

# INFORMATION REGARDING RESEARCH PROJECTS

## QUEENSLAND UNIVERSITY

### **RESEARCH PROJECT 1 - Towards Innovative Sustainable Planning and Building Design**

#### **Research Team**

	<u>Positions</u>	<u>Qualifications</u>
Dr Richard Hyde	<b>Associate Professor</b> , Department of Architecture, University of Queensland, <b>Director</b> , The Centre for Sustainable Design <b>Coordinator</b> Environmental Design and Technology Area, Dep't of Architecture, University of Queensland.	<i>Ph.D, Department of Architecture</i> , Oxford Brookes University, Oxford Degree awarded by C.N.A.A. <i>Dip. Arch.</i> Birmingham Polytechnic <i>B.Sc. (Hons)</i> Birmingham School of Architecture, Aston University. <i>License to practice</i> : Royal Institute of British Architects (ARCUK qualification), Australian Accreditation Council Australia, Royal Australian Institute of Architects. <i>Certified Assessor</i> : Green Globe Design and Construct Standard and Green Globe Precinct Planning and Design Standard.
Richard Moore	<b>Development Management Consultant</b> - University of Queensland School of Architecture	<i>Fellow Chartered Institute of Building - FCIOB</i> <i>Master of Science - MSc (Architecture)</i> – University London (Bartlett) <i>Quality Management Lead Auditor/Assessor (ISO 9000)</i> <i>Building Degree</i> – BSc – Brixton School of Building (Southbank University) <i>Grad Cert</i> (higher Education), The University of Queensland <i>PhD (Engineering)</i> , The University of Queensland <i>M.Eng Sc (Public Health)</i> , The University of New South Wales <i>BE (Chem Hons)</i> , The University of Queensland <i>Bachelor of Science</i>
Dr Lydia Kavanagh	<b>Senior Lecturer</b> , School of Engineering, The University of Queensland	<i>Grad Cert</i> (higher Education), The University of Queensland <i>PhD (Engineering)</i> , The University of Queensland <i>M.Eng Sc (Public Health)</i> , The University of New South Wales <i>BE (Chem Hons)</i> , The University of Queensland <i>Bachelor of Science</i>
Melinda Watt	<b>General Manager</b> – Benchmarking Unit, EC3 Global	
Jason Keating	<b>General Manager</b> - Green Globe International	<i>Master of Tourism</i> , James Cook University <i>Graduate Diploma in Business</i> , Monash University <i>Bachelor of Applied Science (Agriculture)</i> , University of Melbourne

#### **Background and research questions**

The research team as above would like to aim to create a sustainable development by identifying, assessing and validating sustainable building design and precinct planning.

The research will:

1. Identify precincts and buildings within the development which demonstrate innovative sustainable design and planning – these precincts will probably include a demonstration resort and a demonstration house.
2. Assist with and determine the feasibility of the selected design projects as demonstration buildings and precincts for the Ella Bay development meet 'worlds best practice' in sustainability. This will be assessed during design and after construction of Ella Bay.
3. Identify where changes in design, planning and operation of the precincts and buildings may improve sustainability.

## **RESEARCH PROJECT 2 - The Role of Disaster Management Planning in Coastal Residential Development**

### **Principal Researchers:**

Associate Professor John Minnery,  
Dr Clive Warren, and  
Dr Mike Gillen,  
School of Geography, Planning & Architecture,  
University of Queensland

This study proposes to undertake a review of the literature relating to hydro-meteorological hazards and their effects on coastal communities and to use the project as a case study to develop guidelines that can suggest ways to help reduce the physical, social and economic effects of such disaster events. The research will focus on the role of the various stakeholders in the development process in reducing the impact of disaster events. Using the Ella Bay development as a case study and focus the research will evaluate world best practice in planning and implementing hazard risk management strategies through land use, building and related strategies.

## **RESEARCH PROJECT 3 - : A Self-sufficient Lifestyle Community Expression of Interest for a Social Science Research Agenda**

### **Principal Researchers:**

Dr Lynda Cheshire\*  
Mr Ted Rosenblatt  
Mr Peter Walters  
School of Social Science  
The University of Queensland

Research would be undertaken from a social science perspective, there are a number of potential issues that arise from the proposed development, which could be considered via a collaborative programme of research between the developer and researchers from the School of Social Science and the Faculty of Social and Behavioural Sciences at The University of Queensland. A preliminary list of some of these issues is provided as follows.

1. Creating an embedded community within the region
2. Building community within the development
3. Establishing governance structures

#### 4. Demographics

### **RESEARCH PROJECT 4 - Environmental Sustainability and Waste Management**

#### **Research Team**

The personnel will include **Professor Jurg Keller** (Director, AWMC, expertise on nutrient removal and recovery and energy recovery from wastewater), **Dr Damien Batstone** (Chair, IWA AD Modeling group, Assoc editor *Wat Res*, expertise on anaerobic digestion and bioengineering); **A/Prof Bill Clarke** (Director, Env Eng program, expertise in solid waste digestion and composting); **Dr Lydia Kavanagh** (Senior Design Lecturer, expertise in ecologically sustainable treatment of wastewater).

*Groundwater modeling:* UQ has Australia's leading group of groundwater modelers. This includes **A/Prof David Lockington** (Director, Centre for Water Studies, Assoc editor *Wat Resour Res* and *Adv Wat Resour*, expertise in groundwater and nutrient percolation), **Prof Ling Li** (Assoc editor *Adv Wat Resour* and *Hydrogeology J*, expertise in tidally induced groundwater-ocean interactions); **Dr Kate O'Brien** (Lecturer, Chemical and Env Engineering, expertise in surface water quality modeling, esp. algal dynamics); **A/Prof Bill Clarke** (expertise in geochemistry).

*Estuarine ecology and water quality analysis:* **Dr James Udy** (Adjunct Professor, expertise in estuarine ecology, water quality analysis and monitoring).

The system assessment will be encapsulated in an analysis of nutrient fluxes through Ella Bay. Nutrient inventories within the system will include the treatment plant, vegetation, harvested vegetative matter, fertilizer, food, detergents, surface water, lowland marshes and groundwater. Further delineation of inventories will be beneficial for optimizing particular activities. e.g., nutrient fluxes through hotels might be significantly different to that through residential areas.

A dynamic model can be used to simulate fluxes between these inventories. A range of expertise will be required for different facets of the systems model. e.g.,

- wastewater design and control expertise for the treatment plant and overall optimization of nutrient management in Ella Bay.
- nutrient uptake in natural systems such as wetlands
- nutrient release from the degradation of organic solid wastes
- percolation of nutrients through soil and with groundwater
- transformation of nutrients within the subterranean tidal mixing zone.

### **RESEARCH PROJECT 5 – Community News Needs**

#### **Research Team:**

Dr John Cokley PhD (Chief investigator)  
School of Journalism and Communication  
University of Queensland

Ms Susan Hetherington  
School of Journalism  
Queensland University of Technology

We propose a well-defined research project which addresses the **community news needs** of this new community of around 5,000 people undertaken in the “laboratory communities” of (1) Blackall, central Western Queensland and base our proposal on Cokley’s ongoing published research already u, (2) Norfolk Island, (3) Bathurst Island, Northern Territory, and (4) Lord Howe Island, and Hetherington’s ongoing community news research and practice in the *Kelvin Grove Urban Village*, a master-planned community bringing together residential, educational, retail, health, recreational and business opportunities.

## **RESEARCH PROJECT 6 – A Self-sufficient Lifestyle Community**

Research by: Dr Greg Baxter  
School of Natural & Rural Systems Management  
The University of Queensland, Gatton Campus

Research will be conducted early in the project’s development which allows such research to be conducted in a rigours way that will illuminate the before and after situation with any development, and will inform ongoing planning and building of the Ella Bay Master Planned Community (MPC) during the next ten to fifteen years, and to assist the developer in meeting its aim of building a socially sustainable lifestyle community.

## **RESEARCH PROJECT 7 - A social sustainability research agenda for the Ella Bay development.**

### **Research Team**

Dr Michael Cuthill  
Director UQ Boilerhouse  
Community Engagement Centre  
07 3381 1532  
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Professor Helen Ross  
School of Natural and Rural Systems  
Management  
0408-195324  
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Dr. Michael Cuthill and Professor Helen Ross would like to initiate a social sustainability research agenda for the Ella Bay development. The UQ Boilerhouse Community Engagement Centre will be the coordinating centre for the research.

The UQ Boilerhouse acts as a facilitating agent bringing together diverse stakeholders from the private, public, community and tertiary sectors to develop informed and collaborative responses that contribute to building just and sustainable communities.

## **JAMES COOK UNIVERSITY**

### **RESEARCH PROJECT 8 - Ella Bay Development access and internal roads, design of strategies to mitigate road impacts on adjacent habitats and internal corridors, and monitoring of road mitigation strategies.**

#### **Research Team**

Name	Positions	Qualifications
Dr Miriam Goosem	Research Fellow School of Environmental and Earth	PhD, Environmental Science, James Cook

	Science, James Cook University, Cairns	University
Prof Steve Turton	Executive Director, JCU/SCIRO Tropical Landscapes Joint Venture, James Cook University, Cairns	PhD, Geography, James Cook University
Dr Catherine Pohlman	Postdoctoral Research Fellow, School of Environmental and Earth Science, James Cook University, Cairns	PhD, Environmental Science, James Cook University
Dr Robyn Wilson	Research Officer, School of Environmental and Earth Science, James Cook University, Cairns	PhD, Environmental Science, James Cook University
Mr Les Searle	Research Officer School of Environmental and Earth Science, James Cook University, Cairns	BSc, GIS, Computer Science, James Cook University BAppSc, Surveying, Queensland Institute Technology
Mr Peter Byrnes	Research Officer School of Environmental and Earth Science, James Cook University, Cairns	PhD candidate, Environmental Science, James Cook University, BSc (Hons), Environmental Science

The proposed research project will:

1. Examine habitat quality of the remnant and riparian vegetation on site and within and adjacent to the access road footprint with respect to microclimate, vegetation and habitat for selected wildlife groups.
2. Review road design in terms of best practice literature from around the world and within the Wet Tropics and provide advice with respect to best environmental practice with regards design, construction and operation to achieve the smallest environmental footprint possible and to allow wildlife movements, both of the cassowary and other fauna.
3. Monitor wildlife mortality, edge effects and aspects of faunal connectivity both prior to and after road upgrade and construction.

## **RESEARCH PROJECT 9 – Cassowary Studies**

Proposed by : L. A. Moore (MSc, PhD)

Studies of the Seymour Range cassowary population would include:

1. Long-term monitoring of population numbers and demography
2. Social organisation and behavioural studies

3. Movements and home range studies
4. Breeding systems and nesting studies i.e., telemetry will allow the location of courting birds and nesting males to be determined
5. Cassowary interaction with roads and urban infrastructure i.e., Ella Bay access Road, Jubilee grove Road, FFP & EB Resort

## **RESEARCH PROJECT 10 – Community Impact Statement**

### **Research Team**

<u>Name</u>	<u>Positions</u>	<u>Qualifications</u>
Dr. Fay Falco-Mammone	Project Manager & Primary Researcher	PhD Tourism Regional Tourism Consultant
Prof. Bruce Prideaux	Project Supervisor	Professor Tourism & Marketing

As there has been considerable research into the negative impacts as well as positive impacts of tourism on local communities. It has been recognized in the tourism literature that the tourism industry in a given area will only continue to flourish if it has local support and involvement, as local residents are a key stakeholder groups. This clearly points to the need to understand the dynamics of local involvement in the tourism industry. Several models exist which may guide such an understanding. One widely recognized model is Doxey's (1975) irridex. This model builds upon the dynamic nature of tourism to explain how changes in local residents' attitudes to tourism occur as the destination matures over time. Several elements contribute towards local residents' attitudes. These include (i) extrinsic factors, such as the nature and stage of tourism development, the level of tourism activity and the types of tourists involved and (ii) intrinsic factors, i.e. the characteristics of residents such as; their level of involvement in the tourism industry, period of residence, employment, etc.

## **RESEARCH PROJECT 11 – Research Topic: Evaluation of subtle impacts of development on tropical near-shore marine fauna**

### **Research Team**

<u>Name</u>	<u>Position</u>	<u>Qualifications</u>
Marcus Sheaves	Senior Lecturer	PhD
John Collins	Senior Lecturer	PhD
Janine Sheaves	Associate Lecturer	BSc

In particular, the project will address the specific questions:

1. What if any are the responses of sediment faunal composition and biodiversity to altered levels of anthropogenic disturbance during construction and operation of the development?
2. What if any are direct (eg. increased fishing pressure) and indirect effects (eg. from alteration to habitats or changes in sediment fauna) on fish use of intertidal habitats?
3. What if any are the effects on mobile fauna (eg. jungle perch, or mangrove jack) that migration between fresh and marine waters?
4. How successful at achieving their objectives are any mitigation measures implemented in response to any identified impacts?

## **RESEARCH PROJECT 12 – Disaster Mitigation Planning**

### **Research Team**

<u>Name</u>	<u>Positions</u>	<u>Qualifications</u>
David King	Director of CDS	BA Hons, Cert.Ed , PhD
Alison Cottrell	Program Leader	BA, MSPD, PhD, Graduate Certificate Education
Centre Research Staff		

The research will:

Conduct a Natural Disaster Risk Mitigation Study of the proposed development utilizing standard Queensland Government/National procedures and processes

### **Aims and objectives**

The primary aim is to maximise the safety of the Ella Bay community through mitigation of the impacts of natural hazards. This will be achieved through:

1. A systematic identification of all hazard risks, within the context of the Ella Bay environment.
2. Application of hazard risk assessment to a generated socio-demographic profile and planned layout and style of community.
3. Identification of all hazards and likely community vulnerability.
4. Identification of mitigation treatments that may be incorporated into the planning and design of the community.

We are prepared to work with hazard researchers and planners from other institutions, and are willing to develop a research proposal in partnership with colleagues.

## **RESEARCH PROJECT 13 - How do the on-site and off-site environmental impacts of Ella Bay Integrated Development compare with those of a typical low density rural residential development?**

### **Research Team**

<u>Name</u>	<u>Positions</u>	<u>Qualifications</u>
A/Prof David King	Director CTURP	BA Hons, Cert.Ed , PhD
Dr Nicky Moore	Lecturer	BSc Hons, PhD
Research assistants from CTURP		

The research will compare the environmental impacts on the adjoining WHA of the Little Cove (LC) traditional residential development with the residential component of the Ella Bay Integrated Development (EBID) using indicators such as:

1. Extent of weed transport into the WHA.
2. Extent of change in vegetation structure and species composition in the WHA adjoining the development.
3. Stormwater impacts and runoff.
4. Area of permeable/impermeable surfaces as a percent of the overall development.

### **Aims and objectives**

The primary aim is to monitor the on-site and off-site anthropogenic impacts of a traditional rural residential development (Little Cove) and compare it with those from the higher density residential component of the Ella Bay Integrated Development. This will be achieved through:

1. Baseline surveys of the WHA forest adjoining both Little Cove and the EBID.
2. Regular monitoring and mapping of extent and distribution of off-site anthropogenic impacts over time.
3. Remote imagery of the two developments to determine on-site impacts.
4. Comparison of off-site and on-site impacts of the two designs of residential development, as a basis for recommendations for reducing the impact of residential development in the wet tropics.

### **RESEARCH PROJECT 14 - Research Topic: Community marine safety: Placement of marine stinger enclosures and educating the community about venomous marine animals**

#### **Research Team**

<u>Name</u>	<u>Positions</u>	<u>Qualifications</u>
<b>Dr Jamie Seymour</b>	Director, Tropical Australian Stinger Research Unit, JCU	BSc (Hons) PhD
<b>Teresa Carrette</b>	PhD Student, JCU	BSc, Msc
<b>Matthew Gordon</b>	PhD Student, JCU	BSc, (Hons)
<b>Avril Underwood</b>	Research Officer, Tropical Australian Stinger Research Unit, JCU	BSc, (Hons)

Placement of nets for optimal performance and safety should be determined by not only beach shape but also the density of the box jellyfish present. In conjunction with stinger enclosures, recent work has suggested that education of the public drastically reduces envenomings from not only box jellyfish, but venomous animals as a whole.

This project then aims to

- a. Determine the species and distribution of cubozoans present on the beach front to determine the most appropriate type and position of stinger enclosure required to give maximum community safety and use.
- b. Determine times of high and low risk for marine users in the area
- c. Provide information to educate community as to dangers in the marine environment, especially marine stingers, and how best to manage the risk

## Outcomes

There are several outcome of the proposed research, all of which aim to increase the marine safety of the residences and visitors at Ella Bay. These include, but are not limited to,

- i) Determination of the best location and type of Stinger enclosure.
- ii) Production of a real time model to determine the end of the stinger season as well as high and low risk times within the season itself.
- iii) Education centre with displays etc allowing for the dissemination of information about venomous marine animals, including safe periods of the year, first aid treatment and places for bathers to swim.

## RESEARCH PROJECT 15 - 'Adding Value to Science – Sustaining Traditional Ecological & Cultural Knowledge'

How Indigenous traditional knowledge of ecological and cultural heritage within the Wet Tropics World Heritage Area adds value to scientific research and environmental education – and how employment of Traditional Owners supports strong and sustainable Indigenous communities in the Far North.

## Research Team

Name	Positions	Qualifications
Turton, Steve	Project Manager, ATFI, Centre for Sustainable Indigenous Communities (=primary research provider), based in Cairns.	Dr Steve Turton is Professor at James Cook University and the Director of the Australian Tropical Forest Institute & JCU/CSIRO Tropical Landscapes Joint Venture. Prior to his current position, Steve was Associate Professor in Geography and Director of Research for the Rainforest Cooperative Research Centre, based at James Cook University. His research interests include tropical climatology, rainforest ecology and natural resource management. Steve has published over 90 scientific papers in these fields of study, comprising refereed journal articles, book chapters and research monographs. He has also supervised over 50 honours and graduate research students during his time at JCU. He is the co-editor of a major book in press: N.E. Stork & S.M. Turton (eds.) 2007. "Living in a Dynamic Tropical Forest Landscape", Blackwell Publishing, Oxford, UK, 620p. Steve is a Councilor of the Institute of Australian

		Geographers and an ex officio member of the Wet Tropics Management Authority's Scientific Advisory Committee. He was recently nominated to the position of honorary treasurer for the Association for Tropical Biology and Conservation, Asia-Pacific Chapter.
Kuehn, Birgit	Research Officer, ATFI, Centre for Sustainable Indigenous Communities (=primary research provider), based in Cairns	Postgraduate Diploma of Science in Protected Area Management (2000, JCU); Master of Law (equivalent, 1997, Goethe University, Germany) with focus on environmental law; extensive experience in working with Indigenous Traditional Owners in the Wet Tropics, and in communications / media. Research interests include Indigenous involvement in contemporary protected area management, environmental law and intellectual property rights, under consideration of international treaties such as the Convention on Biological Diversity and the World Heritage Convention.
TBA	Research Officer / Assistant (Indigenous / female), Centre for Sustainable Indigenous Communities, based at the Ella Bay Research Centre	Traditional Owner (Ma:Mu); experience in natural resource management or cultural heritage management, including women's business and significant sites; acknowledged by her peers; good communication skills; Appointment with a degree qualification at Research Officer level, without degree qualification at Research Assistant level. 2 part-time or 1 full-time.
TBA	Research Officer / Assistant (Indigenous / male), Centre for Sustainable Indigenous Communities, based at the Ella Bay Research Centre	Traditional Owner (Ma:Mu); experience in natural resource management or cultural heritage management, including men's business and significant sites; acknowledged by his peers; good communication skills; Appointment with a degree qualification at Research Officer level, without degree qualification at Research Assistant level. 2 part-time or 1 full-time.
Aboriginal Rainforest Council (ARC)	Advisor / Co-Research Provider	Representative body of and endorsed by the Aboriginal tribal groups of the Wet Tropics World Heritage Area; expertise in ecological and cultural knowledge systems.

The research will:

1. Examine the parameters of cultural heritage sustainability of the proposed Ella Bay Resort, including the potential of new cultural heritage infrastructure, such as a 'Ma:Mu Heritage Information Centre' and Traditional Owner contributions to landscaping of the Ella Bay Resort area, e.g. with the development of a 'Cultural Heritage Trail / Garden';
2. Investigate how Indigenous traditional knowledge of ecological and cultural heritage within the Wet Tropics World Heritage Area adds value to scientific research, both within and adjacent to protected areas;
3. Investigate how Indigenous traditional knowledge of ecological and cultural heritage within the Wet Tropics World Heritage Area adds value to

environmental education & eco-tourism, both within and adjacent to protected areas; and

4. Investigate how vocational recognition of Traditional Owners' expert knowledge in traditional resource management and capacity building in scientific research skills supports strong and sustainable Indigenous communities in the Far North.

### **Aims, objectives & outcomes**

The anticipated outcomes and benefits of this research are that it provides significant contributions to ecologically and culturally sustainable communities and research through

1. Support of scientific research with advice on cultural protocols for field work on traditional country, at the Ella Bay Research Centre and to ATFI researchers;
2. Support of scientific research with advice on cultural protocols for use and distribution of traditional knowledge and on Indigenous intellectual property rights (IPRs), at the Ella Bay Research Centre and to ATFI researchers;
3. Facilitation of contact with Elders and other Traditional Owners relevant for research on Ma:Mu country and by offering translation services where required; and
4. Facilitation of environmental education inclusive of the rich and diverse Indigenous cultural heritage of the Wet Tropics to residents and visitors of Ella Bay community and resort; and, last but not least, by
5. Providing qualified employment and training opportunities for Traditional Owners on their traditional country that respects and acknowledges their expertise in ecological and cultural resource management and their right to speak for their country.