

POSTGRADUATE



SCHOOL OF GEOGRAPHY

Postgraduate Programmes in Environmental Management

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in the world





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Environmental Management at the University of Otago

Everyone is now well aware of the variety of environmental issues and concerns that face contemporary society, some local, others more extensive, and some, such as climate change, global in scale. Environmental management is a response to these concerns. At the University of Otago we see environmental management as the fusion of an understanding of natural environmental systems with an understanding of the methods and techniques available for managing human activities to ensure sustainable use of resources, and minimum impact on people, communities and the environment¹. We encourage students to advance their knowledge of specific environmental systems, relevant to their own background and interests, but require

all students to think about decision-making processes and how these can be made more sensitive to the needs of sustainable living.

Applicants for our postgraduate programmes would normally be expected to have an undergraduate qualification that provides some degree of background in natural environmental systems and some familiarity with environmental concerns. An introduction to basic environmental management principles is possible for students without that background.



¹ Some programmes in Environmental Management focus on the *technologies* available to deal with specific issues such as waste water treatment, dealing with contaminated sites, etc. That is not the approach used at Otago: we combine knowledge of environmental systems with an understanding of decision processes in environmental management and planning, and the use of tools such as integrated and adaptive management, impact assessment, environmental monitoring and assessment, etc. In addition, there are specific papers available in other departments on topics such as environmental engineering, risk assessment, and project management.

Programme options



There are several options for study at the postgraduate level:

- Bachelor of Applied Science (Honours)
- Postgraduate Diploma in Applied Science
- Master of Applied Science (mainly papers based)
- Master of Science (papers, plus thesis)
- Master of Science (thesis only)

Each programme contains a research component – a vital part of any postgraduate course—but the relative importance changes between programmes: Honours requires a research dissertation worth half the course (60 points), whereas the research projects in the PGDipAppSc (i.e. GEOG 470) and MAppSc (i.e. APPS 597) are smaller components of their

respective courses (40 points). These latter research projects can range from desktop research using secondary sources, through to practical studies using limited primary data collection; all will have an applied emphasis.

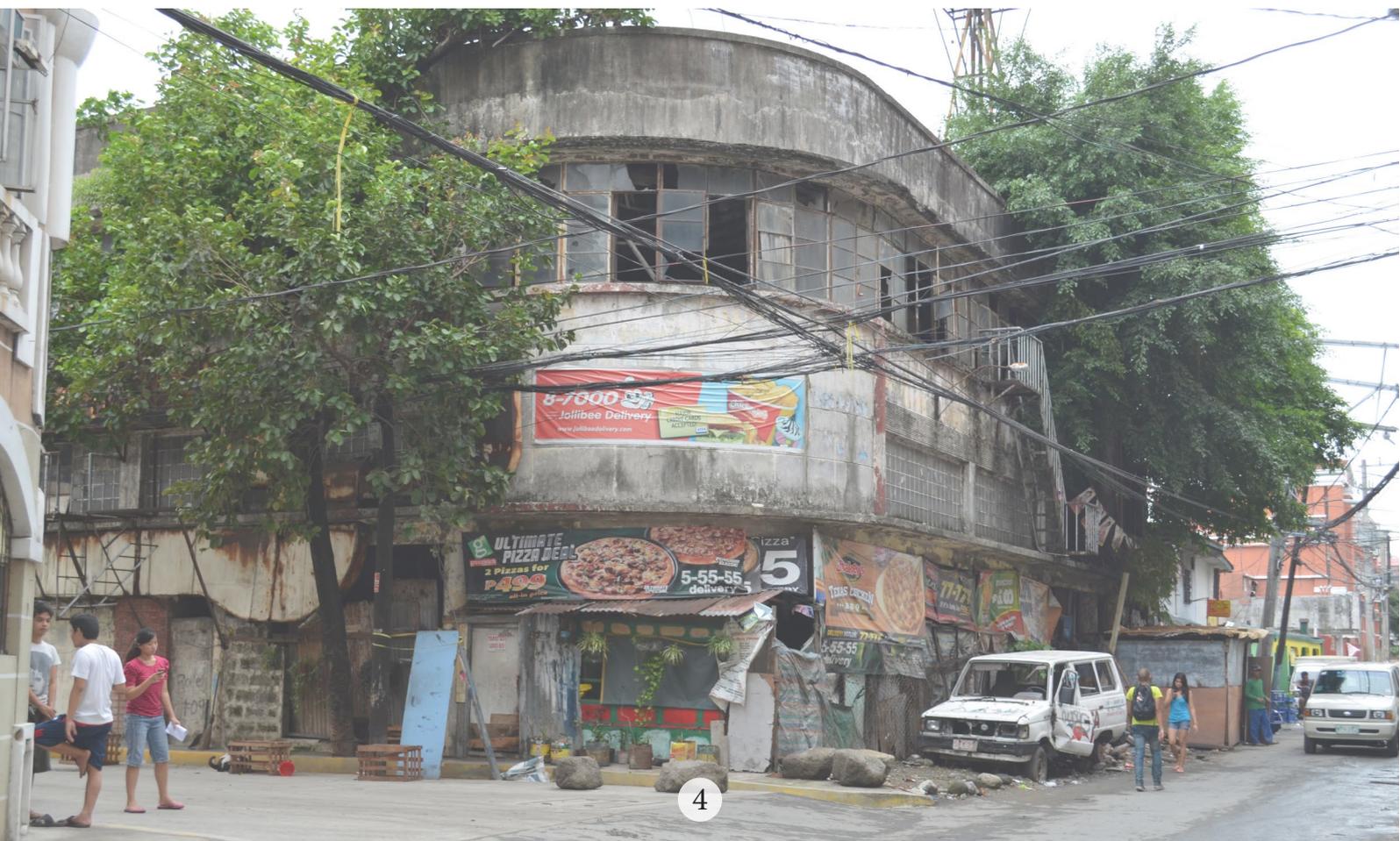
MSc thesis research involves the equivalent of 12 months research activity, resulting in a thesis of up to 40,000 words (Honours dissertations are to be no more than half that figure). Topics for the Honours dissertations and Masters theses will usually focus on specific environmental management concerns, and can range from scientific issues through to topics involving the implementation, operation and effectiveness of environmental management processes.

BAppSc (Hons) Environmental Management

Year	Papers	Points
4th year	GEOG 490 Dissertation	60
	GEOG 471 Impact Assessment and Sustainability	20
	GEOG 472 Developments in Environmental Management	20
	One further 400-level paper worth at least 20 points	20
	TOTAL	120

Students apply for admission to the Honours programme having completed their undergraduate degree, and by 10th December at the latest (for entry in semester 1, February/March the following year). The usual entry criterion is a grade average of at least B+ in the core papers for the major in the third year. Honours degrees have to be completed within one calendar year; no part time study is allowed.

With the Honours programme, all papers should normally be at the 400 level; if you have the necessary pre-requisites you can incorporate a 400 level paper from another Science discipline, if it contributes to a coherent environmental management programme. It is desirable that students organise a topic and supervisor for GEOG 490 (research dissertation) before the summer break at the end of the third year.



Postgraduate Diploma in Applied Science (PGDipAppSc)

Year	Papers	Points
4th year	GEOG 470 Research Topic in Geography	40
	GEOG 471 Impact Assessment and Sustainability	20
	GEOG 472 Developments in Environmental Management	20
	At least 40 further approved points at 400-level	40
	TOTAL	120

Students can apply for admission to the PGDipAppSc programme during the preceding year, and by 10th December at the latest (for entry in semester 1, February/March the following year). The usual entry criterion is a grade average of at least B in the core papers for the major in the third year. PGDipAppSc programmes do not need to be completed in one calendar year; part-time study is possible. All papers should normally be at the 400 level; if you have the necessary prerequisites you can incorporate one or more papers from other Science disciplines, if it contributes to a coherent environmental management programme.

GEOG 470 (research paper): students need to organise a topic and supervisor as soon as possible after starting the course, under the guidance of the paper co-ordinator. GEOG 470 normally involves desktop research on a topic of environmental management interest: in most cases it will not involve primary data gathering; but that may vary case by case. Where a desktop research approach is used, it is more than a simple literature review and allows students to develop an in-depth knowledge about a contemporary issue through directed

research. The final report, of 7-10,000 words, should be an informative, evidence-based analysis of the chosen topic, based on well organised and sound research using available sources. One useful model for students to follow is the type of report produced by the Office of the Parliamentary Commissioner for the Environment.

Graduates of the PGDipAppSc with an average grade of at least B can apply for entry to MAppSc, and complete the latter by taking APPS 597 and another 20 points.

University of Otago Grades

<i>In percentage terms</i>	<i>On 1-10 scale of GPA</i>
B+ is 75 - 79%	B+ is 6
B is 70 - 74%	B is 5

Master of Applied Science (MAppSc)

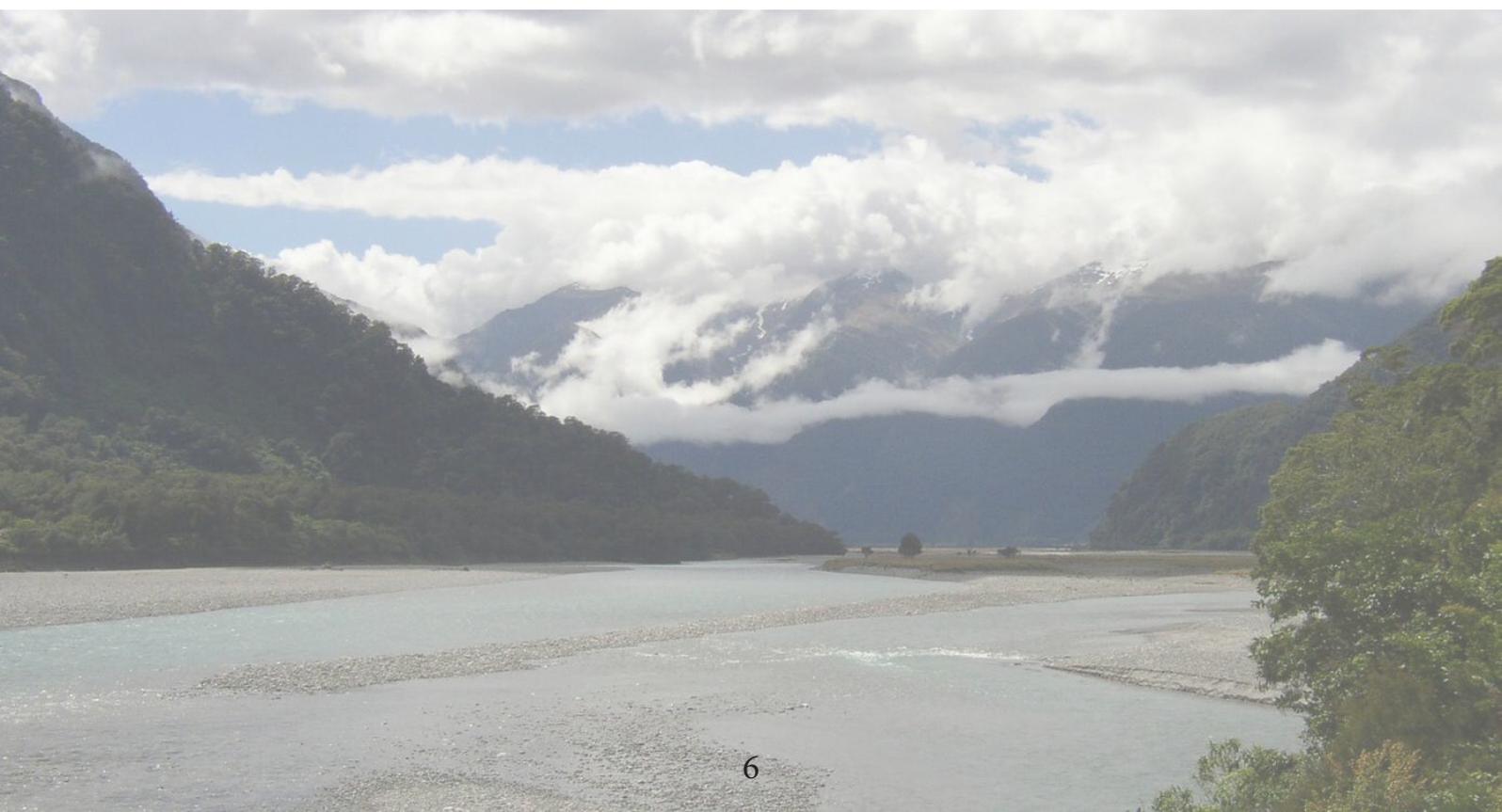
Year	Papers	Points
4th year	APPS 597 Supervised Independent Study	40
	GEOG 471 Impact Assessment and Sustainability	20
	GEOG 472 Developments in Environmental Management	20
	Further approved 400-level papers worth 100 points	100
	TOTAL	180

The Master of Applied Science (MAppSc) is a 180 point, coursework postgraduate degree. The degree can be completed in 12 months or in stages, providing flexibility for recent graduates and those currently employed. Entry to the programme broadly requires a grade average of B+ in the papers that make up the 3rd year major requirement.

APPS 597 is a research project on a topic of environmental management interest and could range from a field based research

study to one largely based on secondary sources. Whatever the approach, the study allows students to develop an in-depth knowledge about a contemporary issue through directed research. The final report, of 10-12,000 words should be an informative, evidence-based analysis of the chosen topic, based on well organised and sound research using available sources, of a standard appropriate to the Masters level.

All elective papers will normally be at the 400 or 500 level; if you have the necessary





pre-requisites you can incorporate one or more papers from another Science discipline, if it contributes to a coherent environmental management programme. The make-up of the five elective papers will vary student by student, depending on interest areas, and previous study. Consequently, workload issues and scheduling of the papers may mean that some students can complete the MAppSc programme in 12 months (two teaching semesters plus the summer period for completing APPS 597), but for others it may take up to 18 months (i.e. a three semester programme).

Students are encouraged to choose some of their elective papers from 400-level papers in Geography (esp. the science papers) if they have the necessary undergraduate background. Papers from other subjects (at the 400 level or above) can also be considered if the student has the necessary pre-requisites and the papers are relevant to environmental management. Other relevant papers to consider include PLAN 412 (Spatial Planning and Development), SURV 554 (Advanced Environmental Engineering), and SURV 501 (Advanced

Project Management) (Note that the last two are not taught every year: check the Guide to Enrolment for the upcoming year, or on the University website).

There is also an interesting series of papers under the HAZA code: Hazard Assessment and Management. Several may be of interest to some Environmental Management students, such as HAZA 401 (Management of Chemical Hazards), and HAZA 409 (New Organisms: Risk Assessment and Management). The HAZA papers employ self-directed learning in that the students work on their own, using online resources to complete a number of assignments, but may be required to attend a workshop on campus as part of the required work for the paper. The papers are broadly linked to the semesters, but run over 20 week periods, rather than the usual 13 week University semester period. For further information see:

<http://www.otago.ac.nz/hazard-management/index.html>

Master of Science (MSc)

Year	Papers	Points
4th year	GEOG 471 Impact Assessment and Sustainability	20
	GEOG 472 Developments in Environmental Management	20
	GEOG 495 Masters Thesis Preparation	40
	Two further approved papers at 400-level	40
	TOTAL	120
5th year	Thesis: ENVM 5	

The Master of Science (MSc) Environmental Management is aimed at students who wish to carry out a full piece of Masters research on a topic relevant to the major. The degree can be either two year (400-level papers plus thesis) or, if students already have 400-level papers through another programme, one year (thesis only).

Entry to the programme (at 4th year) is broadly to have a grade average of B+ or higher in the papers that make up the 3rd year major requirements. (Similarly, entry at 5th year will normally require a B+ average across 400-level papers). All elective papers should normally be at the 400 level;

if you have the necessary prerequisites you can incorporate one or more papers from other Science disciplines, if they contribute to a coherent environmental management programme.

GEOG 495 is a full year thesis preparation paper, involving three written assignments (broadly a literature review, and research methodology/strategy review, and a thesis proposal) and two seminar presentations. Each student has an individual supervisor throughout the paper, and also attends seminars on research-related topics. Entry to the thesis year requires a satisfactory performance in GEOG 495.



Careers in environmental management

Otago graduates, especially those with postgraduate qualifications, have found employment in many fields of environmental management: from environmental consultancies to local government planning departments, from central government agencies to private sector companies. In the box below are job titles for a selection of graduates from 2007-2017:

Assistant Parks and Reserves Officer	Monitoring Officer
Biomonitoring Assistant	Natural Hazards Analyst
Consent and compliance monitoring officer	Parks and Open Space Specialist
Consents Planner Natural Resources	Planning Consultant
Environmental permits and approvals	Policy Planner
Energy Management	Ranger, Biodiversity
Engineering Geologist	Regional Environmental Manager
Environmental Advisor	Regulatory Project Officer
Environmental Consultant	Resource Advisor- Environmental Regulation
Environmental Education Specialist	Resource management planner
Environmental Officer	Risk/Project Manager
Environmental Policy Advisor	Scientific Officer - Surface Water Resources
Environmental Protection Officer	Senior Hydrogeologist
Environmental Scientist	Spatial Information Officer
Exploration Field Assistant	Sustainability Analyst
Geotechnician	Sustainability Programme Coordinator
GIS Analyst	Sustainable Agriculture Advisor



Here are a few examples of graduates and their career paths to date:

Rob (MAppSc 2015): Environmental and sustainability planning and project management for a light rail project in Australia. regional council; now Health, safety and environmental consultant, Australian consultancy.

Allannah (MSc Environmental management 2012): Environmental scientist in the UK with major consultants, moved to senior environmental positions in NZ, now with UN agency in S Pacific.

Chris (PGDipAppSc 2012): pollution prevention officer, regional council.

Lex (MAppSc 2016): Resource planner, with a regional council, working with water resource users, and developing catchment plans.

Paige (MAppSc 2016): Resource consents monitoring officer in a regional council, to ensure compliance with consents conditions.

Hayley (BAppSc Hons 2014): Graduate intern with a regional council, then moved to an environmental consultancy, followed by positions at two major construction and environmental protection consultancies.

Nicola (MSc Environmental management 2013): Resource consents officer, in

ENVIRONMENTAL SCIENTISTS



JOB PROSPECTS

At a glance



There is a shortage of environmental scientists, and job prospects are good. New Zealand's primary industries are growing, increasing demand for scientists to investigate their environmental impact.

The New Zealand government identifies “Environmental scientists”, which covers our science-based environmental management graduates, as a sector with strong growth prospects.

This message was echoed by the US Bureau of Labour Statistics in their similar analysis of employment prospects for environmental scientists in 2016.

(<http://www.bls.gov/ooh/life-physical-and-social-science/environmental-scientists-and-specialists.htm>)

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NEW ZEALAND

School of Geography - Te Iho Whenua
www.otago.ac.nz/geography