

Information for researchers

LAKE MACQUARIE ENVIRONMENTAL RESEARCH GRANTS 2023-2024



**Lake Macquarie
Environmental Research Grants
2023-2024**

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Environmental Research Grants

Lake Macquarie City Council may be able to assist with your research

The Lake Macquarie Environmental Research Grants Scheme has been operating since 1987. Lake Macquarie City Council, with assistance from sponsors, has provided more than 159 grants to support environmental management of Lake Macquarie City.

Sponsors of the Lake Macquarie Environmental Grants for [2022-2023](#) included Hunter Water Corporation, Delta Electricity and Origin Energy.

The Lake Macquarie Environmental Research Grants Committee, comprising representatives of Council, State Government departments, the University of Newcastle and industry, determines research priorities. Issues that have been identified as warranting research include diffuse pollutant sources and their effects, lake water pollution, air quality, biodiversity, health impacts of exposure to heavy metals, estuarine habitat, resource consumption, alternative sources and efficient use of energy and water, sustainability metrics and reporting and the effectiveness of environmental management strategies.

It is expected that the results of funded projects will assist Council and other environmental managers to develop appropriate land use practices, plan remedial and preventative works, and adjust management strategies.

Further enquiries: Please contact Amy McArthur, City Resilience Project Officer (02 4069 0079)

Proposed timeline for assessing submissions:

- October 2023: Submissions open
- March 2024: Environmental Research Grants Committee reviews submissions and determines successful applicants
- April 2024: Lake Macquarie City Council meets to assess and ratify Committee recommendations
- May 2024: All paperwork to be completed by successful applicants and returned together with educational/institution tax invoice
- June 30 2024: Distribution of grant monies

Closing Date: Thursday 15 February 2024



Your submission

The proposed research must relate to an environmental problem confronting Lake Macquarie City.

Your submission for grant funding must demonstrate the practical application of the proposed research project and should include:

- details about yourself and/or organisation (a resume including qualifications, experience etc. of each applicant);
- an itemised budget indicating the way in which the grant money is proposed to be spent;
- an outline of the proposed research project (include aims, method and objectives for the project);
- supporting information on the reasons for the research and how it will benefit Lake Macquarie City;
- a tentative timetable for the research project/thesis;
- name and contact details of the supervisor nominated for the project; and
- names and contacts for two referees.

Collate everything in a single document – pdf format preferable. Please restrict it to a maximum of 10 pages (excluding the resumes of the applicants).

The Lake Macquarie Environmental Research Grants Committee selects research projects based on whether the project meets established research priorities (Attachment 1). See also a list of projects that have received funding in past years (Attachment 2).

In formulating a research grant submission and project, be mindful that Council needs to know:

- what the problem or situation is;
- how bad the problem or situation is; and
- what needs to be done to avoid, rectify or minimise environmental damage.

The projects that have been of most use to Council and sponsors are those which:

- identify and quantify a prevalent environmental management problem/issue with sound science and/or;
- monitor environmental management strategies to determine their effectiveness and/or;
- develop simple, repeatable, inexpensive, monitoring techniques for assessing environmental impacts, and/or;
- establish baseline data that can be used in the future; and
- suggest practical solutions, including ways in which the recommendations can be achieved.

The selection criteria for submissions are as follows:

- a** the outcomes of the project has clear benefits for the city
- b** the potential for the outcomes to have application in environmental management of the city
- c** the quality of the submission
- d** scientific rigor of the proposed research
- e** value for money (including the budget of the project and any in kind contributions)
- f** researcher and/or supervisor's expertise and experience
- g** how the proposed research fits within the priorities for the city
- h** degree to which the project fosters and supports academic achievement for the lake macquarie residents

As a guide, a successful applicant can expect to receive up to \$8000 (higher sums have been approved but only in exceptional circumstances). Grant funds are to cover consumables and costs incurred during field works including travel expenses (the scheme will only pay the Australian Taxation Office (ATO) standard rates for motor vehicle expenses – the 2023-2024 rate is 85 cents per kilometre of business travel). The scheme can also cover laboratory works, computing, printing etc.

Note: Payments of wages, purchasing of durables, or living allowances are not eligible grant components. The Environmental Research Grant will not fund university administration charges or any overheads (on-costs) if charged by your institution/organisation.



Specifications

If you are successful in receiving a Lake Macquarie Environmental Research Grant, then Council requirements for Environmental Research Grants Projects must be met. These are outlined below:

Council's requirements

- a tax invoice is to be forwarded to Council as soon as practicable. If you are not GST registered, the details of your ABN should be provided to Council.
- the grants scheme will only pay the Australian Taxation Office (ATO) standard rates for motor vehicle (travel) expenses (the 2023-2024 rate is 85 cents per kilometre of business travel).
- the grants scheme will not support the payments of any overheads (on-costs) if charged by your institution/organisation.
- evidence of risk and liability insurance which indemnifies Council and its employees against loss or damage to property or any injury or death to persons caused by or arising either directly or indirectly from the undertaking of the project is to be provided to Council.
- any research project that receives \$4000 or more and will take more than 12 months for a final report to be submitted to Council, must provide annual progress reports.
- the researcher shall inform Council of delays and justify in writing any extension to the research project deadline.
- the media may show interest in your research topic. All media inquiries are to be referred in the first instance to Council's Media Public Relations Coordinator or Council's Manager Environmental Systems (02 4921 0333). Any subsequent statements made directly to the media by the researcher should focus specifically on the research being undertaken and should not comment on Council issues or matters of policy.
- the researcher will advise Council immediately of any change in address/contact details or changed circumstances with respect to the grant. For example, changes in employment arrangements, institution and/or host organisation.
- council must be provided with one digital copy of the thesis or report and copies of any other articles, seminar proceedings or papers generated from the research. All components of the digital copy (including maps) are to be compatible with Council's software.
- council and other sponsors (2023-2024 sponsors to be advised) are to be acknowledged in the thesis or report and any derivative papers or publications. An example of an appropriate acknowledgment would be:

"This research was sponsored through the Lake Macquarie Environmental Research Grants Scheme. Lake Macquarie City Council and various sponsors fund this Scheme. The 2023-2024 sponsors were ..."
[2023-2024 sponsors to be advised]

- each report is to be accompanied by an executive summary, up to two pages, that includes:
- the major findings, implications and practical application of the research;
- a list of articles, papers and other documents that may have been generated from the research; and
- an itemised list showing how the grant monies were spent - this summary will be distributed to the Environmental Research Grants Committee members.
- the report is also to be accompanied by a Lake Macquarie City Research Abstract. This will be one to two A4 pages and should describe the research project, its major findings and its relevance (practical application) to Lake Macquarie City (a template will be provided to you upon receipt of your acceptance form). This Research Abstract is made available on Council's website and will be used by Committee Members, Councillors, Council staff, and the community. Its purpose is to illustrate and aid dissemination of important research findings. The Research Abstract must therefore be readily comprehensible by the informed person, who is not an expert in the field, and easily reproduced. The Research Abstract is to be completed on the provided template and supplied in electronic form compatible with Council software.
- an acquittal statement is to be submitted to Council on submission of the project completion and completion of all requirements.
- council reserves the right to reproduce Environmental Research Grant reports and sell them for a fee, which covers the cost of reproduction.
- if any applicant awarded a grant fails to take necessary steps to commence the project or fails to complete the project within a reasonable timeframe as determined by grant administrator and or by the committee, Council can invoice the institution up to the full project amount.

Should you wish to discuss these requirements or any other matters relating to the Lake Macquarie Environmental Research Grants Scheme, please contact Council's City Resilience Project Officer: :

Amy McArthur

Phone: 02 4069 0079

Email: EnvResearchGrants@lakemac.nsw.gov.au

Attachments

Attachment 1

Research priorities determined by the Lake Macquarie Environmental Research Grants Committee

Attachment 2

Previous research grants 1987-2023

Solar panels installed on Council's Building

Attachment 1

Research priorities determined by the Lake Macquarie Environmental Research Grants Committee

Revised: 2022

The following topics are priorities for the Lake Macquarie Environmental Research Grants, with a focus on the management of the Lake Macquarie environment, benefits to the Lake Macquarie community and achievement of actions stated in the City of Lake Macquarie Environmental Sustainability Action Plan (ESAP) 2014-2023¹:

Natural environment (NE²)

1. Identifying and quantifying pollutant loadings, including diffuse sources:

- identifying critical pollution sources and/or quantifying pollutant load contributions;
- effects of diffuse sources in relation to algal floristics, water chemistry, sediment structure and chemistry, and ecology;
- ways to minimise pollutants and improve catchment water quality;
- catchment management studies with practical recommendations; and
- monitoring Lake Macquarie's tributaries.

2. Effectiveness and impacts of management strategies, including:

- baseline studies;
- whether management strategies have slowed infill rates;
- the effectiveness of pollutant controls and management strategies;
- the impacts of fire hazard reduction programs;
- effectiveness of rehabilitation, remediation and stabilising measures for lakebed and foreshores; and
- effectiveness of management strategies for urban bushland and aquatic habitat.

3. Monitoring of seagrass distribution and quality, including:

- temporal variability at different spatial scales;
- identification of stressors and development of recommendations for appropriate mitigation;
- effects of diffuse sources in relation to seagrass spatial changes; and

- impacts of noxious species (particularly *Caulerpa taxifolia*) on seagrass health and associated aquatic ecology.

4. Foreshore areas, including:

- prioritisation and monitoring of foreshore areas requiring remediation; and
- shoreline and near-shore physical and ecological changes in response to various foreshore stabilisation methods (i.e. seawalls, rock revetments, pebble beaches, vegetation).

5. The application, implementation and refinement of monitoring tools and models:

- to assess the health of ecosystems and the effectiveness of management strategies; and
- to assess the effectiveness of remote sensing for application in biodiversity or natural resource management.

6. Transfer of metals and nutrients between sediment, bacteria, water and biota, in regard to:

- effects on individual species, ecology and management strategies;
- consolidating information on the sampling of sediments and development of a lake bathymetric metal map, identifying hot spots; and
- the effect of metal ion concentration (lead, copper, iron and selenium) on fish reproduction rates.

7. Biodiversity, in particular:

- habitat identification and management;
- factors influencing fish habitat in Lake Macquarie;
- functioning and effectiveness of corridors;
- ecosystem and species viability;
- aquatic and marine species and ecosystems management including possible conservation areas;
- species' ecological requirements, distribution and management;
- status of rock platform habitats;
- standardised techniques, monitoring, protection and management of seagrass, wetland vegetation and salt marsh;
- the fire sensitivities and requirements of Lake Macquarie City's flora and fauna communities and identification of indicator species;
- condition and prioritisation of areas for rehabilitation (seagrass, salt marsh and mangroves);
- impacts of thermal discharges;

- sustainable methods of weed control in major parks and foreshores;
- identifying and prioritising key drivers of ecosystem condition and ability to maintain ecological services;
- birdlife and habitat on Lake Macquarie's islands;
- effectiveness of nest boxes; and
- quantification of numbers, impacts and management of introduced species, such as cats, mosquito fish (*Gambusia sp.*), common myna (*Acridotheres tristis*), house sparrow (*Passer domesticus*), species of lantana and privet.
- Investigate novel methods to reduce/impece growth of camphor laurels

8. The influence of subsidence on catchment erosion, ecosystems and biodiversity.

9. The impacts of tourism, recreational fishing and boating, particularly:

- pollutants from outboard motors;
- impacts of moorings and jetties on seagrass;
- impacts on seagrass; and
- assessment of the carrying capacity of Lake Macquarie for sustainable boating.

10. Biodiversity offsetting to address the loss of biodiversity values, including:

- threatened species;
- habitat conservation;
- assessment of Council's Biodiversity Planning Policy and Guidelines in minimising habitat loss through land clearing for agricultural, residential, commercial, industrial and rural developments;
- assessment of the effectiveness of biodiversity offsetting as a conservation planning tool; and
- considering the inter-relations between biodiversity offsetting and mining operations.

11. Environmental heritage research, such as:

- Aboriginal cultural mapping;
- archaeological surveys for Aboriginal, industrial, historic and maritime sites;
- cultural heritage and places; and
- geological heritage (fossils and landforms).

Environmental health (EH)

12. Mosquitoes and their impacts on health, including:

- reviewing epidemiology of mosquito-borne disease in Lake Macquarie in relation to mosquito monitoring data; and
- identifying reservoir species for mosquito-borne disease in Lake Macquarie.

13. Air quality, including:

- the impacts on health; and investigations into domestic pollution sources such as wood smoke.

14. The behaviour of lead in the environment and effects on communities, including:

- investigations into the health impacts of exposure to heavy metal contamination;
- investigations into off-site movement of heavy metals from black slag deposits; and
- assessment of exposure risk to the community from soils impacted by Pasminco black slag and/or lead-oxide fallout from the smelter.

15. Environmental health, in general:

- addressing pollution issues associated with soil contamination; and
- environmental health monitoring in conjunction with the gathering of specific environmental health risk data.

Climate change impacts and adaptation (CCA)

16. The impacts of climate change on environmental, economic and social systems and adaptation responses, particularly:

- estuarine processes;
- biodiversity;
- flood risk and damages assessment;
- bushfire hazard; and
- heatwave and other extreme event impacts on vulnerable groups.

Waste (WM)

17. Waste and quarry rehabilitation, including:

- landfill site capping and revegetation trials;
- acid sulphate soil treatment/disposal options;
- user-pays waste collection services;
- cradle to grave analysis;
- effectiveness of waste management plans in waste avoidance and diverting waste to recycling and reuse for new property developments;
- improvement to commercial waste services;
- development and status of battery recycling options for home and electric vehicle battery systems; and
- developing tools to facilitate exchange of unrecovered resources between local businesses.

¹ The ESAP can be accessed via: lakemac.com.au/environment/reports-and-plans

² ESAP Action Reference

Transport (T)

18. Impacts of transport, including:

- technologies that will reduce greenhouse gas emissions from Lake Macquarie City Council's heavy fleet;
- low-emission transport technology;
- uptake of electric vehicles; and
- uptake of walking and cycling.

Energy (E) and water (W)

19. Alternative sources and efficient use of energy and water, including:

- life cycle assessment and the status of sustainable building product certification in Australia;
- uptake of clean energy and efficiency;
- performance evaluation of installed solar panels and solar thermal systems (household and commercial premises);
- performance evaluation of installed energy battery storage systems (household and commercial premises);
- options for medium to large-scale energy storage (e.g. pumped hydro and battery technology) within Lake Macquarie City;
- factors affecting uptake of sustainable building techniques in the residential building sector; and
- behaviour change programs and the uptake of community, business and/or residential renewable energy.

Resource consumption (RC) and natural hazards (NH)

20. Sustainability behaviours and an evaluation of the effectiveness of environmental education activities, particularly:

- techniques to track impacts of sustainability engagement programs on influencing sustainability behaviours;
- best practice in organising community to take part in environmental activities, with a focus on community groups that are difficult to engage;
- research around emergency preparedness and the Early Warning Network (EWN);
- research into the effectiveness of all types of early warning systems – review of any studies, using focus groups as well as surveys;
- people's attitudes and behaviour patterns around managing food waste in the home;
- attitudes and behaviours around reducing energy use at home;
- strategies to enable communities to manage their own natural hazards risks; and
- existing community engagement models for building capability and partnerships in the emergency management sector.

Sustainability metrics and reporting

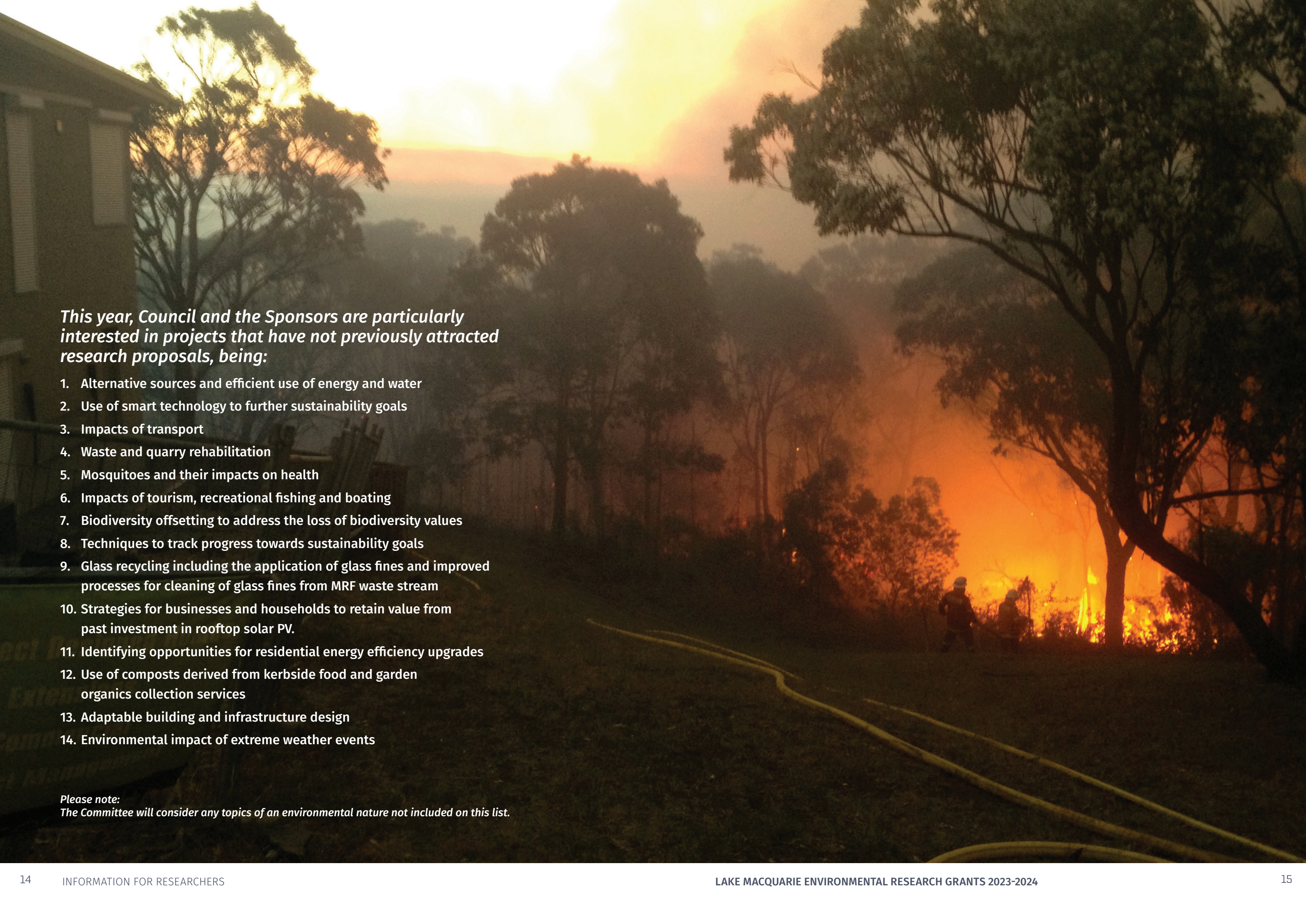
21. Research on techniques to track progress toward sustainability goals, particularly:

- applying sustainability metrics to regional scale economic Input Output Models; and
- measures of community resilience.

22. Use of smart technology to future sustainability goals, including:

- the role of smart city technology, open data and big data analytics in facilitating sustainable outcomes (e.g. transport outcomes); and
- use of remote sensing technologies for the collection of environmental data, including ecosystem health (e.g. aquatic monitoring of fauna), air quality, temperature and humidity.





This year, Council and the Sponsors are particularly interested in projects that have not previously attracted research proposals, being:

1. Alternative sources and efficient use of energy and water
2. Use of smart technology to further sustainability goals
3. Impacts of transport
4. Waste and quarry rehabilitation
5. Mosquitoes and their impacts on health
6. Impacts of tourism, recreational fishing and boating
7. Biodiversity offsetting to address the loss of biodiversity values
8. Techniques to track progress towards sustainability goals
9. Glass recycling including the application of glass fines and improved processes for cleaning of glass fines from MRF waste stream
10. Strategies for businesses and households to retain value from past investment in rooftop solar PV.
11. Identifying opportunities for residential energy efficiency upgrades
12. Use of composts derived from kerbside food and garden organics collection services
13. Adaptable building and infrastructure design
14. Environmental impact of extreme weather events

Please note:

The Committee will consider any topics of an environmental nature not included on this list.

Attachment 2

Previous Environmental Research Grants 1987-2022

Project number	Project title	Budget (\$)
1	Identifying and quantifying pollutant loadings, including diffuse sources	
21/22A	Profiling antibiotic contamination in Lake Macquarie	7500
21/22E	Sub-lethal stressors in seagrass: getting the data before it's too late	5488
87-2	Sediment sources and storages in the urbanising catchment of South Creek	2000
87-3	Soil and sediment sources in the catchment of Fennell Bay	8360
87-4a	Inorganic nitrogen species in shallow lake water and sediments	2000
87-4b	Phosphorus species distribution in the sediments and water of a shallow lake bay	2000
87-4c	Distribution of nitrogen and phosphorus species in shallow bay sediments	5300
88-1	Evaluation of Sediment Yield Models	1000
88-3	Assessment of two key environmental problems (biological and chemical attributes) in shallow bays in northern Lake Macquarie	7381
88-5	Diffuse pollutant sources in a small catchment	5000
88-7	Erosion survey: Cockle Creek Catchment area	3600
89-1	Runoff, soil and nutrient yields from bushland runoff plots at Awaba	6220
89-2	Nitrogen and phosphorus species distribution in shallow lake and water sediments of Lake Macquarie	10,000
89-4	Erosion of road batters	2650
89-4b	Diffuse nutrient pollution and algae proliferation in Lake Macquarie	2500
89-7	Environmental impact of catchment urbanisation and industrialisation	9800
90-3	A model relating runoff to rainfall in two small catchments	975
90-5	Inorganic nutrient species in shallow bay sediments, Lake Macquarie	5000
90-7	Techniques for assessing accelerated sedimentation	14,970
91-3	Urban stormwater runoff quality	700
93-3	Runoff, sediment and solute transport - Jigadee Creek	1940
93-4	Effects of temperature and drying temperatures on the mobility of metals in polluted lake sediments	12,000
94-5	Waste water disposal at Cooranbong	2265
95/96-5	Redox effects in environmental selenium partitioning and speciation	1237
96/97-1	Depth distribution and loading of heavy metals in Slatey Creek and Cockle Creek	1915
99/00-4	Sedimentation rates and sediment sources and contaminants, derived from a highly urbanised catchment Warners Bay	2200
01/02-4	Diffuse pollutant loadings from on-site wastewater treatment systems and other land uses in the Stony Creek Catchment	3487
03/04-1	Factors effecting nitrogen fluxes from estuarine sediments in Lake Macquarie	2988
15/16-2	Survey of emerging contaminants in Lake Macquarie	7500
16/17-3	Identifying hotspots and sources of in-stream litter and micro-plastics in the Lake Macquarie Catchments	6822
17/18-2	Emerging technologies for monitoring of water quality and ecosystem health	7820
2023K	Heavy metal and nutrient removal by the bioretention basin installed in the Lake Macquarie catchment	8375
2020/21/C	Quantifying underwater sound and its effect on marine communities	6415
2023D	Investigating the effect of anthropogenic noise pollution on fish health	7680

Project number	Project title	Budget (\$)
2	Effectiveness and impacts of management strategies	
21/22C	Distribution, abundance and ecological impacts of feral deer in Lake Macquarie	5700
90-4	Effectiveness of sediment control structure to reduce urban pollution concentrations	8662
91-b	Quarry rehabilitation in Lake Macquarie	3145
91-5	Artificial wetland basins: Design and monitoring	6500
93-8	Effectiveness of silt traps and ponds in the removal of heavy metals from runoff into Lake Macquarie	1500
93-10	Report on the Lake Macquarie Sediment and Nutrient Removal Monitoring Project	2000
93-11	Nutrient removal in urban basins and hydrologic factors	1874
98/99-1	Ecological performance of constructed wetlands in Lake Macquarie	6170
99/00-3	Hydrological research into the design and effectiveness of constructed wetlands in reducing pollutants in stormwater runoff	8979
00/01-1	Bacteriological investigations into potential public health risks associated with Stormwater Quality Improvement Devices (SQIDs)	4232
00/01-2	Ecological assessment of the appropriate widths of vegetated buffers to drainage lines in urban Lake Macquarie	4800
04/05-5	Bacteriological investigations into lakeshore water quality adjacent to Stormwater Quality Improvement Devices (SQIDs)	4230
07/08-1	Chronology of contaminants in Lake Macquarie	6118
2023C	Ecological effects of foreshore stabilisation on habitat specific fish assemblages	5654
3	Monitoring of seagrass distribution and quality	
87-1	Aspects of the ecology of seagrass (Zostera capricorni) in Lake Macquarie	2000
88-2	Lake Macquarie wetlands inventory	6740
88-6	Sediment and water factors affecting the growth of the seagrass (Zostera capricorni) in Lake Macquarie	2000
89-3	Lake Macquarie Littoral Habitats Study	6940
02/03-5	The impacts of jetties on seagrass in Lake Macquarie	4500
03/04-5	Health and distribution of seagrasses in Lake Macquarie	2250
04/05-2	Modelling the growth and spread of the noxious green alga (Caluerpa taxifolia) in Lake Macquarie	2956
10/11-3	Seagrass trophic interactions in a changing ocean	7720
12/13-1	Epifaunal community composition and trophic structure in seagrass beds along a metal contamination gradient in Lake Macquarie	7410
2019/20-02	Predicting the effects of climate change on seagrass fish communities	7460
2020/21/D	Invertebrate food sources for recreationally-important fish in Zostera meadows: implications for management	4654
2020/21/G	Ecological ramifications of native seagrass exposure to toxic cyanobacterial species	8000
13/14-1	Spatial and temporal variability of seagrass stable isotope ratios	7510
17/18-3	Effect of temperature on seagrass flowering and reproduction in Lake Macquarie	6382
2023F	Investigating plant-sediment interactions in seagrass meadows under multiple environmental stressors	4500

Project number	Project title	Budget (\$)
4	Foreshore areas	
05/06-1	Impacts on saltmarsh and mangroves from a dune system breach at Black Neds Bay	20,320
14/15-4	Effective dune restoration to create diverse, functional ecosystems	6010
15/16-1	Determining seed viability of endangered coastal saltmarsh plants in Lake Macquarie under climate change	4320
17/18-4	Using bird communities to monitor Lake Macquarie foreshore restoration works	7769
5	Application, implementation and refinement of monitoring tools and models	
94-6	Fish liver enzyme levels as biological monitors of environmental pollutants	2000
98/99-2	The utility of benthic macroinvertebrates as biological indicators for assessing the health of Lake Macquarie	5450
00/01-5	Using biodiversity to monitor coastal Landcare management practices	8240
01/02-3	Biomarkers of heavy metal stress in estuarine biota in Lake Macquarie	8733
02/03-3	Bacteriological investigations associated with Stormwater Quality Improvement Devices (SQIDs)	4750
02/03-4	Testing for corridor and remnant functionality using small reptiles as bioindicators	3686
04/05-3	Remote determination of sediment transport rates within Swansea Channel using a multibeam echosounder	6000
14/15-03	Mapping immaterial social values associated with Lake Macquarie estuary	3890
6	Transfer of metals and nutrients between sediment, bacteria, water and biota	
88-4	Lake Macquarie Hydrodynamic Pollutant Transport Model	8000
89-5a	Effects of heavy metals on the growth of seagrass (<i>Zostera capricorni</i>) in Lake Macquarie	2500
89-6	Lake Macquarie Pollutant Transport/Heat Transfer Model	2500
90-2	Genetic impacts of heavy metals on mussels	3155
90-6	Sediment Transport and Ecosystem Model for Lake Macquarie	5000
91-1	Sediment Transport and Ecosystem Model for Lake Macquarie	2000
91-6	Toxic metal and organo-pollutant impacts on Lake Macquarie biota	7000
91-7	Factors influencing the mobility and bioavailability of metals in lake sediments	2000
93-5	Effects of exposure to air and drying on the mobility of metals in polluted lake sediments	2000
95/96-1	Bioturbation effects on selenium mobility	1505
03/04-2	Factors effecting trace metal fluxes from estuarine sediments in Lake Macquarie	4392
2019/20-04	Enhancing the bioremediation of PAHs contaminated soil/sediments using composts from LM Council	8900
03/04-3	Establishing biological effects in benthic organisms resulting from exposure to sediment contaminants	7680
04/05-4	Assessing the status of mangrove system in Lake Macquarie	1872
15/16-3	Micro-plastics in Lake Macquarie: Distribution, characteristics and chemicals loading and its implications to human health	6507
15/16-6	Persistent organic pollutants in water, sediment and biota	8000

Project number	Project title	Budget (\$)
7	Biodiversity	
90-1	Conservation and management of remnant natural areas	9900
91-4a	Distribution and status of rare plants in Lake Macquarie	9400
93-1	Impacts of lantana invasions on the regeneration and dynamics of wet sclerophyll and rainforest communities	2000
93-6	Ecological assessment of the proposed Awaba Reserve (including fire history)	5500
93-7	Distribution and status of rare and endangered frogs within the City of Lake Macquarie	4000
94-1	The ecology of the Red-browed Finch in an urban area	3960
94-2	Effectiveness of control of Bitou Bush by the Leaf Tip Moth	
94-3	Green Point Estate - Bushland park conservation and management of native vegetation	7700
94-7	Ecological basis for bush fire hazard management in bushland reserves	3700
94-8	Characterisation and identification of forest habitats utilised by the Powerful Owl	2200
94-10	Bat fauna in Lake Macquarie	8735
95/96-1	Aspects of the ecology of the Squirrel Glider	3968
96/97-2	Range, population and habitat of Angophora inopina	1782
96/97-3	Hair trapping survey in western Lake Macquarie	4820
96/97-4	Recruitment of bream, tarwhine and nursery hotspots in Lake Macquarie	5435
96/97-5	Green and Golden Bell Frog in Lake Macquarie	1500
98/99-3	Ecological performance of constructed wetlands in Lake Macquarie	6170
99/00-2	Distribution and status on Macrozamia flexuosa	4400
00/01-3	Demography and conservation status of selected Acacia bynoeana populations within the Lake Macquarie LGA	4675
01/02-1	Investigating the abundance and diversity of fish and invertebrates in the seagrass habitat of Lake Macquarie	4000
01/02-2	The biodiversity of temperate saltmarshes around Lake Macquarie	4000
01/02-5	Vulnerable fauna – Powerful Owl (<i>Ninox strenua</i>)	1500
02/03-2	Status of the Black Swan (<i>Cygnus atratus</i>) and other waterfowl in Lake Macquarie	4521
03/04-4	Diversity of sponges in Lake Macquarie with comparison to other estuaries	4119
04/05-1	An assessment of the vegetation occurring on coastal sands at Pelican Flats	1683
07/08-2	Bell Miner dieback in eucalypt forests	3725
07/08-3	The importance of rock reef habitat for fish assemblages in Lake Macquarie	6900
08/09-1	The importance of the White Fronted Chat to Lake Macquarie	8000
08/09-2	Study of Razor Fish in Lake Macquarie	8267
09/10-1	Movement and status of marine turtles in Lake Macquarie, NSW	19,684
10/11-1	Distribution of genotypes of the vulnerable <i>Tetratheca juncea</i> Sm (<i>Elaeocarpaceae</i>) and implications for its conservation	6364
10/11-2	Indian Mynah (<i>Acridotheres tristis</i>) population expansion in the Hunter Region: Underlying mechanisms and management solutions	6784
11/12-1	Distribution of genotypes of the vulnerable <i>Tetratheca juncea</i> Sm. (<i>Elaeocarpaceae</i>) and implications for its conservation – Variability between populations (continuation of project 10/11-1)	7815
11/12-2	The movement ecology of Indian Mynas, <i>Sturnus tristis</i> , in Lake Macquarie: Assessing Myna movement patterns and their implications for control measures	9851
11/12-3	Razor Clams Lake Macquarie: Friend or foe?	8310
12/13-2	A remote sensing camera survey of the Lake Macquarie Local Government Area, targeting the Spotted Tail Quoll and other mammalian fauna	7000
13/14-2	Assessment of the pollination services for the threatened species <i>Grevillea parviflora</i> subspecies <i>parviflora</i> by the native social stingless bees <i>Tetragonula cabonaria</i>	5795
14/15-1	The use of conservation genetics to determine the level of dispersal and genetic diversity in the Squirrel Glider <i>Petaurus norfolcensis</i> , across varying bushland patch sizes in the Lake Macquarie Local Government Area	7520

Project number	Project title	Budget (\$)
14/15-2	Identifying Squirrel Glider habitat and corridors in the Glenrock-Awabakal-Belmont metahabitat system	2050
15/16-5	Impacts of lantana invasion on habitat use by native and exotic animals in Lake Macquarie bushland	7937
16/17-2	Restoration of tree hollows for hollow-dependent mammals	8000
16/17-4	Predictors of nest-box success in urban parrots	3900
17/18-1	Go west: using DNA to track the movement patterns of Squirrel Gliders Petaurus norfolcensis, west of the M1 Pacific motorway	8000
17/18-5	Fungi: friend or foe? An investigation into species of the genus Chalciporus in Australia, with particular focus on the east coast of NSW	4500
18/19-1	Preserving biodiversity in urban landscapes against cat, fox and human activities	7500
18/19-2	Aquatic recreational structures as ecologically important habitats	7200
18/19-4	The ecology of the newly described and endangered frog, Uperoleia mahonyi	8000
2020/21/B	The use of molecular techniques as indicators of estuary health	5931
8	Influence of subsidence on catchment erosion, ecosystems and biodiversity	
93-9	Long wall mining under Marmong Creek	690
9	Impacts of tourism, recreational fishing and boating	
10	Biodiversity offsetting to address the loss of biodiversity values	
11	Environmental heritage research	
02/03-1	Palaeoenvironmental and palaeoecological synthesis and a palaeoentomological analysis of the upper Permian insect ash beds at Belmont, NSW	4598
12	Mosquitoes and their impacts on health	
13	Air Quality	
91-2 area	Analysis of atmospheric corrosion products and their distribution in the Lake Macquarie/Newcastle area	8000
93-2	Child asthma rates and air quality – Boolaroo/Argenton area	4853
94-9	Daily particulate monitoring in the Speers Point/Boolaroo area	5700
99/00-1	Developing a user-friendly model to assess quality in Lake Macquarie	6127
14	Behaviour of lead in the environment and effects on communities	
92-12	Lead settling in sediment	1943
94-11	Stability of lead in soil	3000
95/96-3	Lead remediation in soils	2000
00/01-6	An examination of the bioavailability of smelter slag lead originating from the Pasminco metal smelter, Boolaroo, North Lake Macquarie – Comparison of the slag as a possible source of lead in the community with contemporary and historical dust depositions	9320
06/07-1	Assessment of Mammalian taxa as bioindicators of heavy metal contaminant availability	9178
06/07-2	Understanding the chemistry and morphology of smelter slag	9980
10/11-4	Assessment of the bio-accumulation of lead in chicken eggs from residential backyards in the vicinity of a disused lead/zinc smelter	7950
2019/20-01	Impacts of metals on endangered saltmarsh communities in Lake Macquarie	8259

Project number	Project title	Budget (\$)
15	Environmental health	
15/16-4	Can endemic Lake Macquarie plant species fix heavy metal-contaminated soils?	7982
16/17-1	Waterborne pathogen carriage in Grey Headed Flying Foxes	7884
16	Impacts of climate change on environmental, economic, social systems and adaptation responses	
10/11-3	Seagrass trophic interactions in a changing ocean	7720
16/17-5	Identifying Lake Macquarie City’s climate history for improved future planning	1770
18/19-3	Community vulnerability to extreme heatwaves in the Lake Macquarie area	3150
17	Waste and quarry rehabilitation	
94-4	Domestic waste in Lake Macquarie City	3850
18	Impacts of transport	
19	Alternative sources and efficient use of energy and water	
20	Sustainability behaviours and an evaluation of the effectiveness of environmental education activities	
110/11-5	Review of Lake Macquarie City Council’s environmental communication strategies	3045
2019/20-03	Why join a sustainable neighbourhood group? An examination of the motives of group members in Lake Macquarie	7470
21	Research on techniques to track progress towards sustainability goals	
22	Use of smart technology to future sustainability goals	
21/22B	Monitoring sedimentation and storage capacity changes using fibre optic sensing	6312
23	Miscellaneous	
91-8	Coastal hazard assessment	2000



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