ACADEMIC BOARD REVIEW

PHASE TWO

FACULTY OF ENGINEERING

TUESDAY 10 JUNE 2003

REPORT AND RECOMMENDATIONS

CONTENTS

Note: *This report draws on the information provided in the documentation considered by the Review Team as well as discussions with staff and students. In some places, text from the Self-Evaluation Report has been incorporated directly into this report*

1 MEMBERSHIP

1.1 Review Team

Professor Judyth Sachs, Chair and Chair of the Academic Board
Professor Masud Behnia, Dean of Graduate Studies
Associate Professor Mike Prosser, Director, The Institute for Teaching and Learning
Dr Janette Bobis, Faculty of Education and Social Work
with
Ms Rachel Symons, Quality Assurance Officer (Teaching and Learning) *(Review Team Secretary)*
Dr Ines Krass, Faculty of Pharmacy *(Observer)*

1.2 Senior Faculty representatives

1.2.1 The following senior Faculty representatives were met by the Review Team during the first interview:

Professor Judy Raper, Dean;
Professor Yu-Wing Mai, Pro-Dean;
Professor Greg Hancock, Associate Dean, First Year Teaching;
Professor John Carter, Associate Dean, Research;
Professor Ron Johnston, Executive Director, ACIIC;
Assoc Professor Liyong Tong, Associate Dean, International;
Professor Lianchi Zhang, Associate Dean, Postgraduate;
Assoc Professor John Small, Associate Dean, Postgraduate Studies;
Dr Doug Auld, Associate Dean, Undergraduate;
Mr John Currie, Associate Dean, Teaching and Learning;
Professor Jim Petrie, Head, Chemical Engineering;
Assoc Professor Rob Wheen, Head, Civil Engineering;
Professor Branka Vucetic, Head, Electrical and Information Engineering;
Mr Michael Whitely, Finance Officer, Secretary to the Faculty; and
Mr Eric Van Wijk, Executive Officer
Ms Irene Rossendell, Engineering Librarian, attended the open meeting

1.3 Students

1.3.1 The Review Team met with three groups of students: fourteen undergraduate students; three postgraduate coursework students; and twelve postgraduate research students.

2 INTRODUCTION

2.1 The Academic Board Phase One review of the Faculty of Engineering took place on Tuesday 23 April 2002. The current Phase Two review process complements the Phase One review, following up on its recommendations and also considering the Faculty's activities and quality assurance arrangements in relation to the seven Goals of the University.

3 OVERVIEW OF QUALITY ASSURANCE IN THE FACULTY

3.1 The table at Appendix One provides an overview of the quality assurance structures and processes of the Faculty.

3.2 The Faculty undertakes accreditation through the Institution of Engineers, Australia. Teaching and learning processes include the Institute for Teaching and Learning Unit of Study evaluation (USE) on a whole Faculty basis. Processes for postgraduate degrees include degree program and unit of study reviews and postgraduate student progress reviews. Quality assurance activities for research include the ARC grant application process, CRC application process and publications citation impact. Undergraduate reviews of degree programs and units of study are evaluated regularly.

3.3 The Review Team commends the Faculty on the progress made in developing a quality improvement culture and on the new structures implemented to ensure the quality of teaching. Recommendation 7 of Phase One stated that the Faculty consider ways further improve the evaluation process and introduce mechanisms to ensure that students are advised of changes that have been made as a result of their feedback. The Review Team noted a significant increase in the use of course evaluation questionnaires. Staff are informing students about the purpose and relevance of USE and the Student Course Experience Questionnaire, emphasising that they are an integral part of the feedback loop by which courses are improved. The Team noted the use by some staff of mid-semester informal feedback to make changes in the curriculum. Students acknowledged that staff were prepared to listen to their feedback and make changes accordingly. ***(See Commendations 1 and 2)***

3.4 Self-Evaluation report

3.4.1 The Review Team noted that all Departments were involved in the compilation of the Self-Evaluation Report. Departments made individual contributions for each of the goals. Information for Goal One presented Departmental responses to each of the Phase One recommendations; whilst that for the remaining goals is Faculty-wide.

4 GOAL ONE: QUALITY TEACHING AND LEARNING

4.1 Appendix Two provides a summary of the action taken by the Faculty in relation to each recommendation from the Faculty's Phase One review in April 2002. Further detail follows in relation to some of the recommendations. Information relating to teaching and learning activities not covered during the Phase One review is also provided.

4.2 Communication

4.2.1 The Phase One Review Team perceived a tendency for staff to identify with their Department at the expense of Faculty cohesion, and gained the impression that the relative autonomy of each of the Faculty's four Departments had resulted in significant variations in practice. The Phase Two Team noted that the situation had improved in the twelve months since the Phase One review due, in part, to the development of the Flexible First Year Program *which* has generated communication and discussion across most Departments *(see Section 4.3)*.

4.2.2 Recommendation 2 from Phase One stated that the Faculty should look at ways of improving communication between Departments and between staff and students. The Review Team noted that the Faculty has made considerable progress in this area, with all Departments having mechanisms in place to improve communication and social engagement between staff and students. These include the use of physical and electronic noticeboards, class email systems and regular staff-student liaison meetings. The Faculty acknowledged that there is now a real commitment to collaboration across Departments, but that it is too early to see positive outcomes.

4.2.4 The Faculty recognises that work still needed to be done in the area of communication with students. This was confirmed by the students, who expressed the view that there is little communication between lecturers within and across Departments. Postgraduate research students indicated that they felt isolated from each other and from other postgraduate students.

The Review Team suggests that the Faculty consider engaging an outside consultant to investigate where the blockages of communication are within the Faculty.

4.2.5 Recommendation 8 referred to the effectiveness and profile of staff-student liaison committee meetings and to setting different parameters for their operation. The Team noted that meetings were held regularly in most Departments. In 2003 the Faculty received a TIF grant to run focus groups to investigate the impacts of departmental action in this area. All Departments have implemented processes which will improve their effectiveness. These include canvassing students for issues prior to the meeting; forwarding recommendations from meetings to the Head of Department for action; and promulgating outcomes through the staff student committee website. ***(See Commendations 3 and 4; and Recommendation 1)***

4.3 Flexible First Year program

4.3.1 Recommendations 3, 4 and 14 of Phase One were all concerned with flexibility for students who wished to change direction mid degree. The Phase One Review Team recommended the introduction of a common first year and a professional practice stream for students.

4.3.2 The Review Team commends the Faculty on the introduction, in 2004, of the Engineering (Flexible First Year) program. This will allow students to decide about their eventual engineering specialisation on the basis of strengths and interests, and to change direction without affecting their courses. Three Departments will introduce the program in 2004, with the fourth to follow in 2005. One Department will offer students the choice of either doing the flexible or the specific degree program, and two will only offer the flexible program. The program will offer the unit 'Introduction to Professional Engineering' during the first and second semesters.

4.3.3 The Review Team also commends the Faculty on the collaborative way in which the program was developed. This was instrumental in mobilising staff to think about teaching and learning pedagogy, has shifted the previous barriers about content delivery and teaching and learning which were apparent during the Phase One process *(See Section 4.2.1)*, and has improved communication between Departments. ***(See Commendation 5)***

4.3.4 The Engineering Librarian provided information about a proposal to include information literacy skills into the Faculty academic programs, in particular the Flexible First Year program, further to the current program offered by the Library. This would provide a systematic approach providing students with skills and associated benefits in terms of student learning outcomes and lifelong learning skills. The Review Team commends the proposal to the Faculty, and suggests that it be initially introduced with postgraduate students. ***(See Commendation 6)***

4.3.5 Recommendation 10 of Phase One suggested that the sharing of teaching materials be formalised across the Faculty. The development of the Flexible First Year program, in particular the professional practice units, requires formal sharing of material, which the Faculty anticipates will lead to more team teaching.

4.4 Assessment

4.4.1 Recommendations 5 and 6 from Phase One covered assessment. It was recommended that the assessment process across all Departments be examined to ensure consistency and quality; and to consider ways of informing students about the assessment process, the criteria used, how marks are awarded, and workload issues.

4.4.2 The Review Team noted that a TIF grant had been awarded to the Faculty in 2003 for the investigation and improvement of Unit of Study assessment practices, and the development of criteria models for implementation. Strategies in place to address the recommendations on a Departmental basis include the coordination of assessment tasks, the reviewing of units of

study to ensure clarity of assessment criteria, and the announcement of assessment tasks on Day One. The Faculty acknowledges that assessment issues require further work. The Review Team noted that the development of assessment criteria and standards based assessment had contributed to a positive change in exclusion and failure rates in the Faculty.

4.4.3 Workload issues are being addressed by the Faculty-wide development of a course curriculum comprising of 6 credit point units of study. The Review Team commends the introduction of this model, and the effective way in which the development had been integrated into the introduction of a common first year. Discussions on streamlining units of study and resources to fit into the model, had contributed to the breaking down of barriers within and between Departments. This should also facilitate the move of students from the Faculty of Engineering to the Faculty of Science if they wish to change degrees. ***(See Commendations 7 and 8)***

4.5 Advanced Engineering program

4.5.1 Recommendation 13 of Phase One stated that 'the Faculty should investigate ways in which the gaps in student learning, occasioned by missing out on core subjects in first year of the Advanced Engineering program, can be overcome.' Most Departments consider that this problem will be addressed by the implementation of the Flexible First Year program, which will enable Advanced Engineering students to elect the units of study which are substituted. One Department runs remedial tutorials as necessary.

4.5.2 Students considered that the problem still existed, with gaps being mainly in the area of maths. Some took extra units of study to cover the gaps in assumed knowledge and coped with the heavier workload.

4.5.3 Undergraduate students in specific degree programs were also concerned that lecturers assumed that all students had basic knowledge of their subject, resulting in problems for those who lacked this knowledge.

4.5.4 The Review Team recommends that the Faculty continue to addresses the issue of gaps in knowledge for Advanced Engineering students. It should also address the issue of assumed knowledge in other subjects. ***(See Recommendation 2)***

4.6 WebCT and online learning

4.6.1 The further development of online learning, together with the need for consistency and the identification of material relevant to particular disciplines, was the subject of Recommendation 11 of Phase One.

4.6.2 All Departments have developed curriculum material using WebCT or their own online learning platform. Coordinators in one Department are organising material on WebCT into consistent subject areas that span units of study over the whole course and which highlight the relevance of individual components to each discipline. Academics in another Department are encouraged to develop at least one Unit of Study on WebCT each year. The use of the web for increasing the effectiveness of administration of teaching and in the use of online teaching such as Matlab and simulations is reported to be quite advanced in one Department. The slowness of WebCT when there is high traffic, and the scarcity of resources, are hindering the development and use of WebCT in some Departments. The Faculty acknowledges that best practice needs to be transferred across Departments and more uniformity in platforms needs to be provided.

4.7 Associate Dean, Teaching and Learning

4.7.1 The Review Team noted the appointment of an Associate Dean, Teaching and Learning in accordance with Recommendation 9 of Phase One. An Associate Dean for First Year has also been appointed.

4.8 Benchmarking

4.8.1 Recommendation 12 of Phase One referred to investigating of international trends in engineering education and curriculum, and benchmarking against universities in Australia and overseas in this area. Qualitative benchmarking takes place with the University of Michigan in the area academic programs, staff development and student exchange. Quantitative benchmarking takes place with Go8 plus two universities. The Faculty is discussing SCEQ benchmarking in Engineering with the Institute for Teaching and Learning.

4.9 Quality of Teaching

4.9.1 The Review Team noted the change in culture relating to the importance in teaching across the Faculty since the Phase One review. However there is unevenness in the take up of initiatives such as the Flexible First Year program, and this needs to be addressed so that there is coherence and areas of common strength across the Faculty. The Review Team suggests that this can be achieved by articulating the importance of teaching to all staff; and making public, and sharing, the philosophy and values of teaching. This will lead to sustained quality of teaching across the Faculty. The Team recommended that, following the lead of other faculties within the university, new staff should be encouraged to take the Graduate Certificate of Educational Studies (Higher Education) within three years of their appointment. The Review Team was concerned that, despite the Faculty having Dean's awards for excellence in teaching, only two staff had applied in recent years for the Vice-Chancellor's awards for excellence in teaching and postgraduate supervision, and suggested that this should be encouraged. ***(See Commendation 9 and Recommendation 3)***

4.10 Tutors and tutorials

4.10.1 The large size of tutorial classes and the English language proficiency of some academic staff and tutors was of concern to the undergraduate students interviewed. Class sizes of between 60 and 120 were reported, with an average of one tutor to every 30 students. Students considered that this negated the purpose of tutorials as they were unable to receive attention and advice on problems, and were unable to concentrate. Staff were aware of the problem, but considered it to be a resourcing and infrastructure issue arising from the large numbers of students enrolled in the degree and the lack of staff available. One Department reported that it held eight tutorials a week for one unit of study. Each tutorial held 60 students with three tutors.

4.10.2 The Review Team found that the training received by tutors varied across Departments. Whilst some Department held workshops and provided opportunities to attend teaching and learning seminars for their tutors, others provided no training for its tutors. The Review Team noted that tutors in some Departments were appointed on the basis of grades and communication skills. *(See also Section 5.3)* ***(See Recommendation 4)***

4.11 Parallel teaching of undergraduate and postgraduate coursework students

4.11.1 The Review Team was advised by students that there is joint teaching of undergraduate and postgraduate students in the Faculty. Noting that this contravenes Academic Board policy, the Review Team recommended that this practice be discontinued. The Faculty informed the Review Team that parallel teaching only occurred with final year (Honours) Units of Study. Conflicting advice was received by the Team regarding the difference or otherwise of assessment tasks for undergraduate and postgraduate coursework students; and they suggest that the Faculty investigate the situation. ***(See Recommendation 5)***

4.12 Compliance with Academic Board policies

4.12.1 The Review Team reminds the Faculty about compliance with Academic Board policies, particularly *Academic Honesty in Coursework.* They noted that one Department had instituted its own code of conduct. ***(See Recommendation 6)***

5 GOAL TWO: DIVERSITY, ACCESS AND EQUITY

5.1 The Faculty aims to provide an environment that is conducive to successful student learning; accepting students of all racial and religious backgrounds; supportive of talented students regardless of socio-economic background; and promoting an increasing gender balance within the profession. Whilst it has been successful in achieving some of these aims, the Faculty acknowledges weaknesses in the areas of gender balance in staff and students; English language proficiency of NESB academics and students; and poor indigenous representation.

5.2 Gender equity

5.2.1 There is a significant gender imbalance among students and Faculty across all disciplines, and whilst the Faculty has appointed a female Dean and one female Head of Department, it acknowledges difficulty in attracting and/or retaining female academics. To address weaknesses in the area of gender equity, the Faculty proposes integration of Women in Engineering as an issue within Professional Practice units of study, and a further emphasis on Women in Engineering programs across the Faculty. Support is already being given to the Women in Engineering Society, which has been initiated by female students.

5.2.2 The Winifred Margaret Neirous Scholarship in Civil Engineering is awarded by women wishing to study civil engineering in either the structural or geotechnical streams. Whilst female recipients of this scholarship expressed the view that they would prefer to receive a scholarship on merit rather than gender; male students felt disenfranchised when this scholarship was female only applicants and others were open to all sexes.

5.2.3 The Loxton Postgraduate Research Scholarship is awarded to male students wishing to undertake postgraduate studies leading to a PhD in Chemical Engineering. The Faculty explained that the terms of the bequest limited this particular scholarship to males and that attempts to change the terms had been unsuccessful. The Review Team recommends that the terms of the Loxton Postgraduate Research Scholarship in Chemical Engineering be communicated to the students. ***(See Recommendation 7)***

5.3 English language proficiency of staff and students

5.3.1 The Faculty is concerned about the English language proficiency of some NESB students, despite appropriate assistance from the Learning Centre. One Department is addressing this problem with a diagnostic language test for local and international NESB students; a model which is being investigated for the rest of the Faculty. This Department is also using 3rd and 4th year international students as bilingual tutors to help 1st and 2nd year international students. The Review Team commends the use of diagnostic language testing and requests further information on its effectiveness, and the way in which information from the test is used to improve language problems. ***(See Commendation 10)***

5.3.2 Students reported that they found it difficult to communicate with some academic staff and tutors who, although they had subject expertise, were lacking the English language skills necessary to make the material understandable. The Faculty acknowledges that it has been consistently unable to satisfactorily address this issue. One Department provides assistance through the Institute for Teaching and Learning with general teaching; another has established a mentoring system for staff with communication problems. The English language proficiency of intending academics in one Department is identified during the research

seminar they are required to present as part of their interview. In another Department, international students who wish to tutor, and who have been identified as having communication problems, are directed to the Learning Centre for assistance before being allowed to tutor. The Review Team recommends that the Faculty continue to address this issue and look for ways in which communication can be improved in this area. ***(See Recommendation 8)***

5.4 Indigenous participation in programs

5.4.1 The Faculty will undertake consultations with the Koori Centre to address the poor indigenous participation in its programs.

6 GOAL THREE: EXCELLENCE IN RESEARCH

6.1 Research productivity

6.1.1 The Review Team commends the Faculty on the high level of research productivity, as evidenced by the amount of national competitive research funding received, peer-reviewed published papers, staff involvement with major international conferences, and having two Federation Fellows amongst the staff. This is despite a drop in academic staff from 125 to 67 in the space of five years, and the consequent fall in research output, ARC grants and ARC linkages. In addition to these 67 staff who are engaged in teaching and research, the Faculty has a further 80 staff in research only positions. ***(See Commendation 11)***

6.2 Research higher degree experience

6.2.1 The Review Team commends the Faculty on the culture of support for the postgraduate research students. This is through a variety of ways: informal mentoring students received as members of a supportive research community, both with supervisors and post doctoral fellows; the induction program and training in research methodology provided; and departmental seminar programs and social functions, all contributed to a positive response regarding their research higher degree experience.

6.2.2 The Review Team noted that quality of research higher degree supervision varied across Departments, especially in regard to availability of funding, the allocation of labs and resources, and the number of students per supervisor. The Team was concerned that students were initially unaware of the processes involved in organising conference travel, and advised the Faculty to inform students of the relevant policies and procedures, particularly in relation to University purchasing policy. Given the pressure for them to complete their candidature in minimum time, students are concerned that there is currently no structure in place to assist them in setting milestones. The Review Team recommends that the Faculty investigate ways of providing the necessary structure for timely completion of candidatures. ***(See Commendation 12 and Recommendations 9 and 10)***

6.3 Research-led teaching

6.3.1 The Faculty reported that research and scholarship informed the teaching across all disciplines, and ensured that students were familiar with the latest developments in engineering, technology and applied science. Whilst some undergraduate students were aware of the research interests of staff and appreciated the integration of research into their lectures; others did not share the same experience and considered that it would make the lectures more interesting and relevant if it occurred.

7 GOAL FOUR: INTERNATIONALISATION

7.1 The degree programs of the Faculty are all internationally accredited and graduates are able to work as professional engineers world-wide. Internationalisation has become a normal part of

the daily process across the Faculty as academic and general staff are exposed to it through teaching, administration and research. The Faculty's objectives in regard to internationalisation are to ensure international recognition of the Faculty research and scholarly activities of graduating students; to attract quality students to the Faculty; and to broaden the income base of the Faculty with international fee income. Processes which are in place to address the objectives include: an Associate Dean International responsible for marketing, exchange programs, services and resources for international students, links, study abroad and exchange; international advisors for students; the availability of some units of study for international students as summer school programs for those entering Semester 2; and representation on the International Operations Committee of the International Office.

7.2 The Faculty attracts a high percentage of international students – 18% of undergraduate, 51% of postgraduate coursework, and 22.5% of postgraduate research positions. International postgraduate coursework students interviewed considered that their degree would be appropriate when they returned to their home country since the subjects studied were international in aspect. International postgraduate coursework students reported a lack of congruency between the units of study that were listed in both the handbook and on the Faculty website and those that were actually available when they arrived at the University. The Review Team recommends that the Faculty consider updating information about unit of study availability, in particular for postgraduate coursework level units, in both the Faculty handbook and on the Faculty website. ***(See Recommendation 11)***

8 GOAL FIVE: ENGAGEMENT WITH THE INDUSTRY AND THE PROFESSIONS

8.1 The Faculty engages with industry and the professions through a range of processes and practices. These include: student industrial experience placements; professional organisation membership and involvement; membership of editorial boards of professional journals; industry consultancies and collaborative research projects; development of departmental Foundations to promote linkages; industry participation in the undergraduate Advanced Engineering program; the use of industry specialists within teaching and learning programs; and industry membership of curriculum review committees. These activities are considered by the Faculty to be a considerable strength, and to have a major impact on the nature and scope of research and teaching and learning within the Faculty, resulting in the Faculty having a sound reputation as a premier provider of engineering education, research knowledge and professional advice both within Australia and overseas.

8.2 The Faculty acknowledges that, despite the strengths, there are perceived weaknesses present in this area. These include: insufficient resources to identify and capitalise on industrial and professional opportunities while maintaining existing teaching and learning programs and pure research activities; a failure to bring the majority of alumni into Foundation Associations; resource constraints in cultivating new/deeper relationships with firms involved in industrial partnerships; an inability to convert the majority of industrial placement relationships into research or consultancy opportunities; and limited inter-disciplinary contacts between Faculty and our industry/professional partners thus limiting inter-disciplinary research opportunities.

8.3 The Review Team noted that although undergraduate students valued the opportunities afforded by industrial experience placements, they reported difficulties in finding placements. The Review Team recommends that the Faculty consider compiling an online database of previous employers to aid students in their choice of placements. Undergraduate students appreciated the openness of the Dean in allowing participation in a research project to replace the industrial experience component of their degree. ***(See Recommendation 12)***

9 GOAL SIX: EFFECTIVE MANAGEMENT

9.1 The Faculty is moving to a matrix management structure consisting of Departments and curriculum/program organisation such as the Advanced Engineering and Flexible First Year programs, and research institutes. Implementation of the model will be progressive, and will

be monitored carefully by senior management. The Faculty considers that success will be measured by a removal of the current management problems. The Review Team noted that meaning and understanding of the matrix model had been taken up in different ways across the Faculty and suggests that the vision needed to be communicated more clearly to staff. ***(See Recommendation 13)***

9.2 The Faculty currently has 67 staff engaged in academic teaching and research positions. A further 80 staff work in research-only positions. The Review Team noted the large number of professors in the Faculty and suggests that they be utilised as a resource, particularly in the teaching of first year units of study, mentoring of junior staff, and taking on some of the senior administrative positions. ***(See Recommendation 14)***

10 GOAL SEVEN: SERVICE TO THE COMMUNITY

10.1 The objective of the Faculty, in relation to community service, is to utilise their specialist engineering knowledge and skill for the betterment of the community. This is achieved by membership of school curriculum and examination committees; provision of resources to the school education committee through visits and demonstrations; external access to Faculty websites and materials; provision of expert witnesses in court cases, coronial inquests and government enquiries; service on government committees; and encouraging Advanced Engineering projects with a community benefit. Positive stakeholder feedback has been received from continued invitations to participate in a community service role.

10.2 The Review Team commends the Faculty on its work with the community, particularly in relation to its work with schools. ***(See Commendation 13)***

11 CONCLUSIONS

11.1 Commendations

Quality Assurance processes

1. The Review Team commends the Faculty on its progress in the development of a quality improvement culture, and the implementation of new structures to ensure the quality of teaching. *(Section 3)*

2. The Review Team commends the Faculty on the instigation of mid-semester informal feedback in some disciplines, and the use of this feedback to improve and make changes in the curriculum. *(Section 3)*

Goal One: Quality teaching and learning

3. The Review Team commends the Faculty on the improvements that have been made in communication within the Faculty. *(See Section 4.2)*

4. The Review Team commends the Faculty on the improvement in the staff student liaison committee structure, the responsiveness of staff to issues raised, and the feedback to students of the outcomes of the meetings. *(See Section 4.2)*

5. The Phase Two Team commends the Faculty on the introduction, in 2004, of the Engineering (Flexible First Year) program and the collaborative way in which the program was developed. *(See Section 4.3)*

6. The Review Team commends information literacy skills program, proposed by the Engineering Librarian, to the Faculty, and suggests that it be initially introduced with postgraduate students. *(See Section 4.3)*

7. The Review Team commends the improvement in assessment practices across the Faculty and notes that the development of assessment criteria and standards based assessment has contributed to the change in exclusion and failure rates in the Faculty. *(See Section 4.4)*

8. The strategic way in which the introduction of a Faculty-wide 6 credit point model for units of study has been used to drive change in the Faculty is to be commended. *(See Section 4.4)*

9. The Review Team commends the Faculty on the change in culture relating to the importance in teaching across the Faculty since the Phase One review. *(See Section 4.9.1)*

Goal Two: Diversity, Access and Equity

10. The Review Team commends this diagnostic language testing and requests further information on its effectiveness, and the way in which information from the test is used to improve language problems. *(See Section 5.3)*

Goal Three: Excellence in Research

11. The Review Team commends the Faculty on the high level of research productivity across the Faculty, and the presence of two Federation Fellows amongst the staff. *(See Section 6.1)*

12. The Review Team commends the Faculty on the culture of support for the postgraduate research students. The informal mentoring students received as members of a supportive research community, both with supervisors and post doctoral fellows; the induction program and training in research methodology provided; and departmental seminar programs and social functions all contributed to their good research higher degree experience. *(See Section 6.2)*

Goal Seven: Service to the community

13. The Review Team commends the Faculty on its work with the community, particularly in relation to its work with schools. *(See Section 10)*

11.2 Recommendations

Goal One: Quality Teaching and Learning

1. The Review Team commends the Faculty on the improvements that have taken place in communication since the Phase One Review. However, it recommends that they investigate ways to further improve communication across departments and between staff and students and suggests that the Faculty considers engaging an outside consultant to investigate where the blockages of communication occur. *(See Section 4.2)*

2. The Review Team recommends that the Faculty continue to addresses the issue of gaps in assumed knowledge for Advanced Engineering students. *(See Section 4.5)*

3. The Review Team suggested staff should be encouraged to apply for the Vice-Chancellor's awards for excellence in teaching and postgraduate supervision. *(See Section 4.9.1)*

4. The Review Team recommends that the Faculty consider ways of improving the variation in tutor training programs and practices across the Faculty. *(See Section 4.10)*

5. Noting that this contravenes Academic Board policy, the Review Team recommended that the practice of joint teaching of undergraduate and postgraduate students in the Faculty be discontinued. Conflicting advice was received by the Team regarding the difference or otherwise of assessment tasks for undergraduate and postgraduate coursework students; and they suggest that the Faculty investigate the situation. *(See Section 4.11)*

6. The Review Team reminds the Faculty about compliance with Academic Board policies, particularly *Academic Honesty in Coursework. (See Section 4.12)*

Goal Two: Diversity, Access and Equity

7. The Review Team recommends that the terms of the Loxton Postgraduate Research Scholarship in Chemical Engineering for male students be communicated to the students. *(See Section 5.2)*

8. The Review Team recommends that the Faculty continue to investigate ways in which the English language communication skills of academic staff from an NESB background can be improved. *(Section 5.4)*

Goal Three: Excellence in Research

9. The Faculty is advised to inform postgraduate research students of policies and procedures for organising conference travel, particularly in relation to University purchasing policy. *(See Section 6.2)*

10. The Review Team recommends that the Faculty investigate ways of providing the necessary structure for timely completion of postgraduate research candidatures. *(See Section 6.2)*

Goal Four: Internationalisation

11. The Review Team recommends that the Faculty consider updating information about unit of study availability, in particular for postgraduate coursework level units, in both the Faculty handbook and on the Faculty website. *(See Section 7.2)*

Goal Five: Engagement with the industry and the professions

12. The Review Team recommends that the Faculty consider compiling a database of previous employers to aid in the choice of placements. *(See Section 8)*

Goal Six: Effective Management

13. The Review Team suggests that the vision of the matrix model of management needed to be communicated more clearly to staff. *(See Section 9.1)*

14. The Review Team noted the large number of professors in the Faculty and suggests that they be utilised as a resource, particularly in the area of leadership. *(See Section 9.2)*

Prof Judyth Sachs
Chair, Academic Board
Chair, Review Team

30 July 2003

APPENDIX ONE: OVERVIEW OF QUALITY ASSURANCE PROCESSES

Overview of Quality Assurance arrangements in the Faculty of Engineering

Student feedback	Externality	Graduate Destinations	Progression and completion	Program review
Mechanisms to analyse and respond to SCEQ results (such as committees). **Other mechanisms to collect, analyse and respond to student feedback at Faculty level**	**Mechanisms to facilitate input from employers/professions on curriculum content and graduate attributes (eg advisory groups, input to periodic review) How is externality built into the Faculty's QA processes?**	**Mechanisms/ structures to analyse graduate destination statistics for the Faculty's programs**	**Mechanisms/ structures to analyse progression and completion rates of the Faculty's programs**	**Faculty arrangements, if any, for periodic review of its degree programs. If the Faculty does regularly review its programs, does the Review process involve external input?**
T&LC Committee DAC Dept/School Meetings USE's T&L Plans APAC Committee HAC Committee	IEAust Accreditatiion Review Discipline based accreditation reviews Deans External AdvisoryCommittee Foundations Industry degree reviewscondusterd bi-annyallu EIE Fiundsation regular contact with industry through guest lectures	DAC CEQ's PG Committee HAC Committee	DAC Department Committees T&L Committee Undergraduate Studies PG Committee HAC Committee	DAC Undergraduate Studies T&L Committee IEAustAccrediation Discipline Accreditation Benchmarking Regular degree reviews at EIE every two years conducted by EIE Foundation
KPI's * SCEQ results faculty degree department/school * USE results * T&L Plan targets				

Curriculum updating	Annual monitoring	Benchmarking	Offshore QA
Processes to ensure the currency, relevance and validity of degree programs	**Processes to monitor the performance of degree programs on an annual basis**	**Arrangements to set, measure and ensure academic standards and benchmark these against national and international peer institutions**	**Quality Assurance arrangements to monitor the standards of any offshore activities**
T&lL Committee TIF Grantd Periodic teaching area committee reviews of courses and degrees, EIE Fiundation reviews by industry	DAC Undergraduate Studies Committee Departments Enrolments in individual degrees and industry demands are monitored by HoS, HAC Committee and APAC Committee	G08 Deans Arrangements with MIT Michigan A benchmarking management role allocated to a senior academic	PMO International Arrangements/students

APPENDIX TWO: REPORT ON RECOMMENDATIONS FROM PHASE ONE REVIEW

Recommendation 1	The Review Team recommends that consideration be given to resuming the staff newsletter that was introduced when the current Dean commenced in the Faculty
Action taken by the Faculty	Faculty – • Action taken – Adhoc Information emails in faculty issues commenced EIE – • Existing Foundation newsletter as a form of staff newsletter AMME – • Email notification of staff achievements ChE – • quarterly news bulletin via Chem Eng Foundation circulated widely Civil – • Frequent email notification of staff achievements. The Civil Engineering Foundation Newsletter circulating to all staff and Foundation members highlights achievements
Further action planned but not yet implemented (if appropriate)	Develop Faculty newsletter – containing issues of interest and reports/minutes of Faculty Standing Committee. To be handled by Faculty Executive Officer and Faculty Secretary.
Faculty's evaluation of the success of action taken	The habit of reporting staff successes is slowly improving staff morale. Staff Achievements are noted on web-site encouraging pride in the faculty. This needs to be kept up.

Recommendation 2	It is recommended that the Faculty should look at ways of improving communication between departments and between staff and students.
Action taken by the Faculty	Faculty – Part of TIF 2003 grant, T&L Seminars, Research Seminars, development of Flexible First Year. AMME – The School over the past year has focussed on improving the communication between staff and students through a number of areas. This includes: The widespread use of the physical and electronic bulletin boards for communication of important School information and resolutions, The use of class email systems for delivering information relevant to UoS, Better improving the method and outcome of the staff-student liaison meeting, and better social activities such as the School BBQs. ChE – ChE is closely involved in intra-Faculty discussions on the proposed changes to allow a Common First Year and a move for all our UoS to be 6 CPs . These are both aiding inter-Departmental communications. Departmental procedures for staff-student liaison meetings have been revised in 2003 with Year Advisors now playing a more important role with the HoD's meetings with students dealing with issues that have been "filtered" through earlier meetings. The Department has invested heavily in a comprehensive communications strategy linked to marketing and promotion, co-ordinated by the Chem Eng Foundation Executive Officer The Department is working actively with SUCES (Chemical Engineering Students' Society) to improve communication and social engagement between staff and students Civil – Student Staff Meeting held thrice yearly have been very effective. Notes of the meeting are posted on the SSLC website. Matters of information or of general interest are posted on the electronic bulleting board. The bulletin board is gaining wider use. EIE – We are working on establishing research cooperation between our Control Group and ACFR at AMME. In the planned restructuring of undergraduate courses, particular attention will be given to consolidating UoS in Control, so that teaching is shared between EIE and AMME. This matter is also being addressed across the Faculty with the introduction of common teaching as part of the common first year, with the Department possibly joining later. The Faculty is looking into establishing PG scholarships to cover interdisciplinary collaboration between Departments.
Further action planned but not yet implemented (if appropriate)	
Faculty's evaluation of the success of action taken	There is a real commitment to collaboration across Departments. However it is too early to see positive outcomes.

Recommendation 3	That the Faculty investigate a program to develop student flexibility if they want to change direction mid degree.
Action taken by the Faculty	Faculty – • Development of Flexible First Year, TIF 2003 grant – curriculum mapping. AMME – • The School participated and supported the faculty initiative - the Common First Year program, which allows students to select a specialisation at the end of first year. • In the School's current program, year 2 students are allowed to move to a degree specialisation, subject to approval, which maybe of a higher UAI weighting, if they are performing well (high WAM) within their streams. ChE – • The Department's use of an academic mentoring system ensures effective communication with students, rapidly identifying those "at risk" and those seeking to change direction. This is supported by interviews conducted by HOD and/or Director of UG studies at pre-enrolment. • Movement between streams in Chemical Engineering has been readily enabled. • The move to a Common First year program across the Faculty will support enhanced flexibility of choice for students. Civil - • The Department has been fully supportive of the Common First Year notion and has incorporated the changes into its own major course review. The change of name to Flexible First Year underlines the clear intention. EIE – • A UoS called Commercial Engineering Practice was established with the assistance of the Foundation and offered last year. It is not taught this year as the external lecturer resigned on a short notice, but will be offered Faculty –wide next year. The School has formed an APAC (Academic Policy Advisory Committee) sub-committee to consider overall course reorganization with the objectives to transform a 4CP to a 6CP model, increase flexibility, reduce the workload and establish a common first year. This is also being addressed both by the introduction of a first year program and by the common first year.
Further action planned but not yet implemented (if appropriate)	The common first year is the first step in achieving this flexibility. In the future the Faculty will support the idea of a 3 year "Liberal engineering" degree.
Faculty's evaluation of the success of action taken	This outcome has been a focus for this year and represents a major improvement to our programs.

Recommendation 4	That the development of a professional practice program be considered. This could cover both core and generic concepts with application for each discipline in the concurrent practice program. It would help students develop a sense of what it meant to be their type of engineer. .
Action taken by the Faculty	Faculty – • Professional Practice & Intro. to Engineering Disciplines UoS' in Flexible First Year program. AMME – • In the new faculty wide Common First Year within Professional Engineering, a new UoS, Professional Engineering course, has been introduced as a core unit of study for all students across the faculty ChE – • Now part of the Common First Year program. • Total revision of ChE curriculum for 2005 will include a strong component of "professional practice" with an emphasis on "what it means to be a professional chemical engineer".This will be supported by significant project work. • The Department remains committed to the 'work experience' concept for its UG students. This is enhanced by the Major Industrial Practice Placement Scholarship (MIPPS) scheme for top-flight final year UG students. Civil – • Development of Professional Practice UoS in all years for 2004. EIE – • A major component of the common first year is the introduction of a professional practice unit and consideration is being given to such a program in this Department
Further action planned but not yet implemented (if appropriate)	Curricula review for later year programs will consider further professional practice units.
Faculty's evaluation of the success of action taken	The 12 credit points in Year 1 has the potential to provide students with both technical and generic skills.

Recommendation 5	The Review Team recommends that the Faculty look at the assessment process across all departments to ensure consistency and quality. Staff should also be reminded of the Academic Board policy requiring all assessment tasks to be announced on Day One.
Action taken by the Faculty	Faculty – • Inclusion in T&L plan, discussion in Faculty committees, TIF 2003 grant – investigation and improvement of UoS assessment practices. AMME – • The School collects and coordinates a School wide assessment task schedules from every UoS coordinator before semester starts. All UoS coordinators are advised to inform students the average time required to complete each assessment task. All UoS coordinators are advised to hand out course profile which must consist of information related to all assessment tasks, such as weighting, due date and expected workload, in the first lecture. ChE – • Assessment profile now much more consistent between various UoS. • Assessment tasks now announced as part of UoS outline (covered in the first lecture of course). Will introduce a system that co-ordinates assessment timing (so not everything is due on the one day). Seen as a Year Advisor role. Civil – • The Department has attempted to co-ordinate all assessment tasks across all CE units of study on a commonly accessible computer file with variable success. Success at announcement of assessment tasks on Day One is good but exceptions still occur. There is now a well understood convention that Week 7 will be set aside for mid-semester quizzes if desired and that other assessment tasks will not fall due in that week. Consistency of overall assessment across all units of study continues to concern us. EIE – The Department already maintains common U of S outlines across all units, which include assessment tasks. A greater emphasis has been placed on quizzes rather than assignments in order to discourage plagiarism. The School is working on implementing a T&L operational plan, which addresses the issue of assessment through tutor training, providing feedback to students, on-line quizzes etc.
Further action planned but not yet implemented (if appropriate)	Assessment methodology needs further discussion. Future T&L Seminars planned.
Faculty's evaluation of the success of action taken	The Faculty has put emphasis on Academic Board requirements.

Recommendation 6	Since students did not consider that tutorials were the right mechanism, the Review Team recommends that the Faculty look at alternate methods. The Faculty is advised to consider ways of informing students about the assessment process, in particular what criteria are used, how marks are awarded, and workload issues.
Action taken by the Faculty	Faculty – TIF grant 2003 – review of assessment practices and development of UoS assessment criteria models for implementation. AMME – There are many subjects within the school that still have the classic lecture/tutorial breakdown. The School is looking at weaknesses in the current tutorial mechanisms. While the tutor/student ratio has been maximised in many areas, but there still concerns about the effectiveness of the feedback given by tutors and this is currently under review. Other methods of delivery, such as project based work or on-line learning processes are being looked at to see if they provide a better learning environment. With regards to the assessment process, the UoS outlines are given to the School's Director of Teaching and Learning for review to ensure that assessment criteria are clearly defined. These outlines dictate also how the assessment is gauged. When assessments are handed out the course coordinator also has to provide an indication of how long the assessment task should take for the average student. With regards to the workload issues, the School is currently going through the process of developing course curriculum which only comprises of 6CP unit of studies. This will give students 4 unit of studies to deal with per semester. This is used in conjunction with the assessment outline as discussed in Recommendation 5, so as to ensure that no two assessment tasks are due in on the same day and that no more than two assessment tasks are due in the one week. ChE – ChE tries to be as varied in terms of assessment as practical. . Tutorials remain an important mechanism, coupled to practicals, to promote experiential learning. Assessment issues are explicitly covered in UoS outlines. Civil – Where tutorials have been employed among the many teaching modes that are relevant to the particular units of study their effectiveness has been re-evaluated. Unit of study outlines now have assessment modes described and allocation of marks is generally clearly announced at the outset. EIE - While students are to be reminded that this is university and not school, considerable progress has been made in improving both the assessment within tutorials and with the tutors themselves.
Further action planned but not yet implemented (if appropriate)	
Faculty's evaluation of the success of action taken	Further work needs to be done here. Staff need to consider different tutorial schemes and continue to improve feedback.

Recommendation 7	While welcoming the Faculty's activities in some areas in terms of collecting student feedback and industry feedback, through the industry review committees, the Review Team recommends that the Faculty consider ways to further improve the evaluation process, especially in terms of achieving greater consistency across the Faculty and introducing mechanisms to ensure that students are advised of changes that have been made as a result of their feedback.
Action taken by the Faculty	Faculty – Faculty –Industry Advisory Committee, ITL USE system used Faculty-wide as basis for T&L QA AMME - Currently the Dean provides a "please explain" to the School's Director of Teaching and Learning for any UoS which are not performing well. This is forwarded to the Course Coordinators for review. This is then monitored for the following year. Course coordinators are also advised to inform students how the course is being improved based on the previous years evaluation results. ChE - The Department's system of mentors and year advisors, together with the staff-student liaison committee, are the primary mechanisms for eliciting student feedback. The liaison committee serves also to convey to students changes which have been introduced to address their concerns relating to T&L. Students are made aware of support structures and services available to them. Industry feedback is elicited via the Chemical Engineering Foundation members, through those companies hosting students in vacation employment, and through industry questionnaires. These are deemed to be satisfactory. Civil - All academic staff have been given results of student evaluations and required to think about perceived shortcomings. Feedback to students on outcomes of ITL USEs has been less than satisfactory and will be addressed. EIE- Faculty communications are being improved through the likes of the T & L Committee and the introduction of Associate Deans, while the Department is moving to improve the process of feedback from staff-student meetings.
Further action planned but not yet implemented (if appropriate)	Staff who get poor students feedback repeatedly will be asked to attend ITL courses.
Faculty's evaluation of the success of action taken	The ITL USE system and the requirement that below average results has raised awareness of poor teaching. However there are a few academics who are still reluctant to believe student feedback.

Recommendation 8	The Review Team recommends that the Faculty give consideration to improving the effectiveness and profile of staff-student liaison meetings with staff and students; and to setting different parameters for their operation.
Action taken by the Faculty	Faculty – TIF grant 2003 – student focus groups to investigate impacts of dept. actions in this area. AMME – The teaching and Learning Director requests student representatives to survey students, who then produce a list of issues for the meetings. Recommendations are then actioned and minutes of the meetings are posted on noticeboards ChE – Accepted - see (2) above. ChE has implemented a scheme built around Year Advisors running staff-student liaison meetings (twice per semester with 3-4 elected students) with recommendations/issues being passed upward for similar such meetings with the HoD on a once per semester basis. This is seen as providing a faster response to student issues. Civil – Students and staff are well represented at these thrice yearly meetings. They have been effective and outcomes are promulgated via the Student Staff Liaison Committee website EIE - The Department is moving to make these meetings shorter, leaving more time for discussion, and to having the student representatives canvas students more widely.
Further action planned but not yet implemented (if appropriate)	
Faculty's evaluation of the success of action taken	Evaluation will be assessed through student focus groups in 2003.

Recommendation 9	To reinforce the message that teaching and learning is important, the Team recommends that consideration be given to the establishment of the position of Associate Dean, Teaching and Learning.
Action taken by the Faculty	Faculty – Appointment made for 2003. Used as an opportunity to review, restructure and expand the numbers (from 2 to 6) and roles of the Associate Deans across the Faculty. An Associate Dean for 1st Year has also been appointed.
Further action planned but not yet implemented (if appropriate)	
Faculty's evaluation of the success of action taken	Associate Deans now part of Dean's Advisory Committee, with Heads of Departments, allowing greater input into Faculty policy discussions.

Recommendation 10	The Team noted that there was sharing of teaching materials in some disciplines and suggests that this practise be formalised across the Faculty.
Action taken by the Faculty	Faculty – • T&L Seminars, Flexible First Year UoS development. AMME – • The faculty wide Common First Year formalizes the sharing of teaching materials. In the School, there has been merging of subjects which share common material, and this will be further improved with the Common 6CP curricula under development. ChE – • It is felt that the development of 'common' UoS in the Common First Year will prove a catalyst here. Obvious extensions are in the areas of computing, fluid flow and energy transfer. Some preliminary discussions are underway across the Faculty regarding teaching and research training in Environmental Engineering. Civil – • Staff have been active participants in T&L Seminars and there have been useful ideas shared. Development of the Flexible First year subjects "Engineering Disciplines" and "Professional Engineering" has involved a lot of interaction across the disciplines EIE – • This is being addressed both by elective units that other Departments can take and the professional practice program of the common first year.
Further action planned but not yet implemented (if appropriate)	Discussions/action on curriculum restructuring around 6 credit point UoS model.
Faculty's evaluation of the success of action taken	The common 1st Year units of study require formal sharing of material, hopefully leading to more team teaching.

Recommendation 11	The Review Team recommends that, in view of the above differences, the Faculty consider ways to further develop on-line learning. It should also investigate ways in which the need of students for consistency and for identification of material relevant to their particular discipline can be answered.
Action taken by the Faculty	Faculty – T&L plan goals, AMME – On-line learning has over the past couple of years taken on a stronger footing within the School. Coordinators are becoming aware of WebCT and how to use it, however, the students are finding the process difficult because of the slowness of WebCT when there is a lot of traffic, which highlights the important resource issue. The School has looked at various ways of improving the placement of core material on the Web where students from all the degree streams have access to, and from which the various UoS can grow from. The school has invested in significant IT infrastructure to support all units of study along with resources in the teaching and access laboratories needed for delivery. There have been many improvements in the modes of access and a policy of organising material into consistent subject areas that span several UoS over the whole of the course has been implemented to highlight the relevance of individual components. ChE – The Department is committed to the development of curriculum material using Web-CT. All academics are encouraged to develop at least one UoS on this platform each year. This practice will be continued with the pending curriculum re-development exercise. Civil – The Department's Project Management Outreach Programme has been a trail-blazing achievement that continues to develop. Nevertheless, there is considerable scope for further development of on-line learning but it is hampered by scarce resources. EIE - The Department is already quite advanced in the use of the web for increasing the effectiveness of administration of teaching and in the use of on-line teaching such as Matlab and simulations.
Further action planned but not yet implemented (if appropriate)	Evaluate UoS web situation in TIF 2003 grant as part of curriculum mapping and communications with students.
Faculty's evaluation of the success of action taken	T&L plan goals met. However we still need to transfer best practice across Departments and try to provide more uniformity in our platforms.

Recommendation 12	The Team recommends that the Faculty investigates further international trends in engineering education and curriculum and continues to benchmark against universities in Australia and overseas in this area.
Action taken by the Faculty	Faculty – • development of benchmarking partnerships with UQ, U of Michigan, MIT, discussions with ITL on SCEQ benchmarking in engineering. AMME – • Students are encouraged to participate in specific programs arranged between the school and specialist engineering departments overseas (eg. Bristol, Turin, KAIST, Sweden) or in the general university level exchange programs sponsored by the International Office. The student exchange programs also provide relevant information about differences and commonalities in teaching approaches. The School will look at formalising this with the stronger University partners. ChE – • Really a Faculty issue - but in revamping our entire curriculum for 2004, we are drawing heavily on similar studies carried out overseas (*eg* at MIT). Civil – • The major course review in CE has been set against the programmes in the major civil engineering departments around the country. EIE – • This is ongoing, with benchmarking against U of Michigan and U of Queensland, and possibly U of Melbourne.
Further action planned but not yet implemented (if appropriate)	Development of further partnerships as part of TIF 2003 grant.
Faculty's evaluation of the success of action taken	Greater acknowledgement, emphasis and interest in this issue is required across Faculty.

Recommendation 13	The Review Team recommends that the Faculty should investigate ways in which the gaps in student learning, occasioned by missing out on core subjects in first year of Advanced Education program, can be overcome.
Action taken by the Faculty	Faculty – • Review by ITL of Advanced Education program. AMME – • This problem is addressed in the current restructure ChE – • This is a problem that is common to many combined degree students as well as Advanced Engineering students. ChE runs remedial tutorials etc when needed. Civil – • The Flexible First Year programme should deal with most of the student concerns. EIE – • This is being addressed in the common first year.
Further action planned but not yet implemented (if appropriate)	Ongoing implementation of review recommendations. Evaluate success of implementation.
Faculty's evaluation of the success of action taken	The common first year will enable Advanced Engineering students to elect the units of study which are substituted.

Recommendation 14	The Review Team recommends that the Faculty investigate the introduction of a common first year for students, as well as the introduction of flexibility into the program, which would allow students to change specialisation during their degrees.
Action taken by the Faculty	Faculty – • Appoint Associate Dean for First Year, appoint Faculty First Year Committee, ratify First Year Plan, gain departmental support for Flexible First Year and negotiate curriculum issues with departments & service teaching providers. AMME – • This has been done ChE – • This is being done for a 2004 start. There is general support for the concept - but some concern about the loss of our "ChE Applications" UoS which has been a good introduction to ChE over the years. Generally, there has been a positive response to the recommendations from the previous Academic Board visit/review, although the proposed introduction of the Common First Year and our curriculum revamp (both to be online in 2004) has taken up a fair bit of effort and maybe slowed down progress in a number of other areas.. Civil – • In hand EIE – • This is being done.
Further action planned but not yet implemented (if appropriate)	Complete UoS development for Flexible First Year for 2004
Faculty's evaluation of the success of action taken	Outcomes will be seen by the demand of the program in 2004.