



## Monitoring the Tyne Tunnel, 24/7

### NET05 successes monitoring solution for tunnel construction site

**The city of Newcastle stays puzzled about heavy traffic**

The city of Newcastle welcomes thousands of commuters' everyday for work or leisure, resulting in a continual impact on the road infrastructure in the wider Newcastle area. The city's escaperoutes on the Westside have a reasonable infrastructure, but the eastside of Newcastle suffers from continuous heavy traffic.

The main reason is that the A19 trunk road narrows down to a forty year old one-lane-tunnel crossing the river Tyne. The '67 Tyne Tunnel, as part of the strategic A19 route, connects the North-East of England with southbound national highways. It was designed for a daily traffic throughput of 24.000 vehicles, but today it is serving 38.000 vehicles per day, resulting in heavy congestion in both directions.

In order to meet growing customer demand The Tyne and Wear Integrated Transport Authority (TWITA) proposed the development of a second 2.6km vehicle tunnel, The New Tyne Crossing.



This €290 million project is one of the biggest transport infrastructure projects currently active in Great Britain.

**Three NET05 instruments are chosen for monitoring existing tunnel**

During the construction of the second vehicle tunnel the parallel existing tunnel should be monitored for possible movement. To manage the situation, Bouygues TP has chosen the full automated monitoring system "Eupalinos" from Geodata. Three extremely precise Sokkia NET05 instruments monitor even the smallest movements.

Eupalinos is installed on a PC close to the Tunnel portal and links all three NET05's in a live interactive least-square-adjusted network via a fiber optic cable inside the tunnel. This secures the accuracy of all 80 precise reflectors installed along the tunnel wall for over 400 meters.

The complete monitoring process can be accessed via GPRS which makes it accessible from anywhere in the world.

This means that not only the operator, surveyor, contractor or Geodata can check the status; also TWITA and Concessionaire TT2 Ltd have the possibility to remotely receive automatically generated reports and instant information from the system.

The instruments run non-stop, 24 hours a day, 52 weeks a year, and remain in place until the summer of 2010.



**Under harsh conditions NET05 retains high accuracy constantly**

Only an Instrument like the NET05 is able to retain its 0.5mm accuracy in the very aggressive environmental circumstances caused by the heavy traffic in the tunnel where it is exposed to fumes, dust, moisture, temperature changes and vibrations.

Work on preparing the site began in February 2008 and construction of the new tunnel began in October 2008. It is due for completion in February 2011 at which point the existing tunnel will close for refurbishment. The construction phase of the project is expected to be completed in December 2011 when both vehicle tunnels are open to traffic again.