

INFORMED SOURCES e-Preview October 2020

Just two topics this month, leading, naturally, on the Carmont derailment. I spent a lot of time researching the technology of earthworks and drainage and gained a new respect for civil engineers.

As I type this on Friday we are still waiting for DfT to announce its policy on what follows the Emergency Measures Agreements (EMA). These replaced franchise agreements at the start of lockdown and ran out yesterday. I analyse the options.

Carmont highlights climate change impact
EMA replacement challenges DfT
New train TIN-watch

After 13 years without a fatal accident, the derailment of 1T08, a ScotRail InterCity IC125, at Carmont on 12 August resonated throughout the industry. It was also the first fatal accident of the social media age, and the sense of a grieving railway community was palpable.

Going back through safety reports and Regulatory Determinations for previous Control Periods (CP), plus Network Rail's own documentation, has revealed how increasing resources have been applied to the maintenance of earthworks since privatisation. Carmont is the first fatal accident due to a landslip since Ais Gill in 1995.

I have a chart showing expenditure on earthworks and drainage for each control period since privatisation. This emphasises that improving resilience in the face of extreme weather is not a new priority.

When Network Rail has 191,000 individual earthwork 'assets', deciding where to spend the growing budget to best effect is vital. By CP5 (2014-19) Network Rail's better understanding of its assets had resulted in a change of policy. Instead of basing remedial work on condition alone, work to be carried out is now prioritised according to a risk metric, which is assessed on the type of asset, its condition and 'criticality' in an 'Earthworks Safety Risk Matrix'.

Asset condition determines the hazard ranked from A to E in increasing severity. The likely consequence of a failure, the 'criticality', is ranked from 1 to 5, also in ascending order.

Almost all of our earthworks were constructed in the 19th century, long before soil mechanics became a science. They were constructed by navvies with pick, shovel and wheelbarrow. Embankments were constructed using whatever material was to hand.

Today, soil mechanics provides a wide range of science and technology which can be used to 'backwards engineer' old structures and predict their vulnerability to failure.

In 2017 Network Rail unveiled its Global Stability and Resilience Appraisal (GSRA) tool which brings together in one set of data the many factors that determine the stability of an embankment or cutting and enables the risks to be compared with the modern equivalent.

In effect GSRA allows Network Rail to quantify the vulnerability of its legacy earthwork assets. It has been introduced alongside existing earthworks management tools.

To monitor earthworks and detect incipient failures Network Rail employs a wide range of technologies which are also described in the column. These include new kit being developed. Also described are some of the techniques used to strengthen earthworks and rock cuttings and mitigate possible failures.

As extreme weather events increase, installation of additional drainage and vegetation management are becoming more important. At the site of the Carmont derailment, new 'crest drains' had been installed above the rock cutting in 2010.

Network Rail Scotland has also developed a Weather Resilience and Climate Change Adaptation (WRACCA) strategy which is being used to identify schemes required in the longer term to meet the predicted change in weather patterns.

Despite rising funding and improving technology, the risk of unpredictable rapid slips will remain with us for the foreseeable future. There are around 100,000 locations in the Low/Medium risk category applied to Carmont when it was assessed in June. After years of primary safety resting with the signalling profession, it is the geotechnical engineers who are now in the front line.

Meanwhile, something I first wrote about 20 years ago is the increasing time taken to restore services after accidents. Not until 26 days after the Carmont derailment could Network Rail start recovery of the vehicles, with a finger-tip search following each lift. I plan to return to this issue in a future column.

Waiting for son of EMA

Sometimes writing this column is like walking a tight rope without a safety net. This is one example.

By the time you are reading this the Department for Transport should have announced what is to succeed the Emergency Measures Agreements (EMA) introduced to keep passenger services running through the Corona virus lockdown. Under an EMA, the train operator hands over any revenue to DfT and the Department covers the operator's costs.

EMAs were introduced on 23 March with a six month term. Inconveniently they expired at 01.59 on Sunday 20 September, long after Modern Railways had gone to press. In theory, TOCs will sign up to Emergency Recovery Management Agreements (ERMA) which will provide a 'glide path' into new concessions due to start next April.

But writing this at the end of last week I, and the rest of the industry, were still in the dark. However, in the column I start by analysing the situation facing DfT early in September, in terms of the state of the franchises, their finances and existing agreements. I've grouped TOCs in a number of categories, ranging from 'Sorted' to the foreign-owned franchises.

Even within these broad groups, TOCs face differing circumstances and it seems unlikely that a 'one-size-fits-all' ERMA will be acceptable. According to Informed Sources, cross-default will not apply to ERMA and whatever follows.

This means that if the terms offered are unattractive for one current franchise, a franchise owner could relinquish that TOC but retain others. Not surprisingly, the Operator of Last Resort had been placed on emergency standby for the duration.

In deciding whether to take up an ERMA, operators face the uncertainty of what happens in the longer term. Here, the ghost of the Williams Review represents the spirit of franchising yet to come - or rather concessions. Is it worthwhile hanging on through whatever terms ERMA offer in the hopes that you will have 'squatters rights' as Williams is implemented?

ERMA agreements are reported to include a franchise termination clause. The financial terms of any terminations, particularly how sunk losses are covered, are likely to have been central to the negotiations over the ERMA's.

While DfT concedes that the current arrangements are 'unsustainable', pressures on the public finances are still growing. To placate the Treasury, the new concessions will have to focus on cutting operating costs and increasing revenue.

Gone are the days when Government could instruct British Rail to implement a 5% cut across all expenditure. Not that 5% would be enough today.

Equally, driving up ridership and revenue will not be easy. At the start of lockdown the Government made an excellent job of restricting train travel to essential workers. Surveys show that there is still reluctance to travel by train and the rise in coronavirus cases, plus new warnings about using public transport, will not help.

New Train TIN-Watch

Not much change this Period. We continue to have a reliability table of two halves.

At the top, Hitachi and Siemens are mostly above 10,000 Miles per Technical Incident Moving Annual Average (MTIN MAA) and improving, while many fleets in the peloton are still struggling to get above 5,000 MTIN MAA.

What is depressing is that while the SWR's Siemens Class 707s rocketed upwards through the Table and the ScotRail Hitachi 385s will shortly Keizen their way out of reception class, too many fleets are failing to improve.

It may be time for another six month progress report next month, to see whether progress really has been as slow as it seems.

+++++

Video previews

Each month we produce two video previews explaining more about what's in the new issue of the magazine.

Go to our Facebook page (www.facebook.com/modernrailwaysmag) to see the Editor talk to Roger Ford and Ian Walmsley in a 'Zoom' call, or head to our YouTube page (<https://rb.gy/jog4f7>) where Ian Walmsley hosts a longer video with individual contributions from the magazine's writers. Both videos are usually published on the day the magazine goes on sale, normally the fourth Thursday of the month.

+++++

As a traction engineer, I've always thought of Civil Engineers as people in hard hats who go round peering through theodolites at striped poles. For my Carmont derailment article I had to get up to speed with soil mechanics and geotechnics and stuff and after three or four days 'reading myself in', my admiration for the Civils is unbounded. Give me something simple like a Traffic Management System or a diesel engine to write about any day.

Conference calls and Zoom meetings continue to replace press conferences and site visits. This month included a virtual update on the work at Kings Cross and Werrington which appears in the News pages.

I also had a useful zoom meeting with a consultancy comparing notes on the future organisation of the railway, with a particular emphasis on cost saving measures which don't affect services. The Editorial team is gearing up for our usual informed analysis of whatever emerges from the ERMA announcement.

Meanwhile there is plenty to do at the desk. While I have published several previews of the on-going interim conclusions of Network Rail's Traction Decarbonisation Network Strategy, the full 250-page version has now been published, with much more detail to absorb and analyse.

Alternative traction - battery and fuel cell power - is still seen as a substitute for electrification rather than an adjunct. To put across the limitations in an easily grasped but fun way, I am designing the 'Alternative Traction Deltic' with the weight and space of the engines and fuel tank available for battery packs or fuel cell stacks and hydrogen cylinders.

But now it is time to start writing my introduction to our annual The Modern Railway. I'm still sticking to 'year of recovery' for the title, but the question is recovery from what?

Stay safe.

Roger