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Introduction

Following a meeting with Gateshead MBC earlier in the year, the consultant team has undertaken an additional assessment of alternative alignments for 2 out of the 29 corridors assessed in Phase 1A:

- variant of Route 8 (Gateshead to Washington) - via Birtley
- variant of Route 19 (Gateshead to MetroCentre) - extended to Blaydon

Technical Assessment

Jacobs Gibb have assessed the technical feasibility of these variants in their note *Assessment of Routes from Gateshead to Blaydon and to Washington via Birtley* (March 2003). In the report, they identify specimen routes for each variant: two for Route 8 and one for Route 19. The alignments are identified on maps accompanying the report.

The findings of this note for the variant of Route 8 can be summarised as:

- 100% segregation not possible;
- two new (or modified) bridges would be needed to cross the ECML;
- may be considered a circuitous route between Gateshead and Washington.

The findings of this note for the variant of Route 19 can be summarised as:

- both options are technically difficult due to the local topography;
- both options impact on environmentally sensitive sites.

Demand and Economic Appraisal

Steer Davies Gleave has undertaken demand estimation and an economic appraisal for the two variants. The cheaper of the two Route 19 variants (Option 1 to Blaydon Burn) was appraised in full. This alignment is fully segregated and allows high floor operation.

A summary of the economic indicators are included in the Appraisal Summary Tables (ASTs).

NATA Appraisal

As well as a summary of the economic indicators, each AST assesses the variants against all five of the overarching appraisal objectives.

Conclusions

Variant of Route 8 (Gateshead to Washington) - via Birtley:

- not suitable for LRT given dispersed markets in Washington and small residential catchment elsewhere;
- A link from Gateshead to Team Valley (Route 9) to be taken forward into Phase 1B.

Variant of Route 19 (Gateshead to MetroCentre) - extended to Blaydon:

- Alternative solutions (bus using Centrelink infrastructure) should be investigated;
- Extensions to MetroCentre from Newcastle (Route 21) and Gateshead (Route 19) to be taken forward into Phase 1B.

Appraisal Summary Table (AST)

LRT Technology

Route 8c: Washington to Gateshead via Team Valley

Route Length

12.8 km

BCR

0.3:1

| | Sub-Objective | Impacts/Measures | | | |
|------------------|--|--|--|--|-------------|
| Economy | Transport Economic Efficiency | Present value of capital costs | £142.3m | Economic benefit to cost ratio | 0.3:1 |
| | | Present value of operating costs | £54.4m | Operating ratio | 0.4:1 |
| | | Present value of revenue | £20.0m | Orpheus share of in-scope trips | 14% |
| | | Significant development sites | Larger housing site at Birtley and smaller one in Gateshead. Access whole metro and national rail networks. North Section public transport flow very high. | | |
| | Population within 800m of the corridor | 42,358 | Jobs within 800m of the corridor | 42,966 | |
| | Wider Economic Benefits | The corridor serves | 0.71% | of people who live in the 16 most deprived wards in the study area (IMD, DETR, 2000) | |
| Safety | Accidents | Small positive impact | | | |
| Environment | Key constraints in the corridor | Travels along the edge of a built environment conservation and adjacent to numerous public open spaces. Potential Tyne floodplain within Team Valley. Low impact – route affects a limited number of environmentally sensitive receptors along its proposed alignment. | | | |
| Accessibility | Key public facilities in the corridor | The Baltic Centre, The Galleries Shopping Centre, Gateshead City Centre, Washington District Centre, Retail World | | | |
| | Local car availability | % of households within the corridor without access to a car | 38.9% | % above / below the study area average | 10.4% below |
| Integration | Key interchange opportunities within the corridor | Buses and Metro at Gateshead | | | |
| | Major regeneration initiatives within the corridor | Coalfields Regeneration Trust priority wards | | | |
| Implementability | Service Type Assumed Service | Street running for 27% of route Washington to Four Lane Ends | | | |
| | Feasibility | Rail line pathing issues on MetroCentre line | | | |
| | Network Integration | - | | | |
| | Cost Issues | - | | | |

Appraisal Summary Table (AST)
LRT Technology
Route 19B: Gateshead to Blaydon via MetroCentre and Blaydon station
Route Length
10.6 km
BCR
0.3:1

| | Sub-Objective | Impacts/Measures | | | |
|-------------------------|--|--|--|--|---------|
| Economy | Transport Economic Efficiency | Present value of capital costs | £116.5m | Economic benefit to cost ratio | 0.3:1 |
| | | Present value of operating costs | £46.3m | Operating ratio | 0.4:1 |
| | | Present value of revenue | £15.8m | Orpheus share of in-scope trips | 0.3 |
| | | Significant development sites | Employment site on south bank of Tyne. Access Gateshead centres and Metro and national rail network. | | |
| | Population within 800m of the corridor | no info | Jobs within 800m of the corridor | no info | |
| Wider Economic Benefits | The corridor serves | no info | of people who live in the 16 most deprived wards in the study area (IMD, DETR, 2000) | | |
| Safety | Accidents | Small positive impact | | | |
| Environment | Key constraints in the corridor | West of Blaydon there is Green Belt with high landscape value and SNCI including Blaydon Burn. Entering the urban area towards the Metrocentre, the route is within 1000m of a SSSI and LNR then directly adjacent to an SNCI for 100m and a built environment conservation area for 400m. Adjacent to protected open space and recreation routes. Existing rail route has medium impact - route affects a number of environmentally sensitive receptors along its proposed alignment. | | | |
| Accessibility | Key public facilities in the corridor | MetroCentre, Gateshead City Centre | | | |
| | Local car availability | % of households within the corridor without access to a car | no info | % above / below the study area average | no info |
| Integration | Key interchange opportunities within the corridor | MetroCentre hub, Blaydon rail station | | | |
| | Major regeneration initiatives within the corridor | Newcastle West Gate New Deal for Communities | | | |
| Implementability | Service Type Assumed Service | Fully segregated Four Lane Ends to Blaydon | | | |
| | Feasibility | Rail line pathing issues on MetroCentre line | | | |
| | Network Integration | - | | | |
| | Cost Issues | Rail/Metro interface uncertainty | | | |

NEXUS – Orpheus Project

Assessment of Routes from Gateshead to Blaydon and to Washington via Birtley

March 2003



Linking People to Places



Project Orpheus

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| | Prepared by | Reviewed by | Approved by |
|-----------------|----------------------------|----------------------------|----------------------------|
| ORIGINAL | NAME Nigel Dyson | NAME Peter Gross | NAME Peter Gross |
| DATE | SIGNATURE | SIGNATURE | SIGNATURE |

| | | | |
|-----------------|-----------|-----------|-----------|
| REVISION | NAME | NAME | NAME |
| DATE | SIGNATURE | SIGNATURE | SIGNATURE |

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1.1 Background

At a recent meeting with Gateshead MBC Officers and Members, a request was made to consider the viability of a route alignment extension from the Gateshead Metro Station to Blaydon and reconsider a potential route from Gateshead to Washington via the Team Valley and Birtley. The later route had been previously considered within the Phase 1A investigations.

1.2 Report Objectives

This short report aims to review the potential routes to service the above corridors and to examine their technical viability and associated costs.

The only realistic way of approaching the route to Blaydon is as an extension of Route 19 - Gateshead to the Metro Centre, along the Newcastle to Hexham heavy rail route. This is already included in the final 10 routes for consideration for Phase 1b. Any other route would be largely highway based or integrated with future development sites, requiring the crossing of the A1(M) on local roads and significant on-street running with the associated risk to journey times.

The route from Gateshead to Washington via Birtley reviews earlier work and examines a further route alignment.

2.1 Existing Public Transport Services

The town centre of Blaydon, and the adjacent residential and commercial areas, are currently served by a heavy rail station on the Newcastle to Hexham route. The station is offset from the main residential area to the south of the town centre, requiring relatively long walking and cycling links, although it is relatively close to Blaydon Bus Station for interchange. However the rail service is extremely limited with trains stopping only once or twice in the morning and evening peak periods to give access to stations to both Newcastle and towards Hexham and beyond. Most services stop at the MetroCentre to the east and Wylam to the west. It is understood that the rail operators, Scotrail and Arriva Northern consider that passenger demand at Blaydon is too low to support a regular stopping service.

There are a variety of bus services along the corridor between Blaydon and Gateshead. The limited stop X66 provides a direct link from Gateshead to the Metro Centre (10 mins) where passengers can interchange on to the Service 613 to Blaydon bus station (7 mins), giving a total journey time of around 22 mins. Additionally, Services 622, 649 and 605 provide direct links from Blaydon Town Centre to Gateshead via various route with journey times ranging from 25 30 minutes. A route that penetrates the main residential area to Winlaton Bus Station is the Service M1 which links to both Blaydon Bus Station and the MetroCentre on a half hourly service.

2.2 Potential Alignments

Any alignments have been considered as extensions to Route 19 Gateshead to the MetroCentre. They need to be tested in patronage terms against a simple extension of Route 19 to Blaydon Station. However the operators of the existing services on this line offer virtually no stopping services to Blaydon Station due to the lack of patronage and the proximity of the MetroCentre station where interchange with local bus services is focussed.

For competing LRT routes to be viable, they must provide the Blaydon residential catchment areas with journey times at least as comparative as current bus and rail services, or a combination of both. The use of a highway related tram type alignment from the MetroCentre to the outskirts of Blaydon is not considered realistic due to the capital cost of highway running and the adverse run time impacts.

Therefore two alignment options have been appraised

- The use of the existing Newcastle-Hexham heavy rail line to the west of Blaydon station and then via the old Rolands Gill rail formation to a terminus near the Burn Road/Black Lane

- junction. Pedestrian access may be difficult and the route will only run round the periphery of the urban residential area.
- A second route would be to leave the heavy rail line to the west of the A1(M) crossing and to pass to the south around the Shibdon Pond Nature Reserve to Shibdon Road. A tramway alignment would then follow the Shibdon Lane-Tyne Street route to Winlaton Bus Station. This has some gradients and narrow carriageway sections and currently accommodates a bus route.

2.3 Key technical issues

Both alignments considered would have longer journey times than the option to upgrade the existing rail service to Blaydon Station. However the Winlaton link could increase the penetration of the residential areas, with associated increased demand potential.

Option One – Link to Winlaton Bus Station

The route to Winlaton Bus station would be possible but involves a significant length of tramway with a number of localised design issues and limited ability to segregate the route. However this route is only considered possible, if derogation could be obtained to use tram vehicles on the rail route, which is looking increasingly unlikely. Additionally there may be adverse environmental impact on the nature reserve.

Option Two – Rolands Gill Route

It is considered that the alignment along part of the old Rolands Gill rail route will create adverse environmental impact on this footpath/cycle path route. Details on this are include in the Route 17 assessment. Access to the main residential area will be difficult due to the topography and walk links. Given the distance from the existing highway, interchange with bus services will not be convenient. However this alignment could accommodate Metro/high floor type vehicles and overcome the problem of interfacing tram and heavy rail vehicles on the Hexham-Newcastle heavy rail route.

In technical terms Option Two would be the most practicable and cost effective.

2.4 Capital and Operating costs

The capital and operating costs of the two route options have been assessed on the same basis as the other routes in the Phase 1a sift. This uses a unit evaluation of alignment type and length, key structure, approximate run times and vehicle kilometreage.

The results are shown below in tables 2.1 – 2.4 for each option.

Table 2.1 – Capital Costs – Option One

| CAPITAL COSTS | | | |
|------------------------------------|---------------|----------------------|------------------|
| Alignment Type | km | Cost/km | Cost (£m) |
| On-Street | 1.6 | 6.4 | 10.3 |
| Segregated | 0.6 | 2.8 | 1.7 |
| Structure | | 3.2 | |
| Modified Heavy Rail | 8.3 | 3.0 | 24.9 |
| Tunnel | 0.2 | | 15.0 |
| Total | 10.7 | | 51.9 |
| | | | |
| Return Journey Time (mins) | 48 | | |
| | | | |
| Vehicles | Number | Cost/Veh (£m) | Cost (£m) |
| | 6 | 1.5 | 9 |
| | | | |
| Development Costs | 3.6 | | |
| Railtrack Costs | 12.5 | | |
| Statutory undertakers Costs | 2.5 | | |
| Total Capital Costs (£m) | 79.5 | | |

Table 2.2 – Annual Operating Costs

| OPERATIONAL COSTS | |
|---|------------|
| Round Trip (km) | 21.4 |
| Vehicle km/year (x1000) | 676 |
| Total annual operating Cost (3m) | 2.3 |

Table 2.3 – Capital Costs – Option Two

| CAPITAL COSTS | | | |
|------------------------------------|---------------|----------------------|------------------|
| Alignment Type | km | Cost/km | Cost (£m) |
| On-Street | 0 | 6.4 | 0 |
| Segregated | 1.3 | 2.8 | 3.6 |
| Structure | | 3.2 | |
| Modified Heavy Rail | 9.1 | 3.0 | 27.3 |
| Tunnel | 0.2 | | 15.0 |
| Total | 10.6 | | 45.9 |
| | | | |
| Return Journey Time (mins) | 38 | | |
| | | | |
| Vehicles | Number | Cost/Veh (£m) | Cost (£m) |
| | 5 | 1.5 | 7.5 |
| | | | |
| Development Costs | 3.1 | | |
| Railtrack Costs | 13.6 | | |
| Statutory undertakers Costs | 0 | | |
| Total Capital Costs (£m) | 70.1 | | |

Table 2.2 – Annual Operating Costs

| OPERATIONAL COSTS | |
|---|------------|
| Round Trip (km) | 21.2 |
| Vehicle km/year (x1000) | 670 |
| Total annual operating Cost (3m) | 2.3 |

2.5 Conclusions on Route

It is considered that the route Option One to Winlaton via a tramway link is expensive, relatively slow and has limited benefits over the existing bus and rail links to Gateshead and Newcastle. Additionally the use of tram type vehicles on the existing heavy rail route is problematic and unlikely to be cleared by Network Rail or the HMRI without significant derogations.

Route Option Two provides a better technical solution but is considered unlikely to generate adequate patronage due to the relation of the alignment to the centroid of the Blaydon residential area.

3.1 Potential Alignments

The alignment considered forms an extension of the Gateshead to Team Valley Route 9 and parallels the original Route 19 routes. These were considered in the earlier Phase 1A analysis but ran to the east of the A1(M) in a southbound direction from Kingsway South. The new alignment has now been assessed from Kingsway South via a new park and ride site just to the south of the A1(M) and then due south on or adjacent to the road alongside the railway sidings and the River Team. The East Coast Main Line (EMCL) would be crossed using the road between Birtley and Knibblesworth. The alignment into Birtley would then join the originally considered route at the crossing of the Bowes Railway Route. This would allow the potential for a fair degree of segregated alignment in the order of 70%. However two improved bridges would be required to pass under the ECML and the adjacent line to the rail sidings area. The route remainder of the route would use the originally considered alignment through the Birtley residential area, partly on Durham Road and then to Washington Galleries.

3.2 Key Technical Issues

The technical issues are similar to the original Route 9A – Washington to Gateshead via the Team Valley. Additionally two new or modified bridges would be required to cross the ECML. On this route there are some relatively severe gradients and a tram type vehicle would be required to deal with the on-street sections, creating interface problems running on the Hexham-Newcastle heavy rail route.

3.3 Capital and Operating costs

Most of this route has already been evaluated in the earlier phase 1a sift. The costs below have been up dated and modified to reflect the cost changes contained in the evaluation of the final 10 routes, short-listed for Phase 1b.

Table 3.1 – Capital Costs

| CAPITAL COSTS | | | |
|------------------------------------|---------------|----------------------|------------------|
| Alignment Type | km | Cost/km | Cost (£m) |
| On-Street | 3.5 | 6.4 | 19.8 |
| Segregated | 6.4 | 2.8 | 17.9 |
| Structure | 0.4 | | 2.2 |
| Modified Heavy Rail | 2.3 | 3 | 6.9 |
| Tunnel | 0.2 | | 15.0 |
| Total | 12.8 | | 61.8 |
| Return Journey Time (mins) | 69 | | |
| Vehicles | Number | Cost/Veh (£m) | Cost (£m) |
| | 8 | 1.5 | 12 |
| Development Costs | 3.8 | | |
| Railtrack Costs | 3 | | |
| Statutory undertakers Costs | 5 | | |
| Total Capital Costs (£m) | 85.6 | | |

Table 3.2 – Annual Operating Costs

| OPERATIONAL COSTS | |
|---|------------|
| Round Trip (km) | 25.6 |
| Vehicle km/year (x1000) | 808 |
| Total annual operating Cost (3m) | 2.7 |

3.4 Conclusions on Route

The newly considered route is very similar to the original alignment analysed in Phase 1a. However it does allow for direct access to a potential park and ride site to the south of the A1(M) at the Kingsway Junction. From a technical viewpoint it is practical but requires the crossing of the East Coast Mainline west of Birtley.