

WORK WITH US TO ACHIEVE THE GOVERNMENT GOAL OF INCREASING ENGINEERING GRADUATES BY 500+ PER ANNUM FROM 2017

**IN THIS ISSUE ... we look at the newly developed work plan for activity to achieve Engineering E2E's mandated goal, and introduce the new Discoveries section of our website**

IN AUGUST, I gave a briefing to the Tertiary Education Commission's senior managers and representatives from the Ministry of Education, the Minister's office and IPENZ. I began by reminding everyone of the problem we're addressing: New Zealand has an extreme shortage of engineers and that Engineering E2E has as its goal 500 more engineering graduates each year from 2017. I outlined our progress to date, the research we've commissioned and finally the work plan featured in this newsletter.

I also spoke about the Engineering E2E programme being a forerunner of the TEC's new Investment Approach which involves the TEC working with others in tertiary education to create a system that's future focused, future proofed and that delivers better outcomes for graduates and for New Zealand.

Engineering E2E has involved TEC, IPENZ, employers and employer groups, tertiary providers and schools in working together to:

- Use evidence to determine the demand for engineering graduates
- Build the connections at both ends of the learner journey from education to employment – to schools and employers
- Improve the pathways from school into tertiary programmes
- Identify and develop the graduate characteristics that count for career success

TEC wants to invest in improving learners' life chances, particularly those from priority groups. This fits with what the employers we are working with tell us – as they also want to increase the diversity of their engineering workforce. Engineering provides graduates with good, well-paying jobs, makes a critical and exciting contribution to our society, and helps us build an innovative economy. It surely helps to deliver better outcomes for graduates and for New Zealand.

**SIR NEVILLE JORDAN**  
Chair, Engineering E2E Steering Group

Initiatives undertaken through the Engineering E2E programme contribute directly to the achievement of the Government's Business Growth Agenda priority of building a more productive and competitive economy.

Initiatives	Objectives of Success	Measurement	2015	2016
<b>TECHLINK PATHWAYS PILOT PROJECTS</b> Hamilton, Wellington, Dunedin Context: Weltec	• Examples of collaboration between ITPs and secondary schools that can be utilised by other schools and ITPs and which lead to increased engineering enrolments.	• Published examples • More ITPs and schools indicating their willingness to take part in 2016 • Increased diversity in student body	2015	2016
<b>ADVANCED APRENTICESHIPS</b> Regional development of model of delivery (particularly relevant for rapidly changing, high-tech occupations where there is no on-going and completion of a degree level qualification in engineering for example) based on research and the state of the industry. "Right Apprenticeship" model with both Baya	• Minister agrees funding for a pilot "sponsored degree" programme.	• FINANCING MINISTRY AGREEMENT	2015	2016
<b>QUALITY TEACHING AND LEARNING</b> A project to guide and facilitate improvements to quality of teaching and learning in engineering. Collaboration with heads of school and ITP staff within ITPs to develop a strategy for professional development. Use with staff from tertiary providers and curriculum design.	• Collaboration and sharing of information and best practice between all providers. • Models of work integrated learning, new teaching modalities and current good practice models. • Increased numbers of students enrolling in engineering education. • Increased diversity in student body. • Learning environments that meet the needs of an increasingly diverse and growing student body.	• BY 2016 • Survey of students and employers report satisfaction with the quality of education received. • Increased numbers of students enrolling. • The diversity of the student body is increasing. • ITP employment outcome surveys indicate students are being employed before or soon after graduation.	2015	2016
<b>EMPLOYER ENGAGEMENT: GROW YOURS' HOPE!</b> A pilot workshop to explore the use of the Professional Capability Framework in determining employer perspectives on graduate profiles and future skill needs.	• Recommendations from the pilot employer workshops are implemented in the early or financial year leading to further activity in this work stream.	• BY 2016 • Numbers of employers participating in apprenticeship • Number of employers on IT advisory boards • A survey of employer satisfaction	2015	2016
<b>GROWTH THROUGH DIVERSITY</b> Workshop to explore the needs of the population of students, Maori, Pasifika and other groups in the engineering workforce. Through investigating systems (education, and with input from other stakeholders, including HEA, NZQA, TEC, and industry	• Improved uptake of Maori, Pasifika and other groups in engineering courses.	• A survey of enrolment demographics.	2015	2016
<b>PUBLIC AWARENESS CAMPAIGN</b> Develop an awareness campaign to increase the number of study options available. Examine any other educational achievements of a diverse range of people.	• Improved public awareness of engineering and the opportunities for the engineering profession.	• BY 2016 • Increased participation in the next ITPs of public awareness campaign • Reported interest to research that underpin the Barriers and Responses report • Survey of stakeholders to determine levels of satisfaction	2015	2016
<b>ENGINEERING E2E WEBSITE AND COMMUNICATIONS</b>	• Stakeholders are kept up-to-date with Engineering E2E activity.	• BY DECEMBER 2015 • Monthly newsletters • Feedback requests • Survey of stakeholders to determine levels of satisfaction	2015	2016
<b>ENGINEERING E2E STUDING GROUP</b>	• The Engineering E2E Programme goals have been shared and are receiving traction and diversity of students enrolling with engineering qualifications particularly at levels 4 & 5.	• SUCCESSFUL COMPLETION OF AGREED INITIATIVES	2015	2016

# Work plan a framework for future activity

Engineering E2E has developed a work plan for initiatives it believes essential to achieving the goal of radically increasing the number of engineering graduates over the next few years.

The A3 work plan outlines current initiatives and those it recommends are implemented over the next two years, under the four headings of Educational Delivery, Employer Engagement, Promotion and Governance, and proposes a preliminary short-term timeline of how these initiatives could be rolled out.

The following initiatives have been extracted from the document, which is available at [www.engineeringe2e.org.nz/Documents/E2E%20work%20plan-July2015.pdf](http://www.engineeringe2e.org.nz/Documents/E2E%20work%20plan-July2015.pdf)

## EDUCATIONAL DELIVERY

### Secondary/Tertiary: Techlink Pathways Pilot

This pilot programme led by ITPs and secondary schools aims to generate interest in engineering as a career by developing programmes of study that offer secondary students a flavour of engineering and engineering study. It involves Weltec, Wintec and Otago Polytechnic and schools in each of these regions. The pilot is being conducted over a nine-month period starting in April 2015.

**Indicators of success:** Examples of collaboration between ITPs and secondary schools that can be utilised by other schools and ITPs and which lead to increased engineering enrolments.

**Measurement:** By December 2015: published examples; more ITPs and schools indicating their willingness to take part in 2016; participating students enrolling in engineering study. By 2018: an increased diversity in student body.

More...

## Sponsored Degrees (Advanced Apprenticeships)

An initiative in which ITPs and employers explore and develop models of delivery (particularly relevant for rapidly changing, high-tech industries) which allow both on-the-job training and completion of a degree-level qualification in engineering.

**Indicators of success:** The Minister agrees funding for a pilot 'sponsored degree' programme.

## Quality Teaching and Learning

A project led by ITPs to guide and facilitate improvements to quality of teaching and learning in engineering and develop a strategy for professional development. Links with Geoff Scott's work on graduate profiles and curriculum design.

**Indicators of success:** Collaboration and sharing of information and best practice between all providers; models of work-integrated learning, new teaching modalities and current good practice models; research-led good teaching practice in engineering education; effective bridging programmes; learning environments that meet the needs of an increasingly diverse (and growing) student body.

**Measurement:** By 2018: Surveys of students and employers report satisfaction with the quality of education received; increased numbers of students enrolling; the diversity of the student body is increasing; ITP employment outcome surveys indicate students are being employed before or soon after graduation.

## EMPLOYER ENGAGEMENT

### Geoff Scott's visit

An IPENZ-hosted pilot workshop to explore the use of the Professional and Graduate Capability Framework to determine employers' perspectives on graduate profiles and future skill needs.

**Indicators of success:** That recommendations from the pilot employer workshop are implemented in the 2015-16 financial year, leading to further activity.

**Measurement:** By 2018: numbers of employers participating in apprenticeships; numbers of employers on ITP advisory boards; survey of employers indicates good engagement.

### Growth through diversity

A TEC proposal to research how to boost the numbers of women, Māori, Pasifika and other under-represented groups in the engineering workforce, through investigating overseas initiatives, and with input from other stakeholders, including MoE, NZQA, TPK, MBIE and industry.

**Indicators of success:** Improved uptake of Māori, Pasifika and other groups in engineering courses.

**Measurement:** A survey of enrolment demographics.

## PROMOTION

### Public Awareness Campaign

An IPENZ- and employer-led initiative to raise interest in engineering and the broad range of study options available, with key messages around individual achievements of a diverse range of people.



## DISCOVERIES – Engineering E2E Website

The new Discoveries pages of the E2E website have relevant news articles, research reports and engineering-related initiatives we've discovered, grouped into four areas:

- **WHAT WE'VE DISCOVERED** – research we've commissioned and reports that have provided a background for our work.
- **WHAT OTHERS HAVE DISCOVERED** – research from other organisations, journal articles and other relevant stories.
- **WHAT OTHERS ARE DOING** – how others are trying to increase the numbers of students studying engineering.
- **WHAT'S MAKING US THINK** – links to news articles and opinion pieces that we have found thought-provoking.

See: <http://engineeringe2e.org.nz/Discoveries>

**Indicators of success:** Improved public awareness of engineering and the education pathways to the engineering profession.

**Measurement:** By 2018: improved outcomes in the next IPENZ public awareness survey; improved outcomes to the research that underpinned the Barriers and Responses report; survey of enrolling students to determine what influenced their decision to study engineering.

### Engineering E2E Website and Communications

The promotional conduit of the Engineering E2E Programme.

**Indicators of success:** Stakeholders are kept up to date with Engineering E2E activity.

**Measurement:** Monthly newsletters; subscription requests; feedback; survey of stakeholders to determine levels of satisfaction.

## GOVERNANCE

### Engineering E2E Initiative

A programme led by TEC that investigates and facilitates the goal of increasing the number and diversity of students graduating with engineering qualifications, particularly at Levels 6 & 7.

**Indicators of success:** Achieving the above goal.

**Measurement:** Successful completion of agreed initiatives.

## FIND OUT MORE...

- The work plan is at: [www.engineeringe2e.org.nz/Documents/E2E%20work%20plan-July2015.pdf](http://www.engineeringe2e.org.nz/Documents/E2E%20work%20plan-July2015.pdf)
- Check out the Our Progress section on the Engineering E2E website: [engineeringe2e.org.nz/Progress](http://engineeringe2e.org.nz/Progress)

IF YOU HAVE ANY ENQUIRIES, PLEASE CONTACT US: ENGINEERING E2E PROGRAMME TEAM

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