



## Tyre Bales in Construction

Research by the UK's Transport Research Laboratory (TRL: [www.trl.co.uk](http://www.trl.co.uk)) on the subject of Tyre Bales in Construction is ongoing. The main themes of the work are the development of design and construction methods for the use of tyre bales in construction together with an associated engineering specification for tyre bales.

The main applications that have been considered are road foundations over soft ground, lightweight embankment fill, slope failure remediation, gravity retaining walls, drainage layers, storm water management systems and rainwater soakaways, and environmental barriers.

Other key issues that have been considered in the work are the manufacture, properties and behaviour of tyre bales and the effects of waste management licensing on the potential use of tyre bales in construction.

A number of outputs have emerged from the project. These are available as follows:

1. [The Use of Post Consumer Tyres in Civil Engineering](#) by J M Reid and M G Winter. The paper is published in the *Proceedings of the Used/Post-Consumer Tyres Conference* held in London in 2004. This paper draws on information from this and other projects to highlight some key issues and obstacles to the use of tyres in construction before presenting some brief tyre bale case studies.
2. [Report on a Technical Visit to the United States of America - May 2004](#) by M G Winter. This report is published in the Royal Academy of Engineering's online magazine *The Delegate* (<http://www.raeng.org.uk/news/publications/thedelegate/feedback.htm?Issue=45>). The report describes the tyre bale construction sites visited in Chautauqua County in New York State and in Texas. The visit was made with the benefit of additional funding from the Royal Academy of Engineering. A second, follow-up visit was made to Texas in April 2005 the results of which have been incorporated directly into the final report (see item 6 below).
3. [Construction of Road Foundations on Soft Ground Using Lightweight Tyre Bales](#) by M G Winter, P E Johnson and J M Reid. This paper is published in the *Proceedings of the International Conference on Problematic Soils* held at the Eastern Mediterranean University in Famagusta, N Cyprus in May 2005. The paper describes design and construction approaches for the construction of tyre bale foundations for roads on soft ground and includes details of successful applications.
4. [Tyre Bales in Construction – Case Studies](#) by M G Winter, J M Reid and P I J Griffiths. This report is published as *TRL Published Project Report PPR 045* (a summary of the report is available from [www.trl.co.uk](http://www.trl.co.uk)). The report describes ten case studies of tyre bale use in construction from the UK and the USA.
5. [Slope Failure Repair using Tyre Bales at Interstate Highway 30, Tarrant County, Texas, USA](#) by Prikryl, W, R Williammee and M G Winter. This paper was published in the *Quarterly Journal of Engineering Geology and Hydrogeology* (<http://www.ingentaconnect.com/content/geol/qjeg>) in late-2005. The paper presents a substantially expanded case study of the repair and subsequent back analysis of a slope failure repair using tyre bales.

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the only definitive repository of the content that has been certified and accepted after peer review. Copyright and all rights therein are retained by the Geological Society of London.”

6. Tyre Bales in Construction by M G Winter, G R A Watts and P E Johnson. This report will be published as a *Viridis Report* in **late-2005**. The report will be the final report from the project and will detail design/construction methods for the use of tyre bales in construction for road foundations over soft ground, lightweight embankment fill, slope failure remediation, gravity retaining walls, drainage layers, storm water management systems and rainwater soakaways, and environmental barriers. In addition it will include an associated engineering specification for tyre bales and will consider the manufacture, properties and behaviour of tyre bales and the effects of waste management licensing on the potential use of tyre bales in construction.

The **TRL Project Team** was led by [Dr Mike Winter](#) with inputs from Guy Watts, Paul Johnson, Dr Murray Reid and Polly Griffiths.

The authors are sincerely grateful for the contribution of the **Project Advisory Group** (C = Corresponding Member). The members of the group are as follows:

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5. Richard Myers, Inverness and Nairn Enterprise.
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**SCOTTISH EXECUTIVE**

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