Potential for aligned work in water quality testing, reporting fisheries incursions etc. to develop hybrid and more sustainable economic bases for businesses

- A model to start working while studying

- Exemplars of digital resources that act as references in the field

Through discussion and analysis of the ways the network has developed and what could be possible, we have a better shared understanding of what was being asked for and ways this could be achieved. Relationships of trust take time but are fruitful in achieving positive outcomes for all stakeholders, by working from across three different knowledge systems (Indigenous, government and education). This process has developed a better understanding of network members' priorities, the pressures on government, trainers and network members and an understanding of the work that is happening on the ground. Ultimately the training framework is a co-production with shared ownership and investment by a range of key people. This will support its development as the programme matures, training packages change and potential links arise. As a pilot, the framework will evolve as the network evolves, the continued input and ownership from stake holders is essential in this process.

The partnership team started by mapping the skill sets inherent in the work network members are doing to the potential units' position description, competency elements and performance criteria. In reviewing both the range statement and context of assessment of a number of units, the discussion about Training Package rules and components opened up the possibilities of the way in which the programme could be taught and assessed. For example;

- Identifying units that can be assessed in a language other than English,

- Using work based projects as assessments

- Having the materials tailored for training specific to the East Arnhem Fisheries Networks priorities, activities and predicted future needs.

The work based learning model was based on a strong mentoring element, network members are working with an experienced Indigenous fisheries trainer who would assist with a large degree of their on the job training. As people develop their skills and complete the relevant qualifications, they in turn can become mentors to newer members of the network. This preceptor model (borrowed from the health education sector) is a valuable as a good way of ensuring the incorporation of Indigenous and industry specific knowledge into the training framework; which could prove difficult for trainers who are not from or extensively involved in the relevant communities. The preceptor model assists to develop communities of practice within the workplace. This is a key aim in the approach used as it will extend the learning beyond formal training sessions. Ultimately this can lead to network members' leading training in the long term.

The principles of the training framework are;

- Locations of the aquaculture activities are remote and contextually unique; training would take place on-site and integrated into the network's support processes.

- The framework identifies and matches the roles and responsibilities of members of the network with units of competency from the relevant nationally endorsed Training Packages.

- The training pedagogy and content is based on the aquaculture industry work as it occurs in East Arnhem land and the participants' skills sets, context and their relationship to the endorsed competencies' description

- Training builds to support a sustainable economic, culturally inclusive, community-based programme.

- Network members could be working in isolation or in small groups and can support each other's practice and knowledge development through the network, this can support training procurement and engagement processes

- Resources need to be developed that respect and incorporate Indigenous literacies, knowledge of and understandings about family, relationships and community services. As such content must be developed with community approval and uses digital visually based data collection methods with Indigenous people working in the area.

- All resources are inclusive, include visual and digital resources for teaching and the programme does not rely on having the English written skills assessed at the National Reporting System Band 3 or above, to enter the programme.

- Students' progression is supported through a scaffolded approach to a framework from Certificate I to Certificate IV.

- The programme includes a set of generic skills to enable people to move into other training and community employment. The programme also needs to be customisable to other programmes

- The programme is easily matched and integrated with existing and future editions of relevant qualifications in aquaculture, cultural management, literacy and numeracy development, business and information technology.

- Enterprises will need to be flexible and may use hybrid models to utilise different opportunities over time. There is a need for training to be flexible and responsive to those changes in business practice and circumstance.

With mentor and stakeholder feedback, this framework will provide training that is fit for purpose and meets the needs of the training cohort. Feedback from trainees, industry, training providers and departmental reference groups will further embed relevance and currency in the framework. The use of technology in the resource design is collaborative with the learning and work contexts of the cohort;

> 'Technologies cannot be used uncritically; rather they are used within social contexts. It is important to understand the relationship between social, cultural and physical contexts in which learners and (mobile) technologies operate.'

Conclusion

The East Arnhem Fisheries Training Framework has successfully developed a clear picture of the needs of fisheries business developing in the Northern Territory. The platform developed provides an extensive set of materials that connects both existing multi-sector resources and resources developed with Aboriginal people involved in fisheries and aquaculture enterprise development. This complex process involving multiple knowledge sets resulted in a fused approach that is more relevant to local people and can better provide a realistic and accessible pathway to economic participation that suits local needs. This project has combined traditional and contemporary Indigenous knowledge, scientific research, government agendas for economic development, VET sector qualification policy, industry practice and negotiations and the social policy and practice work of NI to provide a vision and a practical start to remote aquaculture and fisheries enterprise development that is sustainable. These enterprises are at an early stage and the project has been extended as other Aboriginal businesses saw the value of the work and became engaged by connecting their work to this project. The vocational training programme developed at Charles Darwin University provides a course that reflects the needs of Aboriginal people working in developing fisheries business aligned to their stage in the business growth model outlined above.

There are opportunities to continue to work alongside Aboriginal business in the East Arnhem Fisheries network and beyond as they grow, to extend the resources and build the sections on business, information technology and governance as the need arises in those businesses. The Northern Institute is committed to continuing this work. This project would not have been possible without the support and active engagement of the partners previously acknowledged and the support of the FRDC.

Implications

This project's outcomes have had an impact on all participants:
1. Indigenous organisations and people have benefitted directly through being able to access and negotiate training that accurately met staffing needs. The materials are already being transferred and adapted by groups beyond those involved in the study.

2. Registered Training Organisations not only have exemplars and materials to deliver contextualised and translated materials using multimedia tools, but have worked through the learning and assessment delivery and design processes to adapt their programs to align with business needs of Aboriginal people while also meeting the requirements of the National Training Framework. built skills of trainers to delivery in a more end user focused way

3. The Northern Territory Government has a framework to assess and make decisions about supporting appropriate training in the longer term which can grow over time.

This project's outcomes, in partnership with Aboriginal people, industry and government actively contribute to: how it brought together various parties to discuss needs and collaborative approaches that were community focussed
1. Improving the impact and sustainability of training investments by synthesising and embedding multi-sector and multi-agency resources, e.g. in the exemplar training materials

2. Improving productivity of seafood enterprise workforces and use of downtime for ad hoc training by increasing ownership of skill development in workforce entrants, e.g. giving trainees options to record their own learning informally

3. Provide an effective mechanism to introduce new information related to practice in Indigenous seafood industries by using accessible technology and learning methods, e.g. via the VTP

4. Improving the development of workforces throughout the year, not only when the trainer and staff are available by enabling ownership and flexibility of learning access, e.g. in-language materials produced by learners for each other

5. Improving accuracy and depth of assessment by integrating assessment into daily work; which also

6. improves the use of training time to develop areas of potential weakness, e.g. English literacy and numeracy

7. Improving ownership and leadership of aquaculture training in aboriginal communities that crosses generations. This was evident during the review of training materials; participants involved expressed their satisfaction with the clips, and wanted to share them with their families and children to show the importance of working on Country and their knowledge.

Recommendations

There is a need to develop this project through provision of

1. Additional sections developed for the VTP in IT skills, small business management, as the business, resources and needs are developed.

2. Extension of program to other fisheries groups in northern Australia

3. Promotion of the resource and approach in relevant northern Australian, Aboriginal enterprise and seafood forums. We recommend a workshop is held at the northern Australia Development office in Darwin, promotion at the annual Indigenous Economic forum and the 2017 Indigenous Business, Enterprise and Corporations Conference

Further development

Developing business models that work in local contexts is crucial to the sustainability of Fisheries Business. Every community and collective will have different arrangements and perspectives. Here are some options, resources and examples of attempts from the past that may provide a range of options:

- AIHW Australian Institute of Health and Welfare: Clearing House Resources : Governance and Leadership: http://www.aihw.gov.au/closingthegap/Results.aspx?bbl=Governance+and+Leadership

- Economic Participation: http://www.aihw.gov.au/closingthegap/Results.aspx?bbl=Economic+Participation

- Indigenous Governance Training : http://ailc.org.au/courses/bsb41910-certificate-iv-business-governance

- Indigenous Governance Toolkit : http://www.reconciliation.org.au/governance/

- ALPA Training Wiki : http://alparetailtraining.wikispaces.com/

- How to Form and Register a Cooperative – ORIC Website: http://www.nfpcompliance.vic.gov.au/starting-a-not-for-profit/registering-a-not-for-profit

- http://www.consumer.vic.gov.au/businesses/registered-businesses/co-operatives/register-a-co-operative

- Sustainable Tourism Development Model, written in broad/general enough terms that guiding principles apply to developing a sustainable business http://www.environment.gov.au/system/files/resources/9c8f5084-3565-4f26-8801-77da3458f497/files/steps.pdf

- Stepping Stones to Tourism, a version of the above specifically for Indigenous Groups: http://www.stepwise.net.au/planning/steppingstones_heritage.php

There is an opportunity to build a similar skill set in governance training that would support business development in fisheries networks and draws on the resource *Governance Training and Development Options and Resources : Business Models for Growth : transition beyond supply chain to Partnership*.

These resources, paired with the leadership and Training / Mentoring Units of Competency / Skill Sets for Leaders in Ranger groups, Fisheries Businesses can make a path from mentoring developing business people in the community to letting them go ahead on their own. This can be more sustainable than pre-existing 'one fits all' models that aren't community-led, with its particular needs in mind.

Extension and Adoption

> Supplementary and extension work was completed at Warruwi as original groups were hesitant to share their materials. The collaboration with stakeholders required materials be produced and existing networks were reticent to be forthcoming about exhibiting their knowledge. As demanding that they participate would damage relationships and be inherently unethical in practice, as well as highlight groups that were not prepared regardless of the reasons, other partners requiring materials to be made were forthcoming about a site. Although in West, not East Arnhem, members of the relevant community were extremely enthusiastic about resource production.
>
> Network with DAC, NT Fisheries, NAMRA, ACIAR and TNRM regarding this reinforced research collaboration and consortia and offered multiple layers of expertise to the outcomes.

We are ready to record the learning involved in VTP when people on country are ready and we will be following up with the ranger organisations that have invited us to work with them. Given the examples we can now show them, the coverage of the VTP in Remote Aquaculture and Fisheries can be more easily pictured as a reality.

- West Arnhem interest has grown given the extensive aquaculture work being done there by various initiatives since 2000s and participated extensively given the relevant community's enthusiasm to record their aquaculture knowledge and practice.

- Trainers are using the tool and associated resources and would like more in order to service remote trainees more effectively. Given funding and staffing concerns for this work it is critical that flexible options for training delivery exist.

- Use in research by Milingimbi by Crocodile Island Rangers (CIR). the resource is being used to conducted fisheries work including aquaculture research on fishstocks at Millinginbi. Some of the resources were done in Yolngu Matha and retained by organisations for their use.

- The supplementary NAMRA project – "Developing Indigenous capacity to conduct research and monitoring to support marine based enterprises" involved utilising the Framework Devlopment in a practical trial at Warruwi (see text box above):

  o Ten short clips (see topic list below) were made by the trainees, edited and produced. Footage was taken while CDU and DAC training in aquaculture skills was underway. Trainees chose the pictures and descriptions of each skill set and recorded this on- site.

  o The clips were narrated predominantly in in Maung due to the extension work in West Arnhem (one of the local language of Warruwi Community)and some were transcribed with English subtitles. Each clip was then edited, feedback sought from the trainees on the following trip, and put in any changes from DAC and CDU Aquaculture team. Local music and extra features (such as partnership acknowledgement and the historical context about aquaculture at Warruwi) were added to the clips in production. The methods used to produce the clips focused on Warruwi residents and participants' knowledge. Their ownership over the authoring of this knowledge, via these clips, is intended to contribute to community-led development of aquaculture workforce capacity.

  o Finalised dvd copies have been mailed to participating trainees who made the clips, some senior members and traditional owners of the Warruwi Community, the school, language centre, arts centre and Yagbani Aboriginal Corporation CEO, Wayne Tupper. Copies are also held with CDU and DAC in digital file formats. The clips have been given to Yagbani Facebook administrators to post when they feel is appropriate. The clips developed will be used in future CDU VET aquaculture training courses.

- Making the trainee cohorts the authors of teaching and learning makes delivery more inclusive and far-reaching given online access to education resources, social media and mobile/ audio-visual technology. This can further motivate learners to engage in training which use this technology. The fact that these resources will showcase the skills of the role models as having a direct audience (co-workers) could enhance the motivational factor of the learning regarding audience.

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With mentor and stakeholder feedback, this material and framework will provide training that is fit for purpose and meets the needs of the training cohort. Feedback from trainees, industry, training providers and departmental reference groups will further embed relevance and currency in the framework. The use of technology in the resource design is collaborative with the learning and work contexts of the cohort.

- DAC partners presented some of the videoes at ACIAR Conference in Philipines April 2016 and at the RIEL Livelihoods Symposium, focussed on Arafura and Timor Sea Aquaculture research.

- Evaluation of the NAMRA project also involved staff from NI and RIEL where the 'Warruwi Arrayi Story' Booklet *(described below) was drafted as an evaluation feedback for community which consolidated community feelings and insight on the skill development and fisheries and aquaculture investment in Warruwi and provided community- informed advice about how they want to pursue this.

- As part of other NI work with Yagbani Aboriginal Corporation Strategic planning, consultation over ways forward, based on knowledge gained and consolidated during the resource creation and MARA evaluation has been synthesised and incorporated into Strategic planning for small scale commercial trials in Oyster and Trepang enterprise development at Warruwi.

- Yagbani Aboriginal Corporation is also planning negotiations with Tasmanian Seafoods over the Trepang processing license at Wigu, near Warruwi.

- Local Arrarrkpi knowledge and authority structures as a priority for preservation through more complex negotiations involving multiple agencies is a concern expressed by Yagbani Board

- members, traditional owners and community members at Warruwi. Local ownership over the process is critical to sustainability.

- The CDU and Australian Institute of Marine Science collaboration will be a linkage for further development of this research consortium, with all parties involved in this extension having a vested interest in supporting enterprise development in Indigenous coastal livelihoods.

- The Northern Institute has won funding for the project 'Moving from Theory to Practice – Pathways for Aboriginal led Development'. This project will engage researchers from NI and RIEL who have been undertaking parallel research related to aquaculture development in remote communities. The water and product quality research and research into business models and governance have established the need for interdisciplinary research to improve responsiveness, addressing key issues through integrated approaches and outcomes for Aboriginal people. Recent attempts to apply for partnered projects that engage Aboriginal people in addressing issues of product use and product quality have resulted in assessors querying the role of an interdisciplinary team. This project establishes and profiles the partnership to enable teams to improve successful applications and impact for Aboriginal people.

- Dissemination of the research to support Indigenous engagement and workforce outcomes for the ARC Linkage project "Microbial quality of artisanal marine harvest" which addresses the issues related to indigenous and non-indigenous people harvest marine molluscs (snails and bivalves) in macro-tidal creeks impacted by treated sewage effluent. It is not known if these molluscs harbor pathogens associated with the effluent – and current testing (using Escherichia coli) is an inadequate surrogate for all pathogens1. Better indicators to improve the microbial quality of marine harvest will safeguard the health and wellbeing of the community and the long-term viability of artisanal and commercial harvesting. The project aims to support the safety of traditional and commercial marine harvest through:

  o New technologies to identify microbial indicators of sewage effluent in marine molluscs

  o More specific E. coli markers to reduce the 'noise' from environmental strains

  o Optimised indicator tests for routine monitoring and quality assurance

  o Microbial risk assessment

- The 'Warruwi Arrayi Story' with Yagbani for overarching context of 'what next' – at the request of some of the Warruwi participants in the Oyster research Evaluation and Aquaculture training, as well as traditional owners and members of the Yagbani Aboriginal Corporation board, a 'big picture' story was developed in a power point. This includes:

  o Dot-point perspectives on the oyster research from Senior Traditional Elders, members of DPIF, CDU aquaculture training, Yagbani staff, oyster research trainees, Yagbani board members, and researchers involved in Warruwi community development over the previous year.

  o Summary NAMRA valuation Statements from CDU VET: Continue to upgrade the Certificate II in Aquaculture training materials to make them relevant to Indigenous aquaculture development. Focus on delivering a skill set relevant to establishment of aquaculture business on Warruwi.

  o How the researchers conducted the evaluation

  o What they intended to do with the information

  o Summary of the videos created as training and knowledge records by the trainees and Yagbani staff participants in the oyster research

  o The booklet also includes a history of oyster and trepang trade on the island during pre-mission, mission and in current times

  o Context of the Oyster Research Project and reasons for it

- Requirements for setting up an Oyster business
- Main functions of Yagbani Aboriginal Corporation, Aquaculture being one of six main enterprises
- A map of all the different agencies and how they sit in the intersection between Arrarrkpi Law, business and Science, and that of the Western Knowledge system as well

To set up an Oyster Business

- To set up a new oyster business, we need an aquaculture licence and support from the government (CDP)
- We also need to follow many rules and have skills to run a seafood business
- There are lots of relationships and partnerships needed with different organisations groups to set up this business
- Lots of different knowledge sets needed to run a business: Warruwi and Balanda; traditional knowledge and other knowledges
- We have to have training to regularly check and report on many things for food safety for farming oysters with DAC scientists and CDU
- Kinship, research, licences, rules all affect how work is organised

Yagbani Aboriginal Corporation, different knowledges and groups to work with
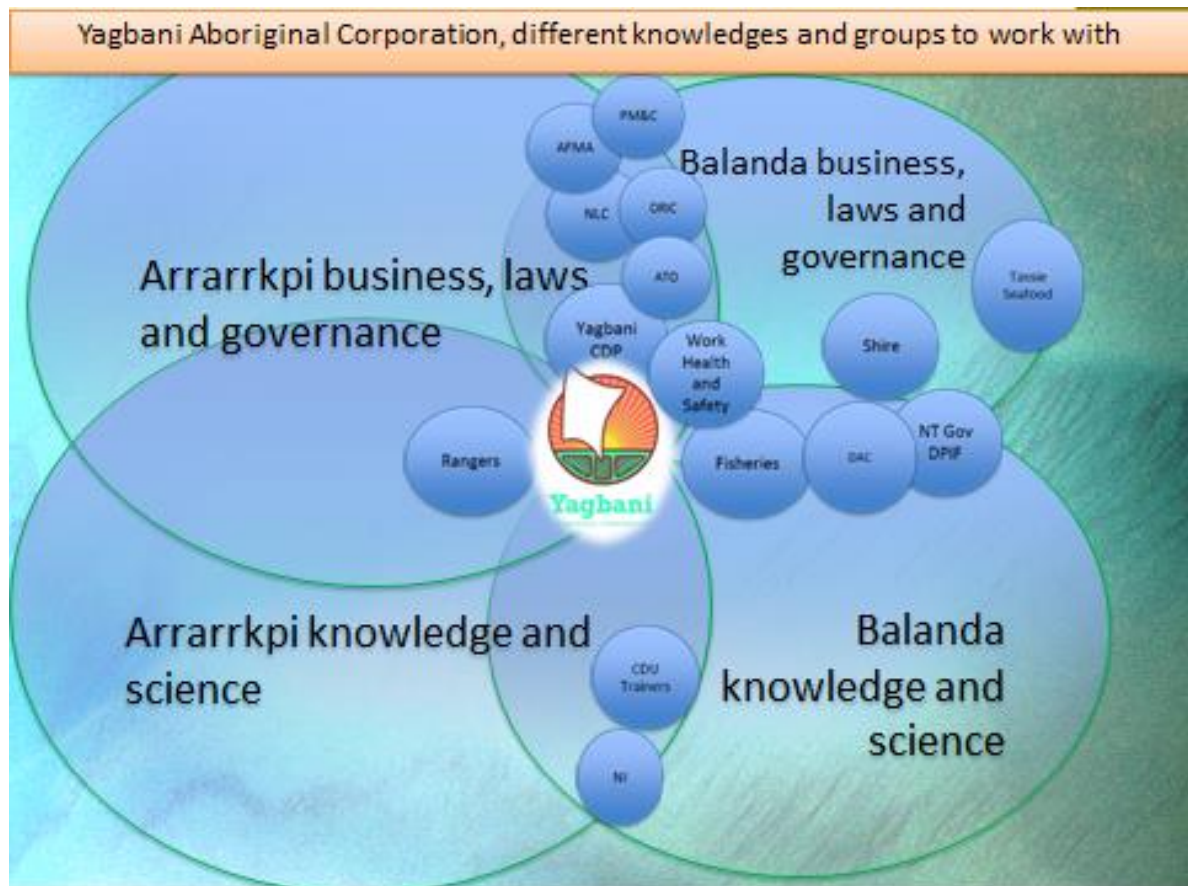
Project materials developed

Supplementary and extension work was completed at Warruwi as original groups were hesitant to share their materials. The collaboration with stakeholders required materials be produced and existing networks were reticent to be forthcoming about exhibiting their knowledge. As demanding that they participate would damage relationships and be inherently unethical in practice, as well as highlight groups that were not prepared regardless of the reasons, other partners requiring materials to be made were forthcoming about a site. Although in West, not East Arnhem, members of the relevant community were extremely enthusiastic about resource production.

Network with DAC, NT Fisheries, NAMRA, ACIAR and TNRM regarding this reinforced research collaboration and consortia and offered multiple layers of expertise to the outcomes.

This project produced the following resources:

**Indigenous Fisheries Training Framework Website –** Contents:

https://indigenousfisheriestrainingframework.wordpress.com/

- Funding Agencies and Partners in this Project

- This section covers background information on the **East Arnhem Indigenous Fisheries Network** to provide other stakeholders with context of the support for the training framework, and the context in which the training is to be designed.
- About this Website shares the background story for the Remote Indigenous Fisheries Training Framework Project.
- This page shows how the resources, Vocational Training Program (VTP), work skills in jobs and training levels match up.
- The Vocational Training Programme (VTP) and Training Package Rules page tells you what you need to do in a special VET Training Package like the one we are developing.
- The Useful Resources and Examples page contains a list of exemplar resources which use similar approaches to training and learning that will be used in this framework's materials and outlines principles underpinning the training framework.
- Training Videos we've created with partner organisations Yagbani Aboriginal Corporation at Warruwi for use in this Framework.
- Career Pathways outlines approaches taken to work opportunities in the Seafood industry, and ways to further the capacity of the network in this regard.
- Business Models for Growth outline procedures, resources and processes that groups can access to foresee how to grow sustainable business pathways for the future.
- Additional Elective Units and Learning Plan contains extra suggested units and Skill Sets available that can meet the needs of the cohort for which the training is intended. This includes skills from Small Business Management, Accounting, IT Skills for business management, and digital media production skills to develop training resources for future cohorts and trainees.
- A glossary of VET terms shares specific terms to help navigate VET course rules and documentation is listed with a link to a web-based document that is more comprehensive.
- RPL outlines processes for Recognition of Prior Learning to outline how trainees can have their experience recognized as skills sets already evidenced towards their qualifications.
- Our Continuous Improvement Cycle for evaluation and improvement of training resources produced includes the accreditation process and links to institutional support documents.
- Employability Skill Summary outlines skills required in the industry that will help maintain employment.
- Helpful Resources From Others Shows Boatnotes from WA.
- Mapping Examples From BoatNotes Coxswain Grade 1
- This page has a Link which takes you to the Training.gov website where full qualification information can be found.
- This page takes you to the Core Units in Aquaculture
- Links to Core Units in Maritime Operations
- The Learning Options page asks some Questions to help you identify what skill sets you can pursue
- Here are the Core Units Mapping templates and Unit Documents For Maritime Operations and Aquaculture
- Literature about Aquaculture Business Development shares some Extra Reading about Enterprise Development
- About this Website shares the background story for the Remote Indigenous Fisheries Training Framework Project.
- Training Approaches tells you about the kind of learning this framework promotes.

Ten videos covering CDU and DAC assisted aquaculture skills:

1. Water sampling – Jamie and Roderick describe the water sampling process for heavy metals testing.

2. Water sampling for plankton- Elroy and Jenny Manmurulu (as narrator) demonstrate tow net and water column methods to take a water sample before sending it for plankton level testing.

3. Water sampling for bacteria - Elroy and Jenny Manmurulu (as narrator describe how to take a water sample before sending it for bacteriology tests.

4. Oyster collection - Gail describes the cycle involving harvesting, receiving oyster spat from DAC and growing them on the longline to maturity.

5. Oyster farm maintenance: Jamie and Roderick demonstrate the process of measuring growth

Fixing the longline

We wrote the measurements down in cm under the basket number.
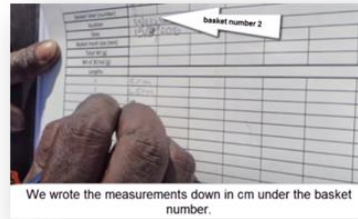
6. How to fix a long line: Jamie and Roderick are featured showing the steps and tips to fixing a long line.

7. Measuring Salinity - Jamie and Roderick show the method of testing salinity of the water near the longlines.

Healthy Water = Heathy Oysters
Water Sampling
for Heavy Metal Testing
South Golburn Island

Hold it up to the sunlight and you will see the reading.

Trepang harvest and processing (3 in total):

1. Gail's Trepang Story – Gail describes how to find trepang.

2. Maurice's Trepang Story- Maurice gives an overview of the steps from harvest to processing.

3. Big Trepang Story for Kids –version for use in the language centre and school

VTP226 Remote Aquaculture and Fisheries registered at Charles Darwin University

The Aquaculture 'Course' from which the flexible skill set is extracted is the full Certificate II in Aquaculture, whereas the units of competency-based training delivery provide locally relevant skill development without the extra course requirements of units that are not relevant to the region or community. In 2016 CDU will be offering a skill set only selected from Certificate 2 in Aquaculture from the Seafood Industry package. This is in line with flexible delivery training frameworks which enable skill development that is locally relevant. The units of competency are:

• SFIAQUA201C Collect brood stock and seed stock

• SFIAQUA206C Handle stock

• SFIAQUA213C Monitor stock and environmental conditions

• SFIAQUA216B Harvest cultured or held stock

• SFIAQUA217B Maintain stock culture, holding and other farm structures

Appendices

List of researchers and project staff:

- Ruth Wallace
- Johanna Funk
- Research partners:

Crocodile Island Rangers	CDU Office of Learning and Teaching
Yagbani Aboriginal Corporation	Research Institute for Environment and Livelihoods
Darwin Aquaculture Centre	Northern Land Council
Department of Primary Industry and Fisheries	Northern Aboriginal and Islander Land and Sea Managers Alliance
CDU School of Primary Industries, Aquaculture	NT Seafood Council
Australian Centre for International Agricultural Research (ACIAR)	Department of Education (NT)
North Australia Marine Research Alliance (NAMRA)	Department of the Chief Minster.
Territory Natural Resource Management (TNRM)	Northern Australian Development office
Tasmanian Seafoods Pty. Ltd.	
East Arnhem Indigenous Fisheries Network	

[Certificate II in Aquaculture](#) *– full option as a next step from the VTP*

There is an alternative to 'work within the packaging rules' and import three units to gain a specialised qualification further down the road once the VTP cohorts gain more competency and a range of roles in enterprise begin to emerge. The VTP acts as a stepping stone or pathway to the full Certificate II in Aquaculture, enabling an entry level skill development for workforce participants that are employed casually in community enterprise. This also enables more realistic access to further skills training and full qualification for those workforce participants that wish to pursue Aquaculture and fisheries as full time employment; if economically viable for the community involved.

PACKAGING RULES

A total of fifteen (15) units of competency must be achieved.

- four (4) core units **plus**
- four (4) aquaculture specialist elective units (Group A) **plus**
- seven (7) elective units that may be selected from a combination of:
  - Group A aquaculture specialist units not yet selected for this qualification
  - Group B elective units
  - Imported units from this Training Package or from any other nationally endorsed Training Package or accredited course. A maximum of three (3) units can be imported; however, at least 2 of those units must be aligned to Certificate II or III level. Units must be relevant to aquaculture operations and not duplicate skills already selected.

CORE UNITS		HOURS	
SFICORE101C*	Apply basic food handling and safety practices	**20**	☐
SFICORE103C	Communicate in the seafood industry	**30**	☐
SFICORE105B	Work effectively in the seafood industry	**30**	☐
SFICORE106B	Meet workplace OHS requirements	**20**	☐

GROUP A ELECTIVE UNITS (AT LEAST 4 UNITS TO BE SELECTED)

SFIAQUA205C	Feed stock	**20**	☐
SFIAQUA206C	Handle stock	**15**	☐
SFIAQUA211C	Undertake routine maintenance of water supply and disposal systems and structures	**25**	☐
SFIAQUA213C	Monitor stock and environmental conditions	**30**	☐
SFIAQUA216B	Harvest cultured or held stock	**15**	☐
SFIAQUA217B	Maintain stock culture, holding and other farm structures	**25**	☐
SFIAQUA221A	Control predators and pests	**20**	☐

GROUP B ELECTIVE UNITS

SFISTOR205A	Prepare, pack and dispatch non-live product	**20**	☐
AHCCHM201A	**APPLY CHEMICALS UNDER SUPERVISION**	**30**	☐

AHCMOM205A	**OPERATE VEHICLES**	**20**	
AHCMOM204A	Undertake operational maintenance of machinery	**30**	
MARF001	Apply basic survival skills in the event of vessel abandonment	**30**	
MARF002	Follow procedures to minimise and fight fires on board a vessel	**30**	
MARF004	Meet work health and safety requirements	**20**	
HLTAID003	**PROVIDE FIRST AID**		
SFISHIP206C	Operate a small vessel	**40**	
SFISHIP207C	Operate and maintain outboard motors	**20**	

IMPORTED UNITS (maximum of 3 units)

MARC005	Operate inboard and outboard motors	**20**	
MARI001	Comply with regulations to ensure safe operation of a vessel up to 12 metres	**40**	
MARJ001	Follow environmental work practices	**30**	
MARK001	Handle a vessel up to 12 metres	**100**	
MARN002	Apply seamanship skills aboard a vessel up to 12 metres	**50**	

TOTAL COURSE HOURS (must be between 243 and 600)**: _____**

Group B elective units MARF001, MARF002 and MARF003 form part of the MAR10413 – Certificate I in Marine Operations (Coxswain Grade 2 Near Coastal) qualification. The remaining units for the Coxswain Grade 2 may be included in the Imported Units area but only 3 of these can be counted towards the Certificate II in Aquaculture.

Therefore, if they complete the Certificate II in Aquaculture utilising the MAR units they will need to complete an additional 2 units to complete the Coxswain Grade 2 qualification due to the amount of cross over.

MAR10413 - Certificate I in Maritime Operations (Coxswain Grade 2 Near Coastal)

All units are core units and must be completed to gain the Certificate I in Marine Operations

MARC005   Operate inboard and outboard motors

MARF001   Apply basic survival skills in the event of vessel abandonment

       Cert II Aquaculture Group B elective unit

MARF002   Follow procedures to minimise and fight fires on board a vessel

       Cert II Aquaculture Group B elective unit

MARF004	Meet work health and safety requirements
	Cert II Aquaculture Group B elective unit
MARI001	Comply with regulations to ensure safe operation of a vessel up to 12 metres
MARJ001	Follow environmental work practices
MARK001	Handle a vessel up to 12 metres
MARN002	Apply seamanship skills aboard a vessel up to 12 metres