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SwP 022/16

Motts Lane - Design Integration

Infrastructure Projects



Background

- In 2013 a significant incident occurred at Motts Lane MSL level crossing.
- The investigation found that the red aspect was lit for apparently erratic & often long times; this caused general misuse of the crossing over time to increase.
- Timetable change complications (regulating trains) aggravated the scenario.

Images courtesy of
RAIB report



Site Configuration

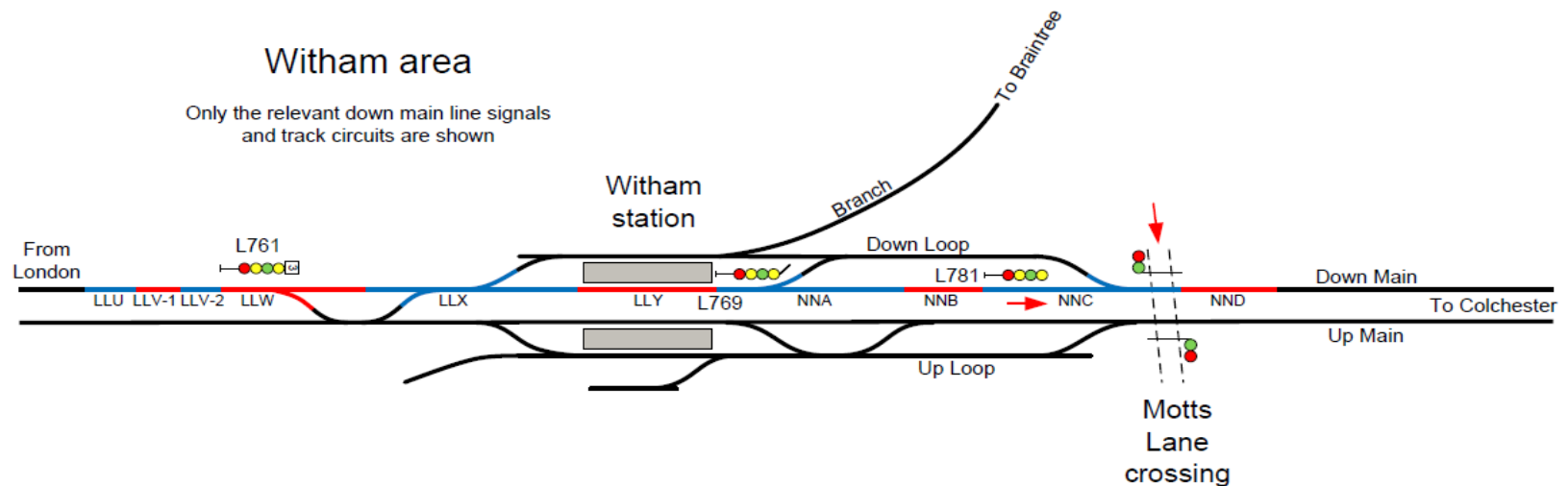
Motts Lane MSL level crossing - situated on two track railway north of Witham station, on the GE main line between Liverpool Street and Colchester.

Control point – Liverpool Street IECC

Services on the branch to Braintree start and terminate here.

The crossing had stopping and non-stopping controls

Signal L781 had signal regulation applied



Equipment and controls involved

- The Automatic (ARS) and Manual Route Setting “Stopping” controls differed and conflicted:
- The accuracy of "manual" route setting depended on the demand on the Signaller. Over time the “Stopping” control was used infrequently, thus overriding the need for signal regulation of L781.
- Automatic route setting controls partially duplicated SSI controls, with the Approach Control appearing in both systems rather than just the SSI.
- Designed closure time of 40 seconds for Motts Lane level crossing only manifested when the non-stopping control was associated with a fast non-stopping train. Other scenarios increased closure time considerably even when in 'normal' operation.
- Subsequent timetable and station dwell changes were implemented without sufficient consideration of the impact on the crossing closure time.

Action Required

The following actions are required whenever a system controlling a level crossing (control centre or interlocking) is altered. To ensure all system integration issues are considered the requirements of PAN/E/SE/PRO/0092 'Identification of Cross Boundary Signalling Interfaces', PAN/E/SE/ES/0040 'Data Design and Testing' and NR/BS/LI/359 requiring Technical Stage Gates should be applied:

1. Produce a System architecture diagram to identify and record system interfaces and components.
2. Identify, define and explore in detail (using interface specs/interlocking data development plans/technical Stagegates to manage) the controls that apply pan systems as defined by the project scope, e.g.
 - a. Stopping and Non-Stopping control apply to ARS, Manual Route Setting and the Interlocking
 - b. Signal Regulation applies to the signal aspect where the protecting signal is close to the crossing (Design Handbook)
3. Undertake HAZID to assess the method of working and potential failure points and IDC/R of concept design.

Further Information...

[RAIB Report](#)

For any further details or information please contact:

Kevin Boyd, STE Chief Engineer CCS

Tel: 07920 856003

kevin.boyd@networkrail.co.uk