Forty Minute Fieldwork: Road maintenance

Key topic areas	Equipment and resources required
• Settlements • Transport • Sustainability	Stop watch

Context

There are over 420,000 kilometres of roads in the UK - taking up 2% of the country's land surface. They have a huge role to play, not just in the realm of transportation, but in how our living and workspaces are designed and organised. Management of these spaces means geographers think about the sustainability of roads and the role they might play in creating a carbon reduced future.

Ill designed roads can have a negative impact on the environment as well as the health and well-being of local people. A road that is overwhelmed by the volume of traffic that uses it is likely to see vehicles idling (being stationary but with their engines running) which causes air pollution. Roads that are poorly maintained are likely to experience potholes and uneven surfaces which can damage vehicles and potentially cause noise pollution as the vehicles slow down and speed up to avoid them.

Local authorities frequently cite a lack of funds when confronted with roads that are falling into disrepair. Many councils have shortfalls in their road maintenance budgets as repairs become more costly in themselves, and more frequently occurring, with vehicles, and particularly cars, growing in size and weight in the UK. These larger vehicles cause greater damage to roads whose size, surface, and layout is not designed for them.

Classroom set up

Find a close up video of a car driving over a pothole and ask students in pairs to list as many geographical issues they can think of associated with that action. As students volunteer their ideas to the class the teacher can put them into 3 untitled columns on an IWB, separating them as

- economic impacts (the high cost of road repair; the cost of repairing damaged vehicles)
- social impacts (increase in road noise; poorer respiratory health due to increased air pollution)
- environmental impacts (higher vehicle emissions due to uneven driving patterns; greater amounts of dust).

Once ideas have been exhausted students should consider the columns and try to come up with a category title for each. Having established the economic, social and environmental trichotomy, teachers can open up a discussion about how poorly maintained roads are far more than just an occasional nuisance and can have more wide-ranging impacts.

In the field

Ideally students will be separated into small groups and allocated a different clearly defined section of road (roughly 30 metres in length) close to the school. At their survey location students have two tasks:

1. Complete a road maintenance survey (see Worksheet 124 Road maintenance survey) where students score the section of road against various criteria.

2. Complete a traffic survey. This should not only count the number of vehicles that use their section of road, but also time how long, in seconds, ten vehicles of choice spend in their section.

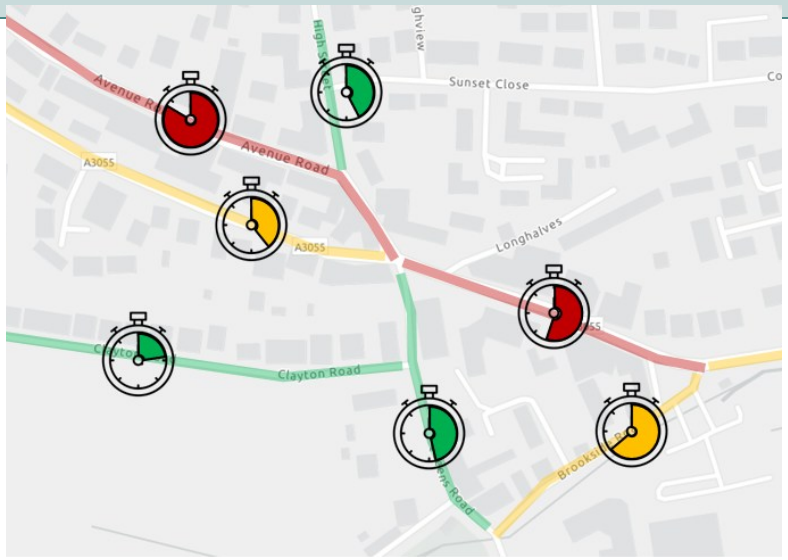
Road name		Grid reference					
	Score 1 = Negative Experience	1	2	3	4	5	Score 5 = Positive Experience
Pothole size	Large and deep						Small and shallow
Pothole frequency	Isolated						Everywhere

This allows students to then calculate an average time period. For this to work effectively each section of road should have a clearly defined start and finish point.

Suggested data presentation

From their road maintenance survey, students can use a base map of the area to colour code roads according to whether they are well maintained (green), somewhat maintained (yellow), or poorly maintained (red).

At each survey location point students can then have a clock symbol with the shaded sector representing the average amount of time vehicles spent in each section. Alternatively students could draw proportional circles where their size represents the volume of vehicles recorded.



Key questions for reflection and analysis

- Which sections of road have the poorest maintenance scores?
- Is there a correlation between road maintenance, traffic volume, and the amount of time vehicles spent in each section?
- Why is poor maintenance paired with high volumes of traffic a concern?
- Should the local authority focus on fixing roads locally or reducing the volume of vehicles using the roads?
- How might changing the time of day of the data collection have affected the results?
- Aside from scoring, how else could we have recorded data on road maintenance levels?
- Was our section of road long enough to get an accurate picture of traffic and of the road itself?
- Are some of our road maintenance criteria more or less important than others?

Taking it further

Students can look at secondary data on potholes and road maintenance by looking at the 'Fix My Street' website and using the postcode of their school to see the local area. They can see if their survey sites were indicative of a more widespread level of road maintenance across the local area.