

Shared Learning

Key learning following a serious incident

Embankment failure caused by construction activity affects safety of the line

Issued to: All Network Rail line managers, safety professionals and Principal Contractors

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Toe of embankment removed without support

Overview

The driver of a Coventry to London Euston train reported that the train made a severe lurch to the left over a track defect on the Up Slow line 1 mile north of Milton Keynes.

The track had dipped by up to 26mm over a distance of some 25m. The movement was directly above newly installed stone intended to improve the sliding resistance of the embankment. The design required progressive removal of embankment material in six metre sections, replacing it once the stone had been installed.

Underlying causes

Work started on site before the monitoring regimes for the construction and for the track had been approved.

The Construction Manager and Site Manager did not consider the risk associated with changes made to the planned design during construction work.

Extensive excavation of the embankment was left unsupported for a period of seven days.

However 130 linear metres of material at the toe of the embankment was removed over four days in an attempt to progress the works and reduce plant and equipment costs.

An earlier telephone conversation involving Network Rail and Principal Contractor's personnel to discuss enabling work was misinterpreted by the Principal Contractor as a verbal agreement to start works in order to mitigate delay.

In 2005/06 there were two embankment failures during construction. Both caused derailments as a direct result of executing works poorly and the lack of accompanying mitigation measures.

Monitoring arrangements were not in place to check that the construction complied with the design requirements.

Geotechnical expertise was not employed on site, contrary to the design requirements for monitoring the embankment during construction work.

Space constraints in the restricted site led to removing significantly more material from the toe of the embankment to facilitate vehicle movements.

Key message

- Principal Contractors and Designers must reach a clear understanding on the preparatory works and sequencing necessary to achieve safe and efficient construction.
- Robust track monitoring must be in place before work starts that might affect the operation of trains.
- Assurance regimes must be in place from the start of site work to check that it is compliant with the design.
- Site safety documentation must be approved by all parties prior to the start of site work.