

Gaining approval: Taking new technology into service

Parry People Movers' Caspar Lucas looks at the UK's safety regulatory regime.



So, you have a marvellous idea for a new form of light rail. You have attracted investors, raised the capital and built a prototype (or several). Your product is highly versatile and can be supplied in 'railway' or 'tramway' form. In each case you could be talking about existing infrastructure or a new route. What's more, there are several forms of existing infrastructure – for example, the 'railway' form of your vehicle could operate on parts of the national network or on independent railways, including heritage lines that have the potential to act as public transport corridors.

It gets even more varied. After all, you don't want to limit the possible uses, so inter-running of your new light rail mode with heavy rail must be considered. By definition, a heritage railway will need a form of inter-running as its steam trains are definitely 'heavy rail', your innovation is most definitely not and at least some single line working is a given.

This article explores the acceptance and approvals regimes in force in Great Britain. It is written from a position of some experience, based on the successful

Plenty of trade at Stourbridge Town for Parry railcar 139001 on 5 June.
Neil Pulling

application of just such an innovation in light rail: Parry People Movers 'Class 139' vehicles. These have just completed a year in full passenger service on the short branch line between Stourbridge Junction and Stourbridge Town in the UK's West Midlands, with over 400 000 passenger journeys and 60 000 railcar services under their combined belts.

Needless to say, these words are not official interpretations of regulations and standards in force and do not substitute for one's own research and enquiries. Note also that some terminology used varies from the precise language of these documents, although the sense remains the same.

Clearly, the Stourbridge experience does not encompass every scenario already outlined, and indeed it is true that much of what is described below has not been successfully implemented to date – although there are proposals. In all cases, however, the first response to the question 'How do I get this approved?' is supplied by the acronym *ROGS* – *the Railways & Other Guided Transport Systems (Safety) Regulations 2006* [1].

Where do you start?

Well, the excellent ROGS guidance notes published by the Office of Rail Regulation [2], freely available on the ORR's website. ORR is responsible for economic regulation of rail operations on the Network Rail system, but for safety on all railways and tramways as defined in the regulations.

During the development of your new form of transport, you may have heard mutterings such as 'you'll never get that past Network Rail' (if that is your intention) or 'but that's against Group Standards and you have to comply with them'. Make sure you actually speak to the people concerned; after all, these things and more were said about Parry People Movers. Experience shows the people concerned to be helpful and constructive.

Once you read the ROGS guidance, you will find that they seem perfectly geared to innovation in rail operation. One key approach shines out: the proposers of an innovation are responsible for ensuring its safety – as it should be if innovation is to be encouraged. There are two important areas of demarcation where you will need to know where you stand, and these are specific to each operation. The first is whether you propose to operate on the Network Rail system.

This is the case at Stourbridge. The branch line – all 62 chains (1.247km) of it [3] – is reportedly Europe's shortest railway line, has a maximum speed of 20mph (32km/h) and is operated as a segregated, standalone route. However as part of NR, Railway Group Standards – the 'main line' engineering, operational, infrastructure and interface standards – are deemed to apply. This is not the case on an independent railway, in which case you would simply forget about Group Standards and ensure compliance with ROGS. But, as your innovative system is, of course, non-compliant with Group Standards in many ways, you must find a way of reconciling that with operating on a route where they apply.

Definitions, derogations...

There have been several suggestions as to how this could be done. One idea was to declare that the relevant infrastructure was not part of the national rail system. Another was to lease it from Railtrack (NR's predecessor) so that it definitely wasn't. Parry People Movers was pointed towards a Group Standard entitled 'Acceptance of Trams and Light Rail or Metro Vehicles for Shared Running on Railtrack Controlled Infrastructure' [4], but this had been written for the Tyne & Wear Metro Sunderland extension shared running and was rather too specific. Somebody suggested designating the branch as a tramway, but study of the ROGS definition (see box) shows why this wasn't possible.

None of the above bore fruit at Stourbridge, which is not to say they could not be used (indeed, the leasing of infrastructure from NR is done elsewhere). The answer was a derogation – not a Non Compliance, still less a Temporary

"Rather than laying down fixed approvals criteria, the safety verification process is flexible and can be made suitable to the system proposed."



Above: The way UK tramways are certified has changed, meaning future works will follow the ROGS process rather than the now obsolete ROTS. A contractor examines the newly laid track on New South Promenade in Blackpool on 18 June. The tramway is undergoing a transformation from 'first generation' to modern light rail. Barry McLoughlin

Non Compliance – from Railway Group Standards. Now, this is either the biggest vehicle engineering derogation ever, because basically it derogates from everything, or the smallest, because it applies to just 62 chains of NR system. The important thing was that it was granted [5].

The second area of demarcation concerns the various definitions in ROGS. A very useful table in the guidance notes shows under what circumstances the various provisions of the regulations apply, and provides more obviously clear direction than the necessary legal language contained in the regulations themselves (see box).

Implicit in the definition of a mainline railway is the existence of other transport systems that consist on the one hand of tramways and on the other of railways meeting the definition of what isn't 'mainline'. Of course, innovative light rail operations are likely to be other transport systems.

One factor to be recognised is that award by the Inspectorate of safety certification (for operators) and safety authorisation (for infrastructure managers) is not required either for tramways or for non-mainline railways whose maximum speed does not exceed 40km/h (25mph). This lessens the burden of safety regulation for lower-risk operations. This can be a shock for those used to formal approval by the Inspectorate, but that change was brought about by ROGS: effectively, for operations satisfying those criteria there is no such 'approval'.

Further reading

- [1] *The Railways and Other Guided Transport Systems (Safety) Regulations 2006*, Statutory Instrument 2006 No. 599.
- [2] *The Railways and Other Guided Transport Systems (Safety) Regulations 2006 (ROGS): A Guide to ROGS*, Office of Rail Regulation, August 2009.
- [3] There are 80 chains to the mile, making a chain 22 yards (20m) long. Network Rail's *Sectional Appendix* – the authoritative reference – uses miles and chains.
- [4] Railway Group Standard *GM/RT2452*, Issue 1, February 1999. Railway Group Standards can be read at www.rgsonline.co.uk
- [5] Derogation No. 07/209/DGN (we will leave aside Derogation 05/090/DGN, which was obtained for the experimental Sunday operation of a Parry People Movers railcar at Stourbridge in 2005/2006 but which used a different method.) Current derogations, non-compliances and temporary non-compliances are listed on the *Deviations In Force Register* which can be found on the Rail Safety Standards Board website.



This new track is on the Blackpool Tramway between Pleasure Beach and Starr Gate, with contractors at work on 18 June. The tramway is overlooked by Blackpool's modern artworks in the 'Great Promenade Show'. Barry McLoughlin



The UK's current major new tramway project: tracklaying takes place in Edinburgh city centre during summer 2009. TIE

All systems must, however, comply with other requirements. A Safety Management System recording how risks are managed is essential. However, it does not have to be complicated if the transport system is a simple one with low inherent risk. It may be that an SMS is already in place; for example, if innovative public transport services are to be introduced to an existing heritage railway. It is nonetheless vital to ensure that the SMS is suitable for its new purpose, and refers out to any instructions specific to the new system.

Risk assessment, safety verification...

Also essential are the sections in ROGS that cover risk assessment, control of safety critical work and all forms of safety reporting. Mainline railways are subject to additional requirements concerning risk assessment and reporting activities. The emphasis on risk assessment is a further example of the drive towards appropriate safety controls.

One aspect of ROGS that has been contentious is the need for Safety Verification of new or altered vehicles and infrastructure where the change presents a risk that is new and where there will be a new significant safety risk or significant increase in risk. Safety verification is undertaken by an 'independent competent person' appointed by the duty holder.

The argument about this process centred on whether suitable 'independent competent persons' were in fact available; for example, whether anyone held suitable insurance. However, the definition covers organisations as well as individuals, and the availability of 'ICPs' does not seem to be preventing changes to infrastructure or vehicles from being carried out.

Safety verification is another example of how the ROGS aim to make safety regulation appropriate to the application; rather than laying down fixed approvals criteria, the safety verification process is flexible and can be made suitable to the system proposed. This is what innovators need to prevent new approaches being tied up by approvals systems that were never intended for their concepts but which happen to be in force.

A flexible system

So there you have it: a (fairly) straightforward menu. Your system fits the definition of a tramway? Then you need a Safety Management System, but not approval of specific operator and infrastructure manager documentation. The same applies if your application is for a railway for local use and you do not wish to exceed 40km/h – a description that could cover public transport services on heritage and many other 'feeder' lines. In every case, you will need an independent competent person, because introducing a new form of rail transport does have a significant effect on operational risks (even if your innovation reduces overall risk it is by definition introducing new ones). If you wish to run above 40km/h, then safety verification and authorisation will be needed, and if it operates below this speed but is to run partly on a mainline railway then these will be necessary but only for the main line section.

Where operation on NR is concerned, then Railway Group Standards must be considered, but this can be done pragmatically provided your proposal includes how those risks that are normally addressed by Group Standards compliance are controlled.

The lesson is that the ROGS provide a flexible system for assuring the safety of rail-based transport systems. With a little thought, it is easy to identify which requirements apply to a particular application, and the aim is for the safety assurance work to reflect the level of risk on the system itself. The Stourbridge operation serves as an example that innovative approaches can be implemented.

Finally, thanks must go to those professionals from organisations throughout the rail industry that have provided the constructive advice that has contributed to the introduction of lightweight rail to the British transport scene.

- Caspar Lucas has worked in rail engineering since 1997. His career has included heavy rail rolling stock maintenance, supply and technical support, and the implementation of the first full lightweight rail operation at Stourbridge. He is currently technical services director of JPM Parry & Associates Ltd, originators and project managers of the Parry People Movers venture. **TAUT**

Definitions

Mainline railway means any railway except for any railway or part of a railway –

- (a) the infrastructure and rolling stock of which are reserved strictly for –
 - i. a local use; or
 - ii. the operating of a heritage railway; or
 - iii. the purposes of tourism
- (b) the infrastructure of which is functionally separate from any other railway which does not fall within sub-paragraph (a)

Railway

means a system of transport employing parallel rails which –

- (a) provide support and guidance for vehicles carried on flanged wheels; and
- (b) form a track which either is of a gauge of at least 350mm or crosses a carriageway (whether or not on the same level) but does not include a tramway

Tramway

means a system of transport used wholly or mainly for the carriage of passengers –

- (a) which employs parallel rails which –
 - i. provide support and guidance for vehicles carried on flanged wheels;
 - ii. are laid wholly or partly along a road or in any other place to which the public has access (including a place to which the public has access only on making a payment); and
- (b) on any part of which the permitted maximum speed is such as to enable the driver to stop a vehicle in the distance he can see to be clear ahead