

## ADHESION AND LEAVES - A REVIEW OF THE PROBLEM AND POTENTIAL SOLUTIONS

Ever since the early days of railways autumn leaves have been a source of disruption to train services in those areas where trees grow close to the trackside. However, over the last two decades this disruption has increased to unacceptable proportions. Many remedies have been suggested, some tested and one or two adopted.

Fallen leaves become rolled onto the running surface of the rails, forming a continuous black film. This reduces the wheel/rail adhesion and, when damp, produces critically low values of 0.05 or less.

Two main forms of service disruption arise:

- Driven wheels spin and lose traction when starting or on rising gradients.
- Wheels lock up when braking, generating wheel flats and extending the stopping distances. This can cause signal or station overruns (a potential safety hazard), and if the wheel flats are severe the stock has to be withdrawn from service.

This report attempts to estimate the cost of this problem to the BR Southern Region. It reviews in detail the mechanism whereby the rails become contaminated, discusses the many effects of this contamination and the remedial measures which have been suggested to overcome the problem. The more promising of these remedies have been subjected to a previous cost-benefit analysis, which is updated and extended in this report.

It is recommended that a policy of Sandite treatment plus tree management/clearance should be adopted wherever low adhesion due to autumn leaves is a problem. It is also recommended that leafguards should be specified for new stock, and that further trials with leafguards should take place. Other remedies with a high efficiency but a high capital cost (eg trackside water sprays) should be used for those trouble spots that do not respond to the other recommended treatments.

An improved reporting and warning procedure for low adhesion sites is long overdue. Ultimately it would allow all trains approaching a problem section to be notified.