Halcrow Group Limited
16 Abercomby Place Edinburgh EH3 6LB
Tel +44 (0)131 272 3300 Fax +44 (0)131 272 3301
www.halcrow.com

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Technical note

Project	A96 Corridor Masterplan Stage 2	**Date**	11 July 2006
Note	Proposed New Railway Line	**Ref**	CBOAHB/200/TN1
Author	Mike Trotter		

1 Introduction

1.1 As part of the development of a masterplan along the A96 corridor considerations immediately east of Inverness have been undertaken. Consultations took place with interested stakeholders as to the composition of a development framework for Inverness East. A series of different options have emerged.

1.2 One of the options proposed the idea of rerouting the Aberdeen – Inverness railway line approximately five miles from Inverness in a southern loop via Balloch, Culloden and Smithtown. The idea of the re-routing is to capture the potential demand generated from an increase in population growth likely to occur with this particular option. The re-routing proposal has two halts, one at Smithtown and at a further halt at a proposed education campus adjacent to the A9 near the Raigmore Interchange. (see attached figure)

1.3 This technical note explores the issues underlying the re-routing proposal.

2 Physical Constraints

2.1 Without detailed design it is unclear whether the construction of the line is technically feasible. The main consideration however will be vertical alignment and the gradient constraints to which railways have to adhere. In this particular case this does not appear to be a problem with spot heights indicating a maximum level difference of approximately 18m over a couple of kilometres.

2.2 There is however, a further consideration that is the requirement to cross existing roads or flood plains at height. With a need for this route to cross the adjacent A96 and at least three local roads this will have a fundamental bearing on vertical alignment that will require more detailed consideration.

2.3 A further consideration is that of horizontal alignment. In this case there appears significant land available for the horizontal curves required to accommodate the connections to both existing lines.

2.4 Both halts would be ideally located on relatively flat and straight sections of track. By looking at the plan this looks achieveable although more detailed investigation will be necessary.

3 Patronage Demand

3.1 The proposed halt near Smithtown would provide a suitable station location with its ability to encompass a large element of the proposed residential development as it would have the 800m ideal walk in catchment for a new railway station.

3.2 For a basic railway halt, a minimum demand of approximately 100 passengers per day is likely to be required. The equivalent population to generate this daily demand is likely to be approximately 2,500 people within 800m of the proposed halt. This would be a pre-requisite for the station halt and if matched this may provide the demand for a railway halt at this location.

3.3 The second proposed station on the re-routing is to serve the proposed Campus/Business Park and the existing Inverness Retail and Business Park and is likely to attract a different type of demand than that of the proposed station at Smithtown. It differs in the directional nature of the demand in that the halt is likely to be an attractor of trips.

3.4 The demand is also more likely to be more limited than Smithtown as it is likely to be derived from the limited catchment of Inverness and its relatively sprawled population although Nairn and Tornagrain may provide future potential additional demand. The attractiveness of an attractor halt only 3km from Inverness may be questionable despite its proximity to an education campus and technical park. Travelling to the centre of Inverness in order to take a relatively infrequent train 3km from the centre is unlikely to be attractive for large parts of Inverness.

3.5 The economics of demand would tend to suggest that students are less likely to use the train than other socio economic groups due to its relatively high price differential.

4 Aberdeen-Inverness Line Capacity

4.1 The rail capacity in the area is in the form of the Aberdeen - Inverness railway line which acts as both a local service and long-distance service. The railway is single track, and constrained by long signalling blocks and few passing loops.

4.2 The introduction of two additional stations does not take account of the capacity constraint that currently exists on the line, which places track occupancy at a premium. This demands that the most efficient use is made of the existing infrastructure.

4.3 There also would still remain significant capacity restraints in terms of increasing the frequency of the service. This re-routing will do nothing to address this capacity issue. Re-routing and additional halts is likely to increase journey times between Aberdeen/Forres/Elgin to Inverness and act as a disincentive to longer distance travel.

4.4 Two additional local rail stations would slow strategically important rail trips between Aberdeen and Inverness. It would also increase track occupancy, making the possibility of any future frequency increases, or rail freight services particularly difficult to achieve.

5 The Economic Case

5.1 The economic case for the substantial capital improvements in signalling and new track required to service the two new halts, combined with the additional revenue support, would be particularly difficult to make within the current national context. It is highly unlikely that the overall benefits would even begin to approach the sum of the operating and capital costs.

5.2 Comparable costs of reopening (not new) railway lines indicate costs at £5m/mile plus the requirement for a passing loop (estimated £5-10m). In this case the two mile line is likely to cost well in excess of £20m with the associated earthworks, costs of bridging the A96 and tie in to existing rail lines at either end of the loop. Simple platform stations may have an estimated cost of £300,000.

5.3 The additional revenue generated by the relatively short distance trips between Smithstown (£3.00 return say) and the Campus (£1.50 return say) from Inverness would be unable to generate a significant revenue stream, sufficient to off-set additional costs. These would be local and relatively low-volume trips.

5.4 The economics of having three railway stations within approximately 5km of each other is unlikely to be attractive for route planners with the costs of direct and hidden costs of stopping unlikely to offset the marginal increases in patronage demand. Journey times between stations such as proposed are more likely to be more acceptable in a highly urbanised commuter belt as opposed to this particular area.

5.5 In summary the business case for the realignment is not likely to be the strongest given the high capital costs involved in the new construction, the questionable patronage demand from at least the Campus halt and the likely adverse impact on patronage demand from longer distance routes with the increased journey times.

6 Other Factors

6.1 Nevertheless there may be other factors to be considered when appraising the potential attraction of a new line. The environmental benefits of transferring potential trips from road to rail could be significant. The adverse effects of traffic congestion, noise, pollution and air quality would be lessened with the availability of a rail option.

6.2 The removal of the existing line along the Moray Firth would remove some degree of severance and provide a potential leisure/transport option for cyclists along the existing solum.

6.3 Notwithstanding these benefits, a more cost effective option may be to keep the existing railway line alignment and provide one halt for the Culloden area served by dedicated shuttle buses/park and ride facilities so enable commuting to/from Inverness.

7 Summary

7.1 The vertical alignment of the proposed line requires detailed consideration. In particular the requirement to cross the A96 and local roads will have a large bearing on the route gradient.

7.2 The demand potential would suggest a station may be viable to support over 100 passengers per day at Smithstown. It is unlikely that a station at the Campus with its close proximity to both Inverness and a proposed halt at Smithstown could support the potential demand required.

7.3 The addition of this new routing will slow strategically important rail trips between Aberdeen and Inverness and would also increase track occupancy.

Thus this new route will not alleviate the currently experienced constraints on route capacity.

7.4 The business case for the re-routing is not strong given the high capital costs involved in the new construction and the minimal likely increase in patronage demand.

7.5 Other factors such as environmental and socio economic benefits will likely offset some of costs incurred in constructing the line although not to such an extent as make this a viable case.

7.6 In conclusion, more detailed work on route alignment, capital costs and likely patronage demand is required to explore the option further for the re-routing. Preliminary thoughts however would tend to suggest this is an extremely ambitious scheme that, with the associated likely high capital costs, may struggle to present a positive business case.