Welcome to Engineering and the Environment

Professor William Powrie FREng
Dean of Faculty
The Faculty in numbers.....

- 1,684 undergraduates
- 256 postgraduate taught students
- 400+ research postgraduate students
- 340 academic staff
- 140 other staff
- Turnover £65M

(Teaching £20M, Research £30M, Enterprise £9M, Other £6M)

Figures from the 2012-13 budget
Transportation research and education
Main areas of activity

- Transport operations and logistics (TRG)
- Railways (National Infrastructure Laboratory, ISVR)
- Aerospace (ISVR, Computational Engineering)
- Noise (ISVR)
- Infrastructure (National Infrastructure Laboratory)
- Maritime (SMMI)
Funding and strategic industry partnerships
Programme and collaborative grants

- TRACK21: railway track for the 21st century: £3.14M
- High speed railway track - getting it right: £1M
- iConnect (engineering interventions for travel): £2.3M
- UK Infrastructure Transitions Research Consortium: £4.7M
- Sixth Sense Transport (developing flexible 24/7 transport): £0.7M
- iSMART (infrastructure slopes: Sustainable Management And Resilience assessment): £1.7M
- International Centre for Infrastructure Futures: £3.4M
Strategic industry partnerships

• Airbus (UTC in aircraft noise) £1.8M since 2008

• Lloyds Register (UTC in ship design for enhanced environmental performance) £2.6M since 2008

• Network Rail (Strategic Research Framework on future infrastructure systems £1M, 2012-17)

• Rolls-Royce UTCs in gas turbine noise and computational engineering £5M
Some achievements
Our bus priority systems research has reduced travel times for London commuters.
We set up the first integrated management, control and information centre in the UK, it is used throughout the UK and is a leading example in Europe.
Over 13 countries are now using rail damper technology developed in conjunction with Tata steel to reduce rail noise.
Reducing aircraft noise

For over 40 years our engineers have been working in partnership with industry to cut the noise from aircraft, resulting in new noise-reduction technologies being incorporated into today’s planes.
Many infrastructure slopes are over-steep and are held up by vegetation-induced suctions in the soil.
Infrastructure slopes

But seasonal variations in soil moisture content driven by vegetation water demand cause cycles of shrinkage and swelling that cause problems for railway operation (Photo: Graham Birch)
Infrastructure slopes

Removing the vegetation can cause loss of stabilising suction and failure of the earthwork
Modelling vegetation effects

End of a wet winter (February 2001)

End of winter (February 2001) pore water pressure contours (a) For a slope with trees at the toe only (b) for a grass covered slope and (c) for a tree covered slope
Discrete pile stabilization of infrastructure slopes

Strain gauges and inclinometer tubes in piles

Inclinometer tubes in between piles

Inclinometer tubes at toe and crest of slope

• Piezometers
• Raingauge
Discrete pile stabilization: monitoring

Hildenborough, Kent

Grange Hill

Mill Hill East
Current research funded by EPSRC and Network Rail is developing low maintenance, high performance new track forms.
Our research has contributed to changes in Government standards and policy helping to improve the safety and efficiency of transport in the UK.
Setting standards

Our research outputs are consistently incorporated into industry standards, guidance and codes of practice.
The future
The University of Southampton and Lloyd’s Register are working together to create a £116 million world leading engineering Centre of Excellence (ECE) on the University’s Boldrewood campus, at the heart of the Solent Maritime Cluster.
The Maritime Centre for Excellence will define a completely new way of delivering engineering education and research to meet the major global challenges facing society.
National Infrastructure Laboratory
We have been awarded £3 million by the EPSRC to train the engineers and scientists of tomorrow that are needed to develop the UK's essential infrastructure.
Thankyou