



campaigning
by the
Railway Development
Society Limited

Policy Group

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Dear Sirs,

ALTERNATIVE SOLUTIONS

Railfuture is pleased to submit this response to the Alternative Solutions Draft for Consultation, which has been prepared by Railfuture's Policy Group with contributions from individuals and branches.

Railfuture is a national voluntary not for profit organisation limited by guarantee and structured in England as twelve branches and two national branches in Scotland and Wales.

TRAMS & TRAM/TRAINS: There are many instances where Railfuture would strongly support the introduction of trams and tram/trains, both for procuring new routes where heavy rail infrastructure would either be impractical or not cost effective and as replacements for heavy rail services but having due regard for possible rail freight requirements.

We agree with the Draft Consultation conclusion that trams and tram/trains can potentially enhance connectivity and broaden market penetration, reduce operating and infrastructure maintenance costs, reduce electrification costs, simplify signalling and control systems, be driven on line of sight enabling lower cost passing loops to be installed without the need for complex signalling thereby enabling service frequency improvements and shorter journey times in many cases.

These benefits can equally apply to town and city centres where street running is made possible and on certain rural routes where service frequency improvements cannot be economically achieved by heavy rail options such as the Esk Valley (Middlesbrough-Whitby) and the St Albans-Watford branch. Extensions of branch lines into town centres is also made possible by such conversion such as linking St Albans Abbey and main line stations, greatly enhancing connectivity and therefore market penetration (see our response to the scoping document).

We note that Transport for Greater Manchester have a number of further proposals for conversion of heavy rail routes to tram or tram/train operation in addition to their current programme of works including Manchester-Marple.

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THE NEED FOR ELECTRIFICATION: The consultation document rightly acknowledges the efficiency, environmental and economic benefits provided by electrification but there are growing external factors that will drive up the need for a rolling programme of electrification of many more routes beyond those currently planned. The primary reason for this will be the increasing cost of oil once the world economy recovers from the current recession and the growing need for security of energy supply. The economics of continued operation of diesel trains will therefore become weaker and the business case for electrification will become progressively stronger, particularly if infrastructure costs can be reduced through continuous production achieved through a rolling programme.

REDUCING THE COST OF ELECTRIFICATION – COASTING: This technique is known to work in certain circumstances and has been used for many years. However, the alternative of reducing the voltage where clearance is limited has not been considered in the draft consultation even though it was used on the Great Eastern main line electrification scheme.

Coasting through neutral sections is to be preferred to discontinuous or discrete electrification since the need to equip rolling stock with an automatic mechanism to lower and raise pantographs can be avoided. Such equipment would add to the cost of rolling stock, increase maintenance costs and import increased risk of train failure, largely negating electrification infrastructure cost savings assumed for Discontinuous and Discrete electrification. Failure of such equipment could also cause significant damage to overhead line or other structures as well as the train itself.

However, we suggest that use of Coasting could be extended to sites where the neutral section would include a risk of a train being “gapped” due to the likelihood of it being stopped for some reason if a low capacity energy storage system based on the “last mile” principal was carried on the train. This could be kept within tolerable weight and space limitations and might be powered by batteries or super capacitors or even a small diesel engine but electrical storage systems could, of course, make use of regenerative braking however.

Where there may be insufficient clearance to accommodate overhead line with the pantograph raised even in a neutral section, there will be no alternative but to increase the loading gauge which in any case could provide other benefits such as increasing route availability for freight.

DISCONTINUOUS ELECTRIFICATION: Railfuture acknowledges that on board energy storage systems can be justified in certain situations where light rail vehicles may need to access sensitive city centre areas for example and as battery technology advances the opportunity to widen the application of this solution will expand but we should mention alternative power systems available that obviate the need for overhead line equipment. The Alstom switchable third rail system used in Bordeaux being one example and Bombardier’s new inductive system another.

We suggest both these solutions could be cost effective where long gaps were required as both systems avoid the need for vehicles to carry batteries, super capacitors or other energy storage systems which would add to the bulk and weight of vehicles and would in themselves consume some of the energy needed to move the vehicles. In the interests of efficiency and reliability, Railfuture suggests vehicles should be designed to be as light and simple as possible.

DISCRETE ELECTRIFICATION: We note the consultation document acknowledges that battery technology that would enable a train to be powered off the wires for up to 75 miles does not currently exist and it could be many years, if ever, before such technology was available without infringement of acceptable weight and bulk limitations. The time when battery technology can match the energy contained within the same bulk and weight, as a tank full of diesel may never be reached. Railfuture recommend that a comparison of expected future whole life costs of electro-diesel and battery powered trains is made to determine which approach will be more cost-effective to bridge gaps between electrified sections.

The need to provide “hotel power” for lighting, heating and air conditioning for longer journeys up to 75 miles would significantly add to the drain on stored energy systems, particularly in winter time, as would the need for increased line speeds, lighter rolling stock and shorter journey times and this would also indicate a strong need to provide overhead line equipment rather than rely upon stored energy systems for all but short gaps in the supply.

However, range could be extended if recharging points were located at intermediate station stops. In order not to cause unacceptable delays while charging is taking place, this might need to include wired sections either side of such station stops so that recharging can also take place while on the move.

Railfuture is concerned that confidence in future battery technology advances could be misplaced and could delay development of simplified and affordable overhead line equipment. In the same way, previous misplaced confidence in the development of hydrogen as a power source could well have delayed important decisions to expand the electrified network. A tram or trolley overhead line system developed for a modest increase in line speed to perhaps 120km/h (75mph) would significantly enhance the usefulness of low cost electrification and widen its application to a number of routes not currently considered economically suitable. Perhaps a feasibility study of the low cost overhead line and track system developed by Tram Power Ltd should be given serious consideration.

Where energy storage systems could provide worthwhile benefits, Railfuture would again express a preference for trackside energy storage systems (see our response to the scoping study) as there would be no constraint on the size and weight of the storage system. Trackside energy storage would also provide significant energy cost savings on the third rail DC network and should be considered for use in conjunction with electrification of lightly used secondary or rural routes where power generation could be sourced from river and/or wind turbines. Whilst the capital cost of such renewable energy sources would be high, the long-term energy savings would be significant and they may one day become virtually the only source of energy readily available to us.

ULTRA LIGHT RAIL: While the Parry People Mover class 139 is a positive development, in its present form its use is restricted to short self-contained branch line services such as the Stourbridge Town branch on which it is currently used. Although it is credited with capacity for 50 passengers, most of these are standees. The ride quality is also poor, the vehicles having only two axles, and this is very noticeable on the Stourbridge Town branch due to the use of jointed track and sharp curvature of the route.

We note that Parry is developing a larger version of the class 139 and we suggest this should be equipped with bogies and be formed as a two car articulated unit for maximum lightness and better ride quality. Furthermore, the use of flywheel technology must of necessity add considerably to the weight of the vehicle and we wonder if development of super capacitors and/or battery technology may now have overtaken the benefits of carrying on board flywheels.

COMMUNITY RAIL PARTNERSHIPS: Railfuture welcomes the continued development of CRPs and notes that the Avocet Line (Exeter-Exmouth) has recently been given Community Rail status. As noted in our response to the scoping document however, it is disappointing that operating and infrastructure maintenance costs remain little changed and it is to be hoped that Network Rail's new alliances with operators will accelerate progress on cost reduction. We assume that CRPs will be involved with alliancing procedures.

GUIDED AND OTHER BUSWAYS: Whilst Railfuture supports public transport as a whole and the integration of bus and rail services in particular, we have reservations about the conversion of rail routes into busways including those that are currently unused if there is a remote possibility of them being brought back into rail use at some point in the future.

For example, the former Luton-Dunstable rail route could have readily been used for a Light Rail service to Dunstable and in time be extended to Leighton Buzzard. Similarly, the Cambridge-St Ives busway could have perhaps formed part of a through route for rail freight to the East Coast main line at Huntingdon and provided another option for the East-West route to be reopened throughout between Oxford and Cambridge. Many local people also think the disused Ellenbrook-Leigh rail route currently being converted into a busway should be restored as a heavy rail route.

The experience gained from the Cambridgeshire busway project has shown that the cost of guided busways is not necessarily cheaper than the cost of reopening rail routes and the full cost of the Cambridgeshire scheme will not be known until the dispute between the construction company and the County Council has been resolved. BAM Nuttall, the construction company, claims the true cost of this scheme is over £180m.

With reference to the performance of the Cambridge scheme in its first year of operations, Railfuture understands that the passenger count (2.5m) includes journeys that were taken on any part of the guided bus routes even if they did not include any part of the guide-way itself. This would include, for example, journeys taken between the railway station and the city centre and it should be remembered that a number of local bus services were removed on opening of the busway, forcing passengers onto the busway services.

It should also be noted that, while guided buses can offer greater flexibility than rail or light rail through ready access to the road network, they are less flexible than rail while on the guideway as the buses are unable to negotiate bends without risk of the rear wheels fouling the guideway and they are also subject to delays caused by road traffic. Indeed, following the opening of the Cambridgeshire scheme it was soon found that timekeeping was so poor that an extra five minutes was subsequently built into the schedule, making the journey time actually slower than as by the original route to St Ives.

Railfuture is concerned with safe operation of guided busways. Unlike passenger carrying rail vehicles, buses have no safety mechanism for bringing the vehicle to a stop in the event of a driver suffering a sudden illness or falling asleep even though the bus operates exactly like a rail vehicle whilst on the guided section of the route. Accidents involving buses running into the rear of stationary buses on guided busways due to this cause are already known to have happened and the tendency for drivers to fall asleep out of sheer boredom while at the controls will be increased because there is nothing for the driver to do except keep a foot on the accelerator pedal.

Railfuture suggests non guided busways such as that using the disused track bed of the Fareham to Gosport rail route would be more cost effective than guided busways, needing far less concrete infrastructure and helping to relieve driver boredom by giving him/her something more to do. We also strongly support use of reserved bus lanes on the road network which can aid service reliability and reduce journey times if properly policed.

NETWORK RUS: ALTERNATIVE SOLUTIONS WORKING GROUP: We are concerned that no representatives of railway equipment manufacturers are included in the working group which will limit the understanding of future technology development trends available to the group.

GAPS: The identification of gaps in section 5 should also consider gaps in the existing rail network where no current service or route exists which could be addressed more cost effectively by one of the alternative solutions considered in this document than by a full heavy rail solution. Currently, the RUS process does not identify these gaps as it focuses on existing routes rather than consideration where population and employment movements have created new travel demands which are not being met.

We trust you will find these comments and suggestions of use.

Yours faithfully,



Norman Bradbury
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Head of Policy Group