THE UNIVERSITY OF MELBOURNE

Towards Environmental Sustainability

The University of Melbourne

2005

Contents

Our Cover

Much care is taken with landscaping and the outdoor environment to enhance the campus experience for students, staff and the community.

The following suite of publications covers the University of Melbourne's goals, strategies, management and operations.

The 'Melbourne Agenda'

Strategic Plan Perspective

Operational Plan

Ensuring Accountability

Annual Report

Annual Review

Annual Budget

Teaching and Learning Management Plan

Research and Research Training Plan

Towards Environmental Sustainability

We are continuously seeking ways to advance environmental sustainability within the University and the wider community.

Professor Peter McPhee,
Deputy Vice-Chancellor (Academic)

Introduction

The University of Melbourne understands that the well-being of the community depends on strenuous efforts being made to sustain the ecological systems upon which life depends. The University aims to face this challenge positively and to take a leadership role in achieving change.

Consequently, we have a strong commitment to promoting environmental sustainability and are seeking ways to advance this within the University and the wider community. The University is involved in many activities, ranging from conservation of resources to the changing of attitudes and policies and the development of environment-focussed curricula and research projects.

The University's initiatives to date are set out in the following brochure, grouped into three major categories:

1. Educating for Environmentally Responsible Citizenship

1.1 Educating our Students

1.2 Educating the University

1.3 Educating and Enriching our Wider Community

2. Institutional Environmental Sustainability Initiatives

2.1 Clean Technologies and Waste Minimisation

2.2 Conserving Energy and Resources

2.3 Open Process and Risk Awareness and

3. Research

3.1 Melbourne Research and Innovation Office

3.2 Research Centres

3.3 Research Areas of Faculties/Departments

Peter McPhee
Deputy Vice-Chancellor (Academic)

1. Educating for Environmentally Responsible Citizenship

The University of Melbourne is committed to educating its students and staff about environmental issues and to developing strong links with the wider community in order to promote learning and informed debate about the environment.

1. Educating for Environmentally Responsible Citizenship

1.1 Educating our Students

The University's commitment to a leadership role in the area of environmental sustainability is reflected in the range of undergraduate and postgraduate courses on offer which support 'environmentally responsible citizenship'.

The programs identified below are intended to produce expertise in environmental management, sustainable economic development, population, and related fields to ensure that the University's graduates are environmentally literate and have the awareness and understanding to be ecologically responsible citizens.

Undergraduate Studies

The University offers a number of undergraduate degrees, diplomas, certificates and short courses in most faculties which cover environmental sustainability. The School of Anthropology, Geography and Environmental Studies, for example, offers undergraduate programs in Environmental Studies. The Institute of Land and Food Resources administers a range of environmental programs, including a Diploma of Conservation and Land Management. The Department of Civil and Environmental Engineering in the Faculty of Engineering has established an international reputation for excellence in teaching, research and consulting in civil and environmental engineering. Students in the Faculty of Science can undertake an Environmental Science co-major in conjunction with another Science major.

Left: Industry and academia marked a shared commitment to the environment at the University's fourth annual Environment Day Breakfast. The breakfast offered participants their choice of a range of free 'enviro packs' containing items such as lunchboxes, drink bottles, calico shopping bags, laboratory spill trays and chemical buckets, all of which are a reusable alternative to disposable products currently on the market. From left, with items from the 'enviro packs', Ms Danielle Rostan-Herbert, Mr Bill Bretherton, and Ms Natasha Cooper.

Postgraduate Studies

Established in 1999 as a co-operative arrangement between ten faculties, the Office for Environmental Programs has a central role in promoting environmental issues and a sustainable future through its Graduate Environmental Program. The Graduate Environmental Program offers a multi-disciplinary curriculum to provide a broad understanding of environmental issues and leading edge ideas about how to change and manage the environment. Its objectives include raising awareness of environmental issues and encouraging synergies and new opportunities in participating faculties through engendering cooperative approaches to research.

The Graduate Environmental Program provides graduate and postgraduate study involving 150 subjects and leading to professional qualifications ranging from a Graduate Certificate to a Master of the Environment. The Program addresses environmental and sustainability issues from many different angles.

The following nine streams of study are offered within the Master of the Environment:

- development;
- conservation, restoration and land management;
- hydrogeology;
- integrated catchment management;
- energy studies;
- waste management;
- public Health;
- environmental education; and
- governance, policy and communication.

The Office for Environmental Programs coordinates Parks Victoria grant money for research into environmental topics as well as postgraduate teaching. Students in the Graduate Environmental Program are able to conduct short research projects as part of their curriculum, and in the long-term will be able to participate in the University's broader environmental programs through:

In 2002, the University signed the Talloires Declaration. It joined 300 other higher education institutions from around the world, affirming the importance of the environment as a foundation of tertiary education and practice.

- the proposed Green Leaf Identification Program, which will visibly alert undergraduate and postgraduate students and staff to units that have environmental issues and sustainable living as part of their teaching and learning objectives;
- the Sustainable Writing Award for Research in the area of the Environment; and
- joint programs with the University's Green Office, linking the academic with the practical to facilitate institutional change towards sustainability.

1.2 Educating the University

In 2002, the University signed the Talloires Declaration. It joined 300 other higher education institutions from around the world, affirming the importance of the environment as a foundation of tertiary education and practice. As a signatory to this Declaration, the University has agreed to act on the Talloires Declaration Ten Point Action Plan. This Action Plan includes raising awareness about the need for an environmentally sustainable future, encouraging all universities to engage in education and research on population, environment and development, and establishing programs to produce expertise and literacy in environment fields. Measures implemented by the University include:

- the University being externally certified by Lloyd's Register Quality Assurance Agency to Environmental Management System ISO 14001. This certifies a strong commitment to the environment and the high quality of the University's processes and procedures.
- Risk Management Office:
  - coordination and updating of the *Environment, Health and Safety Manual* which specifically addresses the University's environmental management goals in its Environment Policy, (section 1.3 of the *Environment, Health and Safety Manual*).
  - oversight of a number of programs which focus on operational activities that have an environmental impact, such as waste management, recycling and energy efficiency.
  - management, through its key committee, the Environmental Advisory Committee, of the Environmental Management System ISO 14001 as well as promotion of environmental awareness.
- through the University's Property and Buildings Department, working to ensure the implementation of environmentally sustainable building practices. The recently-completed Alan Gilbert Building, for example, contains an integrated photovoltaic installation to harness renewable energy and reduce demand for power from the University's main electricity grid.
- offering staff development programs relating to environmental health and safety through the Staff Development Unit. Such programs include Risk Management, Chemical Management, and 'Green' Purchasing.

1.3 Educating and Enriching our Wider Community

The University of Melbourne accepts a responsibility to raise public, government, industry, and university awareness of the urgent need to move toward an environmentally sustainable future.

To this end the University encourages the involvement of government and industry in supporting interdisciplinary research, education, policy formation, and information exchange on environmentally sustainable development. It also works with community and non-governmental organisations, at a national and international level, and has taken the following measures to assist in finding solutions to environmental problems:

The United Nations Global Compact

The University of Melbourne is a signatory to the United Nations Global Compact – a voluntary program that seeks to advance responsible corporate citizenship in the areas of human rights, labour and the environment. The Global Compact has been introduced in 70 countries around the world and has been signed by over 1,300 companies and organisations.

In 2003 the University sponsored the first visit to Australia by Mr Georg Kell, Executive Head of the Global Compact Office to enable Mr Kell to present an International Public Lecture and take part in a seminar organised by the University to discuss and review progress on the Global Compact.

In his lecture Mr Kell reflected on the important contribution of universities, stating *"that the academic community has a growing and important role in the Global Compact, including in preparing case studies, in teaching and in demonstrating how the university as an employer and as a contractor is learning to live with a principle-based approach."*

Property and Buildings

The University cooperates with the wider community by promoting, through its Property and Buildings Department, environmental sustainability at its regional campuses. The University's Dookie Campus, for instance, has the largest natural bush reserve of any Australian university. The Burnley Campus is the finest environmental and ornamental horticulture campus in Australia.

The Melbourne Research and Innovation Office

The Melbourne Research and Innovation Office (MRIO) hosts the University's annual Research and Innovation Fair. Research on the environment and sustainable development is featured in the Fair, which is attended by government officials, industry leaders, members of the diplomatic corps, the general public and University staff and students.

The MRIO has supported a range of activities that have led to the establishment of the Melbourne Water Research Centre, which aims to foster interdisciplinary approaches to education, research and outreach.

The Office for Environmental Programs

In addition to its role supporting postgraduate teaching and learning in the area of environmental sustainability, the Office for Environmental Programs raises awareness of environmental issues within the University and the wider community. It uses email to circulate appropriate 'news' and events to staff and students of the Graduate Education Program, as well as the 'events' page on the University web site to advertise information. It is also taking steps to:

- connect to undergraduate teaching in related areas, linking seminar programs and creating opportunities for collaboration across University communities;
- produce an environmental newsletter, in collaboration with other University environmental organisations; and
- expand its interdisciplinary focus by making links within *Universitas21*.

The Office encourages visiting research fellows from international universities, as well as industry, government and environmental organisations and has established a Community and Industry Advisory Board (CIAB) to link the Graduate Environmental Program to the wider Melbourne, national, and international community.

The CIAB:

- sponsors public lectures that include private and public sector participants;
- hosts a Sustainability Forum each year to bring together University, community, and industry representatives to discuss sustainability issues; and
- will run a CIAB Seminar Series, to bring together community and industry speakers and promote dialogue and interaction between the University and community constituents.

The Office plans to publish a Monograph Series containing keynote speeches, using the material as a catalyst for environmental debate in the University and more widely.

Risk Management Office

The Risk Management Office:

- circulates a weekly email bulletin detailing environmental initiatives taking place across the University and distributes electronically a weekly awareness-raising poster to all departments;
- arranges Orientation Week information displays to inform students of the University's activities; and
- manages the 'Green Steps' Environmental Management and Mentoring Program, an information exchange program which educates students in environmental change management. A core component of the Program is the 'Melbourne Project', pursuant to which students undertake an environmental assessment of University departments. This provides them with practical experience of how environmental considerations are or may be incorporated into the workplace and, in turn, provides departments with information about their environmental performance according to objective criteria.

2. Institutional Environmental Sustainability Initiatives

The University is conscious of its responsibility to protect the environment and aspires to play a leadership role in this area by ensuring good practice in its immediate environment.

The Risk Management Office manages and promotes a range of programs which support institutional policies and practices of resource conservation, recycling, waste reduction, and environmentally sound operations. These include the Waste Wise Program, the Green Purchasing Guide, the Green Office Program and the Green Laboratory Program. The programs raise awareness and encourage responsible, environment-friendly practices in academic and administrative departments. Program representatives report to the Environmental Advisory Committee through its subsidiary bodies: the Management of Substances Hazardous to the Environment Sub-Committee; the Reuse and Recycling Sub-Committee; and the Energy Working Group Sub-Committee.

Through these programs and ongoing input from other key units, such as the MRIO, Property and Buildings, the University Planning Office, and the Office for Environmental Programs, the University has undertaken a number of major environmental initiatives, achieving key objectives in the reduction of waste and pollution, and the conservation of energy and resources:

2.1 Clean Technologies and Waste Minimisation

Major achievements in the area of waste and pollution reduction include:

- the implementation of recycling schemes for a wide range of materials which now include paper, cardboard, commingle, batteries, mobile phones, and overhead transparencies;
- an increase by nine per cent in the overall quantity of paper, cardboard and commingled waste recycled;
- an increase in the volume of recyclables out of landfill waste streams from 299 tonnes paper/cardboard recycled between November 2001-October 2002 to 326 tonnes between November 2002-October 2003;
- an increase in the adoption of recycled paper stock (eg one-sided lecture pads) from less than one per cent in 2002 to approximately 20 per cent;
- an increase in the use of new internet and web technologies to streamline academic and administrative processes, promoting the efficient use of resources on campus, including paper;
- an increase in the coverage of the University's Environment Programs including the Green Office, Green Laboratories and Waste Wise Programs;
- the adoption of the Federal Government's TravelSmart voluntary transport behaviour change program;
- the purchase of 2.5 per cent of green energy annually; and
- certification of the University as a Waste Wise organisation by EcoRecycle Victoria. This commits the University to assessing its waste and taking appropriate remedial action to minimise it and its effects on the environment.

2.2 Conserving Energy and Resources

Recent achievements in conserving energy and resources include the following:

- a 30 per cent reduction in water consumption on campus, largely attributable to replacement of water aspirators in science departments with mechanical vacuum pumps;
- the installation of automated irrigation controllers to replace manual irrigation systems resulting in better management of timing and application durations;
- low water use and drought-tolerant plants as a plant management strategy;
- capturing and reuse of dam water on regional campuses, where practicable;
- the installation of data loggers connected to the University IT network on mains water meters to enable remote reading of data at 15 minute intervals in order to assist in the implementation of effective water management strategies;
- modification of lawn management specifications to specifically reduce irrigation requirements;

The Risk Management Office manages and promotes a range of programs which support resource conservation, recycling, waste reduction, and environmentally sound operations.

- the use of energy efficiency and waste-reduction technologies in the design of all new and refurbished buildings;
- the integration of natural resources with farming on the Darlot Swamp managed by the University's Longerenong Campus. This involves grazing cattle on the area from January to June each year and transferring the cattle to other locations for the remainder of the year to allow regeneration of the native vegetation;
- the installation of triphosphor lamps to reduce electricity consumption for lighting;
- the introduction of the annual Ergie Award program which aims to encourage energy and water saving measures within the University community. Faculties and departments achieving the most energy savings are recognised through Ergie prizes and certificates; and
- the installation of remote utility metering systems in each building to establish baseline utility consumption and track changes over time.

2.3 Open Process and Risk Awareness

The University recognises that environmental sustainability will be best achieved by maintaining open processes. It is strongly committed to establishing a 'risk aware' culture and has in place the following structures, processes and controls which aim to maximise input from the University community and to minimise risk and promote a safe environment for students, staff and the general public:

- the Occupational Health and Safety Committee and the Environmental Advisory Committee and their respective sub-committees and working parties provide opportunities for staff and students to contribute to discussion and decisions on a wide variety of issues relating to environmental, health and safety;
- employee Health and Safety representatives have been appointed for almost 100 designated work groups across the University. A Forum of Health and Safety representatives and Environmental Health and Safety Co-ordinators is held regularly to air issues of concern and provide feedback on operational and policy matters;
- the Faculty Focus Group, another channel for staff input, works collaboratively with the Risk Management Office to develop and implement University-wide Environmental Health and Safety processes and procedures;
- all major University Environmental Health and Safety Committees are required to set goals and targets and to report on progress against plan on an annual basis; and
- statements on the University's Risk Management Strategy and on Occupational Health and Safety matters are published as part of the University's Annual Report.

3. Research

The University's commitment to a leadership role in the area of sustainability and to the creation and dissemination of knowledge in this field is reflected in the range of research activities currently being undertaken and the numerous centres of research being supported.

This section describes the broad range of research activities currently in progress.

3.1 Melbourne Research and Innovation Office

In 2002, over 300 publications relating to sustainability were produced by staff at the University. These included 3 research books, over 100 journal articles and over 50 refereed conference publications. Approximately 350 staff from over 20 academic departments were undertaking research in a field related to sustainability.

Under the academic leadership of the Deputy Vice-Chancellor (Research), the MRIO provides services for the management, development and promotion of University research and research training, facilitating knowledge transfer and innovation. In fulfilling this role, it promotes research on the environment and sustainable development and makes a priority of water-focussed research. The MRIO also pays particular attention to animal welfare and biosafety, advancing the University's role as a centre of responsible research training. Since December 2003 the MRIO has worked with the Risk Management Committee on the management of biosafety and gene technology in research conducted at the University.

In 2002, over 300 publications relating to sustainability were produced by staff at the University. These included 3 research books, over 100 journal articles and over 50 refereed conference publications.

3.2 Research Centres

The University is involved in environmentally-focussed research through research bodies as follows:

- **Co-operative Research Centre (CRC) for Catchment Hydrology (with CSIRO, Monash University and Water Authorities)** aims to deliver the capability to assess hydrologic impact of land-use and water-management decisions at whole-of-catchment scale;
- **Centre for Environmental Applied Hydrology** focuses on all aspects of surface and groundwater hydrology, hydraulics, and fluvial geomorphology;
- **CRC for Irrigation Futures** focuses on generating information to double productivity and halve rural and urban irrigation water use in Australia;
- **Foundation for Sustainable Economic Development** seeks to be the pre-eminent leader in the creation, accumulation, and distribution of knowledge in its field, and focuses on creating prosperity through the best management of sustainable human resources, innovation and the ecology;
- **Forest and Ecosystem Science Institute** is a collaborative venture between the University and the Victorian Department of Sustainability and Environment, focusing on the productivity, sustainability and management of forests and forest ecosystems, both nationally and internationally;
- **CRC for Greenhouse Gas Technologies** is concerned with the development of advanced technologies and systems for the capture and storage of CO_2;
- **Forest Technology Program** is a co-operative research program with the CSIRO Division of Forestry and Forest Products and the Australian Logging Council aimed at improving logging and harvesting practices in production and farm forestry;
- **Joint Centre for Crop Innovation** is a joint venture between the Victorian Department of Primary Industry and the University which undertakes research into crop innovation to improve the sustainability and competitive position of Australian temperate grain crops;
- **CRC for Greenhouse Accounting** provides research outputs for greenhouse emissions accounting at the national and project level;
- **Melbourne Water Research Centre** aims to make a substantial contribution to the understanding, improving, managing and remediation of Australia's water resources;
- **Centre for Environmental Stress and Adaptation Research** (including the La Trobe University and Monash University) is a Special Research Centre of the Australian Research Council which studies the way organisms respond and adapt to changing and stressful environmental conditions; and
- **Bushfire Co-operative Research Centre** collaborates with most national land management agencies, fire agencies, CSIRO and other universities.

3.3 Research Areas of Faculties/Departments

The following opportunities for research impacting on environmental issues are offered across the University:

Faculty of Architecture, Building and Planning

Research areas include Creativity and Sustainable Development, Cities and Ecologically Sustainable Development, and Housing and Ecologically Sustainable Development.

Faculty of Arts

School of Anthropology, Geography and Environmental Sciences

Research areas include Ecologically Sustainable Development, Social Impact Assessment, Global Environmental Politics, Aquatic Ecology, Environmental Hydrology, Globalisation Issues, Natural and Cultural Resource Management, Environmental and Analytical Chemistry, Water Chemistry and Water and Waste Water Treatment.

Faculty of Economics and Commerce

Aims to advance knowledge globally through pure and applied research. It offers undergraduate and postgraduate courses, as well as research training in environmental economics.

Faculty of Engineering

Department of Civil and Environmental Engineering – Research areas include Advanced Energy Systems, Energy Efficiency, Green Buildings and Sustainable Renewable Energy Technologies, and Ecological Sustainable Design.

Department of Mechanical and Manufacturing Engineering – Research areas include Generation of Electricity Using Wind and other Renewable Energy Reserves, Solar Thermal Systems, Energy Policy and Planning in Developing Countries, and Renewable Energy Resources in Developing Countries.

Faculty of Law

Centre for Energy and Resources Law – Research areas include the Production and Distribution of Energy, the Development of Infrastructure, the Environmental Impact of Energy, Resources and Infrastructure Projects, and Indigenous Rights over Land and Waters. Studies focus upon the inter-relationship of government policies, legal and regulatory regimes and administrative practices.

Faculty of Medicine, Dentistry and Health Sciences

School of Population Health – Research areas, addressed through a wide range of approaches, include Aboriginal Health, Work and Health, and Health Governance and Policy.

Faculty of Science

School of Earth Sciences – Research areas include Thermochronology, Geochronology and Tectonics, Isotope Geochemistry and Petrology, Structural Geology and Metamorphismas, Stratigraphy, Sedimentology and Hydrogeology, Surface Processes and Quaternary Geology, and Atmosphere, Oceans and Geophysics.

Institute of Land and Food Resources

Research is carried out through a number of formal ILFR research partnerships with government, industry and other research institutions. Some examples include Farm Forestry Program with the Department of Primary Industries and Energy and the Farm Forestry Network; Forest Industries Program with CSIRO and Forest Industries; Forest Technology Program with CSIRO, Australian Logging Council and the Australian National University; Information Technology for Forest Management Program with Auspine, CSR and Forestry South Australia; Master Treegrower program with the Myer Foundation, Farm Forestry and agroforestry groups; teaching and research alliance between the Victorian Department of Sustainability and Environment, Forest Research and Melbourne Forestry in the Forest Science Centre on the Creswick Campus.

School of Agriculture and Food Resources – Research areas include Crop Production, Sustainability of Agriculture, Crop Improvement, Drought, Irrigation, Drought Resistance and Water Use Efficiency of Rain-fed Crops, Pasture and Grassland Ecology, Grazing Management, Economic and Biophysical Sustainability of Grazing Systems and Sustainable Crop Rotations and Farming Systems.

School of Resource Management – Research areas include Indicators of Sustainability in Agro-Ecosystems, Revegetation on Farms in Dry Areas, and Agro-Forestry and Natural Systems.

Office for Environmental Programs

The Office provides opportunities to undertake research offered by the faculties as part of Graduate Diploma, Postgraduate Diploma or Master of the Environment programs.

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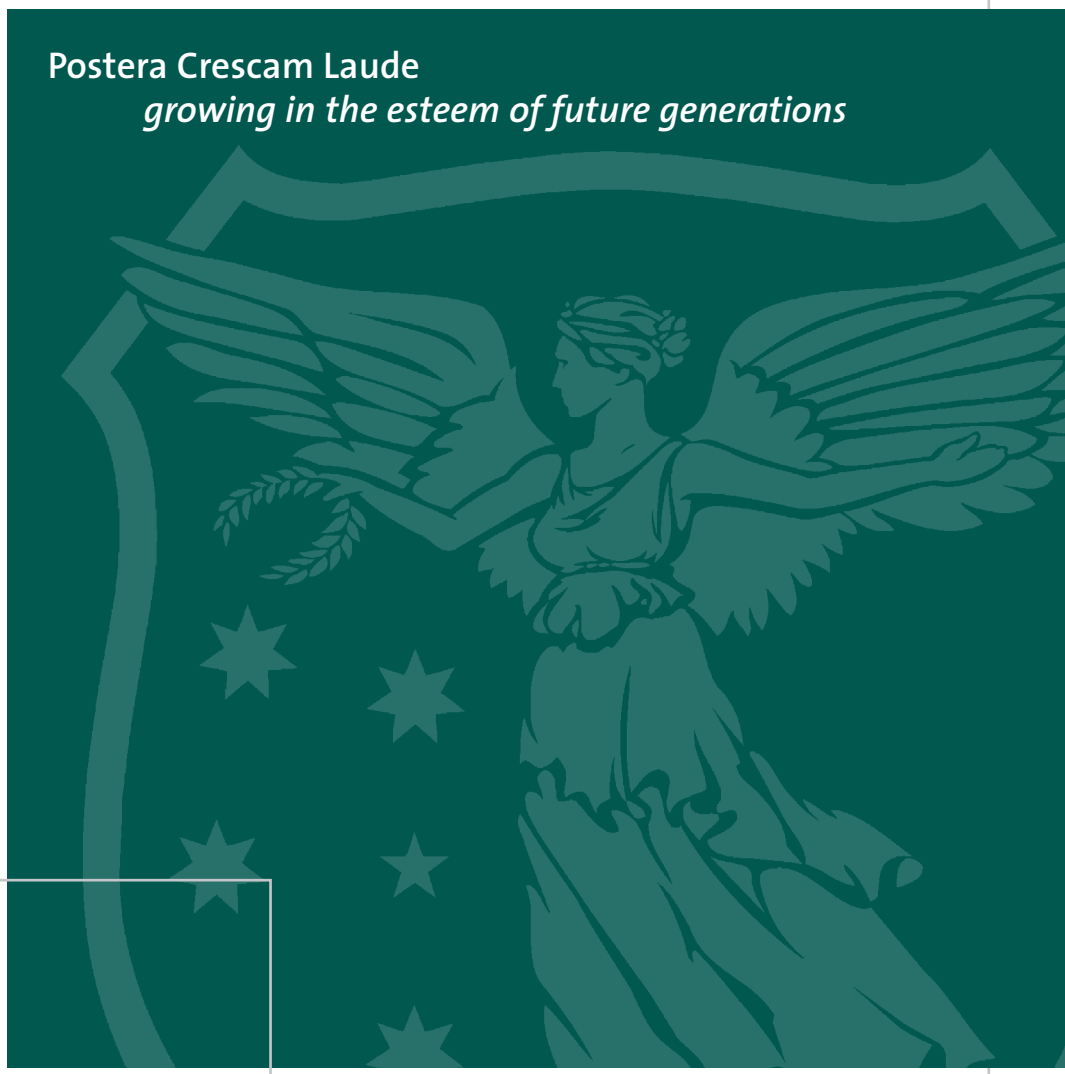
growing in the esteem of future generations



Further Information

The University of Melbourne
Victoria 3010 Australia

General Enquiries

Telephone +61 3 8344 4000
Facsimile +61 3 8344 5104
www.unimelb.edu.au

www.unimelb.edu.au