How the probe vehicle data are derived

This section explains how the Department's GPS-derived journey time data were collected and processed.

Data collection

The Department for Transport purchased anonymised GPS data, supplied by ITIS Holdings PLC. They collate data provided by individual probe vehicles and a number of fleet management and tracking service providers. The data collected includes information on GPS tracker equipped vehicles location, speed and direction which is reported at regular intervals while their ignition is switched on.

The Department uses data from around 40,000 probe vehicles, although the vehicles in the fleet have varied over time. The fleet is a mixture of cars, vans and heavy goods vehicles. The vehicles in the fleet the Department uses report their position at least once every 200 seconds. Most vehicles report every 60 to 120 seconds.

Data processing

The processing method includes 3 main steps:

1. Map-matching
2. Assigning speeds to the network
3. Aggregation into link journey times

1. Map matching
In this step, the location reports of each individual probe vehicle are matched to the road network. Points are matched to the closest road within sixty metres running in the same direction as the vehicle. If this is not conclusive (for example, where there is more than one road), the previous and next location reports are also examined.

2. Assigning speeds to the network
Journeys are reconstructed by chaining together the positions reported by individual vehicles. The journey time between each pair of points is then calculated. The results are checked to identify and remove vehicles that appear to travel at implausibly high speeds.

3. Aggregation into link journey times
A number of tests are applied to these individual vehicle journey times. Vehicles which have not traversed the whole link are removed, as are vehicles that do not move for several minutes at a time. Finally, the individual vehicle journey times are aggregated into average journey times for each link and 15 minute time period.