University of Birmingham

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About

Michael Burrow is a lecturer in the School of Civil Engineering. He is the convenor of the Road Management and Engineering MSc Programme and leads the Senior Road Executives Programme.

Michael was recently invited by the Asian Development Bank to give a seminar on Road Asset Management at its HQ in Manila. As part of this he was interviewed by the ADB, via video, to answer a number of questions:

Adobe Flash Player or QuickTime is required for video playback. Get the latest Flash Player Get the latest version of QuickTime

Qualifications

- PhD, University of Birmingham, 1998
- MA, University of Cambridge, 1999
- BA, University of Cambridge, 1994

Biography

Dr Michael Burrow is a lecturer in the School of Civil Engineering at the University of Birmingham and obtained his MA in Engineering from Cambridge University in 1994, where he studied at Jesus College. After completing his first degree he joined the University of Birmingham to undertake a PhD in the School of Civil Engineering's Highways Group. Since the completion of his PhD, Dr. Burrow has worked at the University of Birmingham on various highway and railway related asset management, maintenance and systems engineering projects.

His research interests are primarily focused on road and railway asset management and he was awarded the Telford Premium in 2005.

He is the convenor of the School of Civil Engineering's Road Engineering MSc programme and is the leader of the Senior Road Executives Programme. The MSc programme has educated over 500 engineers since its inception educates approximately 25 postgraduate students every year and in the region of 500 since its inception. Roughly 75 % of the students come from overseas. He lectures in road asset management, supervises research projects and has also been heavily involved in developing computer based teaching and self learning resources.

Dr Burrow also has a number of external appointments including the Director of Highway Management Services Ltd (HMS), which provides highway maintenance management software and consultancy to road agencies worldwide and he leads the Infrastructure Pole of the European Railway Network of Excellence (EURNEX).

Teaching

Teaching Programmes

Road Management and Engineering MSc Programme

- Roads and the environment
- Road Asset Management

Senior Road Executives Programme

- Road Maintenance Management

Postgraduate supervision

- Road deterioration modelling
- Potential impact of climate change on road drainage
- Road Safety
- Railway investment appraisal
- Railway maintenance
- Railway maintenance managemen

Research

RESEARCH THEMES

- Road Asset Management
- Railway Asset Management
- Railway Economics
- Railway Maintenance

RESEARCH ACTIVITY

Road and Railway Asset Management

1) Resilience of the UK transport network to the potential impact of climate change

Co-investigator FUTURENET Project

Scope: A consortium led by the University of Birmingham been awarded funding for this major four year, £1.5million, research project starting in June 2009 to examine how to make the UK's transport systems resilient to climate change. This innovative project will identify what the UK's transport system will look like in 2050 and investigate hclow to ensure that it will be able to cope with the effects of climate change.

To fully appreciate the impact of climate change on our transport systems it is important that we understand not just how it looks and is used now, but how that will change over the coming decades. So to assess the resilience of the transport network in 2050 it will be necessary to take into account the likely technology and infrastructure changes, as well as changes in climate and extreme weather events.

The project will attempt to answer questions such as: what will be the critical thresholds of extreme weather that cause disruption or accidents; how susceptible are different modes to extreme events; and what are the likely implications for maintenance and renewal costs?

2) Road Asset Management
a. PhD Project – Road deterioration modeling
b. PhD Project – Potential impacts of climate change on road drainage

3) Railway Asset Management
a. PhD Project – Railway maintenance standards

4) Railway Economics
a. PhD Project – Railway Investment Appraisal

5) Railway Maintenance
a. Fines migration

Other activities

- Director of Highway Management Services Ltd. (road asset management)
- Consultant to Waterman Plc (road & railway asset management)
- Consultant to five Capitals (environmental consultancy)

Publications

List of Journal Publications since 2007

1. Schlotjes, M.R, Burrow, M.P.N, Evdorides, H and Henning T.F.P. (accepted for publication). Using SVM to Predict the Probability of Pavement Failure. Transport. Institution of Civil Engineers.
2. El-Cheikh, M., D. Al Sheikh, D. and M. Burrow, M.P.N (in print). Project Appraisal of Rail Projects Using Fuzzy Sets Theory. The International Journal of Railway Technology.
3. Schlotjes, M.R, Henning T.F.P. and Burrow, M.P.N. and St George, J.D. (accepted for publication). Incorporating engineering knowledge to diagnose structural pavement failure. Road and Transport Research Journal. Australian Road Research Board (ARRB).
4. Jin Shi, Chan, A.C, .Burrow, M.P.N. (2013). Influence of unsupported sleepers on the dynamic response of a heavy haul railway embankment. Journal of Rail and Rapid Transit, Part F. Institution of Mechanical Engineers. doi:10.1177/0954409713495016
5. Burrow, M.P.N, Evdorides, H., Savva, M., and Wehbi, M (2013). The benefits of sustainable road management: a case study. Transport. Institution of Civil Engineers. Vol. 166, (4), doi.org/10.1680/tran.11.00075

6. Burrow, M.P.N., Ghataora, G.S. and Gunn D. (2013). An investigation of the suitability of the construction of an old railway embankment for a new freight route. International Journal of Geotechnical Engineering. Vol 7. (2). 292 – 303. DOI 10.1179/1938636213Z.00000000029.
7. Evdorides, H., Burrow, M.P.N. S Suleiman (2013). A methodology to model the variability in pavement performance. Transport, Institution of Civil Engineers Vol. 166, (4), DOI: 10.1680/tran.11.00068
8. Jin Shi, Burrow, M.P.N., Chan, A.C., and Wang, Y.J. (2013). Measurements and simulation of the dynamic responses of a bridge-subgrade transition zone below a heavy haul railway line. Journal of Rail and Rapid Transit, Part F. 227(3) 254–268. Institution of Mechanical Engineers. DOI: 10.1177/0954409712460979
9. Evdorides, H., Nyoagbe, C., Burrow, M.P.N. Strategies to clear road maintenance backlog (2012). Municipal Engineer, Institution of Civil Engineers. Volume 165 Issue ME4. Pages 205–213. doi.org/10.1680/muen.12.00003
10. Rogers et al., (2012). Condition assessment of the buried utility service infrastructure. Tunnelling and Underground Space Technology. Volume 28, March 2012, Pp 331–344.
11. Rogers et al., (2012). Condition assessment of the surface and buried infrastructure – A proposal for integration. Tunnelling and Underground Space Technology. Volume 28, March 2012, Pp 202–211
12. Burrow, M.P.N., Ghataora, G.S. and Evdorides H. (2011). Railway Foundation Design Principles. International Journal of Engineering and Architecture. Volume 5, No. 3 pp 222-230.
13. Burrow, M.P.N., Naito, S. and Evdorides H. (2009). A Network Level Railway Track Maintenance Management Model. Railways 2009. Transportation Research Record: Journal of the Transportation Research Board. Issue No. 2117. pp 66-76. Washington, USA.
14. Zhao, J., Chan, A.H.C. and Burrow, M.P.N. (2009). A genetic-algorithm-based approach for scheduling the renewal of railway track components. Proc. IMechE Part F: J. Rail and Rapid Transit 233 (6) pp 533 – 541.
15. Burrow, M.P.N., Chan, A. H.C, and Shein, A. (2007). Falling weight deflectometer based inverse analysis of ballasted railway tracks. Geotechnical Engineering, Proceedings of the Institution of Civil Engineers. 160 July 2007 Issue GE3. pp 169–177.
16. Zhao, J., Chan, A.H.C. and Burrow, M.P.N. (2007). Probabilistic Model for Predicting Rail Breaks and Controlling the Risk of Derailment. Railways 2007. Transportation Research Record: Journal of the Transportation Research Board. Issue No. 1995. pp 76-83. Washington, USA.
17. Burrow, M.P.N., Bowness D. and Ghataora, G.S. (2007). A comparison of railway track foundation design methods. Proc. IMechE Part F: J. Rail and Rapid Transit. Vol 221, No F1, pp 1 – 12.
18. Zhao, J., Chan, A.H.C. and Burrow, M.P.N. (2007). Reliability analysis and maintenance decision for railway sleepers using track condition information. Journal of the Operational Research Society 58, 1047 –1055.

Conferences

1. Burrow, M.P.N, Ghataora, G.S., Roberts, C., Bains, N. and Clarke, M (2009) Technology transfer in railways. Railway Engineering 2009, London, U.K.
2. Burrow, M.P.N, Ghataora, G.S., Evdorides, H, Gunn, D.A., Reeves, D. A. and Chambers, J. (2009) Design considerations for new freight routes on old Victorian embankments. Railway Engineering 2009, London, U.K.
3. Ghataora, G.S. Burrow, M.P.N. (2009). Large scale tests on a lightweight composite manhole chamber to be used adjacent to railway lines. Railway Engineering 2009, London, U.K.
4. Ghataora, G.S. Burrow, M.P.N. (2009) Composites at ballast/subgrade interface in railway track foundations. Railway Engineering 2009, London, U.K.
5. DA Gunn, M Kirkham, E Haslam, J Chambers, A Lacinska, & A Milodowski, G Ghataora, M Burrow, R Sellers & N Dixon (2009). Moisture Measurements in Embankments: Long Term Stability and Ageing. Railway Engineering 2009, London, U.K.

Books and Book Chapters

1. Ghataora G.S. and Burrow M.P.N. (2010). Railway Foundations. In Geotechnical Engineering Handbook. J. Ross Publishing, Inc
2. Burrow, M.P, Fonseca Teixeira, P. Tore Dahlberg T. and Berggren E. (2010). Track Stiffness Considerations for High Speed Railway Lines. In Railway Transportation: Policies, Technology and Perspectives. Nova Science Publishers, Inc.

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