

THE BORDERLANDS RAIL STUDY EXECUTIVE SUMMARY

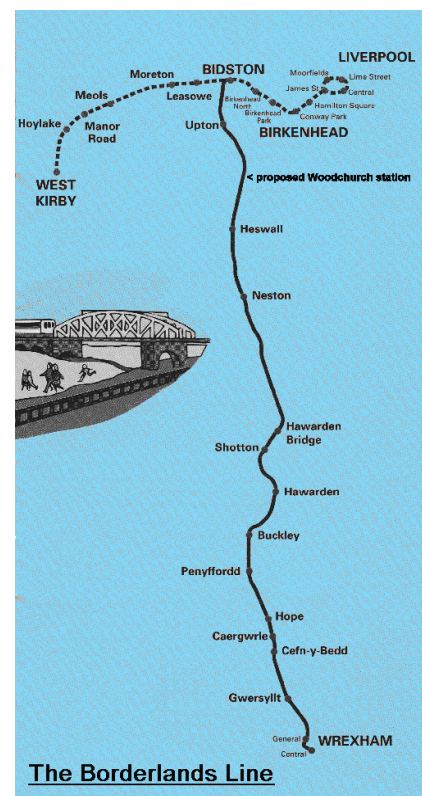
Background and Objectives

Faber Maunsell, with Elan PTC, was commissioned by the following organisations to undertake the Borderlands Rail Study in February 2005:

- Taith Consortium of North Wales Local Authorities;
- Welsh Development Agency;
- Merseytravel; and
- Cheshire County Council.

The local authorities on the route have long recognised that the Wrexham-Bidston (Borderlands) Line is an under-utilised asset. Over 200,000 people live within 2 kilometres of stations on the line and significant new development is projected. By 2020 35,000 new jobs and 2,800 new homes are planned in areas that the Borderlands line could serve. It has the potential to offer an important link between jobs and workers, opening up new opportunities and assisting in the regeneration of areas that have suffered through the decline of traditional heavy industries. It could provide a key direct link between Liverpool, The Wirral, North West Cheshire, Flintshire and Wrexham, yet it currently has only an hourly service and the northern end of the route stops short of both Birkenhead and Liverpool.

Against this background, the purpose of the Study was to assess the economic case for investment in the Borderlands Line, including electrifying all or parts of the line and integrating operations with the Merseyrail Electrics network (and thus potentially providing direct links into Liverpool). The work also considered the case for extensions to the existing diesel operation and new stations at Beechwood and Woodchurch in Merseyside and Deeside Park in Flintshire.



Initial Findings

A two-stage approach was adopted for the Study, with initial findings from the first stage shaping the refinement of the Options for economic appraisal in the second stage of the Study. The key findings from the first stage were:

- Doubling the service frequency and providing a direct link between Liverpool and Deeside appear to be the two main benefit wins;
- There are relatively high capital costs related to pushing electrification south to Deeside or Wrexham;
- Doubling the current service frequency on its own, or with electrification as far as a new station at Woodchurch, produce the most economically viable schemes;
- However, doubling the frequency of the current diesel operation between Bidston and Wrexham would perpetuate the current very tight turnrounds at both terminals. These present a significant reliability risk to both the Borderlands service and to Merseyrail Electrics. This would be unacceptable with a more frequent service;

- Extending the current diesel operation to Birkenhead North does not generate an economically viable scheme;
- New stations at Woodchurch and Deeside Park have the potential to generate significant patronage, although a new station at Beechwood does not;
- Shuttle bus links from Deeside Park and Shotton would extend the catchment area of the line to include key areas of employment growth.

On the basis of the above, a series of options was developed with the Client Group that appraised the incremental introduction of electrification southwards along the Line.

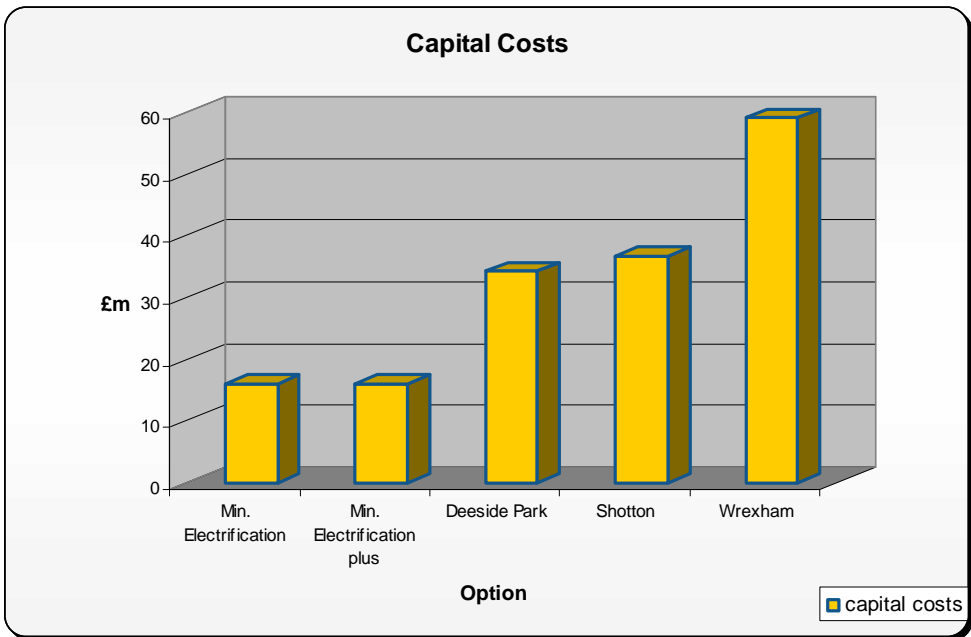
<p><u>'Minimum Electrification'</u> electric service (every 30 mins) Liverpool - Woodchurch / diesel service (every 60 mins) Woodchurch – Wrexham</p> <p><u>'Minimum Electrification plus 30 minutes'</u> electric service (every 30 mins) Liverpool - Woodchurch / diesel service (every 30 mins) Woodchurch – Wrexham</p> <p><u>Deeside Park Electrification</u> electric service (every 30 mins) Liverpool - Deeside / diesel service (every 30 mins) Deeside – Wrexham</p> <p><u>Shotton Electrification</u> electric service (every 30 mins) Liverpool - Shotton / diesel service (every 30 mins) Deeside – Wrexham</p> <p><u>Wrexham Electrification'</u> electric service (every 30 mins) Liverpool - Wrexham</p>
--

All these options included new stations at Deeside Park, replacing Hawarden Bridge, and Woodchurch. Shuttle bus links would be provided to employment sites from Shotton (for Broughton and Warren Hall) and Deeside Park stations.

Costs by Option

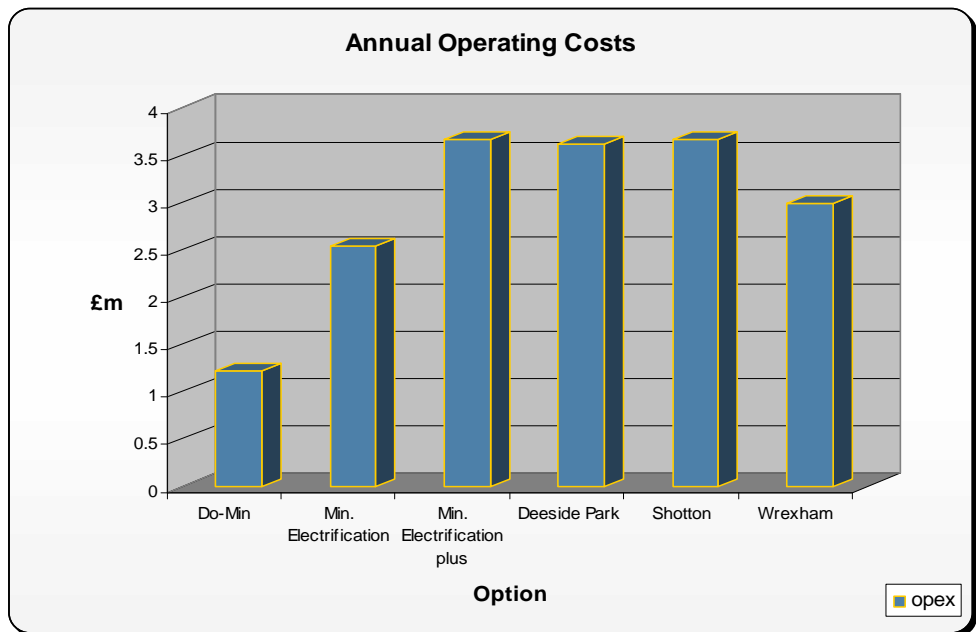
Capital costs were developed by option and incorporated the Government's guidance relating to the treatment of risk at this stage in the appraisal process (called Optimism Bias).

Minimum electrification to Woodchurch was estimated to cost £16m at 2005 prices. A further £20m would be required to extend this electrification to Shotton. Full electrification of the whole route was estimated to cost £59m.



The change in annual rail operating costs, compared to a 'Do-Minimum' scenario, assuming today's service pattern, was calculated by option.

The current cost of £1.2m to operate the service would essentially double if electrification was introduced to Woodchurch (with a doubling of the service frequency as far as Woodchurch). Doubling the service frequency along the whole route to Wrexham would result in annual operating costs in the region of £3.6m, although if the whole service was operated by electric units (Liverpool to Wrexham) then this would be reduced to £3m.



Change in Patronage and Revenues by Option

By 2020, patronage and revenue with the current service is estimated to double as a result of the growth in development, coupled with anticipated changes in the economic and demographic characteristics and the relative competitiveness of transport modes, along the route.

Option	Annual Patronage, millions	Annual Revenue, £m
2004 Current	0.20	0.42
2020 Do-Minimum	0.45	0.96
2020 Minimum Electrification	0.54	1.16
2020 Minimum Electrification plus Higher Frequency	0.94	1.81
2020 Deeside Park	1.00	2.06
2020 Shotton	1.01	2.10
2020 Wrexham	1.01	2.19

Minimum electrification to Woodchurch would increase patronage on the route by nearly 100,000 trips and revenue by £200,000.

Doubling the service frequency along the whole route would double both the patronage and revenue compared to the Do-Minimum. Electrification south beyond Woodchurch would generate over 1 million trips by 2020, with annual revenue topping £2 million.

Economic Appraisal

An economic appraisal has been undertaken to determine the overall value of each option to society in transport terms. This appraisal was undertaken in line with the latest DfT and Network Rail investment appraisal guidance.

This appraisal produces 2 key indicators of the case for each option:

- Net Present Value (NPV) which provides an indication of the magnitude of the net benefit to society from the project. Any scheme with a positive NPV is in principle worth implementing; and
- Benefit:Cost Ratio (BCR) which provides a measure of the value for money of government expenditure.

While any scheme with a BCR above 1 would be worth pursuing in a world of unconstrained resources, to ensure maximum value for money the DfT are advising Ministers not to fund any projects with a poor value for money (BCR less than 1), few projects with a low value for money (1 to 1.5), some, but not all, projects with medium value for money (1.5 to 2) and most, if not all, projects with a high value for money (greater than 2).

The minimum electrification option generates a negative NPV and thus the BCR is less than 1. It is clear that if the frequency of the diesel service is not increased to 2 trains per hour to match the electric service then this has a detrimental impact on the results, overriding any savings in costs.

All four options that provide 2 trains per hour throughout the route record BCR values that indicate that they are economically viable.

Option	Net present Value, £m	Benefit:Cost Ratio
Min. Electrification	-3.3	0.90
Min. Electrification plus Higher Frequency	28.1	1.61
Deeside Park	19.9	1.37
Shotton	22.8	1.40
Wrexham	14.7	1.25

Electrification as far as Woodchurch records a BCR of 1.61 which therefore places it in the 'medium' value for money category according to current DfT value for money criteria. What is critical to the relative success of this option, compared to options which extend electrification into Wales, is the lower capital costs involved. Whilst full electrification to Wrexham significantly reduces the annual subsidy requirement (annual revenue minus annual operating costs), it is not enough to offset the much larger initial capital costs.

Some further sensitivity analysis adding potential developer contributions (through parking levies and Section 106 payments at Deeside Park) resulted in the Shotton electrification option recording a BCR close to 1.5.

The appraisal only considered the transport case for the scheme. It implicitly assumed that development in the corridor would be unaffected by the chosen option. However, improved transport accessibility and the commitment to the corridor represented by electrification could increase investor interest and lead to an increase in the quality, scale and pace of development.

Conclusions and Recommendations

The key conclusions and recommendations from this Study include:

- Any enhancement of the Borderlands Line must consider the doubling of the current hourly service frequency as a minimum requirement;
- Given this requirement, electrification of all, or part, of the route produces an economically viable scheme;
- In purely transport terms, the strongest case is for electrification to Woodchurch, although the wider economic and development benefits would be greater if electrification extended into Wales;
- If electrification is to be considered south of Woodchurch to the Deeside Area, then Shotton should be the target rather than Deeside Park;
- There is a good case for new stations at Woodchurch and Deeside Park as part of the overall development strategy for the line.