New research to reduce disruption from utilities

Every year, four million holes are dug in Britain’s roads and footpaths. Almost all are necessary to repair or protect essential underground services. Moreover, with the Government’s stated objective of available broadband access by 2005 and the increase in gas main replacement programme activities over the next 30 years, the amount of work to be done in carriageways and footways will rise significantly.

Industry Research Ltd and Water, four themes have been identified:
1 Making the best of what we currently have.
2 Improved future surface-based survey techniques.
3 Below-ground survey techniques.
4 Future possibilities and developments.

These four themes were based on the premise that, over time, there is a need to:

- better understand user needs and the real costs and risks associated with installing and maintaining underground infrastructure;
- implement best practice and improve the skills base;
- have a positive influence on regulators;
- move from open cut excavation to trenchless technology, to reduce impact on the above ground and underground environments;
- develop existing and new location technologies that will reduce the time spent in the highway, and
- develop radical longer-term solutions to the problems.

TRL has been focusing on Theme 1 which supports the incoming Traffic Management Bill – Street Works/Highways Work Measures, a Bill TRL has been working on with the Department for Transport (DfT). Under this Theme, TRL has developed five project proposals. These were presented in October 2003 to an international conference in Westminster where representatives from utility companies, research organisations, local and national government, contractors and equipment manufacturers met to review the work thus far. The conference identified greater partnership between all stakeholders as a key requirement for progress and agreed the further development of the research programme, as implementation would make a vital difference.

TRL is continuing as a member of the working group to finalise the international research programme, with work expected to start in Spring 2004.

Unless better information and more effective technologies can be made available to those doing the work, total direct and indirect costs to utilities, industry, society and government of over £3b per year will continue to rise.

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**Air travel for disabled people**

TRL has recently been awarded a contract by the Department for Transport (DfT) to investigate the extent to which the air travel industry complies with a voluntary Code of Practice which was issued in March 2003 (DfT, 2003). This sets out minimum standards the UK industry should meet to provide accessible travel for disabled people. It covers the whole journey by air, from pre-journey information to travel on board the aircraft.

The industry will be benchmarked against the Code’s standards, using indicators developed to provide an objective assessment. A questionnaire survey of travel agents, tour operators, airport operators and airlines will examine awareness of the Code and seek information on the indicators developed to determine the level of compliance.

In order to validate the findings from the self-assessment questionnaire survey, TRL will look at the experiences of a number of travellers who have booked flights and test the booking procedures for a number of package holidays.

In addition, the project will include access audits of a sample of airports, which will involve checking that indicators developed from the Code for airport infrastructure are being followed. Barriers to access for disabled people will be identified for public routes through the airport, including approach, parking and entrances.

A sample of passenger aircraft from 10 airlines will be examined to establish what proportion is compliant with recommendations in the Code, using technical information provided by the airline.

Any changes over time will be monitored by repeating the study after 12 months.
Transport Secretary launches Trucksim

Transport Secretary Alistair Darling officially launched the UK’s first full mission Truck Driver Training Simulator - Trucksim at TRL in November. Trucksim is an initiative within the Department for Transport’s Road Haulage Modernisation Fund and was designed and installed by EADS Dornier GmbH in specifically dedicated training facilities at TRL.

The launch, in the presence of senior representatives of the UK Logistics and Freight Transport industry, signalled the start of a unique four month research programme, which requires over 600 commercial vehicle drivers to validate the application of simulation for truck driver training. The aim of the research is to investigate the opportunities for professional driver training by exploiting innovative technologies.

Trucksim features a fully functional Mercedes Actros cab and has the ability to replicate both rigid and articulated vehicles with various load configurations. It can simulate external factors such as various temporal, climatic and geographic conditions as well as replicating urban, rural and motorway driving.

Participating drivers will undergo a range of bespoke training scenarios developed by truck driver training company J Coates (HGV Services) and TRL experts. Drivers can replay their training sessions and focus on particular issues while expert feedback on their individual performance is delivered by qualified driver trainers.

Speaking at the launch, Alistair Darling said, “A highly trained professional haulage industry is essential if we are to move goods around the country efficiently and safely. By improving the driving skills of truck drivers, haulage companies can make financial gains through fuel savings, reduced accident damage and staff retention – and drivers are better able to deal with driving conditions on the road.

I’m pleased that this simulator has benefited from the money made available to the industry under the Road Haulage Modernisation Fund. Training is an important issue for the industry and I hope that they will make use of all training schemes now available.”

Companies wishing to participate in the programme should contact the Trucksim dedicated hotline: 01344 770555, email on trucksim@trl.co.uk or visit the Trucksim website www.trucksim.co.uk
TRL develops global road safety strategy for Shell

TRL has developed a ten year Global Road Safety Strategy for Shell International Exploration and Production (SIEP) BV. Inspired by the UK Government's road safety strategy, SIEP were keen to develop something similar for their own group of companies.

The development of Shell's ten year Global Road Safety Strategy utilised the experiences from previous projects, and also involved the project team conducting two week long operational audits of Shell’s upstream operating companies in Nigeria, the Netherlands and Oman, where temperatures reached fifty six degrees centigrade. The audits involved meetings with government ministries, the police, other public bodies and community groups, as well as reviewing the operating companies' transport operations. Although originally anticipated that regional differences would be found in these visits, surprisingly this was not the case, with issues generally the same within each company.

The new strategy deals with road users, vehicles, the road environment, journey management, and corporate performance indicators and lateral learning. Implementation of the strategy is timely for Shell as they are currently embarking on a process of globalisation in their exploration and production operations, and are adopting a zero tolerance approach to road deaths.

TRL has also been involved in the development of new global standards for vehicle operations within Shell that will help to underpin the strategic aims of the organisation, and they are also working with individual operating companies within the Shell group to resolve specific road safety issues.

TRL had already worked for a number of Shell group upstream operating companies around the world. In 2001, a team from TRL conducted a scoping study in Thailand for the local exploration and production company, Thai Shell.

As a result of this work, a further project was undertaken in 2002/3 which included the upgrading of company owned infrastructure, improvements in fleet operations and vehicle safety, adaptations to the company driver training regime, the development of community education and awareness activities, and training for local public authority highway engineers in Accident Investigation and Prevention and Safety Audit.

At the end of 2002, the same team were asked to Sakhalin, a remote island off the far eastern coast of Russia. Working in temperatures down to minus twenty degrees centigrade, the TRL project team reviewed the safety of the land transport operations programmed for the development of new oil and gas exploration and production facilities on the island, Shell’s largest ever capital investment.

This is exemplified by a recently conducted forensic examination undertaken by Dave Price from TRL’s Investigations and Risk Management Group involving three tyres that had failed in use and caused accidents in Oman. Backed up by the strength of his report, the local Shell Company, Petroleum Development Oman, was able to lobby the tyre manufacturer who has now withdrawn that particular tyre from their inventory of available tyres in Oman and replaced it with a superior product more suited to the local environmental conditions. In this way, Shell is helping to improve safety for the community, as well as for their staff and contractors.

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Pedestrians form a large proportion of all road casualties throughout the world. There are two ways of improving this situation: by preventing the collision and, as addressed by the new EU Directive (2003/102/EC, published 6 December 2003), by making vehicles less injurious to pedestrians in accidents.

Impacts between vehicles and pedestrians are probably one of the most extreme accident conditions for which injury prevention measures need to be developed. Indeed it might be considered that the impact between hard heavy metal objects and the vulnerable pedestrian presents an insuperable problem for the safety engineer.

Graham Lawrence, who joined TRL in 1983, has spent twenty years researching measures to improve car design, to mitigate pedestrian injuries in collisions. He became TRL’s Head of Pedestrian Protection Research in 1991 and has been a leading figure in this field both in the UK and worldwide.

In 1985, the pedestrian team at TRL produced a demonstration vehicle with many practical protection features including revised surface stiffness and increased crush depths. Simple test proposals were also developed based on the most sophisticated computer simulation models available at that time.

Initially, TRL considered using a pedestrian dummy to develop safer vehicles. However, it was realised that breaking down the impact with the pedestrian into its most significant contact points and reproducing these with separate test tools would be more suitable for developing safer cars. As a result of this work TRL was asked to form a collaborative European Working Group (EEVC WG10 and more recently EEVC WG17) to develop the TRL proposals into a form suitable for use in safety regulations.

Within the European Working Group, TRL developed complex test tools suitable for use in regulatory testing - a legform impactor, used to test the car’s bumper, and an upper legform impactor, used to test the front edge of the bonnet. A significant contributor to the development of these test methods and tools was Brian Hardy who joined TRL’s pedestrian team in 1988.

Graham, delighted that his lifetime’s work has culminated in the publication of this latest EU Directive on pedestrian safety, estimates that the Directive will ultimately result in savings of up to 18% of pedestrian fatalities and 20% of seriously injured pedestrians, with additional savings for other vulnerable road users such as pedal cyclists.

Graham also believes that vehicle manufacturers are likely to add about 20% extra protection over and above the Directive’s minimum as they do with most legislative requirements, so that they can be confident of passing the tests.

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Improving Environmental Outcomes for the Minerals Industry and Statutory Bodies

TRL’s Centre for Sustainability (C4S) has been awarded MIST (Minerals Industry Sustainable Technology) funding to research ways to improve environmental outcomes of the minerals planning process for the Minerals Industry and Statutory Bodies.

The study is particularly important because the requirements of environmental regulations and other controls relating to minerals extraction have been escalating in recent decades. This has had a direct effect on the amount of contact between the minerals extraction industry and the statutory bodies (Environment Agency, English Nature and English Heritage), and the complexity of issues that arise.

A workshop was held in December to bring the Minerals Industry, Minerals Planners and Statutory Bodies together to discuss the types of problems the organisations have encountered/experienced during minerals planning, operation and site restoration, and mechanisms to help overcome these problems.

The Industry was particularly concerned with the level of help received at the planning phase and timeliness of response by Statutory Bodies, whilst the Statutory Bodies and Planners expressed concerns over resource allocation and the need to have a proper understanding of the way in which a minerals site runs.

The next phase of the study is to provide further evidence of the review of key barriers and opportunities using six extraction sites as case studies involving Statutory Body input. These will be specifically selected to draw out the different issues highlighted from the workshop.

The final output will bring together the findings in the form of a recommendations report, a summary advice note for all parties called ‘key lessons to improve outcomes’ and a training/briefing framework and outlines of training modules.

Solar panels on highway noise barriers

TRL is to mount solar panels on highway noise barriers in a demonstration project looking at renewable energy sources.

In a prestigious contract awarded by the Highways Agency, the system will be trialled at the top and bottom of the cutting near Junction 9 of the verge of the M27 motorway.

The demonstration follows earlier work by TRL which found that the significant infrastructure of noise barriers which already exists on UK highways forms an ideal location for solar panels. Unshaded areas of south facing barriers provide a convenient mounting for these panels which are likely to have little adverse local environmental impact. Various demonstration projects using solar panels on highway noise barriers have already been undertaken in Europe and outputs from systems in the UK are expected to be similar.

This demonstration trial is expected to fulfil the following objectives:

• To provide experience in the installation and use of photovoltaic systems in a highway situation and assess their durability.

• To assess public response and any impact on driver behaviour to the presence of this visible technology on the highway network.

• To gain experience in electrical grid-connection.

• To monitor performance and provide advice on design, installation, cleaning and maintenance procedures for future installations of this type.

• To refine preliminary whole life costing studies so that the best value for money can be obtained from a larger investment programme.

Work has already begun on the experimental installation and the system is expected to be operational by the end of February 2004.

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Contracts recently won

**Department for Transport**
- TRL is part of a consortium led by Atkins which has been awarded a contract to develop a Code of Practice for the maintenance of bridges and other highway structures and also a framework for bridge management systems.
- On the Spot Study – Phase 2. TRL’s crash investigation team will continue to attend local accidents in order to gain a detailed understanding of accident causation factors.
- Improvements to motorcycle helmets and visors in order to achieve the Government’s casualty reduction rates.

**Highways Agency**
- Further research into the management of footways and cycle-tracks leading to practical guidance for all highway authorities, particularly in the developing context of asset management and monitoring of local road condition.
- The development of a rural version of SafeNET – a programme which allows accident predictions to be made across the network.
- A review of lay-bys to update information and advice on the design and siting of lay-bys on high speed roads.
- An investigation into the dynamic characteristics of footbridges and the production of design parameters.
- Evaluating congestion caused by abnormal loads – on behalf of the Department for Transport and the Highways Agency.
- Evaluation of traffic delay costs associated with traffic management procedures currently used at roadwork sites for updating delay cost tables in TRMM Volume 1 and for use in the Agency’s whole life cost models.
- Development of a methodology to establish the role of road user perceptions of pavement condition in making maintenance decisions.

**Other contracts**
- Load testing of post tensioned beams recovered from a rail bridge on behalf of Network Rail.
- A strategic review of the current and future role of Gloucestershire Airport on behalf of its Shareholders.
- Research into the benefits, potential applications and safety considerations of electronic vehicle navigation systems for the Public Carriage Office.
- Five year contract for Doncaster Metropolitan Borough Council to provide aviation advice on Finningley Airport.

NPACS

A New Programme for the Assessment of Child Restraint Systems (NPACS) was proposed by TRL in May 2001. At the same time, two of the main European organisations then undertaking consumer evaluations of child restraints were discussing the harmonisation of their procedures. NPACS developed as an integration of these two parallel activities.

NPACS’ objective is to provide independent published guidance to consumers on the relative protection afforded by child restraint systems which can be used in a wide range of road vehicles. This will be achieved through reliable methods of dynamic testing, assessment of the restraints, ease of use and regular European evaluation of the performance of these products.

Child restraints are almost unique as an in-car safety feature. Unlike other safety devices such as airbags and seat belts, child restraints are bought separately and added to the existing car and can and are moved from one vehicle to another. They are expected to fit each car and provide a high level of safety in each case.

All child restraints sold and used within Europe have to comply with the minimum safety levels set down in ECE Regulation 44. This is a base line level requirement only and does not deal with usability or the ability of the child restraint to work well in a variety of cars.

Although still very much in its early stages, NPACS is expected to operate in two phases. The first is the research phase, during which the test methodologies, protocols and rating system will be developed. Following this, the second phase will see regular testing and evaluation taking place. Existing practice worldwide will be reviewed as a first action and, where relevant, accident and survey data will be collated and used to provide guidance.

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Advanced three year old child dummy (Q3) ready for test
FEA Team deliver 1000th Seminar

TRL has a new Mobile Information Unit (MIU), which is being used to help deliver the Fuel Economy Advisors (FEA) scheme. TRL’s FEA team and their partners recently ran their 1000th free seminar on improving fuel efficiency to the haulage industry in England. The presentations, funded by the Road Haulage Modernisation Fund, are designed to raise awareness within the industry at all levels, and to enable companies to achieve savings of between 5% and 10% on their annual fuel bill.

To supplement the presentations at static venues, the new MIU promotes the scheme and delivers seminars at truckstops, service areas and trade events, incorporating a lecture area that can seat up to 20 people.

Seminars are delivered on Driver Development, Telematics, Aerodynamics and Fuel Monitoring. Companies can work with the FEA team to achieve specific fuel savings, which can then be developed into case studies and published, highlighting best practice within the industry. SMEs can also receive Site Specific advice for a small charge.

TRL’s partners in this project are FuelMaster Logistics, Lorry Logic, ChipTec Services and the University of Huddersfield.

For more information on the FEA scheme telephone 0800 056 5005 or log on to www.trl.co.uk/fea

TRL’s work overseas wins prestigious award

TRL has led the way on road safety research in developing countries for many years. Besides exposing the problem and providing a comprehensive understanding of its nature, TRL has developed practices - by education, operations and engineering, to save unnecessary loss of life and the associated financial damage.

In recognition of this work, TRL’s Chief Executive, Sue Sharland and Goff Jacobs, who has devoted much of his working life to improving road safety in developing countries, were recently presented with a prestigious Prince Michael International Road Safety Award by Prince Michael himself.

TRL scoops Ernest Davies Award

TRL’s Allison Martin and Malcolm Pickett have been awarded the prestigious Ernest Davies accolade for an article they wrote in Parking News marking the fourth year of TRL’s Parking Benchmarking Initiative.

Awarded annually at the BPA’s Parkex International, and in recognition of excellence in a Parking News’ feature article, a Highly Commended certificate was presented by former BPA President David Marklew to Allison, one of the authors and TRL Project Manager.

Congratulations.....

Congratulations to Greg Watts who has been awarded the RWB Stephens Medal for 2003.

Awarded by the Institute of Acoustics, the Medal is in recognition of Greg’s significant contribution to acoustics research and education, and his continued support in providing that vital link between academia and industry.

PIARC 2003

In 2002, PIARC launched an international essay competition open to all young and established professionals with an interest in the road and transport sector. Its aim is to encourage and develop new ideas to meet the growing demands of transport throughout the world.

This year, TRL’s James Quick, Victoria Moreland, Matthew Wilson (and Bryan Magee, now working for The Concrete Centre) won the PIARC essay prize for young professionals, with their contribution, “2030: A Transport Odyssey.” The TRL trio were presented with their award in October at the PIARC Congress in Durban.