1. Introduction

The Tasmanian Institute of Agricultural Research (TIAR) is a joint venture between the Tasmanian Department of Primary Industries and Water and the University of Tasmania. The Institute was established in 1996 to focus agricultural research in the State, and to ensure that research programs meet the needs and priorities of the agricultural sector. Natural resource management (NRM) is a significant aspect of sustainable agriculture and the Institute is strengthening its NRM capability to underpin agricultural research across Tasmania.

The Natural Resource Management program of TIAR is a partnership that includes the University of Tasmania, The Tasmanian Department of Primary Industries and Water, CSIRO Sustainable Ecosystems and the three Tasmanian Natural Resource Management regions (NRM South, North and Cradle Coast).

The NRM program brings together a range of multidisciplinary expertise to support sustainable land use, especially the sustainability of agricultural industries and mixed farming systems and the ecosystems, landscapes and human communities underpinning the agricultural sector. The program is cross-cutting in nature as it is designed to complement and enhance the research arenas of vegetable, dairy, extensive agriculture, perennial horticulture, food safety and food innovation systems within the Institute.

2. Mission

The mission of the NRM program is to improve the quality and outcomes of research, development and extension in natural resource management in order to support the sustainability of natural resources and landscapes. The focus is on agricultural landscapes.
3. Portfolio – what the Program offers

The portfolio of the NRM program concentrates on the:

- Provision of strategic support (science and evidence-based information) for the next phase of Regional Natural Resource Management (NRM) Strategy (RNRMS) and Regional Investment Plan (RIP) planning and development across the State; and associated initiatives such as the adoption of Market Based Instruments (MBIs) and incentives.

- Provision of R,D&E and services in NRM to strengthen the activities and outputs of existing TIAR research groups.

- Development and delivery of new R, D & E initiatives including across industries and sectors.

- Training of a new generation of scholars with the multidisciplinary expertise and experience to provide the necessary NRM R, D & E and services to support sustainable land use and sustainability in the agricultural sector.

Strategic research support for the regional NRM process

The TIAR NRM program supports strategic, evidence-based research to guide the next planning and development phase for RNRMS and RIP in Tasmania, including research into the potential role of Market Based Incentives in delivering natural resource outcomes. The research undertaken is intended to bring about practice change in farm businesses, regional NRM Investment Plans, government policy and procedures.

The NRM program is developing quantitative ways to evaluate the effectiveness of public and private sector investments in NRM. This knowledge will inform the development of new Regional Investment Plans in Tasmania and the opportunities for private sector investment in NRM. The Salinity Investment Framework project currently underway in Victoria is an example of how the effectiveness of NRM investments (in this case the mitigation of dryland salinity) can be tested and the results used to inform the next round of investment planning. The efficacy of this approach in Tasmania for evaluating investments in the mitigation of salinity and the management of natural resources such as native vegetation is under investigation by the NRM program.

As part of its strategic activities, the NRM program supports the Commonwealth Environment Research Fund national research hub program and the hub called **Landscape Logic - Linking Land and Water Management to Resource Condition Targets** (http://www.landscapellogic.org.au). This research hub is lead by the University of Tasmania and is a collaborative project between UTAS, ANU, RMIT, CSIRO, DPIW, Forestry Tasmania, Victorian Department of Sustainability and Environment and 6 regional NRM organisations to develop a regional decision making framework that
incorporates interactions between management actions across all the major areas of investment.

**Adding value to existing research in agricultural landscapes**

The NRM program aims to add value by contributing previously unavailable R, D & E and services in natural resource management to a number of existing research activities and major agricultural investment programs of TIAR, DPIW, CSIRO Sustainable Ecosystems and the three Tasmanian NRM regions. For example, TIAR has identified the need to develop a strong spatial information analysis and modelling capability in order to improve R, D & E undertaken through the State’s Research and Demonstration Farms and the resource management and agricultural production outcomes of projects such as the Dairy Australia funded ‘20-12’ project, the NAP funded Best Practice Salinity management projects, the MLA funded ‘Red Meat Targets’ project, and the LWW funded 8x5 Wool for Profit Program.

The Tasmanian NRM Regions have identified many ‘knowledge needs’ and the TIAR NRM program undertakes R, D & E to address these knowledge gaps.

**Development and delivery of new R, D & E initiatives**

The TIAR NRM program is building a portfolio of new initiatives based on the recognised need to address paddock-landscape scale threats to agricultural production and the protection of natural resources and essential ecosystem services. This aspect of the program’s activities gives emphasis to building capacity through cooperation and co-investment with government, industry and community partners. Some examples of the Program’s new initiatives include new research in water conservation and the role of waste water re-use, innovation in soil testing machinery, enhanced understanding of pesticide pathways in ecosystems and food chains, arresting tree decline in agricultural landscapes, and new approaches to integrated catchment modelling in collaboration with the University of Vermont, USA.

**Advanced training for PhD & Masters scholars in NRM**

The NRM program carries out multidisciplinary and problem-oriented research in support of its knowledge discovery, service delivery and training activities in the fields of agricultural ecology and mixed farming systems. Research is carried out by staff, higher degree research students (PhD and Masters) and Honours students associated with the program. Advanced training partnering arrangements also exist with CSIRO, various Cooperative Research Centres and other research agencies.

Students are normally enrolled in the higher degree programs of the School of Agriculture and other Schools of UTAS, although partnering arrangements with other universities in Australia and overseas are invited. Research topics of these students fit within the NRM R, D & E Strategy and many exciting opportunities are now available.
Individuals who wish to enquire about and/or carry out research as a PhD, Masters or Honours student are encouraged to contact the NRM Research Program Manager and/or other senior staff of the program via email.

4. Collaborators of the NRM Program

The TIAR Natural Resource Management Program is carried out in collaboration with land managers and farmers and a range of colleagues with complementary expertise in Tasmania, Australia and other countries worldwide. Program collaborators come from diverse areas of academia, industry, government and the community including the School of Geography and Environmental Studies and other Schools at UTAS, RMIT University, The Australian National University, Australian Academy of Sciences, Chinese Academy of Sciences, leading industry groups and companies such as the Tasmanian Farmers and Graziers Association (TFGA), Dairy Tasmania, TIAR’s Agricultural Research Advisory Committees, the 8x5 Program Advisory Panel, the Red Meat Targets Program Management Committee, Tasmanian Alkaloids, GlaxoSmithKline, Botanical Resources Australia, Simplot Australia, McCain Foods, Tasmanian Aquaculture and Fisheries Institute (TAFI), CSIRO Marine Science and Atmospheric Research Divisions, Hydro Tasmania, Forestry Tasmania, Meat and Livestock Australia (MLA), Rural Industries R&D Corporation (RIRDC), Land and Water Australia (LWA), Grains R&D Corporation (GRDC), Horticulture Australia (HA), Dairy Australia (DA), Australian Centre for International Agricultural Research (ACIAR), Cradle Coast Authority (CCA), Greening Australia, World Resources Institute and World Bank.

The Program has a variety of linkages with a diverse set of stakeholders. These linkages vary in the degree of involvement by staff, commitment of funding and roles (eg. facilitator, service provider, trainer or educator, knowledge broker).

5. Key Themes and Opportunities

The TIAR Natural Resource Management program currently comprises five connected themes with the aim of strengthening the sustainability of agricultural industries and mixed farming systems, and the ecosystems, landscapes and human communities underpinning the agricultural sector. These themes are:

- Strengthening knowledge of key dependencies between agricultural production, landscape function and management
- Helping build productive and resilient agricultural and mixed farming systems
- Conserving key natural resources and ecological systems for the future
- Helping create the capacity for the agricultural sector to flourish under global change
- Innovation in agriculture as an integral component of regional development
The TIAR Natural Resource Management Program is strongly engaged with industry, community and production groups, NRM groups and catchment management organisations, national research bodies & organisations, and education and training programs.

Significant opportunities are available for new researchers, and students interested in undertaking honours, Masters and PhD studies, to join the NRM program and contribute to developing a sustainable future for the agricultural sector.