QCS Value for Money Assessment: Economic Appraisal Derivation

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Prepared for:
Nexus
Nexus House, St James’ Boulevard
Newcastle-upon-Tyne, NE1 4AX

Prepared by:
Steer Davies Gleave
67 Albion Street
Leeds, LS1 5AA
0113 385 6400

www.steerdaviesgleave.com
Introduction

This report summarises the Value for Money appraisal of Nexus’ proposed Bus Quality Contract Scheme (QCS) for Tyne and Wear and the Voluntary Partnership Agreement (VPA) alternative.

The benefits of the scheme have been assessed as a comparison of the Do Minimum (DM = business as usual) and QCS or VPA options.

This report sets out the measures included within the economic appraisal, identifying the impact of modelled measures on:
- The public
- Transport operators
- Local and Central Government

This document sets out the derivation of the conventional ‘static’ central case appraisal.

A separate Value for Money assumptions report includes details of the risk simulation undertaken around the central case results.
Appraisal Drivers

A review of the affordability model identified the inputs influencing the monetised economic appraisal as follows:

1. Bus Network Service Level
2. Fares
3. Service Operating Costs
4. Soft Measures
5. Costs and Savings
6. Mode Shift from/to Highway
1) Bus Network Service Level

Changes in the overall level of bus service offered are represented through:
- Bus Hours operated - influencing both passenger demand and operating costs
- Peak Vehicle Requirement - influencing only operating costs

The relationship between changes in supported bus hours operated and the number of passengers travelling on those services is based on an elasticity of -0.48

This calculation does not directly give the change in journey time required for the appraisal
- The passenger benefits are therefore calculated on the basis of the change in average journey time which would give an equivalent change in demand
- The total benefit is sensitive to the model’s average journey time assumption
- The appraisal standard ‘rule of a half’ is applied - ie passengers continuing to travel receive the full time benefit/disbenefit but generated/lost passengers receive half of the impact
- The total minutes journey time change are summed for each year and monetised
2) Fares

The change in average fare paid forms an input to the model with two impacts:

- Passengers benefit from a reduction in fares/disbenefit from an increase
- Farebox revenue varies from the change in fare and the resulting change in demand

The relationship between changes in fare and the number of passengers travelling is based on an elasticity of -0.42 in the year of the change increasing to an equivalent total of -0.59 from year two

- The elasticity is applied to the change in real fare (ie excluding base inflation)

This change in average fare is used directly in the appraisal

- The ‘rule of a half’ is applied - passengers continuing to travel receive the full fare change while generated/lost passengers receive half of the impact
- The total fare changes are summed for each year

Farebox revenue is also used in the appraisal

- Revenue is converted into market prices (including indirect taxation) for consistency
- Consumer spending on untaxed PT fares results in a reduction in HMT income
- Whether public/private sector takes revenue risk is represented
3) Service Operating Costs

- Service operating costs vary in response to changes in bus hours operated and peak vehicle requirement

- Inputs into the model include annual changes in:
  - Labour
  - Fuel
  - Other operating costs
    These are common between DM/QCS/VPA scenarios

- The change in service operating cost is used directly in the appraisal
  - Converted into market prices (including indirect taxation) for consistency
  - The assumed operator’s margin is included for QCS where the public sector takes full revenue risk
4) Soft Measures

- Equivalent journey time benefits from ‘Soft Measures’ (as established by Aecom’s report for DfT and proposed to be included within the next update of its Web Transport Appraisal Guidance) are specified as an input to the model.

- The demand response is derived based on comparing an assumed average journey time (walk + wait + in-vehicle-time) with/without the benefit based on an elasticity of -0.9.

- The benefit is specified as an equivalent time saving and is directly used in the appraisal:
  - The benefit is applied to the proportion of passengers specified as receiving the benefit.
  - The ‘rule of a half’ is applied - i.e., passengers continuing to travel receive the full time benefit/disbenefit but generated/lost passengers receive half of the impact.
  - The total minutes journey time change are summed for each year and monetised.

- The derivation of benefits for ‘Soft Measures’ is the same as for ‘Network service level’.
5) Costs and Savings

The costs and/or savings of the interventions represented are converted into market prices (including indirect taxation) for consistency and included within the appraisal.

Items included within the model are:
- Revenue losses from intervention
- Assumed reduction in child concessionary fare payments
- Assumed reduction in supported service payments
- Revenue from supported services (net cost)
- Implementation
- Management
- Other operator income transferred to Nexus
6) Mode Shift from/to Highway Impacts

- WebTAG Unit 3.13.2 sets out a process for calculating the external costs of car use based on the change in vehicle km on the highway network.

- The change in bus km on the highway is derived from the change in bus hours operated and the existing bus service km data contained within the model.

- The change in car km is based on the change in passenger km travelled and assumptions of the proportion switching to/from car and average car occupancy (taken from WebTAG).

- The external costs of car use calculated include changes in:
  - Congestion
  - Highway maintenance costs
  - Accidents
  - Noise
  - Air quality
  - Fuel duty
Economic Appraisal - Value for Money Measures

The **Economic** measure is the Net Present Value (NPV) the sum of the net impacts of QCS vs DM on:

- The public
- Private transport operators
- Nexus
- T&W Districts
- Boundary authorities
- Central Government

A positive NPV signifies that the option represents value for money, with the highest NPV being the greatest value for money.

The **Effective** measure is the total of passenger/public benefits and PT revenues.

The **Efficient** measure is expressed as the ratio of the Effective measure to the net cost of delivering it:

- The calculation includes the same costs and benefits as the NPV.
- The efficiency ratio is not directly comparable with a standard DfT BCR having been adapted for a non capital project and representing a shorter (10 year) period.