Asset Management
SQUARING THE CIRCLE

Quality Streets
NEW INITIATIVE

- NPACS ASSESSMENT OF CHILD RESTRAINT SYSTEMS
- COMMANDO ROLL
- GREEN CAR PARKS
- ROYAL RECOGNITION
New Programme for the Assessment of Child restraint Systems (NPACS)

NPACS is an international programme for assessing child seats, which was initiated by TRL back in May 2001. Two European organisations, ICRT and FIA, undertaking consumer evaluations were discussing the harmonisation of their methods and NPACS developed as an integration of these parallel activities.

The NPACS Research Phase was funded collaboratively by the Governments of Catalonia, Germany, the Netherlands and the UK, and by the FIA, GDV, ICRT and the European Commission. It has taken a fresh look at how to assess and rate child restraints. The research used crash data from modern cars and information from the latest accident data. NPACS will assess individual child seats for ‘Universal’ use, so the test methods have to be representative of modern cars, yet independent of specific car model types.

The protocols have been developed to allow manufacturers to demonstrate product performance above the minimum standards set by Regulation. There are three elements to the NPACS assessment; Usability, Front and Side impact performance. The Usability assessment has been designed to be relevant to safety, consistent between test institutes and with minimal subjectivity.

The Front impact procedure involved looking at accident data. This showed that the regulatory approval crash test represents the majority of accidents where children are injured. A crash with a change of velocity of 65kph represents accidents where children are killed or seriously injured. NPACS will test at this higher crash severity to expand the performance of child seats.

Modern cars were measured to gauge cushion stiffness, anchorage location and cushion and backrest angle. A significant amount of sled testing was undertaken to assess the effects of these parameters on restraint systems along with the effects of impact angle, impact severity, and test bench pitch.

Development of the Side impact procedure compared full scale crash tests with four sled test procedures. The ISO draft procedure correlated best with the vehicle data for rear facing restraints but was more severe for forward facing restraints. The NPACS technical working group compromised on a modified version of this procedure.

The assessment within NPACS is for rating purposes and not a pass/fail approval test. It will provide the consumer with information on the relative performance of a child seat, and it is anticipated that the testing of child restraint systems to the NPACS protocols will begin in the Spring.

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Andrew appointed Honorary Professor

In addition to his role in the Transportation and Safety Division as a Chief Research Scientist, Andrew Parkes has been appointed Honorary Professor in the School of Life Sciences at Heriot-Watt University in Edinburgh.

The award recognises Andrew’s broad contribution to the area of applied psychology and traffic medicine. Andrew started his research career in the area of forensic accident investigation and the biomechanics of injury, but later moved to concentrate on factors affecting accident causation and driver behaviour. Opportunities came during the European Prometheus and DRIVE programmes to lead multi-national projects investigating systems such as collision avoidance, vision enhancement, route navigation and driver status monitoring.

Before joining TRL, Andrew held research posts at Birmingham, Loughborough and Leeds Universities, and worked in Brussels advising the European Commission. He was also one of the first European researchers to consider the impact of mobile telephones on driver behaviour, conducting a range of experiments from the early nineties that have influenced UK and European policy and legislation. His current research interests focus on two areas; the measurement of driver impairment, in particular as influenced by fatigue; and also on how simulation can be developed to improve the training process for both professional and private drivers.

The role in the Applied Psychology Department at Heriot-Watt will give Andrew the opportunity to be involved again in lecturing and helping students formulate and conduct research in the areas of mental workload and driver behaviour.
Quality Streets

TRL’s Sustainable Communities Group (SCG) was launched in Spring 2005 as part of TRL’s Centre for Sustainability (C4S) Initiative, to offer research and consultancy where transport overlaps other sectors.

One of the most dynamic areas of development is Streetscape. Streets make up a huge proportion of readily accessible public space in the UK and the quality of local environments is critical to a wide range of determinants of personal wellbeing: contacts in the community; health and physical activity; personal and road safety; local air quality; access to services and goods and other opportunities. These are just some of the things that can be positively, or negatively, affected by the form and characteristics of the streets where we live our lives.

Following C4S’s joint-authorship of the Office of the Deputy Prime Minister’s (ODPM) “Better Streets, Better Places” report, the focus is now on a range of street-based projects, many in collaboration with external partners:

• Predicting how transport proposals impact different social groups.
• How blind and partially sighted pedestrians navigate in streets that feature shared surfaces.
• How cyclists use zebra crossings.
• How existing streets may be effectively audited to target resources on value for money improvements.
• Performance indicators for urban streetscape improvements.

These projects, and previous work developing the award-winning Pedestrian Environment Review System (PERS), are feeding into the development of a key new document, the Manual for Streets (see inset).

In focussing on Streetscape, the SCG is drawing heavily on TRL’s transport legacy, but bringing that knowledge to bear on a topic that in a multitude of complex ways directly affects the lives of everyone living in the UK. Looking ahead, the focus will move beyond traditional transport studies and will centre upon a social research initiative. For more information on sustainable communities, and case studies on the growing list of recent projects, please visit: http://www.trl.co.uk/content/main.asp?pid=72

Manual for Streets

The Department for Transport has commissioned WSP, TRL, Llewelyn Davies Yeang and Phil Jones Associates to develop a Manual for Streets to supersede Design Bulletin 32. The Manual will consolidate the necessary components for effective street design into a single integrated source of information and guidance for practitioners.

The Manual for Streets will deal with the underlying values that can be creatively deployed by practitioners in order to pursue the Government’s ‘placemaking’ agenda of individually distinctive localities while ensuring that streets remain functional. It will initially cover the design considerations for residential streets and other lightly trafficked local roads.

The Manual for Streets will be prepared against a backdrop of sustainable development guidance and initiatives, including the ODPM’s Communities Plan Sustainable Communities: Building for the Future to ensure that it facilitates the long-term sustainability of streets, and contributes to an enhanced sense of place.

If you would like to contribute to this project or contact any member of the Manual for Streets team, please visit the website at www.manualforstreets.org.uk or email info@manualforstreets.org

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Squaring the Circle

The increasing pressure on government to drive down costs whilst improving value for money has thrown the public sector procurement spotlight on better and more efficient management of assets.

At a local level, asset managers, whether they be highway, rail, airport or other property administrators, all face the challenge of achieving numerous objectives in the face of increasing pressures, which include finite resources and budgets, maturing networks, increased accountability and public expectation.

How do we square this circle?

For some time governments and major asset operators worldwide have realised the benefits of introducing Infrastructure Asset Management Plans in order to ensure maximum benefit from available budgets.

There are many different definitions of asset management, but common themes include focussing on customers, taking a strategic, systematic approach to optimising cost-benefits and allocating resources based on need. This approach is of particular interest to UK highway authorities because not only can it help them achieve their long term objectives, but also meet more immediate obligations such as:

- Valuing their assets - compulsory under the introduction of Whole of Government Accounting from 2006/7.
- Demonstrating the adoption of an asset management approach in their second Local Transport Plan.
- Proving prudent stewardship of assets as required by the CIPFA Prudential Code for Capital finance 2003.
- Demonstrating Best Value.
- Achieving 2.5% year on year savings as required by the Office of the Deputy Prime Minister under the Gershon agenda.

The County Surveyors’ Society (CSS) documents Framework for Asset Management and Asset Valuation provide high level information on implementing asset management, whilst the Code of Practice (CoP) - Well Maintained Highways produced by the Roads Liaison Group provides practical guidance on managing highways. Both emphasise the preparation of an Asset Management Plan as fundamental to effective asset management.

TRL’s current and recent asset management work extends across all phases of the asset management cycle, from policy development to service delivery, monitoring and review, and includes the following:

Highway Asset Management Procedures - Guidance on the Requirements for the Production of Highways Asset Management Plans and a Simple Valuation Methodology

Many local authorities are currently in various stages of preparation for their Highway Asset Management Plans.
To help ease the process for many of their clients, the developers of the Confirm Asset Management software, Southbank Systems Ltd, asked TRL to provide further guidance to practitioners on implementing asset management. The resultant guidance, published January 2006, is available free of charge at [www.trl.co.uk/content/download.asp?pid=50](http://www.trl.co.uk/content/download.asp?pid=50) and includes:

- A review of central government requirements and current practice.
- A proposed set of key assets including relevant inventory & condition attributes.
- A simple appropriate valuation model for key assets.
- An Asset Management Plan Template for the key assets.

**Footways and cycle tracks**

Recent work by TRL has focussed on giving local authorities practical advice on valuing footways and cycle tracks, providing whole life cost guidance and developing a model for risk management. Future work will concentrate on improving information collection on footways and cycle tracks, working with local authorities and other stakeholders to ascertain information priorities and recommend improved methods that will cost effectively meet all current data requirements, including input into pavement management systems.

**Durability of thin surfacing systems**

TRL has been monitoring the durability of thin surfacing systems for the Highways Agency since 2001 in order to establish their typical service life and the common modes of failure. The work involves monitoring sites from both the trunk and local networks each year. Tentative typical service lives have been defined in the reports produced to date (TRL557 and TRL606) with further data being collected for the next report at the end of the present project in early 2007.

**UKPMS support**

Over thirty local authorities benefit from TRL’s UKPMS advice, consultancy and training. Amongst these, Blackpool Council in particular has involved TRL in a partnering process committed to delivering best value and the highest quality service to the public. They are currently investigating and promoting initiatives that will enable the authority’s Highways Team to fully utilise the powerful PMS tool to help influence the engineer’s decision making.

TRL has also assisted Blackpool in promoting asset management awareness within their highway division and they recently facilitated a workshop that considered Stages 1 and 2 of the CSS Framework on Asset Management, to begin developing levels of service for core assets.

**Sustainable Construction in Practice - Achieving Whole Life Value in Infrastructure and Buildings**

This joint project with ICE, CRIA and BRE looked at the issue of whole-life value decision-making and introduced the concept of making decisions based on broader criteria of obtaining “Value for Money”, taking into account the needs of a wider range of stakeholders instead of those involved in the immediate decision making process.

The resulting publication, Guide to Achieving Whole Life Value in Infrastructure and Buildings, explains the concepts and principles underlying the use of and application of whole life value approach and encourages the adoption of the process by all stakeholders in the procurement process – designers, manufacturers, suppliers, customers and managers.

**Value Management (VM)**

Over a number of years TRL has been developing a system to assist clients in assessing and prioritising spend on major maintenance projects. The Value Management process uses a scoring system to make best use of available resources, make safety a priority, minimise disruption to the road user, ensure maintenance practices are sustainable and environmentally acceptable, while achieving value for money.

**Bridge Management**

Working in conjunction with Oxfordshire County Council, TRL developed the Bridge Management System – Bridgeman for use by bridge owners. It provides a central location for all the information on bridge stock and can calculate the Bridge Condition Index. It is currently being reviewed to implement the recommendations of the Code of Practice for Management of Highway Structures.

**Asset management overseas**

Further afield, TRL provided the Philippine Department of Public Works and Highways (DPWH) with pavement management and bridge management systems, based on the TRL developed Road Mentor PMS. These systems will be capable of carrying out needs analysis, multi-year programming and annual budgeting for the preservation of roads and bridges that are part of the national road network. TRL is currently modifying Road Mentor for Malawi and providing training in its use.

**The way forward**

TRL continues to further the definition of best practice in asset management through research into:

- Better understanding of deterioration mechanisms.
- Understanding of cost data.
- Improved condition data collection and methods using scanner texture data.
- Faster and more sustainable treatment techniques accounting for whole life costs.
- Accounting for user perception.
- Understanding optimisation of programming all maintenance works on the network for reduced delays.

With a long history of helping government meet its objectives for cost savings in Trunk Road management, TRL is now focussing on applying its skills and knowledge to help local authorities, managing agents and contractors deliver real efficiency savings. To that end TRL is planning a series of workshops commencing in March, to support local authorities in writing and benefiting from their Asset Management Plans. Topics will include:

- Valuing the asset.
- Setting Service levels.
- Life-cycle planning.
- Reaping the benefits of UKPMS.

TRL will be working closely with its clients to help improve the performance of the nations’ assets in the coming years.

If you are interested in attending one of the workshops, would like to suggest an additional theme, or have any queries on asset management please contact Teresa Willway 01344 770346.
What’s On

▶ Materials resource efficiency in regeneration projects

Organised on behalf of WRAP (the Waste & Resources Action Programme) by TRL, EnviroCentre and BRE, this series of interactive workshops is aimed at those involved in recovering demolition materials and using them in new build projects. Delegates will learn how to implement robust and cost-effective practices to make more efficient use of these resources.

Delivered by experts from all four organisations, as well as regional speakers, the events will draw upon the ICE Demolition Protocol methodology, which provides a mechanism for effective recovery of materials from demolition projects as well as the procurement of recovered (recycled/reclaimed) materials in the new build.

Aimed at local authority planners, developers, environment and sustainability managers, architects and designers, consultants and their demolition and main contractors, this event will visit seven locations across England and Scotland in March and April.

▶ Recycled Roads – Recycled materials in highway and street maintenance

The Recycled Roads workshops, delivered across England in the spring of 2005 by WRAP, TRL and BRE were a huge success, with a waiting list for places. In response to this, a further series of Recycled Roads has been planned and will comprise seven events, visiting locations across England, and for the first time will feature two workshops in Scotland.

The workshops will offer new case studies for Scotland and updated information for England, including WRAP’s Procurement Guidance Document Recycled Roads – A step-by-step guide to local authority procurement. The programme will also include practical guidance on specification, procurement and the use of recycled and secondary aggregates in highway and street maintenance.

Recycled Roads is aimed at local authority highway engineers, their consultants, contractors and suppliers.

▶ Road Expo

Roads Expo is a series of regional events giving those involved in the traffic and transport sector an opportunity to meet with fellow professionals and suppliers to the industry, seek practical advice and learn of new technologies and services.

Following on from a successful two days in Edinburgh in the Autumn of 2005 and in London in January 2006, Roads Expo will be visiting Manchester (8th and 9th February) and Dublin (8th and 9th March).

Featuring a Utilities debate in Manchester, the panel includes Marilyn Burtwell, Senior Technical Manager, TRL, Nigel Mason, Chair of the Utilities Special Interest Group, AGI and Chris Tunstall, National Joint Chair HAUC and Chair of CSS Engineering Committee. The debate will be chaired by David Baker, Chief Engineer, Road Network Development, Transport for London.

In Dublin, Roads Expo combines with CIVELEX, aimed at civil engineers, architects and local authorities, to present a series of seminar sessions, demonstrations and exhibits.

For further details visit www.road-expo.com

▶ Reinforcement of pavements with steel meshes and geosynthetics

EU COST Action 348 has been investigating the use of reinforcements to improve the in-service performance of roads and highways, for both maintenance and new-build. All types of reinforcement types have been considered, as has the use of reinforcement in both the un-bound and bound layers. The most effective methods for assessing pavement performance have also been considered. The use of reinforcement within the un-bound layers, and the advantages are well understood. The introduction of reinforcing elements can delay or prohibit reflective cracking, thus prolonging the surface life of pavements and reducing ongoing maintenance costs.

The results of this work will be disseminated at a European wide symposium on March 16.
A review of available information identified eight potential methods which sheep might use to traverse cattle grids, including the widely reported ‘commando roll’ technique. An examination of the dimensions of the cattle grids on the NCN7 was also conducted and their design and construction were found not to conform to British Standard requirements on a number of counts. Departures from the standard included:

- Grid length
- Spacing of transverse members
- Position of the fence sides relative to the inside walls of the pit
- Pit depth (in the case of one of the three cattle grids only)

The design and, in particular, the dimensions of the cattle grids in the Drumochter area were found to be such that only one of the eight methods of traverse was prevented. However, perhaps the most significant factor related to the use of cattle grids is the statement in the British Standard that [cattle] grids of any length often fail with hill sheep.

Following the review and consultations with stakeholders the replacement of the cattle grids with two-way, self-closing gates has been recommended. These allow cyclists to pass through the gates without dismounting, regardless of their direction of travel, although they will have to stop to operate the gate. The gates selected are also difficult to leave open and minimise the potential for sheep accessing the trunk road.

A report entitled “Cycle Paths in Upland Areas: Hill Sheep Containment Issues and Solutions” will be available from the Transport Scotland website early this year. www.transportscotland.gov.uk

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Commando Roll

The National Cycle Network Route 7 (NCN7) runs parallel to the A9 trunk road in the scenic Drumochter Pass area of Scotland. Where the NCN7 crosses minor roads, access tracks and field boundaries, cattle grids have been used to contain sheep. However, these grids have had limited success and, following reports of sheep reaching the A9, some cattle grids have been blocked by local farmers. In preventing the hazard to road traffic a further safety hazard to cyclists has been created.

Many areas subjected to only occasional or light traffic, such as grass verges or overflow car parks, have been paved with bitumen or concrete that is aesthetically displeasing and constructed to an excessive structural capability. One sustainable solution is to manufacture robust engineering surfaces that are visually appealing, using 100% grass cover, and which utilise alternative materials which are less resource intensive.

The objective of this important study, which is part funded by the Welsh Assembly Government under the Aggregates Levy Sustainability Fund for Wales, is to assess the viability of using polypropylene fibres to reinforce soil manufactured from secondary aggregates and appropriate organic materials. Sandstone quarry surplus (SQS) and green waste compost (GWC) have been mixed to create a soil, reinforced with filamentous fibres, that is suitable for controlled vegetation growth and which has reduced maintenance costs.

Laboratory tests on samples of manufactured fibre reinforced soil indicate that a mix ratio of 3:1 (SQS:GWC) with the addition of as little as 0.3% crimped fibre, can provide a suitably engineered surface for trafficking. Field trials are now taking place at Margam Park in South Wales to determine the suitability of the soil in a trafficked environment that is subjected to variable weather conditions. Four car parking bays have been constructed from manufactured, natural and fibre reinforced soils, as shown in the diagram. Each bay is isolated from the sub-grade by a construction, demolition and excavation waste sub-base, and the performance of the bays is being monitored over a full one year growing cycle.

Local interest in the study is high and an on-site description of the trials is available to users and other stakeholders via a purpose-built information screen.

TRL’s partners in this project include Tarmac Ltd, Drake Extrusions Ltd, Cardiff University, Neath Port Talbot County Borough Council and Queens University, Belfast.

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“Green” car parks

POLYPROPYLENE FIBRES
TRL's work with the FIA Foundation was recognised recently in the form of a Prince Michael International Road Safety Award. The award was given for a seat belt toolkit developed to provide seat belt campaigners, particularly in countries with relatively low current usage, with one stop information and advice. The toolkit consists of two elements; a best practice advice manual and a CD Rom of campaign materials.

The manual, researched and written by TRL, brings together in one document comprehensive and practical information covering every aspect of the introduction, use, enforcement and technical control of seat belts. 125 pages long, this high quality publication is easy to use as a source of reference and widely applicable and relevant across cultures and continents.

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10% off Research Alert Plus scheme

Road safety consultant, Darren Divall receives the award from HRH Prince Michael of Kent

Transport is civilisation...

Congratulations to TRL’s Geoff Helliwell who was awarded top prize in the Institution of Highways & Transportation’s (IHT’s) 75th anniversary photographic competition, “Transport is Civilisation” category.

The winning photograph will be displayed in the IHT members’ lounge in London and on the IHT’s web site.