Harrogate Line: Tram-Trains or Heavy Rail

A summary of the advantages & disadvantages of alternative rolling stock on the Harrogate Line between Leeds, Harrogate and the Airport

TRAM-TRAIN DIRECT TO THE AIRPORT?

This paper outlines the current plans and initiatives already being implemented for the Leeds-Harrogate-York rail corridor which could be jeopardised by the Tram-trains proposed by Greg Mulholland MP for Leeds North-West. He proposes that new tram-trains should be used on street-running track within Leeds City Centre, which would then share the Harrogate Line heavy rail track to beyond Horsforth where a new light rail track would be laid up to the Airport Terminal Building and potentially onward to Bradford. The disadvantages of tram-trains are summarised on pages 2 & 3.

HARROGATE LINE PLANS CURRENTLY BEING IMPLEMENTED

- The existing 30 min. frequency services between Leeds and Harrogate are being enhanced to an all-day 15 min. frequency in the current Northern Rail franchise from December 2017.
- It is expected that a 10 minute frequency will be required to meet peak demand during the next decade.
- The planned rolling stock will be provided using refurbished 100mph Class 170 diesel multiple units (DMUs) cascaded from Scotrail plus refurbished Class 150 DMUs from the existing Northern Rail fleet. These will provide a significant increase in the net volume of seats available to commuters when the new timetable is implemented in [2018]
- Virgin Trains East Coast will also operate new services between London and Harrogate at two-hourly intervals from 2019. These will be operated using the new high speed IEP trains now being built by Hitachi.
- The Leeds-Harrogate section has been re-signalled by Network Rail within the last five years by and is understood to be capable of operating train services with a 10 minute headway. Network Rail plans to re-signal the line between Harrogate and York during CP6 (2019-2024) and replace mechanical signals controlled from signal boxes with remote control electronic signals.
- North Yorkshire County Council have allocated funding to double track some of the sections of single track between Knaresborough and York which currently cause frequent delays and constrain capacity.
- Northern Rail has recently upgraded facilities at Harrogate Station and further work is planned to accommodate the increased frequency of local trains and the new VTEC London trains.
- Proposed new Platform Zero at Leeds City Station and new Platform 12 and track into York Station planned as part of York Central will both be designed to enable more Harrogate Line trains.
- Our proposed new dual function LBA Airport “Park-and-Ride” station on the Harrogate line served by existing train services and linked to the Terminal by existing shuttle buses also serving the long-stay car-park is supported by Leeds City Council and Leeds Bradford Airport itself.
- Journey time improvements through line speed increases would offset additional station stops.
- The Electrification Task Force Report to Government prioritised electrification of the Harrogate Line with 25kV overhead wires which already serve both ends of the line at Leeds (Wortley Jn) and York (Skelton Junction).
- When electrified it is further proposed to link York-Harrogate-Leeds rail line with Leeds North West and Airedale Lines to allow direct services from Bradford, Keighley, Shipley & Skipton to the Airport, Harrogate & York. These services already use the same tracks and platforms approaching and within Leeds City station.

BENEFITS OF HEAVY RAIL ON HARROGATE LINE + LINK TO THE AIRPORT

- These trains already serve Leeds City Station with significant direct connections to the Cross-Country, East Coast, Northern and Transpennine services – and the new HS2 link in the future.
- They have reliably faster generalised and actual journey times than any other travel mode.
- Avoidance of high capital and maintenance cost of new track and associated infrastructure to reach the Airport.
- No requirement for additional rolling stock, drivers and conductors to serve the Airport
- Significantly lower and more efficient use of public funds with sustainable operating costs.
- Operationally efficient. There is no requirement for separate exclusive/dedicated rail services which would import significant recurring additional staff and maintenance costs.
- Better, simplified regional penetration to include Harrogate, Knaresborough, York and beyond.
- Significantly greater regional connectivity and penetration (incl. new direct services) to the Airport from the whole Leeds City Region.
- Opens up the corridor to users in Arthington, Bramhope, Cookridge, Pool and Yeadon with improved accessibility and service levels.
- Improved capacity utilisation of platforms 1-5 at Leeds would be possible if the services are integrated with the Airedale and Leeds North-West lines once the Harrogate Line is electrified.
- Will make a significantly greater fare-box contribution to net operating costs than any other option. The economic viability of the corridor is strongly vested in long-distance travel with excellent connectivity at Leeds. It is also attractive to weekday commuters and shoppers because it offers reliable fast trip times to Leeds City station, which is conveniently located in the heart of the business and shopping districts of the city

DISADVANTAGES OF PROPOSED TRAM-TRAINS OVER THE ROUTE AND TO THE AIRPORT

- Much higher capital cost for new track and new rolling stock compared with LBA Parkway plan.
- Considerable diminution of quality (Speed, comfort and safety) for existing passengers
- Relatively low volume of LBA passengers, does not justify the high cost.
- Slow journey times to/from Leeds City centre destroy value.
- Does not improve accessibility for users in Arthington, Bramhope, Cookridge, Pool or Yeadon.
- Complicated and costly technical requirements necessary for both street running and use on heavy rail main lines. Significant additional systemic immunization costs associated with low voltage DC powered vehicles in a 25kV AC environment.
- Tram-trains have not yet been approved for use in the UK pending the planned pilot project.
- The start date for trials on the Sheffield-Rotherham line has been delayed until Summer 2018.
- There is no demonstrable or proven benefit of seeking to adopt such technology or method of operation in a modern UK transport environment
- Tram-trains are much more expensive per passenger to build and to operate than heavy rail.
- Tram-trains need to operate at slower line speeds to enable line-of-sight control by the driver and will have a maximum speed capability well below that required for the Harrogate line in the near future (75-90mph).
- There is concern over the safety of trams after fatal accidents in Basford, Croydon & Sheffield. Accident report recommendations typically seek the incorporation of heavy rail safety measures.

- Tram-trains are uneconomic to operate in "mixed mode" - that is on both existing heavy rail track and on the existing public highway in busy town centres, where lower speeds are needed.
- The operational efficiency and high levels of safety achieved through automation and segregation, which also enables very high frequency of service as expected and demanded by today's users, cannot be achieved with street running. This should be a fundamental prerequisite of taxpayer funded transportation initiatives in the 21st century.
- Tram-train tracks in Leeds City Centre and north of Horsforth would face serious planning issues and would import significant safety interface risks for both road users and tramway users.
- The very limited use of Tram-trains in Europe is designed around specific sets of circumstances which are inappropriate in a typical UK environment. They have lower capacity for passengers and baggage than our existing trains.
- The proposed Tram-train link would only connect Leeds to the Airport – not to Harrogate, Knaresborough or York. In so doing with a limited regional catchment and thus consuming valuable scarce capacity it would simultaneously frustrate further development of the Leeds-Harrogate-York corridor for wider regional benefit, including potential reinstatement of services to Ripon and other locations.
- The suggested on-street tram-train terminal in Leeds would require an inconvenient longer walk to reach Leeds City Station platforms.
- The volume of passengers likely to use a one-way spur rail link to the Airport will not justify a dedicated track, rolling stock and staff. The current level of 3.5 million passengers a year is nowhere near comparable with Manchester or the international airports in the South East.

Our assessment of light rail is that it can and should have a significant role in major urban areas like the City of Leeds for journeys up to 5-7 miles but it must also provide excellent value for taxpayers. To achieve this it must be rapid, safe and operationally efficient. By definition therefore it must be segregated and automated in order to meet the requirements for automation, safety, high frequency and economic efficiency. Once constructed, operating costs are a cost in perpetuity to the taxpayer and fare box contribution to these costs should be maximised through an attractive, frequent, safe and efficient system. The use and development of existing economically viable regional rail corridors should not be compromised in order to fulfil urban needs at the expense of longer distance users. Tram-Trains on the Harrogate Line do not fulfil *any* of these key expectations or criteria.

RATIONALE FOR LBA PARK & RIDE STATION

- The proposed Parkway Station on the existing Harrogate Line near to the Airport is a cost-effective, operationally efficient and better penetrating approach using existing infrastructure and services to best advantage.
- Proposed location will be extremely convenient for users at Arthington, Bramhope, Cookridge, Pool and Yeadon, who currently cannot access services at Horsforth which is operating at capacity with no space for development or expansion for car parking.
- Entirely consistent with firm prioritised and committed plans already in place for improved walk-up service frequencies, train capacities and the 25kV electrification planned for Harrogate Line.
- Future service frequency upgrades (e.g. 10 mins) will benefit both the Airport and the whole corridor

- Scarce capacity on the rail network is used to best advantage by integration with existing conventional rail services.
- Multifunctional station combines all-day airport access with substantial local commuting needs.
- Train to Airport terminal interchange by existing shuttle bus from proposed Parkway Station would be better than that already provided between nearby long-stay car park and the Terminal in terms of timing and shelter. Can be upgraded to an automated people mover (as used at Heathrow & Gatwick) if demand grows to a sufficient level.
- Transit time should be no greater than current transit time between car parking areas and the Terminal.
- Recognises objective DfT data/advice that this regional airport, like most others, functions primarily for leisure users (with luggage) and with limited demand for more revenue-generative business users.
- Consequently it provides a poor business case for major capital investment in a new direct rail link to the Terminal both in terms of initial capex and subsequent ongoing opex (in perpetuity)
- Longer-term sustainable option providing far better regional penetration than any other option.
- Excellent wider connectivity to LBA across Leeds City Region via both Leeds and York stations.

CONCLUSION:

The proposed LBA Parkway Station on the existing Harrogate Line served by existing and planned extra trains is a quick, affordable, low risk, straightforward solution which benefits the whole and wider Leeds City Region and provides exceptionally good value for taxpayers and is entirely consistent with the committed investment and future development of the Leeds-Harrogate York rail corridor.

Compiled by Mark J Leving & Brian L Dunsby for the Harrogate Line Supporters Group.
(Further technical information on this subject is available on request from: info@harrogateline.org)