Professor Jannie S J van Deventer *PhD DCom DEng*
Foundation Professor of Mineral and Process Engineering
Dean of Engineering

THE UNIVERSITY OF MELBOURNE

Ref: JVD.rm

2 July 2003

Professor Alan Gilbert
Vice-Chancellor
The University of Melbourne

Dear Professor Gilbert

Proposal to Establish a new Chair of Sustainable Technology
Department of Civil & Environmental Engineering

The Faculty of Engineering proposes to establish a new Chair of Sustainable Technology in the Department of Civil & Environmental Engineering. This Chair is to be fully funded by the Faculty.

The Faculty of Engineering would very much appreciate it if this proposal could be submitted to the Planning & Budget Committee for approval at its next meeting. An advertisement and Special Information Statement have been prepared and will be forwarded as soon as formal approval is received.

Yours sincerely

Professor Jannie van Deventer
Dean of Engineering

Copies: *Ms Chia-Eng Chen, Human Resources*
Professor Tom McMahon, Head of Department
Ms Jan Mariani, PBC Secretary
Mrs Joan Reese, Faculty General Manager

Faculty of Engineering
The University of Melbourne Victoria 3010 Australia
Telephone: +61 3 8344 6619 Fax: +61 3 8344 7707
Website: http://www.eng.unimelb.edu.au

Faculty of Engineering

A Proposal to Establish a Chair Sustainable Technology in the Department of Civil and Environmental Engineering

Background

The two major research strengths of the Department at present are environmental engineering (hydrology and water resources) and structural engineering (earthquake engineering and structural dynamics). In addition, the Department has research interests and strengths in project and construction management, waste management and transport engineering. With emerging opportunities in environmental engineering and with a greater integration of science, engineering and the social sciences required to solve ecological problems, the Department needs to expand its focus to various aspects of sustainable technology.

Industrial and consumer products are manufactured by using a wide spectrum and combinations of raw materials to meet consumer requirements. At the end-of-life these products return, as complex multi-component materials that cannot be converted directly into the same products again. In addition, constructing and manufacturing these goods and products should be carried out in an energy efficient and environmentally friendly way. The products themselves and their use or operation should also contribute to the overall sustainability. Society requires that a maximum of end-of-life products find their way back into the industrial and consumer cycle while minimising both energy input and the impact to the environment, in an economically optimal manner.

This goal is achievable only when knowledge and technology from the simplest separation and sorting technology to the most complex reactor optimisation and product design are integrated. Moreover, it requires that new and innovative designs and production methods must be developed. This suggests that the optimisation of the material cycle in a world in which products change rapidly is only possible if the interaction between all technological aspects of creating / using / discarding / recycling products is considered in relation to fundamental studies including environmental control and policy. It is therefore imperative to achieve sustainability change at various system levels, from global material cycles down to plant and process equipment design and operation. Company/ plant/ sector /country boundaries must be crossed with a large number of stakeholders involved if the goal of sustainable technology is to be achieved internationally. This underlying strategy needs to be embedded in legislation and the design of infrastructure.

The Chair of Sustainable Technology will be expected to develop a programme of research in an interdisciplinary manner in conjunction with other departments and research centres across the University and foster collaboration at a national and international level. In considering global materials and energy cycles with reference to manufacturing and construction processes and design, the proposed research programme will overlap with a University wide water research programme, the existing catchment hydrology programme, and a proposed programme on sustainable infrastructure.

Proposal to Establish a Chair

It is proposed that a Chair of Sustainable Technology be established within the Department of Civil and Environmental Engineering to lead and develop research in environmental engineering, catchment hydrology, water treatment, material recycling, waste management and sustainable material/product design and life-time flow.

The Responsibilities of the Position

1. Strategic leadership for the development of research in material recycling, waste management and sustainable material/product design and life-time flow.

2. Supervision of research laboratories devoted to hydrology, waste management and sustainable technologies.

3. Provision of a continuing high level of a personal commitment to and achievement in his/her scholarly area.

4. Conducting research and fostering research of other groups and individuals within the Faculty of Engineering. Provision of leadership within the research team. Undertake and supervise the preparation of conference and seminar papers and publications from that research

5. Supervise major postgraduate research projects. This will include the preparation of research proposal submissions to external bodies and responsibility for the oversight of financial management of grants.

6. Participate in planning and supervision of programmes of study for postgraduate research students and projects for coursework masters students and research elective undergraduate students.

7. Play an active role in the maintenance of academic standards and in the development of educational policy and of curriculum areas within the Department of Civil and Environmental Engineering.

8. Develop policy and be involved in administrative matters within the Department of Civil and Environmental Engineering.

9. Contribute to the Department of Civil and Environmental Engineering's academic education programmes in areas of expertise.

10. Participate in and provide leadership in community affairs, particularly those related to civil and environmental engineering in the profession and community.

Funding

Table 1 shows the cash flow in the Department of Civil and Environmental Engineering for the period 2003 to 2009. The figures are based on the salary levels as at 2003 and are projected to 2009 assuming incremental movements, a 3.5% annual salary increase and anticipated retirements. This total salary cost is compared to the annual budget predicted for 2003 with an 8.25% yearly increase.

The Faculty anticipates the appointment of three new professors, one in the second half of 2003, one at the start of 2004 and the third in the second half of 2004. One of the professors (professorial fellow to coordinate the University wide Water Centre) will be appointed for a two year period between 2003 and 2005. The costs of these appointments have been included in the calculations.

Table 1

Year	2003	2004	2005	2006	2007	2008	2009
Total Salary Costs	$2,787,543	$3,131,616	$3.160,898	$3,180,529	$3,294,206	$3,413,395	$3,537,159
Annual Budget Allocation	$2,658,571	$2,877,903	$3,115,330	3,372,345	$3,650,563	$3,951,735	$4,277,753
Deficit / Surplus	-$128,972	-$253,713	-$45,568	$191,816	$356,357	$538,340	$740,594

Departments are expected to cover most of their operating expenses from research income and not from the annual budget allocation, which is mainly used for salaries. This cash-flow situation follows the model described in the Faculty of Engineering Business Plan and demonstrates a period of investment where the funding deficit in departments is underwritten by the Faculty reserves. This plan is essential in order to redirect the research areas in the Department in order to re-position it as an internationally leading department in accordance with the Melbourne Agenda. Although there is a high probability that external funding could be found to support these new positions, the above budget provides a conservative outline as a worse case scenario.