



final report

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Scoping the viability, feasibility and capacity for a Northern beef centre of excellence

Final Report

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Abstract

A Business Plan for establishment of a Northern Beef Hub (NBH) is proposed. The Plan was initiated to address “at risk” expertise and IP available to the beef industry for research and development, and extension and consultancy services in northern Australia. Extensive consultations with the pastoral industry, government agencies, CSIRO, retired beef industry academics confirm these concerns.

James Cook University (JCU) has indicated strong support for the Hub. Murdoch University and CDU will need to be involved to ensure buy-in across Australia’s tropical north. The Hub’s Vision aligns with Meat Industry Strategic Plan 2020 pillar ***Building Industry Capability***, supporting a sustainable and profitable beef industry for northern Australia through evidence-based advice meeting the on-going, practical needs of industry.

The Hub is designed to produce graduates and industry leaders who can access, critically analyse and provide practical, cost effective recommendations to improve productivity and sustainability for individual beef producers in northern Australia. The team will comprise Hub Director, Administration Manager, research facilitator and post graduate students, all with access to expert “on-farm” Mentors who are key differentiators to attract students and industry support. MLA will contract JCU (and potentially in collaboration with Murdoch) to deliver specified services within agreed Milestones.

Glossary of Industry Terms

AAARN	Association of Animal Nutritionists Australia
ACIAR	Australian Hub for International Agriculture Research
ARLP	Australian Rural Leadership Program
BMP	Best Management Practice/s
BRC	Beef Research Committee
NBH	Northern Beef Hub (JCU Townsville)
CDU	Charles Darwin University (Darwin)
CSU	Charles Sturt University (Wagga Wagga)
CSIRO	Commonwealth Scientific and Industrial Research Organisation
FINS	Farm Innovation Networks
GFP	Grazing For Profit
JCU	James Cook University (Townsville)
KPCA	Kimberley Pilbara Cattleman's Association
MOFMC	Marcus Oldham Farm Management College (Geelong)
MLA	Meat and Livestock Australia (MLA)
MDC	MLA Donor Company
MISP 2020	Meat Industry Strategic Plan 2020
Murdoch	Murdoch University (Perth)
NRM	Natural Resource Management Groups
NABRC	North Australia Beef Research Council
NPG	Northern Pastoral Group
NTCA	Northern Territory Cattlemen's Association
NT DPI&F	Northern Territory Department of Primary Industry and Fisheries
PGS	Profitable Grazing Systems
PIEFA	Primary Industry Education Foundation Australia
PDS	Producer Demonstration Site
QAAFI	The Queensland Alliance for Agriculture and Food Innovation
QDAF	Queensland Department of Primary Industry and Fisheries
QFF	Queensland Farmers Federation
RBRCs	Regional Beef Research Committees
RDE&A	Research, Development, Extension and Adoption
RDC	Rural Development Corporations
UNE	University of New England (Armidale)
UQ	University of Queensland (Brisbane)
UWA	University of Western Australia (Perth)
WA DPIRD	Western Australian Department of Primary Industry and Regional Development
WATARI	Western Australian Tropical Agriculture Research Institute

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1 Executive Summary

Many years of under-resourcing and reduced capacity in whole of farm RDE&A expertise has led to a decline in evidence-based research activity. None of the current undergraduate courses available provide graduates with a 'whole of farm' evidence approach to providing the professional advice needed by industry. Coupled with minimal extension resources this has resulted in negatively impacting the productivity and profitability of the northern beef industry. This report contains a Business Plan for the establishment of a Centre of Excellence (hereafter Northern Beef Hub) at James Cook University (JCU) with the aim to address "at risk" expertise and IP available to the beef industry for research and development, and extension and consultancy services relevant to northern Australia.

This Business Plan outlines how industry capability can be built through a focus on upskilling across the industry in line with imperatives outlined in the MISP 2020. This plan also addresses long standing concerns around RDE & A in the north's beef industry, provides for consistency of access to industry and career pathways across the north and shows how volunteer expert mentors can work with students and industry to improve on farm adoption. Extensive consultations with the pastoral industry, government agencies, CSIRO, retired beef industry academics (potential mentors) confirmed that industry and MLA concerns are widely held and need to be addressed urgently. The MISP 2020 key strategy of building industry capability in the northern Australia beef industry is being acted on through the MLA Edge program and other initiatives such as Producer Demonstration Sites (PDS) and Profitable Grazing Systems, but do not necessarily target career development or long term goals that maintains human capacity in the industry. Therefore, there is a strong case to establish a Northern Beef Hub to provide the necessary impetus in the long term.

JCU has indicated strong support to establish a Northern Beef Hub subject to a clear understanding of industry needs, career pathways, defined competencies and assured funding. Other universities (University of Western Australia, Murdoch University, WA and Charles Darwin University, NT) will need to be involved in the Hub's establishment to ensure maximum buy-in and support across the tropical north, potentially providing some financial contribution (that can be matched with MDC), potentially providing some financial contribution (that can be matched with MDC).

Proposed Hub Vision and Core Purpose

Vision (2030)

In alignment with Meat Industry Strategic Plan's key strategy of Building Industry Capability, support a sustainable and profitable beef industry for northern Australia through the provision of evidence-based advice that meets the on-going, future and practical needs of the industry.

Core Purpose

Produce graduates, industry leaders and critical service providers who can access, critically analyse and provide practical, cost effective 'whole of farm' recommendations to improve productivity and sustainability for all beef producers across northern Australia.

Governance, Leadership and Staffing Plan

MLA will contract JCU to deliver a range of research, educational and project-based consultancies and training programs in accordance with the Business Plan outlined in this document. JCU has agreed to deliver on set milestones and to report on progress to industry. The proposed start-up staffing structure is:

- 1 Hub Director at Professor Level

- 1 Administration Manager (HEW 7 Level) and research capability from within JCU
- A pool of mentors with a dedicated Coordinator.

JCU Value Proposition

Research activities are expected to play an important role in the Hub to support the consultancy base, to maintain applied research capacity in the north and to ensure the Hub is at the cutting edge of applied science. The Hub could focus on several possible key research areas which will be developed and presented to NABRC for consideration and priority setting. The Hub will provide high quality coursework for students and short course training for industry participants to meet the stated needs of industry and supported by expert mentors.

Student & Industry Participant Profile

Potential Hub students will most likely hold a first degree or post-graduate qualification in an agriculture-related field, already work in the beef industry, are interested in tropical beef business and production studies as a niche program and interested in studying close to where they work or being able to access on-line offerings supplemented by on-farm mentoring by experts. Potential Hub industry students and participants will most likely already work in the industry, seeking to upskill without wanting to commit to undertaking a full undergraduate or post-graduate program. They will mainly want to participate in specific units or short courses that are recognised and will build credentials towards a higher qualification and result in promotions at work.

Financial Plan

It is proposed that the Hub is underpinned by a 5 year investment commitment. This will provide sufficient time to build the Hub's profile, capability and generate external income. Projected outgoings total \$4.6 M over the 5 year establishment phase. It is assumed that matching funding is sourced from MDC and external sources. JCU have offered \$1.2 M over the 5 year period.

A conservative level of income from external sources has been assumed in the plan. Upon concept approval, MLA and JCU will need to seek support from the corporate sector (e.g. banks, insurance companies, Agribusiness supply chain and service companies) to offset the operating costs. The funding secured from external sources presents an opportunity to match with MDC contributions to optimise the funding base.

Implementation Plan

A twelve stage implementation has been developed outlining actions to be taken, by whom and when. The Implementation Plan stages will inform the Milestones to be formulated in the contract between MLA and JCU.

This Business Plan is supported by the beef industry and Universities as the most viable way to address the dearth of skills and on farm experience facing the industry in North Australia. It is therefore recommended that MDC co-fund the establishment of the proposed Hub at JCU for the first five years.

2 Project Background

2.1.1 Introduction

The driver for this project was the observation by key industry experts that the expertise and IP available to the beef industry in northern Australia were at risk due to a lack of adequate succession planning within Government Agencies and key industry organisations. Many years of under-resourcing and reduced capacity in whole of farm expertise has led to less research and development with lower quality outcomes negatively impacting the productivity and profitability of the northern beef industry.

In July 2018 Meat & Livestock Australia (MLA) engaged Indigo Agriculture and People Business Consulting, Brisbane to develop a specific business plan.

2.1.2 Project Objectives

Meat & Livestock Australia defined the following Project Objectives: by January 2019 the Project Team will conduct the following activities that will provide the basis of a business plan for “The Northern Beef Hub”:

1. Identify the decline in research funding, research stations and extension capacity in northern Australia over the last 40 years.
2. Survey industry organisations and large pastoral enterprises (including relevant operators in south-east Asia) to ascertain the type of advice and services that are currently required and those that are envisaged to be needed in the next two decades.
3. Review the current proposal for a Hub as outlined in the attachment and in consultation with James Cook University, develop and refine content of courses on offer and consultancy services that need to be developed.
4. Contact the list of retired specialists and suggested mentors. Assess the level of commitment and financial re-imbursement and identify where knowledge gaps in the expert team exist.
5. Establish the level of staff required (full or part time in the early stages) along with salaries and input costs and develop an operational budget. Involvement of the Hub in ‘on farm’ research should be considered in the development stages to ensure full employment of all permanent staff is achieved.
6. Prepare a business plan to accompany a proposal to attract MLA Donor Company funding to establish a Hub for the first five years of operations.

3 Methodology

3.1 Overview

The Terms of Reference provided a framework to address the delivery of this project:

1. Interviewed key Agriculture Department staff in Queensland, Northern Territory and Western Australia to determine changes in staffing and funding levels in research and extension areas for the beef industry since 1970.
2. Surveyed key beef industry organisations such as NTCA, KPCA, Agforce Qld, Cattle Council Australia, WA PGA and large pastoral enterprises (including relevant operators in south-east Asia) to determine industry requirements for professional and technical advice now and in the future. In addition, senior individuals in end-user organisations were surveyed to gauge their willingness to utilise the proposed consultancy services or to determine if some of their own staff would engage with the Hub to acquire relevant postgraduate qualifications.
3. Contacted various mentors to ascertain their interest, support and level of input into the Hub. JCU were asked (and they agreed) to provide access for staff and mentors to library facilities and on line services provided through JCU.
4. Visited JCU to discuss establishment costs, appropriate staffing levels, accommodation, access to undergraduate course, office space, existing post graduate subjects on offer and subject requirements for a consultancy based post-graduate training Hub, along with revenue generation from full fee paying students. On the visit the Project team member interviewed a senior CSIRO staff member.
5. Identified research opportunities from external funding sources and proportion of research that may be required to ensure income levels are appropriate for the staffing load and postgraduate coursework load.
6. Explored the possibility of obtaining seeding funds from a major pastoral enterprise/s or entities in return for consultancy services and 'on farm' research or alternatively, revenue generated from medium term contracts as requested.
7. Examined the composition and expenses of establishing an Advisory Committee to oversee the operations of the Hub and to appoint a director.
8. Prepared a proposal for MLA Donor Company (MDC) funding based on contributions from industry, JCU or a combination of both.
9. Confirmed support of the North Australia Beef Research Council for the proposal.

3.2 Data Gathering & Analysis

Needs analysis (skills, knowledge, experience) for the northern beef industry

An on-line survey of 45 beef industry producers (including the major corporates), along with DPI agencies in WA, NT and Qld, and CSIRO was conducted in July 2018. The key findings were presented to a meeting of potential Mentors, senior MLA staff and JCU representatives in Brisbane in August 2018.

Interviews with end users; producers, research, extension stakeholders conducted and reported.

Extensive interviews were conducted with several industry organisations and stakeholders which are summarised in Table 1. The table illustrates the large number of stakeholders involved in the northern beef industry and a view of their likely demands and inputs for the levels of education, research and training.

In addition, the major northern pastoral companies (NPG) were contacted for input along with smaller beef producers and industry consultants.

Table 1 List of Northern Beef Industry Stakeholders* who would potentially utilise the outputs from the proposed Hub

#	Group	Role	Type	Entry / Junior	Under-graduate	Post Graduate	Short Course	Research
1	CSIRO	Research	Gov't Agency			✓	✓	✓
2	QAAFI	Research	Gov't Agency		✓	✓	✓	✓
3	NT DPI	Research & Extension	Gov't Agency	✓	✓	✓	✓	✓
4	QDAF	Research & Extension	Gov't Agency	✓	✓	✓	✓	✓
5	Producer Demonstration Site (PDS)	Research & Extension	RDC			✓	✓	✓
6	Natural Resource Management Groups (NRM)	Extension	Gov't Agency	✓	✓	✓	✓	✓
7	Meat & Livestock Australia (MLA)	Research, Extension & Training	RDC	✓	✓	✓	✓	✓
8	WA DPIRD	Research & Extension	Gov't Agency	✓	✓	✓	✓	✓
9	BeefUp	Extension	RDC			✓	✓	✓
10	James Cook University (JCU)	Research & Education	University		✓	✓	✓	✓
11	Murdoch University (Murdoch)	Research & Education	University		✓	✓	✓	✓
12	Charles Sturt University (CSU)	Research & Education	University		✓	✓	✓	✓
13	Charles Darwin University (CDU)	Education	University		✓	✓	✓	✓
14	Emerald Pastoral College	Education / Training	College	✓			✓	✓
15	Longreach Pastoral College	Education / Training	College	✓			✓	✓
16	Marcus Oldham Ag College	Education / Training	College	✓	✓		✓	✓
17	Best Management Practice (BMP)	Training	Industry Assoc				✓	✓
18	EdgeNetwork	Training	Industry				✓	✓
19	MLA Profitable Grazing Systems (PGS)	Training	RDC				✓	✓
20	Queensland Farmers Federation (QFF)	Industry Support / Services	Industry Assoc		✓	✓	✓	✓
21	Australian Centre for International Agricultural Research (ACIAR)	Industry Support / Services	Gov't Agency		✓	✓		
22	AgForce	Industry Support / Services	Industry Assoc		✓	✓	✓	✓
23	Kimberley Pilbara Cattleman's Assoc (KPCA)	Industry Support / Services	Industry Assoc		✓	✓	✓	✓
24	Pastoral and Graziers Association (PGA)	Industry Support / Services	Industry Assoc		✓	✓	✓	✓
25	NT Cattleman's Assoc (NTCA)	Industry Support / Services	Industry Assoc		✓	✓	✓	✓
26	North Australia Beef Research Council (NABRC)	Industry Support / Services	Industry Assoc		✓	✓	✓	✓
27	Future Beef	Industry Support / Services	Information		✓	✓	✓	
28	Beef Central	Industry Support / Services	Information		✓	✓	✓	
29	Rangeland Society	Industry Support / Services	Industry Assoc		✓	✓	✓	✓
30	Consultants	Industry Support / Services	Industry	✓	✓	✓	✓	✓
31	Australian Rural Leadership Program (ARLP)	Education / Training	Gov't Agency			✓	✓	
32	AVA	Other	Industry Assoc		✓	✓	✓	
33	ASAP	Industry Support / Services	Industry Assoc	✓	✓	✓	✓	
34	Northern Pastoral Group (NPG)	Industry	Industry	✓	✓		✓	✓
35	Indigenous Land Corporation (ILC)	Industry	Industry	✓	✓		✓	
36	Primary Industry Education Foundation Australia (PIEFA)	Education / Training	Gov't Agency	✓	✓	✓	✓	
37	Private Families	Industry	Industry	✓	✓	✓	✓	✓
Indicates the group would utilise / access this level of education. Training & research				✓				

*note both the Longreach and Emerald Pastoral colleges are closing at the end of 2019.

The Project Team also reviewed other projects which are undertaking Research, Training & Extension and their findings:

- Melbourne University Ag Extension project¹
- QFF / Reef / NRM Reef Extension reports²
- QDAF – Beef Industry Quality Workforce handbook 2014³

3.3 Key Issues Identified

Industry needs were explored via an on-line survey and benchmark data were also obtained with respect to numbers of industry organisation staff numbers, training activity and focus, extension and research gaps. The following is an outline of the survey results.

3.3.1 Industry Funding

A report delivered by ABARE in 2017⁴ reviewed the investment in Agricultural Research Development and Extension in Australia. It was not detailed for the Tropics.

3.3.1.1 Key Points

Over the past 10 years total funding for rural R&D increased from \$2.3 billion in 2005–06 to \$3.0 billion in 2014–15 in real terms¹

- This increase mainly reflects funding for the Carbon Farming Futures programs ‘Filling the Research Gap’ and ‘Extension on the Ground’ since 2011–12 – Not for animal production
- Funding from state and territory governments for rural R&D fell from \$330 million in 2005–06 to \$239 million in 2014–15
- Funding for extension from state and territory governments declined in real terms from \$61 million in 2005–06 to \$41 million in 2014–15.
- Funding in the Reef Catchments has increased considerably in the last 12 – 18 months which may have drawn funding resources from other areas.

3.3.1.2 Industry Survey Highlights

- 65% feel quality research is extremely important
- Sourcing the right information not always easy – don’t know what is out there. The underlying issue manifests as a combination of lack of connectivity in the bush, lack of expertise in how to investigate and interrogate the evidence and know when information is supported by best available science
- Duplication of resources an issue – better integration across RDE&A programs
- The courses(s) need to incorporate practical and commercial operating experiences
- Beef producers support the concept and the use of mentors with Students for on farm training / research
- >70% felt it should be government funded
- Industry / Producers prefer shorter format training (1 -2 days)
- See a benefit if employee training builds towards a formal qualification (e.g. Certificate – Diploma level)
- Producers require researchers and extension people to;
 - I. be able to relate and communicate well

¹ <https://rirg.fvas.unimelb.edu.au/ag-extension#publications>

² <https://reefextension.couttsjr.com.au/>

³ https://futurebeef.com.au/wp-content/uploads/Beef_industry_on-station_quality_workforce_handbook_2016.pdf

⁴ ABARE 2017 - Rural research, development and extension investment in Australia

- II. undertake relevant research in the region
- III. ensure greater/better integration with existing programs and research

3.3.2 Demand for Quality Research and Extension

Producers are looking for more research and extension and feel more should be invested in this space with extension personnel having a whole of business skill set, along with good interpersonal skills. Notably MLA invests less in R&D compared with some peer industry bodies (refer Table 5). In response to a question on low adoption by the beef industry at the AGM of MLA in 2017, Don Mackay, the chair of the Red Meat Advisory Council drew attention to the cotton industry where the use of paid consultants with specialised expertise was common place” There is a well-developed consultancy system in many areas of agriculture: cotton, grains, feedlots”.

Traditionally the role of extension was performed by the State agriculture departments free of charge; however, with the shift/reduction in funding, it has resulted in fewer people servicing the industry. Newer entrants are often perceived to lack the required experience and skill sets and the right mentors may not be available to facilitate their growth.

An issue also noted by one of the Northern Beef Hub proponents was the lack of suitably qualified experts to conduct peer reviews of research, which is then loaded onto relevant Industry websites. Producers read this and assume it is well founded when it may be inaccurate and/or not evidence based.

Further industry feedback was received from the Northern Pastoral Group (NPG) meeting in August 2018, where some generally supported the results of the online survey and the Northern Beef Hub concept. The Northern Pastoral Group comprises around 16 of the largest beef cattle operators in Australia who meet regularly with MLA. This group collectively manages an area in excess of 52 million hectares (6.7% of Australia), 1.9 M million cattle (7.7 % of national herd) and 2,800 employees.

Demand for extension capacity extends beyond the Government Agriculture Department & Agencies. Workshops held in 2018 hosted by the Reef NRM groups nominated building capacity in extension as one of their major issues with respect to extension and adoption⁹.

The capability and profitability of the beef industry are intrinsically linked: a profitable, resilient industry attracts the ‘best and brightest’ minds; such talent and expertise helps build profitability and resilience. The industry must continue to build a performance culture and business skills throughout our industry. This includes providing and packaging information and training to support informed and business-oriented decision-making by all participants, especially in the production sectors.

3.3.3 Natural Resource Management (NRM)

Considerable funding has been invested into the NRM program, especially in Queensland for the REEF trust. In particular the NQ Dry Tropics and Fitzroy Basin Association have recruited recently and/or are recruiting trainees/graduates.

The main focus for NRM with respect to the beef industry is relevant to soil quality, grazing management and water quality – with the flow-on impacts on the reef. In early 2018 QFF with the NRM groups held a workshop for around 90 extension personnel (QDAF & NRM).



Fig 1 NRM Regions Map. The general areas regarded as northern Australia is indicated

A key finding from this NRM workshop was the need to build industry (extension) capacity. In the report, it was noted that there was no capacity to do this in northern Australia, with extension training options identified in NSW.

Northern Australia (Fig 1) includes the following NRM regions;

- | | |
|-----------------------|------------------------|
| 1. Rangelands | 2. Southern Gulf (Qld) |
| 3. Northern Territory | 4. Northern Gulf (QLD) |
| 5. Wet Tropics | 6. Dry Tropics |
| 7. Cape York | 8. Whitsunday |
| 9. Fitzroy Basin | |

NRM is funded predominantly by the Federal and State Governments, with a big focus (and proportion of funding) focussed on Reef protection (hence a QLD bias).

A recent Queensland Farmers' Federation (QFF) initiative, in conjunction with the NRM groups and the QLD Government aiming to build industry capacity across all sectors, resulted in six trainees being recruited. The trainees (recent Ag Science or Environmental Science graduates) were placed in the Reef Regions and trained, with an allocated mentor for a one year period. The program was well received and QFF are looking to repeat in 2019. These trainees have indicated interest in further training as have other younger staff within the NRM network. QDAF observe that NRM people need to undertake some research and science training to become better value extension people.

3.3.4 CSIRO

CSIRO made the comment that whilst they are primarily a research organisation, they have moved selectively into adoption to get the research out into the industry. CSIRO in the livestock field have materially reduced research capacity (staff levels) and thus have limited ability to remedy this on their own, relying on MLA and others to provide the initial research funding and then the follow up extension / adoption activities to achieve practice change on farm.

There are modest levels of recruitment in CSIRO with respect to animal production. It is unlikely therefore that CSIRO will provide large numbers of students or staff to the JCU Hub or be a source of future mentors.

3.3.5 Melbourne University Agriculture Extension Project

"Stimulating private sector extension in Australian agriculture to increase returns from R&D"

The MLA Hub project online survey sample delivered similar results to the Extension Project being run from Melbourne University¹. The results of this project demonstrated:

- a demand for more research and better extension
- the use of private consultants is higher in the cropping, dairy and horticulture sectors than broad acre grazing
- a positive attitude towards seeking new information and they rely on multiple sources of information
- Not always easy to source the information.

However, a major difference between the availability of private extension serving the north and south of Australia and the ability to promote research and adoption is scale and distance. For private practitioners, the distances, time and thus cost to service a relatively small pool of clients in northern regions (especially pastoral), compared to the same area in south, make the economics less attractive for both producers and consultants.

Furthermore, a large percentage of properties in the north are held by corporate interests which often have the potential capacity to undertake their own R&D, but often fail to dedicate resources to this activity. . This is where the input from Government Agencies, MLA and other industry stakeholders is required to cover the gaps in services and extension.

Demand for more research with better access to research in the northern regions and improved communication of the research was noted.

Producers are looking for more research and extension and feel more should be invested in this space with extension personnel having a whole of business skill set, along with good interpersonal skills.

Traditionally the role of extension was performed by the State agriculture departments who utilised a string of research stations for acquisitions of skills and instilling scientific rigour; however, with the shift/reduction in funding, it has resulted in fewer people servicing the industry (outside of the Reef catchments) and fewer research stations.

3.3.6 Rangelands Australia Centre

Rangelands Australia operated from UQ Gatton Campus for almost 10 years. It was initially supported and funded by UQ, State & Federal Governments and MLA. Post the establishment phase, UQ reduced funding and drew a large percentage of funds for “UQ Overheads” (circa 70%) which impacted the financing and viability of the program.

The Rangelands Australia Centre was subsequently shut down by UQ post a 2011/12 review. The CEO at the time has provided some insights into the Centre, the positives and challenges. Prior to 2011/12, there were 100 students in the program working through a Graduate Certificate, Diploma or Master’s Course.

A key feature that worked well was the Rangelands Champion component, which is similar to the Mentor concept proposed in this project.

3.3.6.1 Key Rangelands Australia Challenges / Issues

- Funding post establishment phase
- University overhead recovery as a percentage of student fees was too high
- Location – Being in Queensland, some in the southern rangelands (SA/ NSW) felt it did not suit their needs.
- Career path from a highly recognised qualification such as a Masters or PhD.

3.3.7 WATARI

In February 2018, the Minister for Regional Development; Agriculture and Food Working Group released the “Prefeasibility Business Case to Establish a Tropical Agriculture Research Institute in North Western Australia” – the Western Australia Tropical Agriculture Research Institute (WATARI). The working group included representatives from Government, DPIRD and the WA Universities.

The Working Group states the focus of the proposed Institute should be on servicing industry-led RDE&A needs for the primary industry sector particularly focused on the growth of the beef industry, irrigated agricultural crops, horticulture crops, aquaculture, tropical forestry and native plant industries in the north of WA. The aim will be to increase productivity and profitability of agriculture in the north of the State, in a context of ensuring environmental sustainability and social impact acceptability.

This objective is consistent with that of the Hub, although with a broader scope. Should WATARI be successfully funded by the WA State Government, then the Hub should ensure there is close alignment of objectives and activities.

3.4 Summary of Key Survey Findings – Industry Priority Needs

The areas of priority identified in the survey were:

1. Business / Financial Literacy
2. Grazing & Pasture Management
3. Technology

4. Animal Production
 - i. Nutrition
 - ii. Animal Health
 - iii. Breeder Management / Fertility
 - iv. Genetics

Across northern Australia there are a variety of groups (Table 2) undertaking research and extension programs, some organisations do both. In most instances the funding is sourced from Federal/State Governments or Industry levies.

With respect to Training & Extension, the extension component traditionally provided by the relevant Department of Agriculture has been reduced in the traditional agencies and moved into other statutory groups such as the NRM / Landcare groups, Industry bodies (AgForce) and/or privately run options (some with MLA support) such as EDGE or GFP (refer Table **2Error! Reference source not found.**).

Some programs are supported by several platforms (Grazing BMP - AgForce and NRM), and other industry funded programs appear to duplicate programs run by the private sector (PGS v Edge/GFP).

There is considerable cross-over in content across the platforms (Grazing Management, Soils, Bio-diversity – Table 2) but delivered by different groups (perhaps with slightly different emphasis or objective), all funded from the same sources. For producers, there are a raft of names, terms, and options for field days and seminars, which compete for the same pools of funding and staffing resources as well as producer time and input. There may be options to better align and co-ordinate the various programs, or at least provide a clear structure for the industry to see what each group is mandated to do.

Table 2 Relevant Training & Extension options for northern Australia

Relevant Training & Extension Options for Northern Australia

	NRM	BMP	Edge Network	Beef Up	Producer Demonstration Sites (PDS)	Profitable Grazing Systems (PGS)	Grazing for Profit
Owned by	Federal Gov't	AgForce QLD Gov't Fitzroy Basin Assoc	MLA	MLA, DPI, CSIRO	MLA, DPI, CSIRO	MLA	Resource Consulting Services
Funded by	Federal Gov't State Gov't	Federal Gov't QLD Gov't	Producers	MLA, DPI, CSIRO	MLA, DPI, CSIRO	MLA	Producers
Objective	National Landcare Program - protection and improvement of environmental assets such as soils, water, vegetation and biodiversity.	Grazing BMP uses a voluntary online self assessment tool to develop and implement a best management practice program for the grazing industry	MLA's <i>EDGEnetwork</i> [®] offers practical learning opportunities to help producers gain knowledge and develop skills necessary to improve their livestock enterprises.	Operate across Australia and provide producers with insights into R&D, have their say on priorities, gain access to business tools	Producer Demonstration Sites (PDS) program aims to increase the rate of adoption of key management practices and technologies that improve business profitability and productivity, by shortening the time lag between technological innovation and adoption of practices by producers.	Profitable Grazing Systems is a group based delivery program, which drives improved business performance outcomes for participating red meat producers with measurable impacts. The program takes a whole-of-farm business approach to improve business performance and key profit drivers. It enables industry best practice and new research findings to be customised to local environments and farming systems, keeping you ahead of the game. There is a strong focus on understanding the financial implications of making decisions.	The Grazing for Profit [™] School is Australia's premier business school for the agricultural industry, being the longest running, and most attended management school conducted in rural Australia. It covers everything that affects a family grazing and farming business in one holistic package and has been continuously updated for the last 30 years.
Delivered by	53 Regional NRM Groups	Agforce, NRM	Private Consultants	MLA, DPI, CSIRO	MLA, DPI, CSIRO	MLA	RCS
Key Focus	Soils	Soil health	Business	Research Extension	Research & extension at station level	Business	Soil health
	Grazing Management	Grazing land management	Grazing				Grazing land management
	Water Quality	Animal production	Nutrition				Animal production
	Biodiversity	Animal health and welfare	Reproduction				Animal health and welfare
		People and business.	BWFW				People and business.
Source: Indigo Agriculture							

3.5 SWOT Analysis for formation of the northern hub – Key issues identified (Appendix 7.1)

1. Strengths

On-going industry support

- Meeting MLA (and industry needs) for building industry capability
- Coverage is representative of industry across Northern Australia. (refer Table 1)

2. Weaknesses

Lack of student numbers

- Critical issue – need a model in which participants are students +consultants+ researchers and producers.

3. Opportunities

- Funding support from other external groups may not meet expectations - need to demonstrate a Value Proposition for all stakeholders at different levels. Corporate engagement to provide direct support to northern enterprises/operations is an obvious target, but there also seems to be an opportunity to provide a service to the state agencies

4. Threats

- Partnership withdrawal - part of a risk management strategy.
- Staffing - Inability to secure the right Hub Co-ordinator

3.6 Stakeholder Analysis – Key Issues Identified

(See Appendix 7.3 for full Stakeholder Analysis)

1. Industry Needs

- Smaller Pastoral companies and/or family operations appear more likely to participate in Post Graduate programs (see the need to build their business skills), whereas larger companies might not, given their existing level of in-house expertise.
- Beef industry participants will attend relevant short courses such as Edge and Grazing for Profit™.

2. University Collaboration

- JCU to provide insights into how collaboration might work in practice (not necessarily as formal as Articulation Agreements)
- JCU needs to articulate how WA Universities such as Murdoch can obtain buy-in so it is not seen as “Qld-centric”
- Developing specific areas of expertise within the hub such that WA institutions could provide the farm economics and meat quality expertise. JCU may provide genetics, and grazing management support and effectively create mini hubs to deliver targeted activities/consultancies/training.

3. Student Numbers (guarantee)

- Important in underpinning JCU confidence is that the Hub will have a consistent body of well-motivated students. Not all students will be (initially) motivated by an academic pathway. Expectation is that some will be upskilling to enter the sector or looking for “refreshers”.
- Feasibility of a mentoring support group has been proven. Mentors provide a pool of consultants too. JCU can eventually differentiate between consultants and Mentors if necessary. JCU will carry the insurance/indemnity responsibilities/ costs.

4. Agencies’ Support

- An unknown factor at this stage, but expectation of support (through student numbers) if coursework design meets their needs.

3.7 Risk Analysis – Key Issues Identified

A complete Risk Analysis is at Appendix 7.2. In response to that Risk Analysis a Risk Management Mitigation Action Plan has been developed (page 64).

1. JCU unable to establish, support or maintain the Hub

Mitigation Plans

- Ensure all key JCU people are informed and supportive
- MLA/JCU sign off – GO/NO GO point – if JCU unable to support the initiative, then alternative tertiary institute/RTO needs to be identified
- Ensure MLA board understands the strategic imperative of this project to its MISP 2020 outcomes
- Develop support of peak industry groups such as RMAC, NABRC, Cattle Council, Agforce, Northern Territory Cattleman’s Association and Kimberley Pilbara Cattleman’s Association.
- Need professional approach to services provided including initial benchmarking to demonstrate progress in all areas of service

2. Lack of funding over the first 5 years

Mitigation Plans

- Ensure MLA/MDC and stakeholders/partners commit appropriate levels of funding
- Ensure high profile and influential people are invited to sit on advisory committee
- Ensure appropriate person is recruited to champion the initiative to all stakeholders and progress EOI to seek industry wide support
- Develop specific service consultancy packages/agreements with prospective clients over 3-5 years span.
- Commence dialogue with the banking sector and outline services and expertise available in their investment portfolio.
- Seek funding from external commercial parties to secure ongoing support
- Develop research applications for R&D funding calls.
- Deliver opportunity to provide evidence based consultancy capacity through mentor network.
- Need flexibility to develop with demand – start small (staff wise)

3. Withdrawal of Stakeholder Support

Mitigation Plans

- MLA has in place strong accountability measures

- Develop very clear objectives and performance indicators for all participants of the initiative and the Advisory Board
- Employ /develop high quality staff through mentors +/- involve mentors in service delivery
- JCU maintains close links to industry through its Hub structure (Advisory Board). Create highly visible Advisory Board at the beginning.
- Actively support mentors/advisory panel members with media releases and annual/biennial conferences and speaker engagement in industry forums
- Budget for overseas visitations by mentors/advisory panel members to develop collaborative links in association with ACIAR
- Keep the Mentors in the loop and enthused through MLA sponsored meetings, activities and a Mentors Coordinator
- Strong marketing efforts by both MLA and JCU at industry events. JCU Hub Director to target key industry events / field days
- JCU manages its collaborative strategy with other Universities and stakeholders effectively
- Engage services of publicity officer within JCU to promote hub where opportunities exist in the rural media.

4. Unable to attract sufficient Student numbers

Mitigation Plans

- Maintain the focus of being 'world class' and 'the centre of excellence' for northern beef – a striking and succinct mission statement.
- Hire a dynamic and well-credentialed Hub Director
- Develop a focussed research initiative to attract post graduate student/s in a PhD and ensure significant research findings are actively communicated to industry.
- Use marketing to highlight role of expert, high profile mentors and practical coursework orientation
- Promote JCU's farm facilities and state of the art technologies to enable flexible, remote learning
- JCU ensures that course content is aligned to industry needs, practical and flexible, with a defined two tier strategy (Students & Industry Participants).
- Ensure the short courses fill gaps or are seen as next steps beyond the initial Edge or GFP courses, provide ongoing development.
- JCU and MLA's promotion of the benefits of having students supported by acknowledged experts (Mentors)
- Limit spaces to create perception of prestige in course. Establish high entry requirements for top level qualifications.
- Establish/promote (in conjunction with industry, government and catchment authorities) scholarships with clearly identified career pathways
- MLA to select employee/s to undertake training
- Ensure primary focus is always a Hub of Excellence
- Provide opportunities for part-time studies while being employed

5. Unable to attract the right Hub Director within 6 months of establishment

Mitigation Plans

- MLA / JCU advertise and promote the position / role - initiate marketing plan nationally
- Ensure selection of highly influential members of advisory board involved in recruitment and selection
- Select the candidate with the right attributes and attitude and develop an intense training course using the mentors, to equip the newly appointed staff with right skills set
- Include some budget for staff training by mentors
- Develop symbiotic working arrangements with Holmes and McLean /NPG so they can explore development/experimental options for Corporates within their phase 2 Benchmarking Project

- Establish a list of priority areas/research questions which industry and overseas countries can support on farm and highlight these areas in promotional material
- Provide flexibility in employment conditions with regards to location, job share and outside interests

4 Business Plan

The Business Plan comprises the following:

1. Strategic MLA and Industry Objectives
2. James Cook University – Establishing the Hub
3. Students
4. Mentors
5. Accountability Plan
6. Operational Plan – incorporating Financial, Governance, Leadership and Staffing, Marketing and Communication, Technology and Risk Management Mitigation Action Plans
7. Implementation Plan

4.1.1 Strategic MLA & Industry Objectives

The Project Team was careful to align the Business Plan and recommendations to the Meat Industry Strategic Plan 2020 (MISP 2020). The key driver for MLA is the need to **build industry capability**. Within the MISP 2020 under the “Building Industry Capability, the Project Team identified the following key strategies that this Business Plan would need to address:

Table 3 Relevant MISP 2020 Priorities

Identified MISP 2020 Outcomes for Building Industry Capability (p.30 of MISP 2020)	Most relevant MISP 2020 Strategy Outcomes
Consumer & Community Support	1. Welfare of the animals within our care 2. Stewardship of environmental resources
Market Growth & Diversification	-
Supply Chain Efficiency & Integrity	3. Optimising product quality and cost efficiency 4. Guaranteeing product and systems integrity
Productivity & Profitability	5. Production efficiency in farms and feedlots

*A relevant extract from the MISP plan KPI's is provided in Appendix MISP Key Performance Indicators*7.4

4.2 MLA's Value Proposition

- Meets the need to build industry capability as identified in the MISP 2020;
- maintain a focus on animal health and welfare and environmental management
- Overcomes a long-standing gap in meeting northern Australia's beef industry concerns around RDE&A; and
- Helps foster the volunteer cohort of expert mentors to add immediate reputation and credibility to JCU's fledging agriculture discipline.

4.2.1 Northern Australian Beef Industry Objectives

4.2.1.1 High level industry objectives

- Better (evidence based) research outcomes – Commercial, applicable in the region
- Development of 'world's best' consulting service for industry on a 'user Pays' system
- Better communication and adoption of research findings (current, future and historic)
- Development of skilled extension personnel and 'whole of farm' consultants who can apply knowledge at a holistic / whole farm level, have good interpersonal and communications skills

4.2.1.2 HUB Project specific objectives

- Better (evidence based) consultancy and research outcomes – Commercial, applicable in the region
- Better communication and adoption of research findings (current, future and historic)
- Development of skilled extension personnel who can apply knowledge at a holistic / whole farm level, have good interpersonal and communications skills

4.2.1.3 Corporates

- Ability to have ready access to skilled extension consultants – a framework of advisory and consulting services in tropical beef production
- Ability to have staff access relevant, practical technical and commercial skills training
- Ability to source relevant, commercial, evidence based research accompanied by accurate cost benefit analyses.

4.2.1.4 Service & Supply Companies

- Employ staff skilled in 'whole of farm consultancy' to specific positions within their organisation
- Ability to have staff access relevant, evidence based, practical consulting skills training
- Ability to have staff access interpersonal skills training
- Development of staff that are recognised by industry as being leaders in their field of expertise.

4.2.2 Capability / Skills Gaps

The industry must actively invest in identifying and developing leadership capability throughout – this is integral to increasing the professionalism of industry organisations, improving day-to-day operations and in equipping the industry to absorb and prevail against future challenges.

Building industry capability, developing skills and leaders to support the industry with sustainable resourcing for key industry programs and structures will meet the following skills gaps;

- Shortage of trained people in the north and those located there have little or no opportunity to further develop skills or access professional development in the north (hence historic links to UQ, UNE);
- Maintenance or access to an intellectual pool to critique and review scientific findings
- Need to improve skills and practical experience of personnel available to the industry (seen by many as a matter of urgency);
- General agreement that a "framework of advisory & consultancy services" would benefit northern beef industry;

- Consistent theme of need for “whole of farm” consulting skills as key to understanding industry needs and the design of practical training that a Hub might offer; and
- Northern industry underserved by private sector consultants to scale and distance issues rendering costs being less favourable for an individual business (and the consultant) compared to producers in the south.

4.2.2.1 Industry Suggestions for Solutions to identified Needs

The industry and agency survey and interview outcomes reveal strong support for the proposed outcomes of this Project. That is, the areas of need have been identified, and can be met from this initiative.

4.2.2.2 Government Agency Objectives

Queensland, Northern Territory and Western Australia

Traditionally the role of extension was performed by the State agriculture departments; however, with the shift/reduction in funding, it has resulted in fewer people servicing the industry (outside of the Reef catchments). Newer entrants are often perceived to lack the required experience and skill sets and the right mentors may not be available to facilitate their growth. The career pathway for extension officers through a series of research projects and research facilities located throughout the state no longer exists.

Summary of QDAF feedback on extension and research funding:

- Queensland Department of Agriculture and Fisheries (QDAF) have begun to address the decline in extension capacity in major regions in Queensland by moving staff to permanent positions. this will address longevity, which has been an issue with the “project by project” basis of contracts;
- Funding for on ground research remains limited and note that MLA does not fund salaries for Department (NRM) roles for extension;
- A key issue is the low level of RDE&A funding in the red meat sector compared to the plant based industries (grain and horticulture);
- The growth in the MDC side of the business masks the real issue of the red meat industries not investing sufficiently in RDE&A to remain globally competitive; and
- The industry needs to review whether the producer levy managed by MLA is really sufficient to address these issues.

The perspective from QDAF on investment in research is pertinent, with MLA spending considerably less of their income on research compared to other areas managed by MLA for the red meat industries. A far higher proportion is invested in marketing compared to some other Australia RDCs. This indicates a greater reliance now on funding through the MLA donor company than previously to support research and development activities.

Table 4 Marketing investment as % of Revenue

Marketing investment as % of Revenue					
	2012-13	2013-14	2014-15	2015-16	2012-17
MLA	53%	45%	42%	43%	44%
GRDC					
Dairy	31%	40%	41%	34%	35%
Hort	19%	19%	19%	18%	19%
Average ex MLA	25%	30%	30%	26%	27%

Table 5 RDE&A investment as a % of Revenue

RD&E as % of Total Revenue					
	2012-13	2013-14	2014-15	2015-16	2012-17
MLA	49%	51%	45%	45%	52%
GRDC	88%	88%	105%	107%	93%
Dairy	72%	67%	68%	63%	65%
Hort	91%	89%	85%	82%	85%
Average ex MLA	84%	81%	86%	84%	81%

Summary of NT DPI feedback on extension and research funding:

- NT policy settings with respect to investment in Agricultural RDE&A have been relatively consistent and steady since the 1990's regardless of the political situation, especially compared to QLD and WA.
- Funding has decreased circa 50% over the last 25 years. Over the 25+ year period, staffing across the Territory has almost halved – 26 FTE to 13 FTE.
- NT DPI indicated they are producing as much now as they were with more people 15+ years ago. NT DPI believes they are more efficient but are now very stretched and need more resources to meet the needs and demands of an increasingly sophisticated industry (mapping, technical advice, animal health, digital).
- Operational funding is a mix of "State", Federal and other external sources such as MLA. In FY17 this was \$3.5M, plus \$5.0M for maintaining research stations.
- Office and infrastructure costs are funded separately.
- Challenging for NT to utilise MDC platform – given NT Government is federally funded.

Summary of WA DPIRD feedback on extension and research funding:

- There has been a deliberate strategy of exiting extension and research by WA DPI for over a decade, especially in the northern region.
- There are limited numbers of research and extension personnel, with most being recent hires and are inexperienced.
- The current government is looking to re-invest in capacity
- Funding exists for RDE&A in the north of WA from several RDCs and other funding sources, but the lack of capacity, coordination and investment by growers, industry, the WA Department of Primary Industries and Regional Development (DPIRD) and universities have seen the lion's share of the investment in northern Australian RDE&A go to projects in Queensland, and to a lesser extent the Northern Territory.

Summary of NRM feedback on extension and research funding:

- There is a two-tiered approach to funding for the NRM groups.

- Those that are adjacent to the Great Barrier Reef are awash in funds, while those outside of these zones have limited funding and capacity.
- The NRM groups have extension staff, predominantly focused on soils and water.
- They are not involved in research.
- Many employees (especially in the Reef Catchments) are recent graduates and require training and development.

4.2.2.3 Hub Role

The decline in experienced extension officers in rural Queensland combined with the closure of research stations in the north and the translocation of research staff from QDAF to QAAFI, effectively has meant there is no longer a robust connectivity between the extensive beef industry and academia. Research providers such as CSIRO, QAAFI and UQ will continue to pursue pure science and highly technical research activities such as genomic work, improvement in vaccines, development of *Polymerase Chain Reaction (PCR)* tests for disease and digital/electronic data capture, but this will mainly occur in sophisticated laboratories. The ability to conduct applied 'on farm' research is severely restricted by lack of researchers located in remote regions and by technical staff who understand the physical and practical constraints of extension and adoption. While it can be argued that the northern industry lags behind the southern beef industry in many aspects of adoption, the reality is there are large knowledge gaps which relate specifically to genotype and dry tropical agricultural systems and translation from the south to the north is often not possible.

The JCU Hub will be ideally placed to:-

1. Address the gap between applied research and pure research by positioning consultants and post graduate students on farm in all regions of northern Australia and South East Asia (SEA).
2. Provide mentoring and guidance to both the consultancy services and future applied research through its team of experienced mentors who have spent many years in outback regions and have 'hands on' knowledge of the challenges.
3. Train a team of 'next generation' advisors and consultants who will fill the void when the mentor team withdraws from the Hub and who will be able to critically evaluate the need and role of the solutions being developed.
4. Position JCU as a University of high recognition and respect within the northern beef industry and within South East Asia as it is the only tertiary institution servicing the beef industry and currently operating in the tropics.
5. Produce graduates with a whole of farm approach to providing evidence based recommendations to all sectors of the northern beef industry. These graduates will find employment as private consultants, company advisors, department extension officers, advisors to pastoral houses and the banking sector, lecturers in academia and researchers in their own right.
6. Create a model and a career path for future consultants and advisors in the pastoral industries. This model is based on the recruit, re-train, retain (3Rs) approach.

4.2.3 Conclusion

The MISP 2020 key strategy of Building Industry Capability with respect to the northern Australia beef industry is NOT currently being acted upon in a coordinated and targeted fashion. The establishment of the Northern Beef Hub will enhance industry capability building and long term viability of an industry able to maximize returns from MLA's investment in R&D.

There are no definitive figures on the levels of adoption or practice change in the north. Arguably this is difficult to record and manage, but is a 'must-have' benchmark to monitor the success of this plan or any other plan over time.

4.3 James Cook University – Establishing the Hub

4.3.1 Define the Vision, Strategy and Goals of the Hub

The following Vision, Strategy and Goals were initially developed at the Mentors' meeting in Brisbane (August 2018).

Vision (2030)

In alignment with the Meat Industry Strategic Plan 2020 key strategy of **Building Industry Capability**, support a sustainable and profitable beef industry for Northern Australia through the provision of evidence-based advice that meets the on-going, practical needs of the industry

Core Purpose

Produce graduates and industry providers who can access, critically analyse and provide practical, cost effective recommendations to improve productivity and sustainability for individual beef producers across northern Australia.

4.3.2 Northern Beef Hub in five Years (Goals and Objectives)

A template for the Beef Hub is the Mackinnon Project.

Based at the University of Melbourne's Faculty of Veterinary and Agricultural Sciences at Werribee on the outskirts of Melbourne, the Mackinnon Project is a recognised leader in sheep and beef consultancy both in southern Australia and internationally. A unique range of services is offered, including farm management consultancies, farmer training programs, contract research and post graduate training programs.

The Mackinnon Project was established in 1983 with the specific aim of improving the productivity and profitability of sheep flocks and beef herds following a bequest from the Scobie and Claire Mackinnon Trust. The bequest from the Trust is ongoing and supports the residency program.

There is nothing comparable for operation in northern Australia.

It is proposed the Northern Beef Hub adopts a similar structure, embedding itself within the JCU College of Health and Veterinary Sciences (Townsville) with linkages to Murdoch University, the College of Business, Law and Governance and the Australian Rural leadership Program (ARLP).

Under the Mackinnon model, the people exclusive to Mackinnon are the Director, Technical Assistant, Administration and 1 – 2 Consultants/ Residents / Post Grad Students. Most of the Consultants have roles as Lecturers / Researchers at Melbourne University within the Veterinary Faculty and are utilised by Mackinnon as required for their research / consulting activities.

Under the proposed JCU model, it is envisaged the initial team will comprise the Hub Director, Administration Manager, a research capacity and post graduate students, all of whom will have access to an expert panel of highly qualified and distinguished Mentors. Current JCU Veterinary staff have the opportunity to dedicate up-to 30% of their time to research, as long as replacement teaching personnel can be sourced to cover any gaps. With sufficient resourcing, JCU and Hub personnel can apply and undertake research projects in the north which will build the profile. There are suitably qualified staff within the JCU Vet College to undertake research activities.

The Hub should aim to tap into MLA programs such as the Producer Demonstration Sites (PDS), Profitable grazing Systems (PGS), Farm Innovation Networks (FINS) and Regional Beef Research Committees (RBRCs) to link students with these efforts as a simple means of providing low level exposure in the first instance.

Table 6 Hub 5 Year Objectives

Current (est 1983)	Year 1	Year 5
Melbourne University	James Cook University	James Cook University
Mackinnon Project	Northern Beef Hub	Northern Beef Hub
Located at the faculty of Veterinary and Agricultural Sciences at Werribee	Located at the faculty of Veterinary (and Agricultural Sciences)	Located at the faculty of Veterinary (and Agricultural Sciences)
Mackinnon Project, the sheep and beef cattle farm consultancy service at the Melbourne University Veterinary School	The beef cattle farm consultancy service at the JCU Veterinary School	The beef cattle farm consultancy service at the JCU Veterinary School
Director 1	Hub Director 1	Hub Director 1
Senior Consultants 2	Senior Consultants / research capacity 1	Senior Consultants / Researcher 2
Consultants 3	Consultants 0	Consultants 2
Residents and Postgraduate Students 3	Residents and Postgraduate Students 1	Residents and Postgraduate Students 5
Research & Technical Assistant 1	Research & Technical Assistant 0	Research & Technical Assistant 1
Administration Manager 1	Administration Manager 1	Administration Manager 1
Mentors	Mentors 6	Mentors 8

Building a profile will be important to attract students and research projects. Linking closely with the NABRC groups will be vital to ensure exposure to their key objectives and view on where research should be focussed and adopted. Having highly reputable and experienced mentors overseeing the Hub research projects and who are actively involved with the Hub's consultancy services or who are providing their own external consultancy work should place the JCU Hub well ahead of others if there is a true focus on quality evidence based research.

The relevant Colleges within JCU are;

- Public Health, Medical and Veterinary Sciences;
- Business, Law and Governance (including the ARLP); and the
- Science and Engineering

JCU staff members of each College have undertaken research work in areas relevant to the Northern Beef Hub and the northern Beef Industry. This should be more widely promoted as an initial means of exposing the current expertise within JCU.

4.3.3 Finances

While strongly supported by JCU, the Hub will require external funding for at least five years to establish and operate. JCU is not in a position to materially fund the Hub, however it can and will provide a significant level of support from current staff and administration. It is envisaged that external funds will be sourced from industry, MDC/MLA, and agribusiness service and supply organisations to establish and operate the Hub.

An imperative of the Hub will be to develop its commercial operations via consulting and training (short courses) which will generate income, but importantly will expose staff and students to commercial operating perspectives that will in turn benefit the industry. Further it will enable the Hub and JCU to build a profile within industry.

It is recommended that upon approval of the Business Plan by MLA, there is a coordinated joint approach at MLA CEO / JCU VC level to the large pastoral companies (NPG), finance institutions (Banks, Insurance Companies), resource companies (BHP, Rio Tinto, Santos), AgTech and Ag Chem (Nufarm, Bayer) or recruitment companies for sponsorship funding and ideally commitment to send employees to the Hub for either short or long courses.

A medium term timeframe is required to ensure sufficient time to establish the Hub, ramp up activities and develop a profile in the market for consultancy services and excellence in research. The purpose and benefits of the Hub will need to be clearly articulated to all industry stakeholders and that it is a long term investment in building capacity and capability.

It is unlikely that the Hub will be in a position to earn material amounts of external revenue in its first year with the focus being on establishment and business development.

JCU will contribute via staff time, facilities, IT, Insurance and administrative support. JCU have advised that a majority of the fees from students will be retained by the College for administration and overhead costs.

4.3.3.1 *The Investment*

It is envisaged the annual running costs will be in the vicinity of \$800,000 - \$900,000 per year (post the establishment year). It is envisaged that the income from Hub activities (consulting and training) will ramp up from year 2 and would ideally meet at least 30% of the running expenses by year 4 or 5. This would be a long term strategic investment by MLA (the industry) in capacity building in northern Australia.

Full budget details are provided below in Section 4.6.1.

4.3.4 Technology

Within JCU there is strong technology capability with the established eResearch Hub. Current JCU staff have key skills in computational chemistry and high-performance computing. Research capability includes:

- Sensor Networks and IoT
- Big Data Analytics
- eResearch
- Precision Agriculture

and within Precision Agriculture JCU is leading work contributing to:

- Northern CRC - Applying new technologies to enhance biosecurity and cattle quality
- QLD Department of Science, Information, Technology and Innovation - Smart Ear Tag for Livestock “Ceres Tag”
- Department of Agriculture and Water Resources - Control Tools and Technologies for Established Pest Animals and Weeds Programme – “Enhanced landscape scale management of feral pigs and buffalo in large remote landscapes with new technologies enabling real-time data, modelling and analytics”
- The school of business has undertaken work in Ag Tech such as the Digital Homestead project (along with CSIRO), and in adoption for the Queensland Department of Environment and Science - Contract Research “Landholders Driving Change”.

JCU has considerable experience in Technology and servicing remote and regional areas of Australia and Asia Pacific. It has links into regional towns in Queensland which are currently utilised for training (mostly in Public Health), which would be available for students (either long course or short course). JCU makes good use of the internet via webcasts and video conferencing.

Technology is of great interest to both industry and students, with the challenge being to understand what is available, how it can be applied and who can supply and service the AgTech. JCU is well positioned to fulfil all these functions through training students in this area and working with others to develop and demonstrate AgTech in the north.

4.3.5 Research opportunities

Beef Research priorities in northern Australia are driven by industry through the Northern Beef Research Advisory Council. The annual call for projects usually occurs in October - November with approval by the end of the financial year. Given the timing, it is unlikely that the Hub will be in a position to become an active party in supporting and facilitating research projects until 2019/20. There may be opportunities for students / the Hub to have some involvement in the MLA PDS program or similar activities in the north that are underway. It is envisaged that students could be integrally involved as on ground co-ordinators and provide critical data and economic analyses in these small projects on farm.

In addition, the Hub should canvas the major northern pastoral and resource companies to see if there may be specific issues that can be addressed by the pool of expertise (mentors).

The current MLA and NABRC R&D priorities are:

Northern

1. Develop whole farm systems for managing breeder productivity
2. Rumen technologies to improve efficiency
3. Research into how to sustainably develop to support increased carrying capacity
4. Optimising production from the feed base
5. Chemical castration of females and males
6. Awareness and integration of cost-effective labour saving technologies
7. Develop pathways to efficiency - performance recording and benchmarking
8. More efficient and effective collection and use of data, both broad scale and crush-side, to reduce cost of operation, better inform decision making and improve overall productivity

In the 2013 Northern beef situation analysis⁵, Holmes and McLean identified three main areas of herd productivity where real gains can be achieved in economic performance by making modest improvements in each area:

- a. Higher reproductive rates
- b. Lower mortality rates
- c. Heavier sale weights

The findings of that report now make it possible to construct a clear roadmap for economic sustainability for a northern beef business, embracing both location and target market. Their roadmap provides clear guidelines on factors critical to income (productivity) and expenses (scale and labour efficiency).

There is wide variation across the industry in what it costs to produce a kilogram of beef (cost of production). The Holmes and Maclean analysis⁵ showed that there was significant scope for improvement for many producers. There is far less variation in beef price received and much less scope for individual producers to improve beef price received. Therefore, it could be said that it is the high cost of production that is the main cause of low profits for the majority of northern beef producers. Cost of production is affected mainly by labour efficiency and poor animal productivity.

⁵ <https://www.mla.com.au/research-and-development/search-rd-reports/final-report-details/Productivity-On-Farm/The-Northern-beef-report-2013-Northern-beef-situation-analysis/234>

Table 22: Beef herd income statement comparisons (\$/AE)

	Typical	Top 25%
Gross Profit	194.27	226.30
Enterprise Expenses	37.03	32.30
Gross Margin	157.24	194.00
Overhead Expenses	117.95	102.54
Total Operating Expenses	154.99	134.84
EBIT	39.28	91.46

Table 23: Beef herd KPI comparisons

	Typical	Top 25%
Price Received (\$kg LW)	\$1.77	\$1.78
Cost of Production (\$kg LW)	\$1.41	\$1.06
Operating Margin (\$kg LW)	\$0.36	\$0.72
Kg Beef/ AE	110.0	127.1
Labour Efficiency (AE/FTE)	1,025	1,237
Labour Costs (\$/AE)	\$44.46	\$37.91
Gross Value/ Head Sold (all sales)	\$849	\$897
Sale Weight/ Head Sold (all sales)	472	493
Reproductive Rate %	65.2%	70.4%
Mortality Rate %	2.0%	1.3%

From the above tables and more extensive detail in Appendix 1.26.4.3:

Fig 2 Beef Herd Metrics5 - Average v Top 25%

There is a \$52.18/AE EBIT difference between the top 25% and a typical producer (

– information from Northern beef situation analysis Report). If the Hub could provide services to 5% of producers either directly or indirectly and improve performance on 685,000 AE (5%), then the immediate benefit to producers would be approximately \$35.74m p.a.

However, the 2013 Northern beef situation analysis did not analyse the long term trends in loss of carrying capacity in our rangelands. A recent report by Shaw *et al.*, (2016)⁶, as a result of a series of surveys across the northern Gulf region suggested that land condition has declined over recent decades with a prediction that it will continue to decline. Since 2004, the proportion of original carrying capacity retained has declined from 72% to 66%. This is in line with a similar decline in land condition. Shaw *et al.*, (2016) reported that continuing the trend suggests that 50% of original carrying capacity will be lost by 2046. These grave findings are also evident at a national level where the combined size of the national herd and flock have declined by around 20% in past 30 years. The focus of the Hub is to provide whole of enterprise consultancy so that gains of productivity are balanced against sustainability while improving the bottom line.

⁶ Shaw D, Jones D, Rolfe J, Gogius N, English B and Brdye N; Changes in Land Conditions in Northern Gulf Region of North Queensland 2004 – 2016. Internal report for Northern Gulf Resource Management Group.

Research activities are expected to play an important role in the Hub to support the consultancy base, to maintain applied research capacity in the north and to ensure the Hub is at the cutting edge of applied science and is regarded as a centre of excellence in its own right. The Hub could focus on several possible key research areas which will be developed and presented to NABRC for consideration and priority setting. The list below outlines some of the research options:

1. Young breeder productivity – establishing optimum time of joining to maximise lifetime productivity, reduction in joining time for maiden replacement heifers, establishing Critical Mating Weight (CMW), examination of cost effective strategies to achieve CMW and establishing the causes of neonatal calf loss and evaluation strategies to reduce the same.
2. Monitor calf losses with specific reference to determining the prevalence and distribution of *Clostridium perfringens* type E as a cause of calf scours and calf loss in the growing/wet season of northern Australia. This was first discovered in 1967 by Mitchell but no work has been done in this space since then. Similarly, akabane has been identified as a possible cause of calf loss in several MLA projects at Lake Nash and Bow Park in Queensland and its significance needs to be determined.
3. Explore feasible management options for the control and effective production of entire male cattle in extensive enterprises in northern Australia looking at paddock security and short scrotum technology. Investigate the feed conversion efficiency of entire males and short scrotum stock in lot feeding operations. Some of our live export markets have a preference for entire males.
4. Development of tools and technologies to monitor land condition and forage budgets. Establishing trigger points for pasture growth in all regions of the north, based on current biomass, soil temperature, recent rainfall data and soil moisture and then establishing safe stocking rates for the remainder of the season until the next anticipated 'green date'. Development decision tree approach to drought mitigation based on pasture and fodder reserves, cash reserves and herd structure is a new approach to drought management.
5. Explore options for fodder conservation and development of alternate energy sources such as cassava for northern Australia for finishing *Bos indicus* stock cost effectively in the event of disruption of the live export trade. Utilise the same options to finish cull cows and ensure viable markets for cows in northern Australia to reduce mortality rates, improve profitability and maintain moderate stocking rates. Map out the suitable mosaics of horticultural soils where these activities can occur. Develop these options in collaboration with the Northern Australia CRC.
6. In conjunction with CSIRO, QAAFI and the new laboratory at Berrimah, test vaccines in the field for cattle tick, bovine ephemeral fever and blue tongue which may eventually lead to lifelong, single shot products.
7. Monitor and investigate the impact of high faecal egg counts in grower cattle in extensive regions of northern Australia and research management options for strategic parasite control if causing losses in productivity and mortality issues.
8. Continue research to support further intensification with regards long term productivity and sustainable pasture management.
9. Examine the impact of provision of shade (artificial or native flora) for stock in the large treeless plains of the downs country and investigate the impact of water quality on livestock performance.
10. Development of cost effective strategies to reduce evaporation in surface water storages in northern Australia and conduct further research and adoption for construction of stock waters and dams.
11. Explore options to measure feed intake for grazing cattle so that eventually grazing stock can be selected on feed intake and conversion rates.

12. Continue research into finding and mapping the spread of weeds using satellite and drone technology.
13. Support initiatives for the development of a crush-side P diagnostic tool kit and identification of paddocks where Phosphorus supplementation will provide positive cost benefits. Create more detailed maps at a paddock level to clearly show where responses to P will be regularly achieved.
14. Continued research into the development of practical strategies to improve the success rate of artificial insemination in *Bos indicus* maiden heifers in northern Australia with the goal of guaranteeing that recommendations can deliver on 60% success rate.
15. Support research into the development of drone technology to reduce the cost of locating stock and aerial mustering in extensive regions.
16. In conjunction with ACIAR, tailor research needs specific to SEA countries and post graduate training projects where specific needs can be clearly identified and where the host country can support these research initiatives.

The above list would need to be prioritised in consultation with industry and mentors, taking into account JCU/Murdoch/UWA (and CSIRO Townsville) research capabilities and interests.

The issues identified above highlight the need to maintain an active, mobile and applied research capability specific to northern Australia ready to travel to the areas where the research is being conducted. Researchers should not be so highly qualified and trained to specific laboratories and pieces of equipment but be adaptable to change disciplines when and where required.

4.3.6 Consultancy opportunities

There is no income forecast for Consulting in the first year; however, it would be possible to initiate an income stream from minor assignments. The Hub will be seeking to engage with industry to secure external income from consulting work from the date of establishment.

A clear opportunity for consulting (and research) will be to leverage the productivity issues identified in the 2013 Northern beef situation analysis⁷ and the more recent Australian Beef Report⁸. It is envisaged that these reports will identify property level and regionally specific issues that could be addressed / reviewed with the assistance of the Hub and its mentors. In addition, benchmarking work underway by Mclean and Holmes and the NPG will illustrate research and information gaps that may be filled by Hub personnel on NPG properties that wish to test various hypotheses to improve productivity.

⁷ <https://www.mla.com.au/research-and-development/search-rd-reports/final-report-details/Productivity-On-Farm/The-Northern-beef-report-2013-Northern-beef-situation-analysis/234>

⁸ Australian Beef Report, Jan 2018. Bush Agribusiness Pty Ltd.

4.3.7 Training – Short Courses

QFF along with the REEF NRM groups have identified a priority need for training in extension. This is an area the Hub could step into relatively quickly. JCU could collaborate with CSU to provide access to the CSU extension training coursework for application in northern Australia which would be a means of;

- a. Earning income from training in Extension and Consulting, and
- b. Developing a profile for JCU and the Hub.

The need for extension training was clearly outlined in the Reef Reports developed by JR Coutts in 2014 – 2017⁹.

Priority areas of focus identified by the industry survey were:

- improving business and financial literacy,
- grazing and pasture management,
- technology, and
- animal production.

The JCU Veterinary and Business colleges have the capability to offer focussed short courses in all these focus areas. Ideally the JCU led short courses would complement and build on training offers from groups such as Resource Consulting Services (RCS), MLA EDGE packages along with Beef Up Forums, filling gaps rather than directly competing.

RCS offer an excellent ongoing business development program Executive Link™ which provides ongoing business support post completion of the Grazing for Profit™ Program. There appears to be no real follow up with the EDGE programs and the likelihood of adoption is only being captured through the PGS program. There may be an opportunity for the Hub to provide the follow up / next step development post completion of the Edge program and perhaps to integrate with RCS on Executive Link™.

In order to succeed in this component, a deeper understanding of the current industry (short course) offers and then gaps needs to be developed.

Whilst not a driver for all short course attendees, building accreditation (or micro-credentialing) into the training pathways has attraction for many and thus is a consideration for short course alignment and/or development.

4.3.8 Academic Activities

The focus for the northern Beef Hub is elite and niche for post graduate students and potential lead service providers to industry. Research and consulting will be an integral component of the Hub activities. Feedback from the various agencies and departments indicates the numbers of staff within the three State Agencies (NT, QLD and WA) may total five to twelve people, undertaking post graduate study in any one year.

Ideally JCU could position itself to attract some of these potential students, especially if they are focussing on northern beef systems (pastures, technology, grazing, and animal production). This would provide JCU an opportunity to promote its value to industry over the traditional Agricultural Science Universities (UQ / UNE), which have been the “go-to” Universities for students from northern Australia. While the focus is predominantly beef, other species such as sheep, goats and dairy cattle could also be included in the scope of studies. The new offering would include supporting quality

⁹ <https://reefextension.couttsjr.com.au/>

research projects, strong industry links and overseen by highly respected mentors with scope across the northern beef industry. Scholarships, direct engagement with PDS, and other MLA programs would also be beneficial.

There is demand for short courses from industry and other agencies such as the NRM groups. For the NRM groups this is likely to be in the areas of extension, business management and animal production. Extension training for the NRM groups is a high priority and an early opportunity for JCU and the Hub. For industry, areas of focus would include business management, technology and animal production.

Given that the Hub has a northern Australia focus, it is important that all stakeholders are involved, especially the agencies and universities from Western Australia and Northern Territory, representatives of whom indicated concern over another proposal that was "Queensland-centric". To this end University of Western Australia and Murdoch University have been approached to gauge their interest in participating in the project from the WA perspective. Murdoch has expressed positive interest. In addition, CSU has offered to collaborate with JCU on this initiative.

Charles Darwin University (CDU - NT) offers a well-regarded rural training and development program which is utilised by some of the corporates from the Katherine Campus. This training is mostly at the Certificate (II, III & IV) level but is an important component of the career pathway for the beef industry (in NT).

Longreach Pastoral College used to offer a similar program in Queensland but does not undertake training and assessments on station (a major positive for CDU), thus is not well utilised by the corporates. A further advantage for NT is that the cost of the NT courses is subsidised by the NT Government, which does not occur in QLD.

DRAFT HUB		
Murdoch	JCU	CSU
Animal Production Nutrition Breeding Genetics	Animal Production Nutrition Breeding Genetics	Agriculture Risk Management Agriculture Marketing Extension Supply Chain Research methods Agriculture Resource Economics
Business	Business	
	Technology	
Crop & Pasture Science		
Biosecurity		
Food Security		
WA based students Broome / External	QLD / NT Students T'Ville / External	QLD / NT Students Wagga / External
"Murdoch" Student	"JCU" Student	"JCU" Student

Fig 2 Indicative Hub partners

Note that the Queensland State Government has decided to close both Emerald and Longreach Pastoral Colleges (Coaldrake Review - 5th Dec 2018)^{10&11} and "move to more modern, cost effective

¹⁰ <https://www.beefcentral.com/news/anger-over-ag-college-closures/>

¹¹ <https://publications.qld.gov.au/dataset/coaldrake-review/resource/ae7e15bf-4041-4651-a711-c8fc114eb089>

training”. The alternative options have not been identified. This removes a well-established pathway for school leavers to enter the agriculture industry and makes the establishment of a northern Hub increasingly important. At this point there is no clarity around the future use of either college.

WA Beeflinks

MLA/ MDC in conjunction with the University of Western Australia (UWA) are collaborating to establish the Beeflinks program (WA specific). Beeflinks is a whole of supply chain program from breeding to growing, feed-lotting and meat quality. It will support evidence based R&D activities across WA focusing on how the use of irrigation in northern WA can improve productivity and enable development of market pathways outside the Live Export market.

It is expected the Northern Beef Hub will collaborate with MLA and UWA to ensure alignment of objectives, consultants and resources.

4.3.8.1 JCU Current Academic Programs

- Bachelor / Masters of Tropical Veterinary Science
- Bachelor / Masters of Tropical Science (possible change to Science, Food and Agriculture)
- Bachelor / Masters of Commerce/Business
- Australian Rural Leadership Program Certificate (ARLP)¹² qualification, which is a high quality industry leadership program (JCU is the only University with that link) and moving to a Master's offer in 2020 (via the College of Business).

4.3.8.2 Hub Academic Offer and Industry Pathways

The Hub is designed to produce graduates, industry leaders and professionals who can access, critically analyse and provide practical, cost effective recommendations to improve productivity and sustainability for individual beef producers in northern Australia.

For postgraduate study, courses could be structured for the following qualifications:

1. Graduate diploma – 1 year full time or equivalent
2. Masters – coursework
3. Masters – research
4. PhD

The Hub is also designed to meet the immediate, shorter-term needs of industry through its short course programs supported by acknowledged industry experts.

5. Short courses – These are usually one subject about a specific topic. Non-award and cross-institutional courses are for academic credit and include assessment. Some of these may be offered by JCU, a partner University (CDU, CSU) or another RTO. Ideally the short courses would have some form of credit towards a qualification.
6. Courses that sit below post graduate level (excluding undergraduates at JCU) are likely to be offered by other organisations. However, there should be an emphasis on ensuring that all industry participants/ stakeholders can see the full picture and how the levels of training and

¹² <https://rural-leaders.org.au/>

accreditation can build over time, should this be a desired pathway (and **Error! Reference source not found.**).

JCU Post Graduate Masters programs

1. Tropical Animal Science, and
2. Tropical Veterinary Science

It is suggested that the former (1.) be rebadged to specifically include the word agriculture (Masters of Science, Food and Agriculture). Under this banner the various components can be offered, either by JCU or partner Universities such as UWA/Murdoch and CSU.

Partner RTO's and Student Access

Rather than “re-invent the wheel”, the Hub could leverage the strengths and capabilities within JCU and its partner universities. UWA, Murdoch and CSU both have strong Agriculture offerings which can be utilised by the Hub. Rangelands management should be incorporated into the program given that much of the tropical/northern beef areas in Australia are “rangelands”.

Students sourced from WA may need to remain UWA/Murdoch students to ensure full collaboration of the WA DPIRD and support for the concept in northern WA. However, all other students would likely remain JCU students, even if some components are supplied via other institutions. This will need to be resolved with further discussions with JCU and partner RTOs.

Flexibility around modes of delivery as well as location will be important. Venues outside Townsville should be considered and utilised depending on demand (Mt Isa, Katherine and Broome). Webinars and the internet will allow close connectivity between JCU and Murdoch and mentors would be able to visit the various sites.

Within the core institutions, most areas of need identified can be addressed at the post graduate level. Other organisations such as pastoral colleges and CDU can facilitate the lower levels of training and certification.

It should be a priority for MLA, in conjunction with agencies, industry partners and the NPG to promote the various education pathways and options that are available.

4.3.9 JCU's Value Proposition

- Provides an opportunity to position JCU as offering a strong and credible agriculture discipline for northern Australia (and potentially SE Asia), particularly through the “instant” reputational boost of many leading experts as “mentors”;
- Provides an opportunity to build strong links to the beef industry in the north to meet that industry's practical needs and with prospective funding input from significant corporate players;
- Optimises the benefits from JCU's virtual facilities and agricultural properties; and
- Build on existing capability and research along with the close CSIRO links.

4.3.10 Conclusion

JCU continues to contribute to northern Agriculture via research and training, although not to the extent of other universities such as UNE & UQ which have become the institutions of choice for northern Australia agriculture students. However, it is important to recognise that JCU has engaged

with industry across its various colleges and this should be emphasised as part of the Hub promotion process.

JCU has a great opportunity to re-position itself in conjunction with UWA/Murdoch and CDU as the foremost institution for study of tropical beef (Agriculture) in northern Australia.

4.4 Students

4.4.1 Industry/Student Pathways Matrix

The following table provides a high-level overview of career pathways in the beef industry, student and industry/agency needs and how these are linked to qualifications, possible mentor support and the “fit” with desired MISP 2020 outcomes.

Table 7: Industry - Student Pathways Matrix

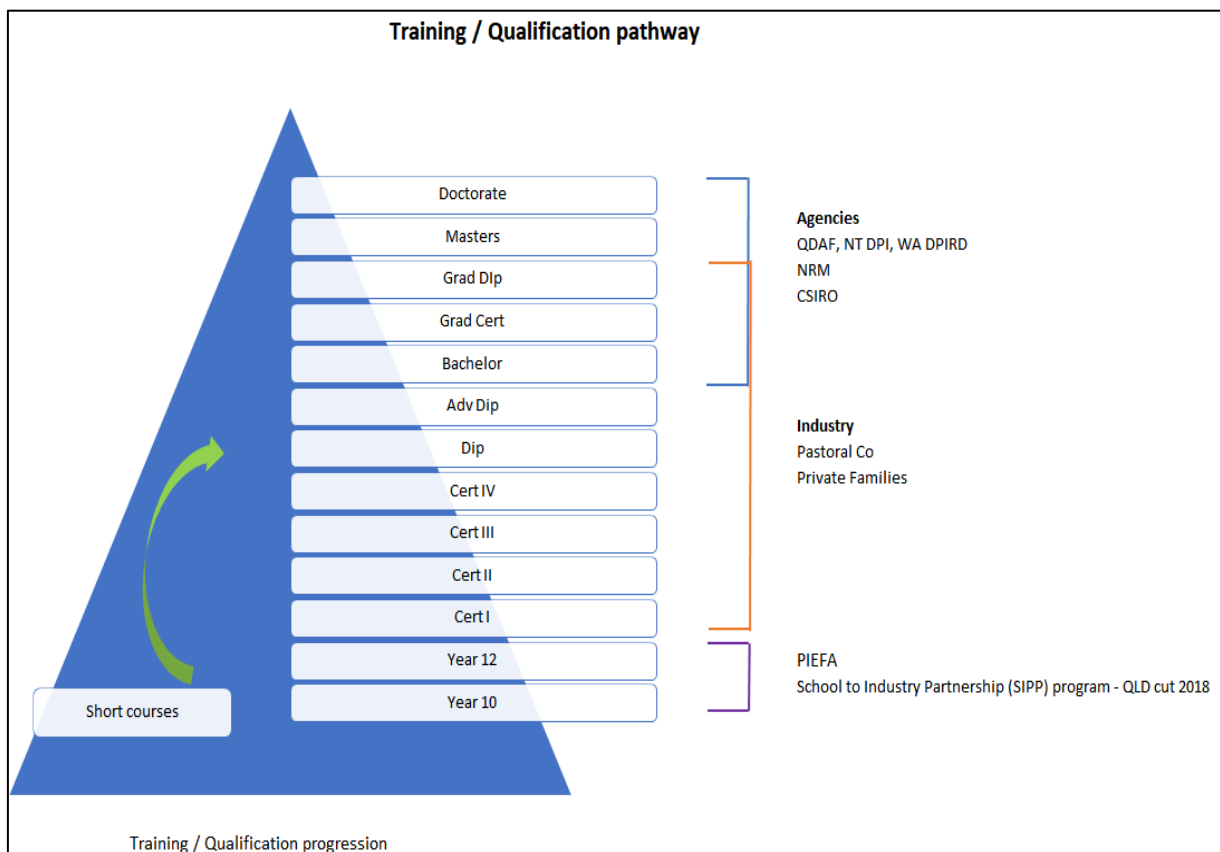
Qualifications Sought	On-farm Pathway	Ex-Farm Pathway	JCU delivery Y/N	TAFE / Ag College delivery Y/N	Student needs	Australia & Asia Pacific Industry Needs - Corporates	Industry Needs - Service Companies	Agency Needs	Mentor support? Y/N	MISP 2020 Alignment
Senior (PhD, Masters, P-G)	Management stream	Senior Industry professionals/ researchers / consultants	Y	N	PhD and other P-G studies, research Interested in “tropical beef” studies as a niche program Practical on-farm experience (access to “real world” mentors & farms a big plus) Access to latest research via short courses and on-line offerings	Access to latest research and best qualified extension resources / skills and capacity building	Access to latest evidence based research Extension skills – interpersonal and technical (whole of farm)	Research personnel, access to research opportunities Capability to extend knowledge gained from research. Maintain a core technical expertise for peer review & staff development	Y	1 -5
Intermediate (U-G, Dip, Advanced Dip)	Livestock stream and admin stream	Intermediate industry professionals/ consultants	Y/N	Y	Practical on-farm experience (access to “real world” mentors & farms a big plus) Access to latest research via short courses & on-line offerings	Access to latest research and best qualified extension resources / skills. On farm practical technicians to perform essential routine tasks.	Research concepts, extension training	Extension skills - interpersonal and technical (whole of farm). Resources & updated extension material.	Y	1 - 5
Junior (Certs 1 to IV, Dip)	Livestock stream and admin stream (non-graduates – prior learning?)	Admin	No	Y	Pathways to higher qualifications including diplomas and degrees in conjunction with existing rural colleges	Knowledge & skills development in animal production, pastures/grazing management & technology, business literacy. Develop a platform to attract next generation staff to exciting careers in the outback.	Admin and technical skills (. business, pastures & animal production). An appealing career pathway to retain staff in rural regions	Admin and technical skills (business, pastures and animal production). With a practical background.	N	1, 2 &5
Entry Level Pathway to Diploma and degree entry	School Leaver Y10 or Y12 – rural college recognised prior learning at accredited enterprise.	School Leaver Y10 or Y12	No	Y						1 & 2

4.4.2 Context for Industry Training and Pathways

It is important for building industry capability that we understand where the Hub will sit giving reference to the full scope of career options and training pathways. Figures 3 and 4 illustrate the potential pathway from high school through lower level certificate qualification, diploma, and undergraduate to post graduate study and where the various stakeholders can contribute or their areas of possible demand.

illustrates pathway options. **Error! Reference source not found.** indicates where students may be sourced from for the various training qualifications. This is not however, how the Hub will be structured as it has a focus on post-graduate, high achieving students who will be adding to their current qualifications and will be involved in research and consulting activities.

Fig 3 Agriculture Training pathways



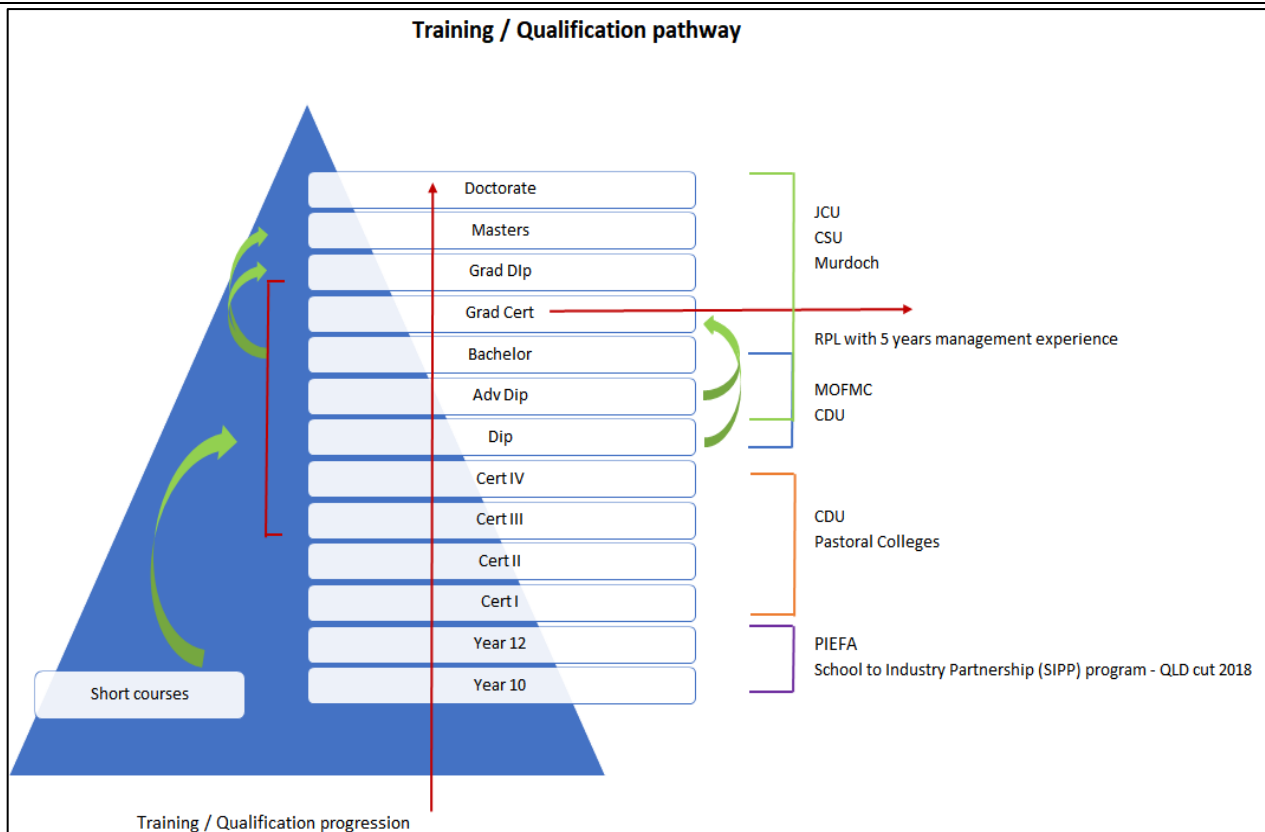


Fig 5. Probable preferred industry study areas

4.4.3 Student Profile

The following student profile and student attraction strategies are based on interviews with several recent graduates who are part of MLA's Future Consultants Program as well as a 2013 QDAF initiated research paper based on a series of focus groups across Queensland.

It is envisaged that a majority of the post graduate students will be drawn from Government agencies and South East Asia, with the short courses having more appeal to beef industry participants.

JCU Hub Participants - Projected Interest Levels							
		Post Graduate			Short Courses		
		High	Medium	Low	High	Medium	Low
Agency	WA						
Agency	QLD						
Agency	NT						
CSIRO							
NRM							
NPG							
Beef Producers							
SE Asia							
Agri Service / Supply							

Fig 6 Hub Participants projected interest levels

4.4.3.1 Students and industry participants most likely to undertake JCU courses

Students

- Holding a first degree or post-graduate qualification in an applied science and/or agriculture-related field;
- Already working in the beef industry, most probably at a rural veterinary practitioner or junior level and seeking experience before wanting to undertake further study OR seeking career change;
- Interested in “tropical” / Northern beef business and production studies as a niche program; and
- Interested in studying close to where they are working or accessing further education through flexible on-line offerings supplemented by “on-farm” mentoring by experts.

Industry Participants

- Already working in the industry, looking to upskill without undertaking a full undergraduate or postgraduate program;
- Current established industry participants and/or provider wishing to change career path within the beef sector or upgrade existing skills/knowledge;
- Participate in specific units or short courses of interest that are recognised and will build credentials (over time) towards a higher qualification; and
- This component may include units / courses run by JCU / Murdoch but also from other RTO's; and
- An industry group made the comment that the MLA Edge program is meeting many of their short course training needs, with less support for the CDU program from the industry group.
- An industry group acknowledged that EDGE package of courses (and other similar programs) were generally delivered by people at the latter end of their careers and there is likely to be succession issue in extension services for the north; and
- This provides an opportunity for the JCU Hub to meet the need to train more trainers in these areas. Further JCU could develop programs to fulfil the need for follow up training post the initial EDGE course/s. This follow up process would also enable more clarity around adoption and practice change on farm.
- A focus for industry will be to ensure training pathways and standards are consistent. This would assist employers as they will know the skills and training of employees meet a common standard.

4.4.3.2 Student Attraction Strategies

- Position “tropical-northern agriculture” as a niche and highly valued study program across northern Australia and SEA with links to a range of Universities;
- Have high quality agriculture course(s), other than Veterinary Science (call it Agricultural Science);
- Have Lecturers/Researchers with good reputations and experience in addition to the Mentors;
- Have a reputation for strong northern beef industry links (NPG, private operators), including a rangelands focus;
- Emphasise practical mentoring support on farms and research stations by persons with strong academic and commercial experience in agriculture – offer subjects with projects linked to working with industry in “real” situations (the University for the real world of building tropical beef industry capability);
- Offer access to excellent, state of the art virtual, on-line study facilities and the capacity for some coursework to be delivered regionally;
- Work closely with industry in start-up phase to ensure coursework offerings are aligned to industry needs so that industry will provide on-going support;
- Business studies linked to agriculture would be welcomed;
- Become active and highly visible in northern beef research projects in conjunction with MLA, CSIRO, NRM, and QDAF; and
- Promote access to three research farms (owned by QDAF, JCU and CSIRO) all within 160 km of Townsville.

4.4.3.3 Principles Underpinning Academic and Training Courses based on industry demand

1. *Mix of course work and project-based work*

The structure of education and training requires the appropriate *mix of course work and project-based work*, to meet needs and objectives of each student. It will be dependent on pre-requisites for entry but will need to make sure it covers basics of production but then links them together to produce a whole of business result. The Hub will rely on existing University courses for business, finance, statistics, physiology and agronomy. Focus new courses on critical thinking and problem-solving within each subject-area (grazing ecology, extension, nutritional constraints and reproductive efficiency) along with developing technical skills to enhance productivity.

2. *Practical/hands-on*

There needs to be practical and hands-on procedures done whether it is using models, developing plans, analysing data and ‘on farm’ research projects/PDS application. Theory should underpin practical recommendations, and these should be accompanied by accurate cost benefit analyses. Mix of new and old information and approaches.

3. *Whole of Business*

Students will be trained in an understanding of whole of business systems, including the value of benchmarking and risk, analysing business performance and identifying business/profit drivers. Students will be encouraged to develop good interpersonal skill sets.

4. *New Technologies*

Students will be trained in the value of different technologies and be able to examine and value their benefit to the individual client. An expansion of knowledge could occur with the sharing of information between 'like-minded' producers about adoption and implementation of new ideas. The addition of extension technologies and business management strategies to the proposed course will enable graduates to develop their own business principles, and work towards encouraging adoption of new technologies within northern Australian cattle businesses. Critical thinking skills – students will be able to understand the value of 'doing things differently', think about the implications of the adoption of new technology for their clients in terms of risk, profit (short and long term), and required resources. A number of large corporates have large datasets that cannot be easily interpreted without some specialised skills in large data management and analytical skills. This presents new and unique opportunities for career development in the beef industry.

4.4.4 Pastoral Company – Competency review

Six northern pastoral companies are major employers in the northern beef industry. Collectively these entities manage very large herds and have the internal capability to review and implement commercial research concepts. Within each entity a considerable number of people are recruited, employed under various conditions and trained. Across the northern industry retention of staff is a common issue. Career development as opposed to training is an important issue for most of the large pastoral companies.

Following consultation with a selection of the major northern pastoral companies, it is apparent their needs in terms of training are lower level, technical and issue specific. It is unlikely that many operational employees will look beyond Certificate / Diploma/ Undergraduate qualifications whilst in these roles (Table 8).

It is important to recognise the needs of the companies and how these operations view the career path of their people and that the full context of career path / training pathways is provided. The reality is that over time, younger employees will become the managers of the large properties on which agency staff or Hub personnel will undertake research and extension.

Table 8 Pastoral Company competency review

	Company 1	Company 2	Company 3	Company 4	Company 5	Company 6
QDAF Beef Industry Quality Workforce Handbook (2014)	Aware	Aware	Recently Aware. Did not have a copy, have sent	Aware	Aware	Unaware. Did not have a copy, have sent
Aligned / Use the Handbook Pathways	Yes Aligned More formal pathways Agree with competency Overlay with internal standards	Yes Aligned Informal pathway Agree with competency, overlaid with internal standards Not everyone will be a leader	WIP – Reviewing and developing the processes and frameworks Early days	Yes – Aligned Informal pathway both structured and unstructured Seasonal workforce Working through succession planning for the group	Yes - are using the handbook as the foundation for their workforce career pathways with the company 5 overlay.	WIP –Reviewing and developing the processes and frameworks Early days Handbook may become foundation for role development and competency assessment
NT Training CDU Katherine	Utilise for CDU - NT as assessed on farm	Don't Utilise CDU or Longreach, use another Contractor for Cert 2, 3 & 4 training	N/A	Utilise for NT – CDU as subsidised, assessed on farm	Utilise for CDU - NT as assessed on farm. HR Manager planning to meet with CDU and other RTO's to understand training options available and how this can be utilised by company 5.	N/A

	Company 1	Company 2	Company 3	Company 4	Company 5	Company 6
QLD Training Eg Longreach Pastoral College	Ad hoc Don't use Longreach or equiv. No subsidy or onsite assessment	Ad hoc Don't use Longreach or equiv. No subsidy or onsite assessment Use Contractor for assessment to Cert 2, 3 or 4 level.	N/A	Ad hoc Don't use Longreach or equiv. No subsidy or onsite assessment	Are aware of Longreach and Emerald. Had few properties in QLD until recently so not utilised.	N/A
Professional Development Plans	Induction for all new staff Identify gaps Develop training plan as required Encourage and support training Have offered scholarships Encourage and support training Will support further study at Uni / MOFMC etc on a case by case basis –2 -3 per year perhaps	Induction for all new staff Don't conduct a formal gap/needs analysis Develop training plan as required Encourage and support training Will support further study at Uni / MOFMC etc on a case by case basis – 1 per year perhaps	Aiming to have station employees at Cert 3 level within 12 months Working on Head Stockman development plan	Induction for all new staff Identify gaps Develop training plan as required Encourage and support training NT staff have a week at CDU / Katherine Have offered scholarships for further study previously Would consider assisting with further study on a case by case basis	Yes. Induction for all new staff. Developing career pathways for staff at all levels. Move from a casual workforce towards more permanent long term staff. Very supportive of consistent quality training that benefits the employee, company and industry. Looking at what MOFMC has to offer and how this may be applied. Considering a form of internal scholarship to attend further education (WIP).	Staff can leave the Co and then re-join, Paraway would then rebat a % of cost on a pro- rata basis for the equivalent time spent studying Encourage and support training
WPH&S	Training for safety first, then further development	Training for safety first, then further development External consultant undertaking a WPH&S review	Training for safety first, then further development About to recruit full time WPH&S employee	Training for safety first, then further development	Have a dedicated WPH& Safety manager in Perth, plus a more operationally focused manager who travels to stations. Strong mining safety background to apply in the pastoral industry.	
Qualifications		Aiming to have all junior station employees to Cert 3 standard.		Est 10% - 15%of workforce have post high school qualification,	Estimates less than 10% of employees at this stage. Would like this to increase and to	

	Company 1	Company 2	Company 3	Company 4	Company 5	Company 6
		Some have Cert 4, very few Diploma or greater Est 5% - 10% doing extra / external study		most at certificate level	ensure training programs build qualifications.	
Other Training or actions	People / Leadership Basic Excel	People / Leadership Basic Excel		People / Leadership Basic Excel	Have recruited a GM Science and Animal Technology and recruiting a GM Innovation.	

4.4.5 Mentors

4.4.6 Mentors Concept

The original concept of establishing a northern beef Hub was developed in consultation with a network of recently retired (or about to retire) veterinarians, agriculturalists and McKinnon post graduates, who collectively have special skill sets and vast experience that should not be lost to the industry, especially at a time when relevant and unique skill sets are in such short supply.

The vision is to utilise these experts and researchers who are keen to contribute to see the northern beef industry prosper. These “Mentors” will have input into the initial stages of postgraduate training that will provide an excellent consultancy service to the red meat industries of Australasia by imparting on-farm technical skills that will be invaluable to the students and to the industry, both short and longer-term. The Mentors will be given adjunct status by participating universities and collectively ensure that future advisors are well grounded in sound scientific and commercial operating principles.

Several mentors have led and managed similar start-up Hubs across the country. These Hubs include the Morley Centre in Wagga Wagga. The mentors have indicated a willingness to be involved in the early stages of the Hub’s establishment to assist the new Hub Director to settle into their role as quickly as possible.

The Project team has recommended that a Mentors Coordinator be appointed in a part-time role with JCU. This appointment would be jointly funded by MLA to ensure that Mentors are kept well-informed, managed and are allocated appropriately to students and participants or other roles as emerge from the Hub’s needs. JCU has indicated its support for the Mentors, not only for their technical training expertise, but also as a differentiating factor in marketing the Hub’s courses and as subcontractors in farm-based consultancy services by the Hub.

4.4.6.1 Support for Mentoring Concept

The Project Team surveyed 27 potential Mentors and met with the majority of this group in Brisbane in August 2018. As a result of consultation, the Project team concluded that the Mentors strategy is viable given the strong participation rate and enthusiasm for their contribution to the concept and its potentially positive impact on short and longer-term viability of the northern beef industry.

- 13 potential mentors have made a commitment to participating in a mentoring program they see as urgently required (more identified)
- The skills and experience of the potential mentors are outstanding (Table 9, 10)
- Industry survey and student interviews indicate that the inclusion of mentors would be highly valued and a **key differentiator** in attracting quality students to the Hub
- Mentors are keen on the idea of JCU being the nominated University
- JCU has indicated that mentors could be made Adjunct with access to library and on-line services.

4.4.6.2 Mentors' Backgrounds & Skills Sets

Table 9 provides an indication of the skills sets and qualifications of individuals who have expressed an interest in providing support to the northern Hub

Table 9 Mentor background and skills

Academic Qualifications	Experience	Area of Specialty	Preferred contribution to Mentoring Program at JCU
BVSc MVS PhD FANZCVS	Veterinary practice 1973-91 Academic - University of Sydney Vet School 1991-2001, Royal Veterinary College 2001-2004, Head of Vet School CSU 2004-2011, and Adelaide 2011 - 2016	Whole of farm consultancy, animal health and welfare, systems and economics.	Contribution to program development. Teaching contribution if appropriate.
BVSc., PhD	Director of the Fred Morley Hub, Wagga Wagga	Modelling, animal health and welfare, whole farm consultancy	
PhD	CSIRO – Developed sustainable grazing systems, Wambiana etc.	Rangeland ecology and grazing land management	
M.Rur.Sc	Principal Extension Officer; Qld and NT	Whole of farm extension / advisory / consultancy, animal breeding and genetics.	
BVSc. PhD.	Ex Dean, Ex Director Mackinnon Project Melbourne Vet School, Ex Chair NCCAW, Ex Fellow AHA, Chair Cattle & Sheep Animal Welfare S&G writing groups	Mineral nutrition, animal health and welfare	Advisory role only.
BVSc,MSc,PhD,FACVSc	Ex Head of FAMP Dept. School of Vet Science, UQ	Cattle health and welfare.	
BVSc. PhD MBA (Exec)	Exec Director, AgriScience Qld, DAF Ex-MLA Program Manager	RDE&A management	What are the options
B.Agr.Sc. (Hons) PhD	Ex CSIRO Senior Principal Research Scientist, OIC Rendel Laboratory, Rockhampton and Northern Deputy Director of the first Beef CRC	Ruminant nutrition, metabolic regulation of growth	Awaiting developments
BAGSc. (Hons), DipAgEc, MEnv, MAE (Assessment and Evaluation)	Ex Mackinnon consultant Experience in project and program management, Specialist in evaluation across farming, business and natural resource management	Whole farm business consultancy, farm systems and economic analysis, genetics and grazing systems, extension methods and strategies	Whole farm business systems and management Economic analysis Genetics Extension and evaluation strategies
MBA	Director of Bush AgriBusiness Pty Ltd	Northern Beef, Business Analysis	
BVSc, PhD, DipACT, GCED	Adjunct Assoc Prof in Theriogenology, CSU	Theriogenology	
Dip Ag, Dip BM	Currently practicing rangelands management consultant.	RDE&A in Grazing Land Management, northern Aus.	
BAGricSc, MAgricSc, PhD	Lincoln University NZ, UQ and smaller periods at Institutions in UK, Canada, USA, France, Netherlands and Italy, teaching academic and researcher, large number of ACIAR projects	Animal nutrition, whole farm systems, animal production in developing countries	Short focussed period of lectures, possible contribution to research projects
B Agr Sc, PhD	Research Scientist, QDPI. R&D Manager, MLA. Program Manager, Qld Canegrowers	Pasture agronomy and rangeland management	
BVSc, MVS	Ex principal animal production officer (NT), ex Director of Gonndiwindi Pastoral Veterinary	Herd health and production, modelling, systems and farm management	

	Centre. Consultant to MLA, and overseas		
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NB: As some of these mentors are in their twilight years, their availability and length of commitment will depend on their continuing good health.

4.4.6.4 Mentoring Strategies

In the design of mentoring strategies, it is important to take account of the interests, skills and time availability of the potential mentors. The design will need to be inherently flexible to accommodate the various needs and availability of the mentors, matched with the skills needs of the students.

The best results from mentoring come with an intensive training program attended by both mentors and students, followed by agreed one-on-one training and virtual support over an extended period such as an 18 month project (Barbara Bishop *pers comm*).

That approach seems to fit neatly with the proposed JCU model, akin to the MacKinnon model – the desired outcome being highly qualified students gaining practical technical skills which they will use on-farm or in consulting settings. Ideally over time these students will become mentors themselves.

4.4.6.5 Mentor Training Design

Optimum Model

The first decision is who will conduct mentor training and where? If the person selected to undertake the training is located at JCU, (as well as the students) then it would make sense to fly the “matched” mentors to Townsville. Presumably the numbers of students and mentors would be no more than three to five, thereby reducing costs associated with travel and accommodation.

The mentors and students would undergo a half day each of training and then the next day would be matched to undertake further training together where they would agree objectives, approach, timelines for training in the field, timelines for accountability purposes over the allotted timeframe and KPIs.

Over the course of the project the mentors and students would meet at mutually convenient times or use on-line facilities such as webinars and WimbaCreate™ as appropriate. At the conclusion of the project, the mentors and students would get back together for a final time with the student preparing a report on progress and next steps.

Option 2

Mentor training could be conducted in Brisbane sponsored by MLA. A trainer (such as Barbara Bishop & Associates) would be engaged to undertake the training. The advantage of this approach is that a greater number of mentors would be trained all at once and be available to participate immediately in the project once matched with a student. This approach would be highly cost-effective.

The mentors would fly to Townsville to meet their students, who would have received “being mentored” training by JCU trainers. Another advantage is that it would provide more flexibility for the mentors in terms of flying to Townsville at times that suit them, not restricted to times that meet the JCU timeframes.

In addition, the mentor training in Brisbane could coincide with a mentors “briefing” and networking day to keep the mentors enthused across what’s going on, similar to the mentors meeting in August 2018.

4.4.6.6 Mentors Role in Promoting the Hub

Mentors could be used to promote JCU coursework offerings at the Hub to potential students (and employers) by having an “open day” in Townsville, where the JCU academics would outline the courses and advantages of undertaking study at JCU. Potential students and employer representatives would be invited to ask questions and discuss options.

After the academics’ presentation, the mentors would each make a personal presentation to the students and employers about their backgrounds, career highlights, what they have to offer, how they would approach the mentoring and the importance of this endeavour to the northern beef industry. The potential students and employers would be invited to ask questions.

4.4.6.7 Mentoring the new JCU Hub Director

Some mentors have led and managed similar start-up Hub’s across the country, such as the Mackinnon Project (Melbourne University) and The Fred Morley Hub (CSU). The mentors have indicated a willingness to be involved in the early stages of the Hub’s establishment to assist the new Hub Director to settle into their role as quickly as possible.

It is recommended that MLA selects the most appropriate mentor to work with newly appointed JCU Hub Director to ensure they have right skill sets and approach.

4.4.6.8 Mentors as sub-contractor consultants

Mentors in conjunction with hub consultancy services would provide a valuable adjunct to the provision of quality professional advice to clients. They would work in a sub contract capacity to the hub in this role and the hub would simply charge a small commission over and above their normal charge out rate.

4.5 Accountability Plan

4.5.1 Accountability Objectives

A key component of successful implementation of a business plan for this initiative is to have well-structured set of accountabilities, where the key players understand their roles and who will do what by when. Under the terms of the Research Consultancy Account, JCU has contracted to MLA to deliver a range of research, educational and project-based consultancies and training programs in accordance with the Business Plan outlined in this document. JCU has agreed to deliver on set milestones and to report on progress to MLA in accordance with the contract.

4.5.2 Accountability Links

Where JCU links (either formally or informally) to Murdoch, CDU and other Universities and CSIRO to assist with the delivery of its programs under the Hub arrangement, JCU will expect that those other Institutions will provide reports to them on progress in accordance with the agreed MLA Milestones.

4.5.3 Accountability Processes

The JCU Hub Director is expected to make progress reports to MLA through the proposed Advisory Board in time to meet MLA Milestones. The Implementation Plan set out below specifies the actions required by both MLA and JCU to meet the objectives of this Business Plan, together with the persons nominated to undertake the actions and the timeline by which the actions need to be commenced / completed. It is assumed that the Implementation Plan Actions will inform the Milestones in the contract between JCU and MLA.

4.6 Operational Plan

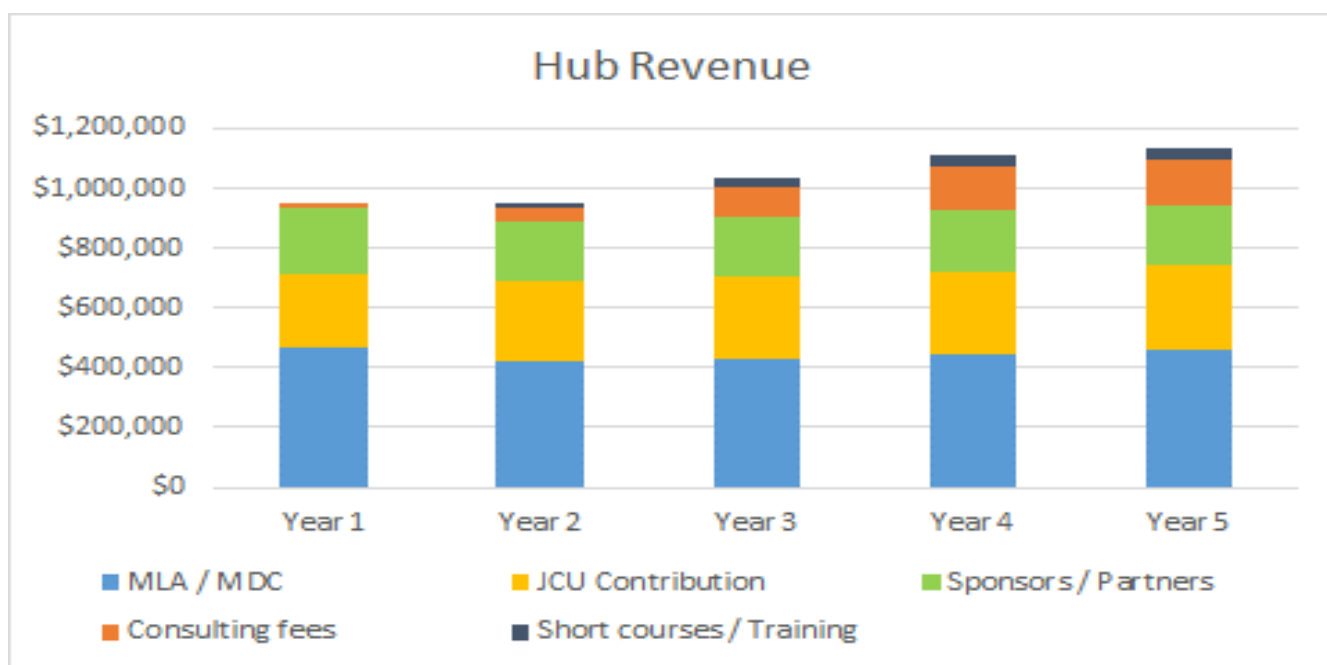
4.6.1 Financial Plan

The Financial Plan assumes a small number of dedicated staff supported by University research staff, students and mentors (Table 11, 12). Over time this would expand as budget and demand requires.

As noted above in Section 4.3.3, a majority of the student fees would be retained by the University to cover their overhead costs. **Strategic Investment - The projected operating costs are in the vicinity of \$800,000 to \$900,000 per year post year one, totalling \$4.6m over 5 years.**

It is expected that the Hub can generate modest consulting & training fees from its second year and attract sponsorship support to reduce the demand on MLA/MDC for underwriting support. **External Income of \$1.6m, excluding MDC and JCU is required to support the Hub over the 5 year plan.** MDC funding of \$2.2m is budgeted with the balance sourced from JCU.

It is expected that it may take 3 – 4 years to gain momentum which can then build into the second phase from years 6 – 10. Ideally it would become self-funding, however this is a best case scenario.



Error! Reference source not found. Projected northern hub revenue over first five years of operation

Table 11 Hub Budget

Estimated Funding requirements						
	Year 1	Year 2	Year 3	Year 4	Year 5	TOTAL
Hub Director (Prof level) ACD / ACE	\$180,000	\$183,600	\$187,272	\$191,017	\$194,838	\$936,727
Hub Project Manager (Snr Admin HEWL7-4	\$80,000	\$81,600	\$83,232	\$84,897	\$86,595	\$416,323
Contractors	\$30,000	\$30,600	\$31,212	\$31,836	\$32,473	\$156,121
Mentors	\$100,000	\$102,000	\$104,040	\$106,121	\$108,243	\$520,404
Research facilitation	\$120,000	\$122,400	\$124,848	\$127,345	\$129,892	\$624,485
Advisory Board sitting fees	\$40,000	\$40,800	\$41,616	\$42,448	\$43,297	\$208,162
On costs 30%	\$165,000	\$88,740	\$90,515	\$92,325	\$94,172	\$530,751
Travel	\$50,000	\$55,000	\$50,000	\$50,000	\$50,000	\$255,000
Overhead contribution				\$59,945	\$122,289	\$182,234
Administration	\$10,800	\$3,500	\$3,500	\$4,000	\$6,700	\$28,500
Vehicle Hire	\$25,150	\$20,180	\$20,200	\$20,200	\$20,220	\$105,950
Participation in industry events	\$80,000	\$60,000	\$60,000	\$60,000	\$60,000	\$320,000
Marketing & Promotion	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$250,000
Contingency 10%	\$21,595	\$18,868	\$18,370	\$24,415	\$30,921	\$114,168
TOTAL Outgoings	\$952,545	\$857,288	\$864,805	\$944,549	\$1,029,639	\$4,648,826
Less						
Student Fee Income (retained by JCU)	\$0	\$0	\$0	\$0	\$0	\$0
JCU Scholarship	\$40,000	\$40,000	\$40,000	\$40,000	\$40,000	\$40,000
Short courses / Training		\$10,000	\$30,000	\$40,000	\$40,000	\$120,000
Consulting fees		\$50,000	\$100,000	\$150,000	\$150,000	\$450,000
Sponsors / Partners	\$220,000	\$200,000	\$200,000	\$200,000	\$200,000	\$1,020,000
JCU Contribution	\$246,473	\$267,227	\$273,226	\$278,769	\$284,357	\$1,350,052
MLA / MDC	\$466,473	\$420,000	\$432,600	\$445,578	\$458,945	\$2,223,596
TOTAL Income	\$972,946	\$987,227	\$1,075,826	\$1,154,347	\$1,173,302	\$5,363,648
Net Position	\$20,401	\$129,939	\$211,021	\$209,797	\$143,664	\$714,822

The \$5.1M investment over the 5 years compares favourably to the WATARI proposal which is seeking capital funds of \$12m and \$5m per annum for 5 years, albeit the Hub has a tighter focus (beef) than WATARI which also includes horticulture and irrigation.

In addition to the Hub Director and administration, the budget provides for expenses such as;

1. Advisory Board;
2. A research capacity from within JCU's existing staff;
3. Funding to cover the costs of re-writing teaching programs such as some business school content to be Ag Specific;
4. Travel; and
5. Marketing and Promotion.

The Hub will need to source in the vicinity of \$200,000 to \$250,000 per year from external partners. This could take the form of up-front payment for future services provided or simply a commitment to utilise the consultancy/research arm on a fee for service based on some clearly outlined outputs. Groups that should be targeted include banks and insurance companies, agribusiness supply and service companies, mining and energy, the Queensland State Government along with beef industry producers. A high level approach from JCU and MLA to the potential partners will be required.

Building capacity and knowledge of the employees of the companies that operate and service northern Australia will benefit both the company and producers. Having bank and insurance group employees who have a better understanding of the northern beef production systems, cycle and risk would undoubtedly be of benefit to all stakeholders in the industry.

Banks in particular would benefit from ensuring northern beef producers are well supported with not only their employees, but beef producers are improving their skills and are supported by well qualified and knowledgeable extension personnel.

Income generated from Consulting and Training is estimated to provide a modest contribution to the Hub. Feedback from industry identified demand for training in specific areas such as Business / Financial literacy, Technology and Animal Production. Private operators such as EDGE Consultants and RCS offer training in some of these areas, thus the Hub should focus on filling gaps, using the research stations as a platform as well as their regional training links to offer training options which are not well covered by current operators. An early opportunity for JCU lies in developing an extension training offer which is in demand from NRM groups.

The advantage JCU (and partner Universities) offers is that the short courses can generate credits towards a higher qualification.

The training / short courses offered will be at undergraduate or higher level standard. Vocational level training is already well covered by the Pastoral Colleges¹³ and CDU.

JCU have an unallocated \$40,000 pa scholarship which they are willing to contribute to a student at the Hub. There may be opportunities for other agencies to also provide scholarships or part scholarships to support student engagement.

JCU have detailed their financial contribution to the initiative (Table 12). In order for this to work within the MDC framework, JCU would contribute a cash component of the funding to the MLA Donor Company. The MDC funding process has been explained to JCU. MLA and dedicated MDC staff will need to work directly with JCU to manage the contributions that underpin the operation of the northern Hub.

Table 12 JCU forecast financial contribution

JCU Contributions		Year 1	Year 2	Year 3	Year 4	Year 5	TOTAL
JCU Staff							
Staff 1	ACD-4	\$19,206	\$19,533	\$19,924	\$20,323	\$20,729	\$99,715
Staff 2	ACC-4	\$15,894	\$16,604	\$17,385	\$17,733	\$18,087	\$85,703
Staff 3	ACE	\$22,375	\$22,756	\$23,211	\$23,675	\$24,149	\$116,167
Staff 4	ACB-6	\$14,166	\$14,408	\$14,696	\$14,990	\$15,289	\$73,548
Staff 5	ACC-6	\$16,758	\$17,044	\$17,385	\$17,733	\$18,087	\$87,007
Staff 6	ACE	\$22,375	\$22,756	\$23,211	\$23,675	\$24,149	\$116,167
Staff 7	ACD-4	\$19,206	\$19,533	\$19,924	\$20,323	\$20,729	\$99,715
Staff 8	HEWL6-4	\$10,469	\$10,647	\$10,860	\$11,077	\$11,299	\$54,353
Staff cost funded		\$140,450	\$143,281	\$146,596	\$149,528	\$152,519	\$732,374
JCU Overheads							
Overhead contribution		\$99,105	\$115,125	\$117,540	\$59,945	\$0	\$391,716
Total JCU Cash contribution		\$239,555	\$258,407	\$264,136	\$209,473	\$152,519	\$1,124,090
JCU in kind contribution							
Office Space		\$4,838	\$6,650	\$6,850	\$7,050	\$7,250	\$32,638
IT Services		\$2,080	\$2,170	\$2,240	\$2,300	\$2,300	\$11,090
Total in Kind Contribution		\$6,918	\$8,820	\$9,090	\$9,350	\$9,550	\$43,728
Total JCU Contribution (cash & "In Kind")		\$246,473	\$267,227	\$273,226	\$218,823	\$162,069	\$1,167,818

¹³ Note that the Queensland Government has decided to scrap QTAC after 2019.

4.6.1.1 Cost - Benefits Analysis (CBA) of the Hub

- Establishment of a Northern Beef Hub, along similar lines to the Mackinnon project in Victoria, will involve a substantial investment and justify an independent financial CBA.
- becomes the central focus for northern beef research and extension support.
- Produces people which can add value to the producers and service providers in northern Australia.
- will support evidence based research that is relevant, demanded and can be demonstrated within the region (on CSIRO/JCU/QDAF research farms, or producer properties).
- Will offer focused short courses in areas of identified need that will generate credits towards a qualification
- Achieves the goal of building industry capability – helps fill the gap – **MISP 2020 Priority**
- The proposal becomes less financially risky if industry stakeholders are prepared to commit funds early in the life of the hub.

In quantifying the benefits to industry, the view is that from improving extension capacity and capability along with more relevant evidence based research there will be benefits to the northern beef industry. This may be either new research or the demonstration of completed research which has not been widely adopted.

If the HUB were able to use its expertise on northern properties in a paid research and consulting role in an area such as this, it would add value to northern beef producers and generate income for the Hub. The Hub could complement and support existing research actions such as Cash Cow and other northern focused MLA investment, particularly on reducing calf mortality and increasing overall breeder herd performance

The Hub could be established relatively quickly should the proposal receive approval.

4.6.2 Governance, Leadership and Staffing Plan

The objectives of the leadership and staffing plan are to:

- Articulate the governance structure recommended by JCU and MLA;
- Outline the optimum staffing structure that will ensure success in establishing the Hub;
- Outline the best structure for growing and maintaining the viability of the Hub over 5 years;
- Identify recruitment strategies designed to ensure best people are in place at start-up and during the growth phases;
- Outline the key personal traits and abilities of the staff to be employed.

4.6.2.1 Governance Structure

The preferred Governance Structure at JCU is the Research Consultancy Account (RCA) or 5@NONRSH (non-research contracts and consultancy accounts). An RCA is seen as easy to establish with MLA contracting JCU to provide agreed services for a transparent fee under an MDC Agreement, complete with relevant and agreed Milestones.

A key component of the Governance Structure is the establishment of an Advisory Board, chosen by MLA and JCU. The Project team recommends that the Advisory Board comprise six people – 3 from industry (including representatives from Corporates, Service Companies and Agencies), 1 each from key supporting organisations, namely MLA, JCU and Murdoch University, with the Dean, College of Public Health, Medical and Veterinary Sciences (hereafter Dean) ex officio. It is proposed that the Advisory Board Chairperson would be a highly respected and influential person from the beef industry. It is recommended that the Advisory Board be appointed soon after the formal approvals are signed.

4.6.2.2 Staffing Structure

Staffing Structure in Start-up Phase

It is proposed that the Hub will need staffing “firepower” at the top to be successful. The Dean has emerged as the on-ground “Champion” of this initiative and will continue to drive the Hub forward. As shown at Mackinnon as an example of “Champions” driving success, the Dean’s continued enthusiasm, drive and initiative will be essential to the success of the Hub. The other key player (not necessarily based at JCU’s Townsville campus), will be the Mentors group, led by an MLA-funded Mentors Coordinator position. The Mentors Coordinator will be available to assist JCU with the recruitment advertising, selection, orientation and on-going mentoring of the Hub Director.

The proposed start-up staffing structure is as follows:

- one Hub Director at Professor Level
- one Project / Administration Manager (HEW 7 Level) and research capability provided by current JCU researchers
- A pool of mentors with a Mentor Coordinator (funded by MLA)

The Hub Director will play a pivotal role in establishing and growing the Hub. In broad terms the Hub Director will need the following:

- Experience in leading and managing a start-up business, preferably in the beef or agriculture sectors;
- A reputation for entrepreneurial flair and business acumen;
- Experience in working with, or being exposed to, a University environment;
- Outstanding interpersonal and communication skills; and
- Ability to represent JCU to the beef industry stakeholders and to achieve ready credibility within the stakeholder group.

Staffing Structure in five years

In five years, it is projected that 25 students will have participated in either F/T or part-time coursework, while some 250 students will have completed short courses (1 to 3 days). Post-graduate students will be enrolled in Masters Programs, working with consultants and doing training. One Resident will be trained in the disciplines. It is estimated that the staffing structure to support the Hub at that time will be as follows:

- one Hub Director
- two full time consultants
- one Administration Manager and a Research coordinator
- A pool of mentors with a Mentor Coordinator

4.6.2.3 Recruitment Strategies

The Mentors will play a vital role in the recruitment process by providing evidence to candidates of not only their technical excellence, but also their experience in establishing similar Hubs. MLA and JCU will develop a coordinated approach to recruitment through various publications and beef industry forums. JCU have indicated that they will drive the recruitment process (See Risks Mitigation Action Plan).

4.6.3 Marketing & Communication Plan

The objectives of the Marketing & Communication Plan are to:

- Outline a high-level Marketing Strategy for the Hub; and

- Identify communication strategies within JCU and to its external stakeholders to provide on-going awareness of the Hub and its activities

4.6.3.1 Marketing Strategy

The aims of a high-level Marketing Strategy will be to:

- Initially promote awareness of the Hub and its offerings to industry, prospective students, prospective staff members and prospective Advisory Board members;
- Position JCU as responding to northern beef industry needs by engaging in new disciplines in Agriculture; and
- Position JCU as one of three main universities collaborating to address industry needs across the whole of northern Australia.

Promoting awareness of the Hub to the beef industry

The Hub Director will play a pivotal role in promoting the Hub to industry, government agencies and to the broader community. The proposed Administration Manager will also play a role in marketing and communication in liaison with the Hub Director and JCU Marketing Department. Key activities will include:

- MLA and JCU to profile the Hub through Feedback magazine, Beef Central, QCL and other relevant media outlets;
- JCU Hub Director to attend and speak at major industry forums where appropriate;
- JCU Hub Director to develop close contacts with relevant stakeholders (state agencies, CRCs, AgForce, QFF, KPCA, NTCA, NABRC)
- Promoting awareness to prospective students

Once the Hub Director and Administration Managers are in place, their initial focus and priority will be to develop student attraction strategies as outlined in this Business Plan. Key activities will include:

- Use marketing to highlight role of expert, high profile mentors and practical coursework orientation (short courses/ training)
- Promote JCU's farm [Fletcherview] facilities (with close links to CSIRO [Landsdown] and QDAF [Spyglass] farms in the north) and state of the art technologies to enable flexible, remote learning
- JCU ensures that course content is aligned to industry needs and is practical and flexible
- JCU and MLA's promotion of the benefits of having students supported by acknowledged experts (Mentors)
- JCU to establish/promote (in conjunction with industry, government and catchment authorities) scholarships with clearly identified career pathways
- MLA marketing to liaise with JCU Hub Director and JCU marketing to develop relevant media releases and coordinate functions
- JCU to promote Hub when on overseas visits
- JCU to develop closer links with ACIAR re Asian opportunities
- Promoting awareness to prospective staff members and Advisory Board members this awareness will be linked to the promotion of the Hub to industry as outlined above.

4.6.3.2 Communication Strategy

The aims of the Communications Strategy will be to:

- Ensure that JCU staff are aware of the Hub and its proposed contribution to the northern Australia beef industry; and
- Ensure that external stakeholders are updated regularly on the progress of the Hub.
- Communication of activity and delivery to industry will be a vital component of the Hub

Staff Awareness Strategies

JCU staff will be made aware of the establishment of the Hub and will be encouraged to promote the Hub in their interactions with industry as the situations arise.

External Stakeholder Communications Strategies

It will be critical to keep all external stakeholders briefed on progress with the Hub. Activities will include:

- JCU to actively support mentors/Advisory Board members with media releases and annual/biennial conferences and speaker engagement in industry forums
- MLA Mentors Coordinator will ensure that all Mentors are emailed with updates every month
- The Hub Director will produce an Annual Report for the Advisory Board and MLA.

4.6.4 Technology Plan

The objectives of the Technology plan are to ensure the Hub identifies the currently available (commercial) technology, keeps abreast of new technology and identifies the gaps for industry. It also lays out the current JCU Technology capacity and capability to utilise technology for effective, efficient delivery of its programs. Technology is, and will continue to be a huge issue in keeping young people interested in working in the northern industry.

The Technology Plan encompasses two levels:

1. Industry AgTech, and
2. Program delivery Technology

4.6.4.1 Industry AgTech

AgTech has become a focus globally and is receiving greater attention in Australia. Every week there is a new concept, idea or technology platform that is announced or launched, on top of some of the existing well proven technology that is yet to be adopted.

Most producers appear keen to learn more and understand the benefits that may be derived from “technology”, however are unsure of the options, cost/benefits, how to use it and equally importantly who will be there to service, and support said technology.

Internet coverage was highlighted in the survey as a key reason why producers struggle to follow new research and adopt new technology. The lack of digital coverage in some regions of the north makes implementing the technology challenging and costly.

JCU, CSIRO and QDAF have access to substantial research farms in the vicinity of Townsville on which platforms have been demonstrated and can host future events. Importantly through the Hub, JCU has the capacity to train and develop students who can provide service and support for beef industry AgTech. Ensuring exposure to these opportunities while at JCU may facilitate capability in this area.

The Hub has a role in collating and coordinating relevant research in the north and should use its platform to ensure the relevant commercial research is available on the site and to industry.

4.6.4.2 Program Delivery Technology

JCU has considerable experience delivering its programs and research in remote and regional areas of Australian and Asia Pacific. It utilises the internet for webinars and course deliver and it would be expected the Hub would utilise the same platforms.

JCU has access to equipped sites in regional Queensland which host training for other JCU courses and would be available to the Hub. This network could be extended into the NT and in collaboration with the partners in Western Australia.

4.6.5 Risk Management Mitigation Action Plan

Table 13 Risk Mitigation Plan

Note: These Risk Management Mitigation Actions have been incorporated into the overall Implementation Plan.

Risk Identified	Mitigation Plans	Actions	Who	When
1. JCU unable to establish, support or maintain the Hub	Ensure all key JCU people are informed and supportive	Dean, College of Public Health, Medical and Veterinary Sciences (hereafter Dean JCU) to champion the Business Plan through appropriate JCU approval channels	Dean JCU	December 2019
	MLA/JCU sign off – GO/NO GO point – if JCU unable to support the initiative, then alternative tertiary institute/RTO needs to be identified	MLA Board and JCU Executive sign-off on agreed Business Plans	Dean JCU/ Project Manager - Research & Development Grassfed Beef (hereafter Project Manager, MLA)	January 2020
	Identify possible members of the advisory committee – high profile and influential.	MLA Board adopts the Business Plan	Project Manager, MLA	January 2020
	Ensure MLA board understands the strategic imperative of this project to its MISP outcomes	MLA senior staff make presentations of the Business Plan recommendations to peak industry groups	MLA Executive	February 2020
	Develop support of peak industry groups such as NABRC, Cattle Council, AgForce, NTCA and Kimberley Pilbara Cattleman's Association.	JCU Hub Director and MLA work with industry and advisory board to develop initial benchmarking to assist with objectives and accountability.	JCU Director /Advisory Board/MLA	February 2020
	Need professional approach to services provided including initial benchmarking to demonstrate progress in all areas of service			
2. Lack of funding over the first 5 years	Ensure MLA/MDC and others commit appropriate levels of funding	Project Manager, MLA to present and follow-through on funding with MLA Board	Project Manager, MLA	December 20120
	Ensure high profile and influential people are invited to sit on advisory committee	GM/ Chair of MLA and VC or DVC or senior HR of partner university engage in the communication strategy. MLA and		

Risk Identified	Mitigation Plans	Actions	Who	When
	<p>Ensure appropriate person is recruited to champion the initiative to all stakeholders and progress EOI to seek industry wide support</p> <p>Seek funding from external parties to secure ongoing support</p> <p>Develop research applications for R&D funding calls.</p> <p>Deliver opportunity to provide evidence based consultancy capacity through mentor network. Need flexibility to develop with demand – start small (staff wise)</p>	<p>JCU to identify and endorse appointment of appropriate person/s to engage across industry</p> <p>Develop a package and position description to attract appropriate person/s to lead initiative. Project Team member and Project Manager, MLA to engage Northern Corporates. JCU to advise on funding requirements for a Chair</p> <p>Senior level MLA / JCU to approach groups such as Banks, Ag Chem, Elders for sponsorship</p> <p>JCU Hub Director to drive consulting & research starting in first 2 years</p> <p>JCU Hub Director to enhance the funding model as the Centre develops momentum</p>	<p>Project Manager, MLA /Dean, JCU</p> <p>Project team member/ Project Manager, MLA /Dean, JCU</p> <p>JCU senior exec, MLT, HR senior exec/s</p> <p>JCU Director</p> <p>JCU Director</p>	<p>November 2020</p> <p>Jan / Feb 2021</p> <p>December 2021</p> <p>On-going</p> <p>On-going</p>
3. Withdrawal of Stakeholder Support	<p>MLA has in place strong accountability measures</p> <p>Develop very clear objectives and performance indicators for all participants of the initiative and the Advisory Board</p> <p>Employ /develop high quality staff through mentors +/- involve mentors in service delivery</p> <p>JCU maintains close links to industry through its Hub structure (eg Advisory Board). Create highly visible Advisory Board at the beginning.</p> <p>Actively support mentors/advisory panel members with media releases and annual/biennial</p>	<p>MLA develops accountability protocols in agreement with JCU. These protocols would include achievement of milestones for JCU such as appointment of the Hub Director, Administration Manager, engagement of Mentors, requisite number of students.</p> <p>Mentors strategy to be developed and agreed between MLA and JCU</p> <p>See 2 above. MLA and JCU to identify and select best people for Advisory Board roles.</p> <p>MLA marketing to liaise with JCU Hub Director and JCU marketing to develop relevant media releases and coordinate functions</p>	<p>Project Manager, MLA/Dean, JCU/Advisory Board</p> <p>Project Team, MLA Consultant, Project Manager, MLA, Dean, JCU</p> <p>Project Manager, MLA/Dean, JCU</p> <p>Project Manager, MLA /MLA Marketing/Dean,</p>	<p>February 2020</p> <p>November 2019</p> <p>November 2019</p> <p>February 2020</p>

Risk Identified	Mitigation Plans	Actions	Who	When
	<p>conferences and speaker engagement in industry forums</p> <p>Budget for overseas visitations by mentors/advisory panel members to develop collaborative links in association with ACIAR</p> <p>Keep the Mentors in the loop and enthused through MLA sponsored meetings, activities and a Mentors Coordinator</p> <p>Strong marketing efforts by both MLA and JCU at industry events. JCU Hub Director to target key industry events / field days etc</p> <p>JCU manages its collaborative strategy with other Universities and stakeholders effectively</p>	<p>Ensure Hub is promoted by JCU when on overseas visits MLA Asian offices to have briefing and regular updates on Hub. JCU to develop closer links with ACIAR re Asian opportunities</p> <p>As above</p> <p>As above</p> <p>JCU develops strong links with Murdoch, CSU, CDU and hosts regular teleconferences, meetings etc</p>	<p>JCU/ JCU Marketing</p> <p>Project Manager, MLA/MLA Marketing/Dean, JCU/ JCU Marketing</p> <p>As above</p> <p>As above</p> <p>Dean, JCU/JCU Director /Advisory Board</p>	<p>January 2020, on-going</p> <p>On-going</p> <p>On-going</p> <p>On-going</p>
4. Unable to attract sufficient Student numbers	<p>Hire a dynamic and well-credentialed Hub Director</p> <p>Use marketing to highlight role of expert, high profile mentors and practical coursework orientation</p> <p>Promote JCU's farm facilities and state of the art technologies to enable flexible, remote learning</p> <p>JCU ensures that course content is aligned to industry needs, practical and flexible</p>	<p>Reputation and experience of the academic staff will be critical to attract the best students (see 5 below)</p> <p>Research projects will drive reputation and interest. JCU / CSIRO linkage. MLA to preference northern Beef research projects with the Hub (JCU / CSIRO – plus WA links) where possible.</p> <p>JCU to develop student attraction strategies in consultation with MLA</p> <p>As above</p> <p>As above</p>	<p>Dean, JCU/ JCU Director /MLA</p> <p>Dean, JCU/JCU Director /MLA</p> <p>Dean, JCU/JCU Director /MLA</p> <p>As above</p> <p>As above</p>	<p>February 2020</p> <p>February 2020</p> <p>February 2020</p> <p>February 2020</p> <p>February 2020</p>

Risk Identified	Mitigation Plans	Actions	Who	When
	JCU and MLA's promotion of the benefits of having students supported by acknowledged experts (Mentors)	Profile the Hub through Feedback magazine, Beef Central, QCL and other relevant media outlets that provide exposure of the Hub Director at major industry forums where appropriate. Develop close contacts with relevant stakeholders (state agencies, CRCs, KPCA, NTCA, NABRC)	Dean, JCU/MLA Consultant	November 2020
	Limit spaces to create perception of prestige in course. Establish high entry requirements for top level qualifications.	JCU to decide on coursework design and academic approaches in consultation with MLA and industry reps on Advisory Board	Project Manager, MLA/MLA Consultant/Project Team Member	February 2020
	Establish/promote (in conjunction with industry, government and catchment authorities) scholarships with clearly identified career pathways	MLA to develop strategies for engaging with industry and other stakeholders in developing appropriate student support measures aligned with the JCU Hub.	Project Manager, MLA	On-going
	MLA to select employee/s to undertake training	MLA to promote internal opportunity for study at the hub internally	Project Manager, MLA/MLA Consultant	February 2020
	Ensure primary focus is always a Centre of Excellence	JCU maintains its focus on the Hub as originally conceived – review as part of the accountability process	Dean, JCU/JCU Advisory Board/JCU Director	February 2021
	Provide opportunities for part-time studies while being employed	JCU to include opportunities for part-time students as part of its academic design	Dean, JCU/JCU Director	Ongoing
5. Unable to attract the right Hub Director within 6 months of establishment	MLA / JCU advertise and promote the position / role - initiate marketing plan nationally	JCU HR develops relevant PD's, advertising strategies and selection panel (including industry reps and MLA), MLA advertises in industry media and MLA website	JCU HR, Dean, JCU/ Project Manager, MLA	February 2020
	Select the candidate with the right attributes and attitude and develop an intense training course using the mentors, to equip the newly appointed staff with right skills set	MLA selects appropriate mentor to work with newly appointed JCU Hub Director to ensure they have right skill sets and approach	MLA/ MLA Consultant/JCU Director	April 2020

Risk Identified	Mitigation Plans	Actions	Who	When
	<p>Include some budget for staff training by mentors</p> <p>Develop symbiotic working arrangements with Holmes and McLean /NPG so they can explore development/experimental options for Corporates within their phase 2 Benchmarking Project</p> <p>Establish a list of priority areas/research questions which industry and overseas countries can support on farm and highlight these areas in promotional material</p>	<p>Project team to include funding for staff training by a mentor</p> <p>MLA to ensure that newly appointed JCU Hub Director meets Holmes & McLean / NPG to explore development /experimental options for Corporates within their phase 2 Benchmarking Project</p> <p>MLA and industry reps work with the JCU Hub Director to establish a list of priority areas/research questions which industry and overseas countries can support on farm and highlight these areas in promotional material</p>	<p>Project team Member</p> <p>MLA/MLA Consultant</p> <p>MLA/Advisory Board/JCU Director</p>	<p>October 2019</p> <p>April 2020</p> <p>July 2020</p>

4.6.6 Implementation Plan

4.6.6.1 Key Implementation Steps for Establishing the Northern Beef Hub

It is intended that the Implementation Plan will be followed by both MLA and JCU representatives to enable them to put this Business Plan into operation commencing in 2019. The Implementation Plan takes into account the key findings within the body of this Business Plan, the Operational Plan and the Risk Management Mitigation Action Plan.

Table 14 Key steps for Implementation Plan for the northern beef hub

STAGE	MLA ACTIONS	JCU ACTIONS	WHO IS RESPONSIBLE	BY WHEN
1. Hub Model Developed and agreed by MLA and JCU	<p>Ensure alignment with MISP 2020</p> <p>Ensure Hub will meet Industry needs / gaps now and in future</p> <p>Agree the Hub Model as outlined in this Business Plan, including:</p> <ul style="list-style-type: none"> MDC Funding for 1st 5 years Hub Director input Mentors Coordinator Advisory Board participation Industry marketing re Hub Marketing & Communication 	<p>Dean, JCU to “champion” the Business Plan through appropriate JCU approval channels</p> <p>Agree the Hub Model and formally commit to establishing the Hub as outlined in this Business Plan, including:</p> <ul style="list-style-type: none"> Acceptance of MLA’s funding model JCU’s in-kind contribution Staffing contribution & support Advisory Board administration Scholarship offer Roll-out of this Business Plan’s recommendations pertinent to JCU 	<p>Dean, JCU</p> <p>MLA Board</p> <p>JCU Executive</p>	<p>December 2019</p> <p>February 2020</p>
2. Governance Structure	<p>Agree the proposed Governance Structure (Research Consultancy Account) with JCU and prepare the contract document with clearly defined Milestones and accountability processes.</p>	<p>Confirm the Governance Structure (Research Consultancy Account) with MLA and sign the MLA contract when satisfied with all conditions of the contract.</p>	<p>MLA</p> <p>/ JCU Legal</p>	<p>February 2020</p>
3. Funding	<p>In conjunction with JCU, participate in meetings with potential external financiers - banks and major pastoral companies.</p>	<p>In conjunction with MLA, participate in meetings with potential external financiers - banks, major pastoral companies.</p>	<p>MLA</p> <p>JCU</p>	<p>April 2020</p>

STAGE	MLA ACTIONS	JCU ACTIONS	WHO IS RESPONSIBLE	BY WHEN
4. Advisory Board	MLA to assist JCU to establish an Advisory Board by identifying potential candidates within industry	JCU to appoint the Advisory Board members in consultation with MLA and relevant industry bodies.	Project Leader, MLA, Dean, JCU	February 2020
5. Academic coursework offerings / content	Work with JCU academics to develop a core academic program designed to meet industry needs	Work with MLA and Mentors to develop a core academic program that meets industry needs	MLA / Mentors Coordinator, Dean, JCU	April 2020
6. Students	Identify potential student sources e.g. Beef Industry professionals Work with JCU on developing a marketing strategy to attract students to the Hub's programs	Source strategy / game-plan Agencies DPI, NRM Research groups – CSIRO Work with MLA on developing a marketing strategy to attract students to the Hub's programs	MLA JCU / Hub Director	April 2020
7. Australia-wide University networks	In conjunction with JCU, Murdoch and other Universities, identify an Australia-wide network of Universities that are interested in participating in the Hub	In conjunction with MLA, develop an Australia-wide network of Universities that are interested in participating in a Hub and make agreements between those Universities (which could include CDU, CSU and Murdoch)	MLA JCU	February 2021
8. Mentors	MLA to appoint a Mentor's Coordinator (part-time role) Liaise with the Hub Director to ensure the growth, fostering and regular communication with the Mentor Group	Liaise with the Mentor Group and make Adjunct appointments as necessary	MLA/ JCU Hub Director	February 2021
9. Risk Management	Mentors Coordinator to review the Risk Management Mitigation Plan on a quarterly basis	Advisory Board and Hub Director to refer to the Risk Management Mitigation Plan as a standing agenda item for their meetings	Advisory Board Hub Director	On-going

STAGE	MLA ACTIONS	JCU ACTIONS	WHO IS RESPONSIBLE	BY WHEN
10. Technology	In conjunction with JCU identify the technology that JCU can use to deliver its programs to remote areas, ensure this is included in the marketing plan and promoted to industry	Identify the technology that JCU can use to deliver its programs to remote areas, ensure this is included in the marketing plan and promoted to industry	MLA / JCU	June 2019
11. Australia-wide coordination of publications, best practice	Capture all the data relating to the Northern Beef Industry (including reports from agencies across Australia, personnel profiles, best practice etc.), maintain and update as necessary, publish on MLA's website and market in a coordinated fashion to the industry	Hub Director to give presentations to the Northern Australian Beef Industry Groups on a regular basis	MLA/ Hub Director	June 2020
12. Implementation review & accountability	<p>Conduct regular reviews on implementation progress and market success to the industry</p> <p>Establish and nurture a Northern Australian Beef Industry Working Group including representatives of relevant government agencies, relevant NRM's, pastoral companies and CSIRO to ensure accountability for implementing the Business Plan and alignment with MISP 2020</p>	Participate with MLA in accountability and success reviews on a regular basis	MLA / JCU / Advisory Board	Ongoing Quarterly

5 Conclusions

The draft Business Plan demonstrates how the beef Hub, managed through JCU, would address the “at risk” expertise and ongoing needs of the northern beef industry for research and development, and extension and consultancy services. The Hub will contribute significantly to a more sustainable and profitable beef industry for northern Australia through evidence-based advice meeting the practical needs for on-farm and off-farm endeavours. Incorporating South East Asian and Pacific Island countries into the Vision broadens the scope of the venture by increasing the number of graduates being trained, attracting collaborative research and supporting the development of viable beef industries in these regions. There is strong support for this initiative across the beef industry, government agencies, several universities, CSIRO, and retired beef industry academics.

James Cook University (JCU) has indicated strong support for the Hub. Murdoch University and Charles Darwin University (CDU) would need to be involved to ensure buy-in across Australia’s tropical north. JCU has the expertise to undertake relevant research and development in technology applicable to the beef industry. Further it has the capability to demonstrate technology on its own research farms or in conjunction with CSIRO/QDAF/NT DPI&F properties, all positioned in northern Australia. JCU has in place the infrastructure and capability to deliver programs to rural and remote areas.

The Hub is designed to produce graduates, industry leaders and professionals who can access, critically analyse and provide and/or implement practical, cost effective outcomes that improve productivity and sustainability for individual beef producers in northern Australia. The Hub would also meet the immediate, shorter-term needs of industry through its short course programs supported by acknowledged industry experts.

The JCU team will comprise a Hub Director at Professorial level, Administration Manager, research facilitator and post graduate students, all with access to expert “on-farm” Mentors who are key differentiators to attract students and industry support. MLA will contract JCU to deliver specified services within agreed Milestones.

This Business Plan is supported by the beef industry and Universities as the most viable way to address the dearth of skills and on farm experience facing the industry in northern Australia. The establishment and long term success of the Hub will be dependent on the ability of the Hub to establish as a centre of excellence for the northern beef industry and the commitment and investment from industry and key partners such as JCU and MLA for the first five years of operation.

6 Recommendations

This Business Plan details a strategy for the northern Australian beef industry to increase productivity, profitability and address sustainability challenges by providing human capacity that grows out of evidence-based science and the ongoing investment in RDE&A across the north. The Hub is not designed to be a stand-alone entity or an investment in bricks and mortar. It is envisaged that the Hub will play a pivotal role in facilitating and enabling a co-ordinated approach to current and future research activities in the north. The Hub will engage with all stakeholders across the beef value chain to build extension capacity and IP that will result in adoption of best practice.

The establishment and long term success of the Hub will be dependent on the commitment and investment from industry and key partners such as JCU and MLA. It is recommended that:

1. The Business Plan is submitted to external review to gain industry endorsement (achieved with match funding commitments)
2. The Business Plan is used to further work with JCU academics to develop a core academic and short course program that is designed to meet the practical needs of the northern beef industry. This will be extended to incorporate input from Western Australian universities and most likely CDU and CSU.

3. The Business Plan is endorsed to deliver to industry through a formal contracting mechanism with the MLA Donor Company and industry partners. Support through the MDC will be critical for the first five years of operation and delivery, so that dedicated staff can be engaged to implement the Business Plan and generate the momentum needed to support the industry in the long term
4. An agreed Governance Structure (Research Consultancy Account) with JCU is executed and MDC contract documentation clearly defines Milestones and accountability processes.

Other supporting activities include:

- In conjunction with JCU, MLA and key partners will participate in meetings with potential external funders such as financial institutions with significant agricultural portfolios, banks and northern pastoral companies who have much to gain from the activities of the Hub.
- The Hub will capture all the data relating to training opportunities, courses and professional development activities that have direct relevance and benefit to the northern beef industry. Act as training broker for the northern beef industry and provide consistency across the industry. A priority for MLA, in conjunction with agencies, industry partners and the NPG is to promote the various education/training pathways and options that are available.
- MLA to establish and nurture a Northern Australian Beef Industry Working Group including representatives of relevant government agencies, relevant NRM's, pastoral companies and CSIRO to ensure accountability for implementing the Business Plan and alignment with MISP 2020 Building Industry Capability strategic objective.

7 Appendices

7.1 SWOT – establishment of the Northern Beef Hub

Strengths	How to build on	Ideas/Strategies
Industry / MLA support	On-going communication with industry and Mentors showing that MLA has listened and is taking appropriate steps	Ensure coverage is representative of industry. Do we have gaps?
JCU support	The project has met JCU's requirements for a clear understanding of industry needs, mentor support & funding support	Maximise – but need to be conscious of the tertiary sector politics – JCU is the funnel and provides majority of support – other universities have critical buy in for specific reasons (maintain ownership)
Mentors support	On-going communication with Mentors	JCU Hub Director responsibility but MLA might like to sponsor an annual meeting of Mentors to keep the group engaged, share insights into how the program at JCU is going etc. This is likely to become another dedicated role in addition to the head of the Hub.
Viable model/structure	Agreement from JCU & MLA that the model/structure can work.	Model/structure needs to be well defined and maybe present a couple of alternatives.
Regional approach (across states)	MLA building capability across northern Australia	Message is that the intent is for industry across N Australia so need to put state boundaries aside
Urgency is a driver	Realise that the project needs to deliver as quickly as possible before Mentor interest wanes	Need to keep mentors engaged...and grow the pool
Weaknesses	How to overcome	Ideas/Strategies
Lack of student numbers	Ensure industry and agency pathways and competencies are agreed. JCU (and other institutions) able to deliver academic programs that meet the needs of industry and students Close collaboration with other universities and agencies and other RTOs Ensure adequate marketing and promotion Note the lessons from Rangelands Institute	Critical – so need a model that is students +consultants+ corporate types - “students” is a generic term Could leverage some of MLA marketing capability and avenues (Feedback magazine)
Funding support from other external groups does not meet expectations	MLA to use its influence to encourage external companies to support with funding Ensure ongoing communication and appropriate accountability processes are in place to reassure investors that the Hub is succeeding	Need to demonstrate a Value Proposition for all stakeholders at different levels. Corporates are one obvious target but also seem to be an opportunity to provide a service to the DPI types.
Regional approach (across states) in northern Australia hits a political issue	Ensure all stakeholders are included in the establishment and development of the Hub	Involve other State stakeholders from the outset.

Opportunities	How to maximise	Ideas/Strategies
Asia Pacific region engagement	Work with ACIAR to identify south-east Asian educational and research opportunities Leverage from the JCU regional Asia Pac networks.	JCU to engage with ACIAR to identify educational and research opportunities UNE & UQ also have good overseas contacts
MLA becomes driver to centralise and better coordinate (manage) research reports/projects for northern Australia	Re-design website Better promote through all avenues, Beef Central, Future Beef	MLA to invest in changes to its website to promote improved communication to industry and better access to its wide range of on-line resources. MLA works in the background “sponsor/facilitator” takes the kudos, but the Hub needs to be operating independently
JCU expands offer, capacity and reputation in tropical science and agriculture	Market the Hub’s capability and offerings that are matched to industry needs Leverage success of the Hub	JCU appears to be going through some internal change that is likely to align better
Potential of strong backing by private sector (such as finance groups), HNWI, Pastoral Co	MLA / JCU to use its influence and approach target groups/companies for funding at CEO level.	Targets could include Landmark/Elders type
Future proof northern beef industry across northern Australia	Re-build RDE&A capability and capacity through this initiative	Definitely a large driver
Technology adoption, development and support by industry participants (ie MLA, CSIRO, JCU)	Utilise research stations, PDS etc to establish technology Hubs that industry can view Provide the technical training and support to operate and service equipment/technology.	Could be excellent fit with how Producer Demonstration Sites are managed and delivered – expect Ted Parish can add a lot here
Expand industry sectors	Look beyond beef to dairy, horticulture, aquaculture etc into the future to meet perceived needs of the region	Eventually. Worthwhile to flag potential but can’t afford to be distracted. This won’t sell the idea to MLA (or NABRC). First target is northern beef.
Threats	How to minimise	Ideas/Strategies
Build it and they will come strategy	Learn lessons from defunct Rangelands Institute at UQ that a “build it and they will come” strategy might not work if the overall design and output is not aligned to industry needs and if the University controls funding	MLA to identify key lessons from the Rangelands Institute failure (Project Team work in progress)
Dilution of resources (both people and funding) through competing interests	Ensure all industry agencies, stakeholders are well informed on the objectives and role of the Hub Ensure there is “buy in” from these groups Ensure the industry career paths are promoted and integrated from school level through to post grad	MLA to regularly update industry bodies on progress with the Hub MLA to promote resources such as the 2014 QDAF career pathways and competencies handbook to industry across Australia NABRC could be a good opportunity for next year to gauge interest from the larger audience
Industry scope may be perceived as too narrow in the future	Beef to be the initial focus, but demand for RDE&A in the tropical north and Asia Pac extends beyond	Need to build in a capacity to be flexible. MLA’s Sam Bucolo could indicate strategies over time.

	beef to Horticulture, Dairy, aquaculture, goats etc. Some areas of training will be multisector	
Partnership withdrawal	Ensure regular communication, strategy aligned Benefits are made apparent	Part of a risk management strategy.
Inability to secure the right Hub Co-ordinator	JCU acknowledges that role is Associate Prof level as a minimum to drive the program with sufficient industry credibility and authority. JCU recruitment and retention strategy is given full support.	JCU recruits a credible and dynamic Professor to drive the establishment and on-going viability of the Hub Possibly MLA and/or JCU will have to advertise widely or manage through recruitment agency.

7.2 Risk Management Plan

Risk	Potential Causes	Potential Impacts	Mitigation Plans	Consequence	Likelihood	Residual Risk Rating
1. JCU unable to establish, support or maintain the Hub	<p>Lack of internal JCU support</p> <p>Unable to develop links with Murdoch and Charles Darwin Universities</p> <p>Lack of financial and human resources in start-up and delivery period</p> <p>Lack of Industry support in Northern Australia</p> <p>Progress in achieving objectives not quantifiable</p>	<p>Hub is established elsewhere, such as Darwin (CDU), CQU, WA or concept mothballed</p> <p>Hub won't be able to make immediate impact to gain momentum required</p> <p>MLA's strategic initiative fails to meet industry needs for building industry capability</p> <p>If successes are unable to be measured, industry support may wane</p>	<p>Ensure all key JCU people are informed and supportive</p> <p>MLA/JCU sign off – GO/NO GO point – if JCU unable to support the initiative, then alternative tertiary institute/RTO needs to be identified</p> <p>Ensure MLA board understands the strategic imperative of this project to its MISP 2020 outcomes</p> <p>Develop support of peak industry groups such as Cattle Council, Agforce, NTCA and Kimberley Pilbara Cattleman's Association.</p> <p>Need professional approach to services provided including initial benchmarking to demonstrate progress in all areas of service</p>	4	2	Medium
2. Lack of funding over the first 5 years	<p>MLA / MDC / Corporates / Other not providing funding to make Hub viable to deliver industry benefit</p> <p>Inability to attract a suitable Hub Director</p> <p>Expansion not aligned with staffing levels</p>	<p>Hub is not established</p> <p>Hub is not viable at end of establishment/development phase (initial 5 years) or fails <5 years</p> <p>Inactive non-revenue generating staff</p>	<p>Ensure MLA/MDC and others commit appropriate levels of funding</p> <p>Ensure high profile and influential people are invited to sit on Advisory Board</p> <p>Ensure appropriate person is recruited to champion the initiative to all stakeholders and progress EOI to seek industry wide support</p> <p>Seek funding from external parties to secure ongoing support</p> <p>Develop research applications for R&D funding calls.</p>	5	3	Medium

Risk	Potential Causes	Potential Impacts	Mitigation Plans	Consequence	Likelihood	Residual Risk Rating
	Inability to develop effective consultancy base		<p>Deliver opportunity to provide evidence based consultancy capacity through mentor network.</p> <p>Need flexibility to develop with demand – start small (staff wise)</p>			
3. Withdrawal of stakeholder support	<p>Design of JCU model not aligned to MISP 2020 and/or industry needs</p> <p>Consultancy services provided don't achieve customer satisfaction/ value for money</p> <p>Corporates don't see value in the coursework on offer or long-term benefit</p> <p>Other Universities don't see the value for their students or their University</p> <p>Mentors perceive that they are not having their expertise used appropriately</p> <p>Insufficient communication re Hub's progress and advantages to industry</p>	<p>MLA decides to invest funds elsewhere that do not support capacity building and investment in industry intellectual capital</p> <p>Loss of income and reputation</p> <p>Corporates withdraw support both financially and in student / staff numbers</p> <p>Collaborative efforts fail to produce the numbers of students required or funding to support initiative once MDC support phases out</p> <p>JCU loses advantage of leveraging high-profile Mentoring expertise from Day 1</p> <p>Students and industry across Australian beef sector are not informed of the benefits of the JCU offer</p> <p>Students unable to identify career opportunities and establish on-going roles within industry</p>	<p>MLA has in place strong accountability measures</p> <p>Develop very clear objectives and performance indicators for all participants of the initiative and the Advisory Board</p> <p>Employ /develop high quality staff through mentors +/- involve mentors in service delivery</p> <p>JCU maintains close links to industry through its Hub structure (and Advisory Board). Create highly visible Advisory Board at the beginning.</p> <p>Actively support mentors/advisory panel members with media releases and annual/biennial conferences and speaker engagement in industry forums</p> <p>Budget for overseas visitations by mentors/advisory panel members to develop collaborative links in association with ACIAR</p> <p>Keep the Mentors in the loop and enthused through MLA sponsored meetings, activities and a Mentors Coordinator</p> <p>Strong marketing efforts by both MLA and JCU at industry events. JCU Hub Director to target key industry events / field days etc.</p> <p>JCU manages its collaborative strategy with other Universities and stakeholders effectively</p>	4	2	Medium

Risk	Potential Causes	Potential Impacts	Mitigation Plans	Consequence	Likelihood	Residual Risk Rating
4. Unable to attract sufficient Student numbers	<p>JCU absence of historical Agriculture reputation and high profile academics</p> <p>Lack of demand/employment opportunities for post graduate students</p> <p>Townsville location</p> <p>Quota is too high and doesn't reflect industry needs/wants/capacity</p> <p>Course content / quality</p> <p>Mentor system fails to attract student numbers forecast</p>	<p>Not on potential students' radar in a competitive field with overseas and well-established Australian Universities</p> <p>Students perceive negative recognition of study outcomes in industry</p> <p>Townsville Might be perceived as too far away for southern and western based students</p> <p>Students won't enrol for courses that are not aligned to career opportunities / practical in orientation</p> <p>Course content and outcomes will need to be urgently reviewed.</p>	<p>Hire a dynamic and well-credentialed Hub Director</p> <p>Use marketing to highlight role of expert, high profile mentors and practical coursework orientation</p> <p>Promote JCU's farm facilities and state of the art technologies to enable flexible, remote learning</p> <p>JCU ensures that course content is aligned to industry needs, practical and flexible</p> <p>JCU and MLA's promotion of the benefits of having students supported by acknowledged experts (Mentors)</p> <p>Limit spaces to create perception of prestige in course. Establish high entry requirements for top level qualifications.</p> <p>Establish/promote (in conjunction with industry, government and catchment authorities) scholarships with clearly identified career pathways</p> <p>MLA to select employee/s to undertake training</p> <p>Ensure primary focus is always a Hub of Excellence</p> <p>Provide opportunities for part-time studies while being employed</p>	4	3	Medium
5. Unable to attract the right Hub Director within 6 months of establishment	<p>Historic difficulty in attracting senior staff to Townsville</p> <p>There is no one suitable that fits the job specifications</p>	<p>Slows establishment of the Hub and Business Development opportunities</p>	<p>MLA / JCU advertise and promote the position / role.</p> <p>Select the candidate with the right attributes and attitude and develop an intense training course using the mentors, to equip the newly appointed staff with right skills set.</p>	4	2	Medium

Risk	Potential Causes	Potential Impacts	Mitigation Plans	Consequence	Likelihood	Residual Risk Rating
			<p>Include some budget for staff training by mentors.</p> <p>Develop symbiotic working arrangements with Holmes and McLean so they can explore development/experimental options for corporates within their phase 2 Bench marking Project</p> <p>Establish a list of priority areas/research questions which industry and overseas countries can support on farm and highlight these areas in promotional material</p>			

Rating Legend	Low	Medium	High	Extreme
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Consequence Table

	Consequence				
	1	2	3	4	5
JCU unable to establish the Hub	Very little consequence to establishment of the Hub.	Would require some resources and effort to achieve	Would require significant resources and effort to achieve	Would threaten establishment of the Hub	Would stop establishment of the Hub
Lack of funding	Very little consequence to establishment of the Hub.	Would require some resources and effort to achieve	Would require significant resources and effort to achieve	Would threaten establishment of the Hub	Would stop establishment of the Hub
Withdrawal of stakeholder support	Very little consequence to establishment of the Hub.	Would require some resources and effort to achieve	Would require significant resources and effort to achieve	Would threaten establishment of the Hub	Would stop establishment of the Hub
Unable to attract sufficient Student numbers	Very little consequence to establishment of the Hub.	Would require some resources and effort to achieve	Would require significant resources and effort to achieve	Would threaten establishment of the Hub	Would stop establishment of the Hub
Unable to attract the right Hub Director within 6 months of establishment	Very little consequence to establishment of the Hub.	Would require some resources and effort to achieve	Would require significant resources and effort to achieve	Would threaten establishment of the Hub	Would stop establishment of the Hub

Likelihood Scale

Likelihood	5	Almost certain	Expected in most circumstances. Has occurred on an annual basis in the past or circumstance are in train that will cause it to happen.
	4	Likely	Has occurred in the last few years or has occurred recently in other similar organisations or circumstance have occurred that will cause it to happen in the short term.
	3	Possible	Has occurred at least once in our history or is considered to have a 5% chance of occurring in the current planning cycle.
	2	Unlikely	Has never occurred in our past but has occurred infrequently in other similar organisations or is considered to have around 1% chance of occurring in the current planning cycle
	1	Rare	Exceptional circumstance only. Is possible but has very much less than 1% chance of occurring in the current planning cycle.

			Consequence				
			1	2	3	4	5
			Insignificant	Monor	Moderate	Major	Catastrophic
Likelihood	5	Almost certain					
	4	Likely					
	3	Possible					
	2	Unlikely					
	1	Rare					

Low	Medium	High	Extreme
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7.3 MLA / JCU Northern Australia Beef Hub - Stakeholder Analysis

The Stakeholder Analysis is designed to identify all stakeholders, their expectations in relation to research, training & development and how their expectations will impact on the development of this Business Plan.

Stakeholder(s)	Stakeholder Expectations	Impact on Business Plan
MLA	Development of a Business Plan to establish a Northern Australia Beef Hub at JCU that will meet the on-going needs of the tropical beef industry for access to relevant research, education that is practical and whole-of-farm etc.	BP must meet MLA project milestones
Beef Industry – Large Pastoral	Experienced extension personnel Relevant & quality research applicable to their operation & prepared to invest	Unlikely to supply students for higher degree programs (already have in-house expertise)
Beef Industry – smaller Family Pastoral	Experienced extension personnel Relevant & quality research applicable to their operation – less likely to invest	Likely to participate in P-G programs (see the need to build their business skills)
Beef industry - other	The Ridley AgriProducts, LandMark, Elders, FeedWorks, ASAP, AARN, AIAS&T	Widens the pool of potential participants/ supporters. Identify now, but engage later
JCU	Understand industry needs Funding Student profile & numbers of students to make Hub viable	We understand what industry needs JCU working in conjunction with MLA to determine funding arrangements Provide JCU with as much information as possible on student profiles, demand and motivations
Other Universities and RTOs (Agricultural colleges)	Able to access and/or supplement / collaborate to ensure students have access to flexibly designed courses, including mentors	JCU to provide insights into how collaboration might work in practice (not necessarily as formal as Articulation Agreements) Need to articulate how WA Universities (Murdoch and/or UWA) can obtain buy-in so the Hub is not seen as “Queensland centric”
Potential students – Certificate or other qualification level (non-degree)	Relevant courses that be accessed easily (eg assessment on farm) Credential building aligned with career pathways	QDAF career pathways & competencies handbook to be widely disseminated (via MLA website) Emphasise importance of mentoring support Scale - Regional, state, national (PIEFA?)
Potential students – Degree or PG level	Work in progress	Important in underpinning JCU confidence that the Hub will have a consistent body of well-motivated students Not all students will be (initially) motivated by an academic pathway. Expectation is that some will be upskilling to enter the sector or looking for “refreshers”
Mentors	Their expertise and skills are used to overcome the perceived shortcomings in research & training for extension staff	Feasibility of a mentoring support group has been proven Mentors=pool of consultants too. Can eventually differentiate if necessary.

Stakeholder(s)	Stakeholder Expectations	Impact on Business Plan
		Need to establish who carries the insurance/indemnity responsibilities/ costs?
Agencies - QDAF	Complements existing T & D programs in-house Benefit from staff participating in JCU coursework Hub provides coordination/ consistency/ network / recognised framework / agencies sub contract for this “service”. same comment across other agencies	Provides indication of student numbers Support for the objectives of the Hub through promotion & in-house motivators
Agencies - WA	Complements & integrates with existing T & D programs in-house Benefit from staff participating in JCU coursework Seen to be actively involved in a partnership, rather than Qld-centric focus. WA types will need “special” treatment. Some potential fit to the proposed “WA Beeflinks” program (another sideline discussion)	Provides indication of student numbers Support for the objectives of the Hub through promotion & in-house motivators
Agencies - NT	Complements existing T & D programs in-house Benefit from staff participating in JCU coursework Seen to be actively involved in a partnership, rather than Qld-centric focus	Provides indication of student numbers Support for the objectives of the Hub through promotion & in-house motivators
NRM's & Landcare	Ability to access extension training in NQ Broadening extension skills to include animal production & business Better opportunities for extension training Expect this could be a significant source of suitably motivated graduates starting out. A large number of NRM positions contracted.	Source of consistent student numbers Student numbers Relevant training
CSIRO	Better research coordination and integration with existing industry programs	Opportunities for students to participate in relevant CSIRO research projects
Greening Australia	Better opportunities for extension training	Student numbers Relevant training
PIEFA	Attracting more students into primary industries	Potential conduit for students

7.4 MISP Key Performance Indicators

Fig 4 MISP Key Performance Indicators

Key Performance Indicators and supporting industry objectives to be achieved

PILLAR		PRIORITY		IMPERATIVE	
Title	KPI	Title	KPI	Title	Objectives to be achieved
LEADERSHIP AND COLLABORATIVE CULTURE	Increased stakeholder recognition of the industry's leadership capability and socio-economic value	Building industry capability	Maintain or increase stakeholder confidence in the industry's leadership capability	Developing skills and leaders to support the industry	<ul style="list-style-type: none"> Industry leadership skills strengthened with formal governance training as standard practice for all organisational Boards Develop and implement a whole-of-industry approach to identifying and developing new and emerging industry leaders, in both representative and executive (staff) capacities Improved stakeholder support (endorsement) for industry representative councils and Service Companies
				Sustainable resourcing for key industry programs and structures	<ul style="list-style-type: none"> Financially viable industry representative organisations provide effective representation of sector interests and ongoing maintenance of value to members Agreed and upfront co-funding models developed and implemented for joint industry-government programs Future program requirements (NRS, AHA, NLIS, etc) identified and 'user-pays' options for key quality assurance programs implemented following a formal forecast levy needs analysis.
		Promoting and protecting our industry	Maintain or increase key stakeholder and community support and recognition for the industry's contribution to Australian economy	Monitoring and communicating industry performance to key stakeholders	<ul style="list-style-type: none"> Standardised and periodic monitoring, evaluation and reporting to industry, implemented, including the establishment of an annual 'report to industry' A framework for efficiently and accurately reporting on the sustainability credentials of Australia's red meat and livestock industry developed and implemented Industry socio-economic indicators at the national and regional level developed and reported to key stakeholders at least annually
				Issues management and crisis preparedness through planning and communication protocols	<ul style="list-style-type: none"> Industry and individual sectors are well prepared to avoid, or mitigate the impact of, any crisis through formalisation of framework for managing and communicating industry issues