Why Harrogate “Metro” Line?

Presentation compiled by
Mark Leving, Project Director & Brian L Dunsby, Chief Executive,
Harrogate Chamber of Trade & Commerce
Leeds-Harrogate-York railway line: Geographical context & key locations
Local Authorities & Transport Authorities

Local Authorities:

Leeds City Council

Harrogate Borough Council

York CC

Transport Authorities:

WYPTE

North Yorkshire County Council

York CC
Why upgrade/convert to conventional Metro?

- Resolve inadequacy, capacity, passengers left behind
- Improve connectivity – Harrogate generates significant long distance flows accounting for an estimated 60%+ of the national rail revenue generated
- Optimise use of network capacity and capability
- Effectively serve the corridor and its major international venues
- Improve accessibility and usage - including several new stations
- Walk-up frequency (15 mins or less) and improved journey times
- Deliver significant efficiencies, reduction in unit costs
- Grow usage and revenues – 400% achieved elsewhere
- Only achievable using the superior performance capability of electric trains
- Maintain capability to operate direct London services

**BUT:**

- The line straddles three transport authority areas with historic absence of “ownership” post rail privatisation. Harrogate Borough Council is the largest single stakeholder by revenue and volume by a considerable margin.
Unlike other routes in the region, already serves or potentially could serve many venues and destinations apart from Leeds

- Many complex passenger flows in four directions simultaneously, peak, contra-peak and off-peak.
- Two Leeds Universities + Trinity college (Horsforth) + two York Universities
- Headingley Carnegie stadiums (cricket & rugby)
- Leeds Bradford International Airport,
- Great Yorkshire Showground,
- Harrogate Spa town, shopping centre and major college
- Pannal and Hornbeam Business Parks
- Knaresborough historical town centre
- City of York - major national tourism centre & National Railway Museum
- Excellent public transport links are imperative for all these venues
- A1(M) Park and Ride capability offers significant untapped potential.
The Harrogate Line - where are we now?

• Illustrative planned weekday seating capacity averages 206 per train
• Average observed seating capacity of widely mixed diesel fleet approx 170 per train – estimated average load factors around 75%-85%
• 11% of worst recorded crowding in the Northern franchise occurs between Leeds, Horsforth and Harrogate.
• Many complaints about the poor quality of a very mixed bag of old uncomfortable rolling stock with high density seating configuration
• inadequate journey times, frequency and connectivity at Leeds and York
• inadequate reliability and punctuality.
• Development and growth severely frustrated by the availability and capability of slow diesel rolling stock
• New stations frustrated for the same reason
• Key destinations on the route and income generation not served
• Accessibility severely hampered by inadequate car parking

YET: - High level of generation of long distance travel, esp. to/from London.
The Leeds-Harrogate-York Line: Where are we now?

Harrogate-York services constrained by:-

• Capacity bottleneck at Skelton Junction with East Coast Main Line
• Single line sections Knaresborough-Cattal and Hammerton-Poppleton
• Availability, capacity and capability of diesel rolling stock
• Inability to contemplate additional stations due to rolling stock + single line

but

• 7% annual growth in journeys to/from/via Harrogate (highest across route)
• Major development plans along the line inhibited by absence of stations.
Where are we now?
Usage by grouped stations (incl. 2010 growth)

Leeds City Council area (WYPTE) = Burley Park + Headingley + Horsforth (+5%).

Harrogate Borough Council area = Weeton + Pannal + Hornbeam Park + Harrogate + Starbeck + Knaresborough + Cattal + Hammerton. (+7%) 

York City Council = Poppleton (-1%)
Where are we now? – poor connectivity/inadequate rolling stock

Harrogate line passengers (left) wait to gain access to the Class 144 pacer train Leeds-Harrogate-York on a wet platform 4 at Leeds station (12.29 June 2011). Many have just arrived in a high quality environment from London with luggage. The national revenue flow derived from connecting long-distance journeys (particularly London) is estimated to be almost double the income earned from local journeys internal to the route.

Overcrowded conditions on-board the 1720 York-Harrogate-Leeds contra-peak service in July 2011. Intending passengers were unable to board at Headingley & Burley Park. This was a 4-car train. Revenue collection staff were unable to perform their duty.
Where do we need to get to?.. in our lifetime!

- Higher capacity trains with better seating and more standing room
- Some further platform extensions to suit longer trains as necessary
- Higher performance trains (better acceleration/braking)
- More frequent services – aiming for walk-up frequency
- Uplift from 30 to 15 minute frequency Leeds-Harrogate-Knaresborough
- Uplift from 60 to 30 minute frequency York-Harrogate
- More car parking at all Stations plus new Park & Ride facilities
- Extra stations to allow access to the services by a much wider audience e.g. Nether Poppleton (York former BSC site), Flaxby Moor A1(M) P&R
- Leeds Bradford International Airport Parkway station
- Significant improvement in reliability and in connectivity

Electric rolling stock on the Harrogate Line enable all these objectives
How might we get there affordably?

• Use cascaded rolling stock to quickly deliver the benefits

• Examine alternative low cost modern ground-level electrification (on DLR)

• Deliver affordable passenger benefits and efficiencies through electrification, single-person operation and smart-card ticketing

• Capital investment in extra stations and car parks to provide all-day accessibility

• Either Network Rail as a partner or a long-term concession is possible

• Iterative development plan for extra Stations and routes over 15-20 years

• Examine opportunities for development and operation a not-for-dividend/mutual company or concession locally controlled with key stakeholder representation, outside current rail franchising to re-cycle potential profits towards ongoing development.
Possible cascaded rolling stock options – Plan A-1

Class 315 4-car 25kV electric train – available 2018-20

- 318 Seats (+54% on current average)
- c.10%+ improved journey times
- Single Person operation
- Refurbished 2004
- No selective door controls
- No certainty of availability
Possible cascaded rolling stock options – Plan A-2

Class 317 or 319 4-car 25kV electric train – available ??

- c.198 Seats (+16% on current average)
- c.10%+ improved journey times
- Single Person operation
- Refurbished 2004
- No selective door controls
- No certainty of availability
Possible cascaded rolling stock options – Plan B

D78 6-car 750v DC electric train – available 2014-15

• 280 Seats (+36% on current average) + 700 standing for events

• c.12%+ improved journey times

• Single Person operation

• Refurbished 2007

• Selective door controls

• Certainty of availability 2015
Benefits of electric operation (D78 Metro)

- Significant increase in capacity
- Consistent standard train length
- Designed for single person operation
- Approx 10-12% faster running times and shorter station dwell times
- 20 years estimated forward asset life
- Estimated operating costs 50% lower per vehicle compared with diesel
- Maintenance costs 33% lower than diesel (D78 = £0.42p per vehicle mile)
- Significantly improved train reliability
- Significant contribution towards carbon/emissions targets and modal shift.

(Source Network Rail Electrification RUS & London Underground)
Electrification options

Electrification is needed - but a “one size fits all solution” may not be cost effective for the Harrogate Line

**RHS = Standard 25kV overhead electrification** – may involve significant overbridge structure replacement and additional feeder for power supplies

**LHS = Modern form low-level side rail 750v DC electrification** on Berlin Metro – by a UK supplier. May involve additional gauge clearance work in the lower sector and additional signalling immunisation
Why consider modern DC electrification option?

- No certainty of availability of suitable AC rolling stock in acceptable timescales.
- Age of 25kV cascaded rolling stock when it becomes available
- D78 rolling stock is recently heavily refurbished & available with certainty.
- The Leeds-Harrogate-York route has operated successfully as a self-contained enclave for over thirty years.
- There are no wider network benefits, diversions or freight over the route.
- Most new DC rolling stock is also dual voltage so can operate on either 750vDC or 25kV AC systems, e.g. Class 375/377, Eurostar, Class 395 etc.
- Close proximity of stations lends itself to conventional 750v DC metro operation (higher power to weight ratio/acceleration etc.).
Possible key Park & Ride stations include:-

**Flaxby Moor Park & Ride**

- Junction 47 A1M/A59 offers frequent journey opportunities to York, Knaresborough, Harrogate, Airport, Headingley and Leeds.
- Approx 10 minutes drive time from Boroughbridge and Wetherby
- Development site for station, park & ride + possible maintenance depot

**Leeds Bradford Airport Park & Ride**

- 1.9km from Airport terminal – just off Scotland Lane
- Served by extending existing Long Stay car park shuttle bus
- Park and ride for Bramhope / Yeadon / Cookridge
- Overspill for Horsforth (Car park usually full)
- 75%+ more journey opportunities & 21% faster journeys
Leeds Bradford Airport – potential new Parkway Station - Significant benefits for wider Leeds City Region – e.g. +75% more journey opportunities by train AND average 21% reduction in journey time.
November 2011 – strategy and objectives agreed across all stakeholders, led by Harrogate Chamber and hosted by Harrogate Borough Council:

- Harrogate Borough Council
- North Yorkshire County Council
- West Yorkshire Passenger Transport Executive
- Leeds City Council
- York City Council
- Network Rail

Electrification forms a fundamental, essential and urgent cornerstone of the strategy to fulfil increased capacity and improved frequency and accessibility along this vital orbital route.

(59% of all trips on the route involve travel to/from stations in the Harrogate Borough Council/NYCC area. (2010-2011 data). WYPTE = 39%; YCC = 2%)
Harrogate Metro Line – what next?

Electrification at 25kV or modern DC system as proposed endorsed technically in principle by the Rail Industry Vehicle/Traction Interface Committee in Sep 2011. (Network Rail, DfT, ORR & senior industry reps).

- Formalise alliance of key stakeholders and manage as one route - e.g. Harrogate Line Development Company.
- Lobby Government – Dept for Transport
- Resolve omission from industry planning process (RUS)
- Include in CP5 industry planning
- Demand forecasting & Business Case
- Feasibility/outline design estimates
- Synergy/opportunities arising from Trans-Pennine Electrification
- Set the agenda for franchise replacement /concession and beyond
- Funding for next steps to be secured (c. £0.3m)
Future vision – Harrogate “Metro” Line

e-mail: enquiries@harrogateline.org
website: www.harrogateline.org