DELTIX
transport consulting

Sustainable Newburgh Project

Review of potential for a Newburgh rail station

Final Report by Deltix Transport Consulting to A Douglas Consultancy for Newburgh Community Trust

March 2011

business • community • environment

CONTENTS

1. EXECUTIVE SUMMARY

Deltix Transport Consulting was commissioned in August 2010 By A Douglas Consultancy. The brief from Newburgh Community Trust states that: "The viability of reinstating Newburgh's Rail Halt in today's economic climate is most appropriately addressed by undertaking a literature review of previous studies and assessments undertaken, and setting these into a contemporary context." The bulk of this study was completed in 2010, but the Final Report was held back until completion of the wider questionnaire survey of households by Jo Secker Walker.

The study has been both desk and field based, including discussions and correspondence with Transport Scotland, Network Rail, First ScotRail, SEStran, Fife Council and Newburgh Community Trust members.

The most recent and most significant of past studies was *An Appraisal of the Viability of Developing New Rail Stations / Halt Facilities in Perth & Kinross*, delivered by the consultants Atkins in 2005). This examined the case for stations at Newburgh, Bridge of Earn / Oudenarde, Blackford and Greenloaning. Key conclusions of the study were that:

Key conclusions insofar as Newburgh was concerned were as follows:

- the provision of a new station at Newburgh or Bridge of Earn / Oudenarde was likely to require additional *local* train services to be operated, as the inclusion of an additional stop in existing train services would have a net detrimental effect on the attractiveness of existing train services operating between Perth and Edinburgh via Fife

- the proposed new train service could only be introduced if signalling was improved between Hilton Junction and Ladybank Junction

- demand projections indicated that there was only likely to be justification for a train service every two hours

Key recommendations insofar as Newburgh was concerned were as follows:

- further (Scottish Transport Appraisal Guidance Part 2) appraisal should be undertaken to examine new stations at Newburgh and Bridge of Earn / Oudenarde

- it would also be necessary to produce more robust estimates of demand, revenues and costs, and the impact of operating additional trains on the reliability of existing services

- Perth & Kinross and Fife Councils should enter into dialogue with the Scottish Executive to obtain support and possible financial assistance for further work to be undertaken.

The current study has reviewed the situation in light of demand, supply and public policy changes since 2005. The key positive changes (in broadly descending order of importance) have been:

- the Edinburgh-Perth rail service frequency more than doubled since 2008 (from 17 to 35 trains passing through Newburgh daily)
- upgrading of the rail route infrastructure between Hilton Junction (Perth), Newburgh and Ladybank
- increased local population (at Abernethy) and new development plans
- the success of recent Scottish station re-openings
- evidence of reduced station construction costs elsewhere in Scotland in recent years.

A further positive development is that re-opening Newburgh station was the clear top priority amongst potential sustainability measures in the recent questionnaire survey, backed by over 80% of respondents.

There have been significantly fewer negative changes since 2005, but a key issue is that Transport Scotland now has a presumption against new intermediate stations unless these are strategic in nature (because of the impact on through inter-urban journey times); and investment in stations of local or regional significance is now seen as the responsibility of local authorities, regional transport partnerships or other funders.

The key conclusions of this study are that:

(i) Since previous studies were undertaken in 1999-2005, across a range of demand and supply factors there have been significantly more positive than negative changes in terms of the prospects for a station at Newburgh.

(ii) The most positive of these changes has been the increased frequency of trains which pass through Newburgh, providing the basis for a train service of perhaps 10 stops in each direction at Newburgh.

(i) A key negative factor which has however to be overcome is the general presumption of Transport Scotland against funding and permitting the creation of new intermediate stations (unless these are of a strategic nature), due to their impact on longer-distance journey times.

(ii) The most realistic option for Newburgh is potentially a ‘swap stops’ strategy, with perhaps a majority of stops being transferred from Ladybank (which has one of the highest frequencies of train service per head of population in Fife) and the balance from a number of the small intermediate stations on the Highland Main Line.

(iii) A single new station strategy (ie only at Newburgh, rather than Newburgh plus Bridge of Earn / Oudenarde) would minimise the complexity and difficulty of a ‘swap stops’ strategy – it would also avoid the need for a new passing loop on the single-track Hilton Junction to Ladybank section, with associated additional capital costs in the range £5-10m and a much extended project timescale. A single-station strategy is therefore critical.

(iv) The capital cost for a single-platform station at Newburgh – excluding land purchase and any signalling changes (which are considered unlikely) – may now be closer to £1m than the £2m estimated by the Atkins report in 2005. A

range of funders is likely to be required, but these would not include Transport Scotland unless a future Scottish Government changed policy.

(v) Four future rail traffic scenarios for Newburgh station suggest that CO2 savings could range over a 30-year life from a minimum of 1,800t (30,000 passengers pa) to a maximum of 5,486t (90,000 passengers pa).

(vi) The household questionnaire survey results clearly demonstrate overwhelming community support for re-opening Newburgh station, but the projected rail patronage figures should be treated with caution. Any next stage of analysis of the case for a rail station would be resourced to undertake more detailed forecasting, potentially combining three methods – the recent survey-based evidence, demographic analysis and a 'trip rate' model.

(vii) Given that the train service is already in operation, a Newburgh station could be viably operated and maintained, almost certainly improving railway finances rather than requiring an additional revenue subsidy.

(viii) Experience elsewhere suggests that a strong and sustained local re-opening campaign would be required in Newburgh (and Abernethy) over a number of years.

The key recommendations of this study are that:

(i) Newburgh Community Trust should consult with the 'Laurencekirk Villages in Control' campaign and other rail campaign groups on their experience of successful station re-opening campaigns, and then consider the likely capacity and capability of the Newburgh and Abernethy communities to mount a strong and sustained Newburgh station re-opening campaign.

(ii) Dialogue should be entered into with Transport Scotland, the rail industry, Fife Council, SEStran and other interested parties (including representatives of the Ladybank community) to explore the acceptability of 'swap stop' options to minimise the impact of Newburgh stops on longer-distance journey times.

(iii) Funding should be sought for a pre-feasibility study (costing of the order of £15,000) to explore the key demand, supply and funding issues in more detail, as well as assessing emerging transport competition trends. If this proved positive, funding should then be sought for a full feasibility study, producing robust estimates of demand, revenues, costs, wider benefits and potential funders.

2. BRIEF, METHODOLOGY & REPORT STRUCTURE

2.1 Brief

Deltix Transport Consulting was commissioned in August 2010 by A Douglas Consultancy (on behalf of Newburgh Community Trust) to undertake a short review of the potential for a rail station on the existing Ladybank-Perth (Hilton Junction) passenger railway route. This review forms part of the Sustainable Newburgh Project funded by the Climate Challenge Fund.

The brief from Newburgh Community Trust states that: "The viability of reinstating Newburgh's Rail Halt in today's economic climate is most appropriately addressed by undertaking a literature review of previous studies and assessments undertaken, and setting these into a contemporary context."

The bulk of this study was completed in 2010, but the Final Report was held back until completion of the wider questionnaire survey of households by Jo Secker Walker.

2.2 Methodology

The study has been both desk and field based, including a **site visit** to the environs of the former Newburgh Station (closed 1955) and other possible locations for a new Newburgh station.

Telephone / e-mail / letter **discussions and correspondence** were undertaken with the following organisations:

- Transport Scotland (the Scottish Government's transport agency, who specify the franchise and fund the provision of ScotRail passenger train services, and can specify and fund Network Rail infrastructure enhancements)
- Network Rail (who own, maintain and operate the rail route infrastructure)
- First ScotRail (who operate internal Scottish train services)
- SEStran (the statutory regional transport partnership)
- Fife Council
- Newburgh Community Trust members, including its Chair (Cllr Andrew Arbuckle).

The principal **previous studies reviewed** were:

- *Fife and South Tayside Rail Study*, by Scott Wilson for Fife Council (1999)
- *Scottish Strategic Rail Study*, by Steer Davies Gleave for Scottish Executive (2003)
- *An Appraisal of the Viability of Developing New Rail Stations/Halt Facilities in Perth & Kinross*, by Atkins for Perth & Kinross and Fife Councils (2005).

Other **key sources of data** were:

- First ScotRail passenger timetables – for train service frequencies and journey times
- the First ScotRail website – for existing train fares from Perth & Ladybank stations to key destinations
- the 2001 Census – for comparison of Newburgh's resident population (and potential rail catchment) with other towns in Fife and along the Ladybank-Perth-Inverness rail corridor
- the Transport Direct website, funded by the UK Department for Transport, Scottish Government and Welsh Assembly Government – for carbon reduction impacts (http://www.transportdirect.info/Web2/JourneyPlanning/JourneyEmissionsCompare.aspx?repeatingloop=Y)

Key **contextual policy documents** reviewed were:

- *Local Transport Strategy for Fife 2006-2026*, Fife Council
- *Fife Structure Plan 2006-2026*, Fife Council
- the *Finalised St Andrews & East Fife Local Plan 2009, Fife Council*
- the Scottish Government's *Strategic Objectives for Scotland (2007)*
- the Scottish Government's *National Transport Strategy (2006)*
- Transport Scotland's *Strategic Transport Projects Review (2008).*

As part of the **household questionnaire survey** of Newburgh household, business and schools questionnaires' survey of Newburgh and the surrounding area (sub postcode area KY14 6**) undertaken by Jo Secker Walker for A Douglas Consultancy, a number of questions framed in conjunction with Deltix were included on current travel patterns and potential usage of a re-opened Newburgh rail station.

3. REVIEW OF PREVIOUS STUDIES

3.1 Introduction

The previous studies reviewed were:

- *Fife and South Tayside Rail Study*, by Scott Wilson for Fife Council (1999)
- *Scottish Strategic Rail Study*, by Steer Davies Gleave for the Scottish Executive (2003)
- *An Appraisal of the Viability of Developing New Rail Stations/Halt Facilities in Perth & Kinross*, by Atkins for Perth & Kinross and Fife Councils (2005).

3.2 Fife and South Tayside Rail Study

Scott Wilson consultants concluded that the renewal of track / upgrading works which were already programmed for Ladybank to Hilton Junction would give a time saving of 3.3 minutes. There were further works, costing in the region of £750,000, which could bring the time saving up to 4 minutes.

The report indicated that a passing loop on the Ladybank to Hilton Junction single-track section might be required to increase capacity in the long term, costing in the region of £4m. Alternatively, in the medium term, the provision of intermediate block signals on the Ladybank to Hilton Junction single track section would allow two trains heading in the same direction to operate at closer headways, at an estimated cost of between £100,000 and £150,000.

New stations at Bridge of Earn / Oudenarde and Newburgh would use up the journey time savings on the line brought by track improvements, but if only one station was built then there would still be a two minute time saving on through journeys.

A new station at Newburgh would cost in the region of £600,000 (6-car length single platform, with shelter). This station was not justified by itself but if housing development was completed at Oudenarde, then Newburgh could be justified around 2005-2010.

3.3 Scottish Strategic Rail Study ('SSRS')

Within this high-level study Newburgh was identified as one of the new rail stations in both the Medium Resource Scenario and the High Resource Scenario for the Tay area.

The SSRS examined the case for an hourly local service stopping at Newburgh and Bridge of Earn / Oudenarde, operating as an extension of the then Edinburgh-Markinch service. Some enhancements to track and signalling were assumed, including the doubling of the track between Hilton Junction and Bridge of Earn and the provision of passing loops at Abernethy and Newburgh.

The cost of a Newburgh station was estimated at £1m, with Hilton Junction to Ladybank capacity expansion estimated at £8m. The study concluded that the service would make a useful contribution to planning objectives, but would be marginal in terms of value for money.

The study also examined the relative benefits of a local service and an express service from Edinburgh to Perth/Inverness via Ladybank. It concluded that the benefit-to-cost ratios between the two service options were indistinguishable and that the local service would contribute more to the planning objectives of the Tay area than the express service to Perth and Inverness would do for the planning objectives defined for inter-regional services.

3.4 An Appraisal of the Viability of Developing New Rail Stations / Halt Facilities in Perth & Kinross

(i) Objectives / methodology:

This study by Atkins (delivered in 2005) examined the case for a station at Newburgh in more depth than the two earlier studies. A partnership comprising Perth & Kinross Council, Scottish Enterprise Tayside, Fife Council, Highland Spring and the Highland Rail Partnership commissioned the consultants to examine the viability of stations at Greenloaning, Blackford, Bridge of Earn / Oudenarde and Newburgh.

The study was undertaken in accordance with the Scottish Transport Appraisal Guidance ('STAG') Part 1 methodology. This required a wide range of transport options to be identified and appraised with the aim of addressing current and anticipated future transport problems and issues. The overall objective of the study was to determine whether the station proposals were worthy of being taken forward to a more detailed examination in a future study.

Surveys of the travel patterns of existing rail passengers in the area were undertaken, and the 2001 Census journey to work statistics were analysed, but Newburgh area residents were not directly surveyed. Stakeholder consultation included Councillor Andrew Arbuckle and Newburgh Transport Users Group.

(ii) Existing situation:

A review of the existing situation recorded a population of 1,954 in Newburgh and 945 in nearby Abernethy. For a small town, Newburgh had a fairly high proportion (27%) of households with no car.

The review noted that the Ladybank to Hilton Junction route was single-track throughout its 16-mile length – with only around 20% comprising (modernised) continuous welded rail track – and had a maximum speed limit of 55mph.

At the time, the line was served by nine southbound and eight northbound passenger trains per day. Because of restricted maximum axle loading over the Forth and Tay Bridges, the line was the only unrestricted freight route into Fife [although no regular freight trains operated at the time – nor indeed do they in 2010].

Census journey-to-work data analysis results were not disaggregated below the level of Bridge of Earn / Newburgh combined, but for this area it was calculated that over 10 times as many trips were made to Perth than to Edinburgh. It was also noted that good bus links existed from the area to Perth, but no direct services to Edinburgh. The station surveys recorded nobody travelling by rail from the Newburgh area (eg via Ladybank station).

With regard to the wider policy context, the following were noted:

- the Government's objectives for transport – environment, safety, economy, integration and access & social inclusion
- the Fife Structure Plan, which safeguarded land for a station at Newburgh
- the new East Fife Local Plan, which was expected to allocate land for up to 500 new houses at Newburgh, possibly linked to the provision of a new station (at the original station site)
- the Fife Local Transport Strategy, which recorded the intention of Fife Council to apply for funding to implement the recommendations of the Fife and South Tayside Rail Study, including a possible Newburgh station (subject to detailed feasibility study).

(iii) Rail potential – demand and supply:

The report questioned whether a new Newburgh station would generate as many long distance commuters per head of population as stations on the Fife Circle line, because of the greater distance from Edinburgh. It suggested that "commuters generally do not want to travel more than 45 minutes to work", and cited Inverkeithing as "probably the place where congestion levels on the approach to the Forth Bridge reach a level when it becomes logical for many motorists to switch to public transport" (albeit that the station car park was "frequently full").

Capacity was highlighted as a major issue on the Perth (Hilton Junction)-Ladybank (Ladybank Junction) line, due to the lack of an intermediate passing loop and the low maximum line speed on the route. A time of around 20 minutes to clear the route placed "a major restriction on the timing and frequency of services possible to operate on the line."

It was noted that the opening of new stations at Newburgh and/or Bridge of Earn / Oudenarde would incur a time penalty of the order of four minutes each, "thereby threatening the ability to run an hourly service in each direction." [Note: The figure of four minutes per station stop added to the through journey time appears to be an error, as experience elsewhere on the rail network suggests just two minutes per stop should be added, particularly as the maximum line speed through Newburgh was (and still is) a relatively low 55 mph.]

Options for capacity enhancement included the following:

- replacement of the single track junction at Ladybank with a double track junction
- providing a long passing loop in the Newburgh area, or two short loops.

With regard to line speed, it was noted that in 1998 Scott Wilson consultants had identified scope for journey time savings of three minutes through track renewal / upgrade works, and around four minutes (cumulative) through a combination of minor track realignment works and improvements in track quality. Further surveys would be required to check whether level crossing layouts would still be suitable for the increased line speeds.

It was stated that, without a new local train service, these potential time savings would only allow one new station to be opened between Perth and Ladybank, and

that the introduction of additional stops on the Edinburgh-Perth/Inverness service "may however be contrary to the desire to make the journey from Perth and the Highland mainline to Edinburgh faster" and that therefore "it is considered unlikely that a new station could be served by existing train services."

Three different options were identified for the provision of a new local passenger train service between Perth and Ladybank (and onwards to Edinburgh), all of which assumed a frequency of stops of around every two hours at Bridge of Earn / Oudenarde and Newburgh. The analysis assumed that a local service would take 31 minutes to travel between Perth and Ladybank stations, including two intermediate stops. The two initially favoured train service options would necessitate either (a) additional signalling to enable trains travelling in the same direction to operate closer together on the single line, or (b) an extended passing loop in the vicinity of Hilton Junction (at the Perth end of the single-track section).

The preferred option was (a) as above, requiring the least additional infrastructure, albeit that this option could not – in conjunction with existing 'express' services between Perth and Edinburgh – provide an even spread of departure times from these two locations, due to operational constraints.

(iv) Potential station locations:

Examination of potential station sites at Newburgh assumed the following requirements:

- a platform of 150 metres length (and 2.5m width) to accommodate 6-coach trains
- a minimum 50-space car park with convenient road access
- meeting various railway technical and safety standards eg track alignment and curvature compatible with platform provision.

Three sites were examined in Newburgh, with those west and east of Hill Road rejected due to poor foot, car and bus access. The former station site (thought to be still largely in rail industry ownership) was recommended, due to the site size, accessibility and potential proximity to new housing, albeit it was noted that that there might be a need to relocate a railway signal.

(v) Appraisal of options:

This part of the study identified the likely demand and revenues for the proposed stations, and the likely scale of capital and operating costs. A range of options were then subjected to STAG Part 1 appraisal.

The option of providing a new station at Newburgh only (not jointly with Bridge of Earn / Oudenarde) was rejected for further (STAG Part 2) appraisal, as it was assumed that an entirely new train service would be required, and it was considered unlikely that "a station at Newburgh alone would generate anywhere near sufficient revenue to meet the operating costs associated with a new local train service".

Insofar as Newburgh is concerned, just one option was recommended to be taken forward to STAG Part 2 appraisal – namely opening two new stations at Bridge of Earn / Oudenarde and Newburgh, to be served by a new local train service (extending the then Edinburgh-Markinch service to Perth).

On the basis of existing Journey To Work data from the 2001 Census it was estimated that 220 current car trips per day from Newburgh & Bridge of Earn (aggregated) to Edinburgh & Lothian were 'in scope' (ie theoretical potential) for the proposed station re-openings. However, it was noted that a high proportion of car trips from Newburgh were to Perth, and that these "would attract low fares and the net benefit, considering that a good bus service exists already, would be marginal." In survey results, some 188 existing rail users suggested they would use a Newburgh station.

Using methodology from the railway industry's Passenger Forecasting Demand Handbook, detailed forecasts were prepared for both 'with' and 'without' planned future housing developments. In the case of the preferred scenario, with new stations at Newburgh *and* Bridge of Earn / Oudenarde, the following number of boarding trips per day was forecast for Newburgh:

- 100 (without housing development)
- 110 (with housing development).

In the case of a new station being provided at Newburgh *alone*, the following number of boarding trips per day was forecast:

- 120 (without housing development)
- 140 (with housing development).

The capital cost of constructing a single platform station at Newburgh was estimated at £2m (at 2004 prices); perhaps surprisingly, the same cost was estimated for a twin-platform station at Blackford. Signalling alterations to enable the preferred train service to be introduced (but with no requirement for a new passing loop @ £5m) were estimated to cost in the region of £1m (at 2004 prices).

Taking account of projected revenues and operating costs for a new local train service, all four scenarios appraised for a Newburgh station (ie with or without a Bridge of Earn / Oudenarde station, and with or without housing development) produced a requirement for an annual operating subsidy, ranging from £410,000 to £800,000.

(vi) Key Conclusions & Recommendations:

Key **conclusions** insofar as Newburgh was concerned were as follows:

- the provision of a new station at Newburgh or Bridge of Earn / Oudenarde was likely to require additional *local* train services to be operated, as the inclusion of an additional stop in existing train services would have a net detrimental effect on the attractiveness of existing train services operating between Perth and Edinburgh via Fife

- because there was a need to introduce additional train services, the case for Newburgh was greatly strengthened if a new station was also built at Bridge of Earn / Oudenarde, and this in turn was also dependent on housing development at Oudenarde

- revenues were unlikely to cover additional train operating costs, although almost two thirds of these costs were predicted to be covered if future

planned housing development in the Newburgh and Oudenarde areas took place

- the proposed new train service could only be introduced if signalling was improved between Hilton Junction and Ladybank Junction

- demand projections indicated that there was only likely to be justification for a train service every two hours

- the introduction of additional *express* services between Edinburgh and Perth (stopping at Newburgh and Bridge of Earn / Oudenarde) would require additional passing loop facilities to be provided between Ladybank Junction and Hilton Junction, which were likely to be prohibitively expensive

- overall, the option of providing new stations at Newburgh and Bridge of Earn / Oudenarde, served by extending the existing Edinburgh-Markinch service to Perth, performed best in the STAG Part 1 appraisal

- it was likely that an element of private finance would be required (over and above that which had been indicated would be available for Oudenarde) if the proposed stations were to open – further work was therefore required to examine scheme funding issues and delivery mechanisms.

Key **recommendations** insofar as Newburgh was concerned were as follows:

- further (STAG Part 2) appraisal should be undertaken to examine new stations at Newburgh and Bridge of Earn / Oudenarde served by extending the existing Edinburgh-Markinch service to Perth – assessing in more detail the economic and wider benefits

- it would also be necessary to produce more robust estimates of demand, revenues and costs, and the impact of operating additional trains on the reliability of existing services – this work would seek to confirm the findings of the Scottish Strategic Rail Study (2002) with regard to whether priority should be given to the needs of local trips which could make use of improved rail services, as opposed to more strategic travellers

- Perth & Kinross and Fife Councils should enter into dialogue with the Scottish Executive to obtain support and possible financial assistance for further work to be undertaken – dialogue was also recommended with the rail industry to ensure the station proposals were taken into account in future planning.

4. ASSESSMENT OF KEY CHANGES SINCE PREVIOUS STUDIES

4.1 Introduction

In a fast-changing market and political environment, circumstances have inevitably moved on beyond the assumptions and analyses of the three studies undertaken between 1999 and 2005. Some of the changes have negative implications for the prospects for a Newburgh station, but a majority are positive, as outlined below. These changes are assessed within three broad categories:

- the market for rail travel
- public policy & spending
- rail supply

4.2 The market for rail travel

(i) General rail travel trends:

The demand for travel by rail has been growing steadily in Scotland for more then a decade. Rail use at the 19 Fife stations grew from 4.7m in 2005/06 to 5.3m in 2008/09 – an increase of over 12% in three years. The new stations at Dalgety Bay and Dunfermline Queen Margaret attracted 272,718 and 214,664 passengers respectively in 2008/09.

Across Britain, 'Community Rail Partnerships' have been very effective in working with local partners (such as local businesses and community organisations) to raise awareness of their lines and have secured external funding for projects, including station improvements and extra train services, allowing services to better meet local needs. Many stations have been developed as local 'hubs' for businesses and/or community facilities, bringing benefits to both the railway and the community.

Partnerships go beyond a simple 'transport' agenda and link into wider strategies for accessibility, rural regeneration, social inclusion and sustainable tourism. Within Scotland, the Stranraer to Ayr Line Support Association ('SAYLSA') has in recent years organised many events to raise awareness of the railway and encourage greater use by local people. After an absence of 20 years, the station shop at Girvan was re-opened by SAYLSA, with the support of South Ayrshire Council and First ScotRail, selling refreshments and souvenirs.

In recent years, First ScotRail has launched an 'Adopt a Station' initiative nationally, and earlier this year Fife's Dalgety Bay and Rosyth stations became the 100th and 101st Scottish railway stations to be ''adopted'' by members of its local community. Inverkeithing and Dalgety Bay Rotary Club, which also covers Rosyth, have agreed to provide and maintain decorative floral planters at both stations, with the club members taking it in turn to water, weed and care for the displays. The planters were manufactured and supplied by a local company with connections to Rotary.

(ii) The success of Scottish station re-openings

Since 2005, station re-openings in Scotland have proved highly successful, and modelled forecasts of patronage have frequently underestimated actual station usage. Key examples are:

- Laurencekirk (re-opened 2009) – with 10/11 trains in each direction daily – was used by 60,000 passengers in its first year of operation, compared to the forecast 36,000, and has a number of parallels with Newburgh (similar population, fairly isolated and located on a main line served by express services)

- Alloa (2008) has 400,000 passengers annually, compared to a forecast of 155,000

- Larkhall (2005) was by 2008 being used by 40% more passengers than originally forecast

- Beauly (2002) has similarities to Newburgh, being a small wayside station with a population of 1,200 – and with 9/12 trains in each direction daily is now carrying around 60,000 passengers annually (four times the original forecast traffic).

(iii) Local population changes and development plans:

Newburgh, with around 2,000 residents, is the largest freestanding settlement in Fife adjacent to a passenger railway but with no station of its own.

The nearby village of Abernethy (three miles by road) has grown substantially in the last 10 years, to around 1,500 residents. Much of the new development is evidently commuter-based, and is therefore likely to have a good fit with what rail from Newburgh would be able to do best in competition with road transport, ie longer journeys and those during peak periods of road congestion, to key commuter / business travel / shopping & leisure locations such as:

- Kirkcaldy
- Edinburgh Airport & the Gyle (via the new 'Edinburgh Gateway' station)
- Central Edinburgh.

Together with Abernethy, Newburgh now has an immediate population catchment similar to Ladybank with Freuchie and Kingskettle (3,500) – and Ladybank station is now served by a total of 64 trains daily. Per head of population, Ladybank has one of the highest levels of train service provision in Fife.

The combined Newburgh / Abernethy population is now also greater than the immediate population catchment of a majority of the eight intermediate stations between Perth and Inverness, which are predominantly served by trains which pass through Newburgh.

The Local Plan now provides for up to 225 new houses at Newburgh, compared to the figure of up to 500 used for the 'with housing development' forecasts in the 2005 Atkins report. The latter speculated that these might be to the west of the town, convenient for the station, but the current Local Plan zones land at the eastern end of the town for this housing, around a mile from the station site.

The proposed Newburgh community wind farm, if it goes ahead and is successful, could possibly generate substantial new revenues which would in part be available for sustainable local projects, facilities and services – this could be a potential funding source towards capital expenditure and any revenue subsidy required for a

new Newburgh station, or the projected revenue stream could provide collateral for associated borrowing of capital funds.

The arrival of the Fife Coastal Path at Newburgh and the passage of the National Cycle Route close to the former Newburgh station both provide potential sources of inward leisure traffic for the railway, potentially linked to Newburgh's aspirations to be a 'green' town and to make more of its fruit-growing capability and associated Annual Plum Market.

4.3 Public policy & spending

(i) National:

A new Newburgh rail station would potentially contribute to all of the current Scottish Government's *Strategic Objectives for Scotland*, namely:

- **wealthier & fairer** – through strengthening economic prospects in an area of some social disadvantage, and providing a rail service to a community which has none (despite having a larger population than five Fife settlements which are already served by rail)
- **healthier** – through reducing air pollution emissions locally (since rail has a superior performance to private road transport)
- **safer & stronger** – through potential reductions in road deaths and injuries (since rail has a much superior performance to private road transport)
- **smarter** – allowing Newburgh to become more resilient, in no longer being wholly dependent on road transport
- **greener** – offering potential carbon reductions through modal switch from car to train (since rail has a superior performance to private road transport in terms of carbon emissions – see Section 5).

Scotland's National Transport Strategy, published in 2006, focuses on three strategic outcomes:

- improve journey times and connections
- reduce emissions
- improve quality, accessibility and affordability.

A Newburgh rail station would contribute to all these outcomes, albeit that adding a stop to existing Inverness / Perth to Edinburgh train services would *potentially* extend longer-distance journey times (see Section 4.6).

Scotland's Railways, also published in 2006, states that: "Measures to encourage passengers or freight to shift from road and air to rail can be generally seen overall as positive for the environment, in particular as a result of the reduction in air pollutant and climate change emissions".

Notwithstanding the above, Transport Scotland's *Strategic Transport Projects Review* ('STPR') in 2008 specifically considered new rail stations at St Madoes, Errol, Newburgh and Bridge of Earn as a potential intervention, but these were dropped at

an initial 'Sifting Stage', since "to the south of Perth the objective is to reduce journey times to Edinburgh, which this intervention would conflict with."

In its 9th September 2010 response (see Appendices B) to the 9th August 2010 letter from Deltix Transport Consulting on the potential for a Newburgh station (see Appendix A), Transport Scotland noted that during the STPR appraisal process:

> "the proposal was rejected due to the potential conflict with the Government's objectives of reducing journey times between Aberdeen and the Central Belt and Inverness and Edinburgh, as well as, limiting the potential to accommodate wider service improvements" and "We therefore have no plans to re-examine Atkins' proposals for a station at Newburgh at the present time."

[These objections can be satisfied, and potential strategies to achieve this are summarised in Section 4.6 below.]

Policy has also changed in terms of funding rail infrastructure improvements (including new stations), with Transport Scotland now focusing on the strategic dimension (as has long applied to the road network), leaving investment in stations of local or regional significance to local authorities, regional transport partnerships or other funders.

In the current economic situation, and with public spending cuts anticipated, there is inevitably a great deal of uncertainty about availability of capital funds for rail infrastructure enhancements, including further station re-openings. Politically it may be that Fife could face particular pressure on rail transport spending, since the £2bn Second Forth Road Bridge project will take up such a large proportion of the Scottish transport budget.

With regard to revenue expenditure and any subsidy requirements for a new station, it may be anticipated that there will be pressure to reduce the costs of the ScotRail franchise. Interestingly, given that a suitable train service is already in place, adding a stop at Newburgh might have a significantly positive net benefit in terms of revenue v. cost, offering a small but useful reduction in overall rail subsidy requirements. This issue is explored in more detail in Section 4.4(iv).

(ii) Local and regional:

Within the *Local Transport Strategy for Fife 2006 – 2026*, a Newburgh station is highlighted in the Integrated Transport Network section (ITP9) as a long term (10 -20 years) proposal, with an estimated cost of £2.5 million.

Within the *Fife Structure Plan 2006 – 2026*, a Newburgh station is highlighted in Transportation Section (PT1) Transport Proposals, showing it as both improving local and national access.

The *Finalised St Andrews & East Fife Local Plan 2009* was approved for public consultation by Fife Council's Planning Committee on 30th June, 2009. In the plan it is stated that "New development of the scale proposed in the Local Plan strategy will require improvements to the rail network and so the Local Plan safeguards land for new rail halts at Newburgh and Wormit", and that Newburgh "is well located to have a strong functional role, both within Fife and looking outwards to Perthshire. This Local Plan proposes a significant housing allocation for the town, to be the subject of a

masterplan, which will support the development of a new rail halt to help realise the town's potential as a gateway to Fife."

The station area, and the nearby car park on Abernethy Road (which has capacity for around 40 cars), are allocated as area 'NEB03' ('new rail halt with park & ride and employment'), comprising 'strategic transport network improvements', 'junction and car parking improvement' and 'serviced employment land' (a small area to the north east of the station site encompassing light industrial businesses in two buildings).

4.4 Rail supply

(i) Network Rail guidance on investment in new stations:

In 2008 Network Rail published *Investment in stations: a guide for promoters and developers*, a document reflecting "how industry changes have influenced the process for implementing new stations" [since the previous (2004) Strategic Rail Authority guidance].

Key operational, commercial, economic and design/technical issues for consideration are set out in some detail in the document – in terms of technical issues in relation to station siting (eg track gradients, curvature, etc) there is little difference from the requirements noted by Atkins in 2005 (see Section 3.4 (v)). The Office of Rail Regulation's related document *Railway safety principles and guidance* flags up two key factors for consideration:

- stations should be constructed with straight platforms and on the level or on a gradient not steeper than 1 in 500 – minor stations may be built on steeper gradients where suitable arrangements can be made to ensure safety

- the location of station buildings should take account of the need for sighting of signals.

In the case of Newburgh, the track is straight at the station site, and the gradient is understood to be 1 in 158 – which is not as steep as at least two stations which have been built in modern times in Scotland (Newcraighall and Armadale) – and therefore no technical problems are envisaged in these two respects.

There are two signals in the immediate vicinity of Newburgh station, one to the west of the station and one to the east, separated by a distance of around 350m, controlling movement in the southward and northward directions respectively. In simple terms, these 'intermediate block' signals allow two 'following' trains, *ie travelling in the same direction,* to be occupying the single-track section between Ladybank Junction and Hilton Junction at the same time.

Normally, a safety 'overlap' distance of around 180m is required beyond the signal before any platform where a train might be standing (to cater for the eventuality of a train passing a signal at 'danger' (ie red). At Newburgh however there is insufficient overlap distance available between the two signals to provide for overlaps from each signal (circa 360m total) plus a 150m platform.

In practice this 'following' train capability is not utilised in the current timetable, since there is an hourly frequency of service between Edinburgh and Perth, so by the time

a northbound train has passed Newburgh, there is insufficient time for a following train to reach the double-track at Hilton Junction before the southbound train is timetabled to enter the single-track section to Ladybank.

There are a couple of theoretical 'paths' in the early morning / late night where following trains could be provided, but the service is timetabled to avoid this necessity. In a future scenario with a Newburgh station, an overlap could be provided in one direction only without any capital expenditure on signalling changes, while in the other direction the timetable and operating instructions could be programmed to avoid following train situations. At this stage it is considered much more likely that this fit-for-purpose approach to what is a relatively simple secondary main line environment would be approved by the rail regulatory authorities, rather than there being an insistence on signalling changes which might cost of the order of £300,000.

With regard to the wider process of providing new stations, Network Rail has developed a Guide to Railway Investment Projects ('GRIP') as its in-house vehicle to monitor and project-manage investment in the rail network. Before the GRIP process commences, however, the following stages will need to have been gone through by the promoter / developer of a new station:

1. A feasibility study undertaken to satisfy the promoter / developer and potential funders that the scheme is technically and operationally feasible and that the commercial / economic / social / environmental benefits justify the likely capital cost and any revenue subsidy requirement.

2. Outline concept agreed by the promoter / developer, and 'in principle' commitment secured from funders.

3. A 'Project Inception Report' submitted to Network Rail (and Transport Scotland) covering four key areas:

    (i) a statement indicating that there is sufficient capability within the rail network to accommodate the new station;

    (ii) a discussion of why the promoter has decided to promote the new station;

    (iii) a statement of the basic design and operational requirements, eg number and length of platforms, interchange with other modes of transport, and disabled access; and,

    (iv) a site suitability statement, identifying the location of the site as appropriate with regard to curvature, gradient, public access, etc.

On receipt of the Project Inception Report, a scheme will progress to pre-Stage 1 of GRIP when all rail industry parties and the promoters are satisfied that the scheme is feasible.

As noted by Atkins in 2005, the complexity of the issues involved in efforts to develop new stations should not be underestimated, and implementation can take five years or more to achieve, depending on the specific local circumstances. In the case of Beauly, just four years elapsed between the initial proposal and the first trains calling, despite there being complicating regulatory and safety factors associated with building a platform much shorter than the train length. The Edinburgh CrossRail

service to Newcraighall – which involved the construction of two new stations and the extension of services over a stretch of track which had not carried passenger trains for 33 years – was first mooted in 1997 and began operations in 2002.

(ii) Station construction costs:

While the cost of new stations has risen substantially since the privatisation of the rail network in the mid-1990s, some progress on costs has been made in recent years. Network Rail's guidance on new stations notes that: "[our] modular station design is a new concept of station that is created off-site and assembled together on-site within days. Economies of scale can be achieved from having a standard drawing-board design that can be modified to fit in with local conditions and offers significant financial benefits to building or replacing existing station facilities compared to traditional bespoke methods".

Railway engineering associates of Deltix, who have been working recently on station platform extensions in Ayrshire, consider that modular construction techniques and simpler on-site working methods could now allow a 6-coach single-platform station to be constructed at Newburgh (including remote public address, waiting shelter, car park and road access) for closer to £1m than the £2m estimated by Atkins in 2005.

This excludes land purchase and any signalling changes (which are considered unlikely), and is of course subject to detailed engineering study. Given that much of a station construction site (other than the platform itself) would not be in Network Rail ownership, this further increases the potential for innovative approaches to design and costing.

(iii) Network Rail Scotland – Route Utilisation Strategy:

In 2007 Network Rail published its Route Utilisation Strategy ('RUS'), examining current and future markets, predicted growth and strategies to accommodate this growth.

Noting that the Edinburgh-Fife-Dundee route generated unacceptable performance and that capacity was insufficient to meet demand, it identified and supported the option to increase line speeds between Hilton Junction and Ladybank to various speeds in the range 65-90mph. This improvement would be delivered in line with a number of phased planned renewals (including some minor signalling alterations) which were then scheduled to be completed by 2009, securing a reduction in journey time of around four minutes.

The document also supported the provision of an hourly 'semi-fast' service between Edinburgh and Perth via Fife (see below).

(iv) Enhanced Edinburgh-Perth rail service:

In December 2008, ScotRail express and semi-fast services through Fife were substantially enhanced, with Transport Scotland funding allowing the frequency of train services between Edinburgh and Perth to be increased from 8 to 17 northbound and 9 to 18 southbound. 12 of the northbound and 13 of the southbound services stop at Ladybank,

This enhancement has in effect created the new train service which Atkins in 2005 concluded would be required to service new stations at Newburgh and Bridge of Earn

/ Oudenarde. However these are 'semi-fast' / 'express' rather than 'local' services, making only limited stops within Fife, and therefore additional stops between Ladybank and Perth would in principle extend existing journey times for longer-distance inter-urban passengers.

Whereas in 2005 the preferred option involved promotion of stations at both Newburgh and Bridge of Earn / Oudenarde (to boost revenues to minimise the amount of annual revenue subsidy required to support the new local train service), in the new circumstances a single new station is more likely to be an achievable objective, since:

- one station stop on the single-track Ladybank Junction to Hilton Junction section is potentially achievable within line capacity constraints, whereas two stops push closer to a requirement for a new passing loop

- one station stop minimises the knock-on impact on longer-distance journey times from Perth and Inverness to Edinburgh.

If an additional station stop at Newburgh can be achieved without unacceptable knock-on impacts on line capacity and through journey times, then the great benefit of the new circumstances is that instead of a revenue subsidy of between £410,000 and £800,000 (at 2004 prices) being required, only modest additional operating costs would be incurred, in essence as follows:

- a small increase in train fuel consumption

- day-to-day maintenance of a basic unstaffed station – estimated by Atkins in 2005 at £6,100 annually

- long-term Network Rail station charges – estimated by Atkins in 2005 at £12,100 annually.

If one assumes an average return rail fare of £10 at Newburgh and a conservative estimate of 100 passengers daily (around 30,000 annually), then revenue in excess of £300,000 would be generated annually, against costs of perhaps £50,000 or less. While detailed analysis would be required to assess net revenue robustly (for example to take account of Newburgh residents who currently use the train from Ladybank), it can be seen that a Newburgh station would almost certainly have a positive impact on rail finances rather than requiring any new subsidy.

Even if deemed desirable, there is now no prospect of introducing an additional local train service without investment in a new passing loop in the Newburgh area, since the Edinburgh-Perth frequency enhancement has resulted in more than 90% of the capacity of the single-track section being utilised, with only some two or three spare 'paths' available for additional trains in the early morning and late evening.

In a scenario where a new loop was required at the site of Newburgh station, this would substantially increase the capital cost of such a station since two platforms and a pedestrian overbridge for passengers would be required.

A final point should be made with regard to medium-term plans for changes in train service stopping patterns – when the strategic new 'Edinburgh Gateway' rail/tram interchange station at Gogar is opened (likely to be in 2012), trains from Inverness and Perth will stop there. This will add to through journey times and will therefore not

assist the case for a Newburgh station further adding to journey times – but nevertheless will also open up an additional market for rail travel from Newburgh.

(v) Stopping patterns of Edinburgh-Perth-Inverness trains:

A significant proportion of the trains which pass through Newburgh originate or terminate at Inverness and make stops at intermediate stations on the Highland Main Line. The table below shows the number of daily daytime train stops at these stations (including Glasgow-Inverness and London-Inverness trains), plus the 2001 Census population of the freestanding settlement adjacent to the station.

	Daily trains (total)	Population
Aviemore	20	2,397
Pitlochry	19	2,564
Kingussie	18	1,410
Dunkeld	16	1,005
Blair Atholl	12	500*
Carrbridge	10	550
Newtonmore	9	982
Dalwhinnie	8	100*

* estimate (2001 Census figures not available)

(vi) Hilton Junction-Ladybank Junction route infrastructure upgrading:

The large majority of the track has been upgraded since 2005, incorporating modern continuous welded rail. Short stretches of traditional jointed track remain in the vicinity of Ladybank Junction and between Bridge of Earn and Hilton Junction. Despite track upgrading, the maximum speed limit on the single-track section remains 55mph, other than two short stretches of 45 mph (by Clatchard Craig quarry, south of Newburgh) and 50 mph (through Abernethy).

Following recent track alterations and passing loop extension at Hilton Junction (as part of Network Rail's ongoing track renewal programme), the length of single track route is now slightly shorter – 14¾ miles from the Hilton Junction loop exit to the entrance to the loop north of Ladybank station. Thence there is a further ½ mile route mileage before southbound trains (having passed through the single-track Ladybank Junction and the otherwise northbound platform at Ladybank station) reach the southbound main line. Trains typically take 17 minutes or less to traverse the single-track section, which, with allowance for some late running and for train pathing constraints elsewhere on its journey, enables a broadly hourly service in each direction to be operated through most of the day.

Network Rail advised that line speed improvements [from 55mph to 70mph] are anticipated, potentially reducing the journey time by between 1½ and 2 minutes. The remaining track upgrading (planned to be undertaken as part of programmed renewal work, rather than 'enhancement') is scheduled for 2014, and will offering a potential further time saving of up to two minutes.

(vii) Follow-up to Atkins 2005 report:

In respect of a Newburgh station, the Atkins report recommended (i) further (STAG Part 2) appraisal, (ii) the production of more robust estimates of demand, revenues and costs, and the impact of operating additional trains on the reliability of existing services, and (iii) entering into dialogue with the Scottish Executive to obtain support and possible financial assistance for further work to be undertaken, plus dialogue with the rail industry.

Fife Council has advised that here has been no further work undertaken on the feasibility of a new station since the Atkins report. The Council has lobbied to gain support for the project from Scottish Government and Transport Scotland but these bodies have indicated that Newburgh does not fit with their short to medium term rail policy priorities. The regional transport partnership, SEStran, has also had meetings with Transport Scotland and Ministers to discuss the rail station but have not been successful in securing commitment to the project.

(viii) Land ownership and condition at Newburgh station site:

In 2005 Atkins reported that the former station site was thought to be still largely in rail industry ownership, but a land plan supplied by Network Rail for this study shows that it now owns only a relatively narrow corridor on each side of the operational track. The derelict former platform and station building, the former goods yard and the station approach road have in practice been in private ownership for a number of years; according to the Registers of Scotland, it was purchased in three tranches by the current owner (Iain Peter Brown) for a total understood to be £108,000, between 1996 and 2008.

However, less than half of this land area would be required for the station and associated facilities, and these would not encroach on the current light industrial activities towards the north east corner of the site. The majority of the site is zoned for rail-related development in the Local Plan – 'Other Transportation Proposal (rail halt)' – apart from a small area encompassing two light industrial businesses which is classified as 'Protected Employment Area'

The site is largely level (although at two slightly different heights to the north and to the south), and is a mix of rough roads, open land (partly used for low-density storage of chopped wood in containers), light industrial activity (two buildings and timber chopping machinery), substantial scrub / tree areas and a clear east-west strip of around 15m width encompassing the single-track railway.

Network Rail has a continuing right of access through to the western end of the site to enable equipment to be brought in for track maintenance etc.

On initial viewing of the site and examination of land plans, it would appear that the southern half of the site north of the rail track – ie the area which is not currently used for industrial activity other than some storage of chopped wood containers, plus the existing access road from Abernethy Road – should be of sufficient size and configuration for the creation of:

- a single platform of 150m (6-coach) length, with waiting shelter, ticket machine and remote public address system
- parking space for up to 50 cars, plus some drop-off / short-term parking space for taxis and cars

- suitable road access for passengers in cars, on bikes and on foot
- a simple pedestrian ramp west from Woodriffe Road on the north side of the railway down to the platform area (the location of former wooden steps down from the overbridge to the station), providing direct access from the significant housing areas to the immediate south west and south east of the station.

Any future feasibility study would therefore have to consider the capital costs of the above, plus:

- land purchase
- demolition of the derelict station building
- site clearance, including removal of trees and scrub.

Based on the concept of a Newburgh station as a 'sustainable transport hub', a further possibility is that rail-related housing or tourism development could be undertaken on that section of the northern part of the station site which is not a protected employment area, and indeed on other adjacent parcels of land which are currently not specifically zoned.

The two other possible Newburgh station locations examined by Atkins in 2005 (east and west of Hill Road) were viewed during the site visit, and rejected on grounds of poor access and lack of car parking space. It is unlikely that other suggested locations – further west from Hill Road, and beside Clatchard Craig Quarry – could meet the required design and access standards for a new station.

(ix) Central Scotland rail electrification programme:

The Scottish Government's plans for rail electrification incorporate the following phases:

- Phase 1 – Edinburgh-Glasgow Queen Street/Alloa/Dunblane
- Phase 2 – Edinburgh-Shotts-Glasgow Central
- Phase 3 – Edinburgh-Fife
- Phase 4 – Dunblane-Perth-Dundee-Aberdeen

Electric traction allows faster acceleration than diesel, and can therefore provide particular benefits for routes with tight curvature and multiple stops. Future electrification would therefore facilitate the creation of a Newburgh station, although the timescale could be longer than might be achievable through alternative supply and demand scenarios.

4.5 Conclusions on key changes since previous studies

Across the issues analysed above, there have been more positive than negative changes since 1999-2005 in terms of the prospects for a station at Newburgh, as summarised below.

(i) Positive changes:

- enhanced Edinburgh-Perth rail service frequency
- Hilton Junction-Ladybank Junction route infrastructure upgrading
- increased local population (at Abernethy) and new development plans
- the success of Scottish station re-openings
- reduced station construction costs
- general rail travel growth trends
- local and regional public policy supporting a rail station
- Network Rail Route Utilisation Strategy support for line upgrading
- Central Scotland rail electrification programme

(ii) Neutral:

- continuing private ownership of the Newburgh station site
- Network Rail guidance on investment in new stations
- stopping patterns of Edinburgh-Perth-Inverness trains

(iii) Negative changes:

- national public policy & spending on intermediate stations
- lack of follow-up to Atkins 2005 report.

It should be noted, however, that some issues are more critical than others – for example, national public policy and spending (in particular Transport Scotland's general presumption against new intermediate stations unless these are strategic in nature).

4.6 Core current factors in station feasibility

The core factors which will now determine whether a Newburgh station project is feasible or not are summarised below:

(i) Who pays?

Experience suggests that multiple funders will be needed, and these could include:

- Fife Council
- possibly Perth & Kinross Council (eg for upgrading of the cycle path along the A913 between Abernethy and Newburgh)
- SEStran
- Network Rail
- developer(s) – housing and possibly tourism/leisure related
- proposed community wind farm revenues.

Due to its changed policy position, focusing only on strategic rail investment, Transport Scotland can be discounted as potential funders (unless a change of Scottish Government altered this position).

(ii) Can the impact on through journey times be minimised / avoided?

Given Transport Scotland's high-level priority to reduce through journey times, the most realistic option appears to be a 'swap stops' strategy for Newburgh (allowing a service of around 10 trains daily in each direction) – with perhaps a majority of stops being transferred from Ladybank and the balance from a number of the small intermediate stations on the Highland Main Line.

This would raise operational train planning and political issues, but Newburgh can argue that it is in a poorly connected corner of Fife which deserves improved and sustainable accessibility (a key criterion in the Government's STAG appraisal process).

In a scenario with six train stops a day in each direction transferred from Ladybank to Newburgh, and four from Highland Main Line stations, Ladybank (with a total of 52 calls a day remaining) would *still* have one of the highest levels of train service provision per head of population in Fife.

(iii) Can the impact on the single-track section capacity be suitably minimised?

With anticipated line speed improvements, the heavy utilisation of available capacity on the single-track Hilton Junction to Ladybank section will be slightly eased if this is translated into shorter timetabled journey times, but a Newburgh stop would use up much of the additional spare capacity created.

If a strategy was pursued to open both Newburgh and Bridge of Earn / Oudenarde stations (as suggested by Atkins in 2005) then there would almost certainly be a requirement to construct a new passing loop at Newburgh (plus twin-platform station) increasing capital expenditure requirements by £5m-10m, and necessitating a much extended project timescale. A single-station strategy is therefore critical.

(iv) Can a strong and sustained campaign be established in Newburgh?

The complexity of the issues involved in efforts to develop new stations should not be underestimated, and implementation can take five years or more to achieve, depending on the specific local circumstances. Recent experience at Laurencekirk demonstrates the importance of a strong and sustained local campaign, and a view needs to be taken of the capacity and capability of the local community in Newburgh (including park-and-ride potential from Abernethy) to establish and maintain such a campaign.

5. OVERVIEW OF POTENTIAL CARBON REDUCTION IMPACTS

5.1 Source documents

On the recommendation of Transform Scotland (the sustainable transport alliance) the Transport Direct web site has been utilised for carbon calculations for passenger travel. This site is a non-profit service funded by the UK Department for Transport, the Welsh Assembly Government and the Scottish Government:

http://www.transportdirect.info/Web2/JourneyPlanning/JourneyEmissionsCompare.aspx?&repeatingloop=Y

In the case of embodied carbon in station construction and ongoing maintenance, we have consulted the *Whole life carbon footprint of the rail industry* report for the Rail Safety & Standards Board Ltd, plus other web sources:

http://www.rssb.co.uk/sitecollectiondocuments/pdf/reports/research/T913_rpt_final.pdf

5.2 Travel distance assumptions

In order to calculate carbon savings from a travel switch from car or bus to train at Newburgh, an average rail distance travelled has to be assumed. Based on broad size of settlement and facilities / services at the key stations which would be served by a Perth-Newburgh-Edinburgh train service (plus Glasgow), the following split of rail destinations has been assumed from Newburgh:

Perth	20%
Markinch	5%
Kirkcaldy	20%
Inverkeithing	5%
Edinburgh	40%
Glasgow	10%

Based on the rail mileage from Newburgh to these locations, the average distance travelled by train would be 36 miles.

5.3 CO2 generation per person

The Transport Direct 'Carbon Calculator' calculates CO2 emissions per journey for small car / large car (with variable number of occupants), plus rail and bus / coach. We have assumed an average of 1.5 occupants per car, and the CO2 emissions per person 36-mile journey are therefore:

Small car	5.5 kgs	
Large car	11.1 kgs	
Train	3.1 kgs	
Bus/coach	1.7 kgs	
Car to Ladybank then train	4.5 kgs	(2.1 kgs for 8 miles by small/large car average, plus 2.4 kgs for 28 miles by train)

5.4 Newburgh station passenger numbers

The recent Scottish station re-opening with strongest parallels to Newburgh is Laurencekirk in Aberdeenshire – where annual patronage was projected to be 36,000 passengers, but achieved 60,000 in its first year. Beauly in the Highlands also has similarities to Newburgh, and now handles in excess of 60,000 passengers a year.

We have made four scenario assumptions for patronage (and hence carbon reductions):

- a 'conservative' assumption of just over 30,000 passengers a year (100 passengers per day, ie 50 single trips out and 50 single trips back the same day)
- a 'positive' assumption of 45,000 a year
- an 'optimistic' assumption of 60,000 passengers a year (similar to the actual performance of Beauly and Laurencekirk)
- in light of information received[1] from the Fife Coast and Countryside Trust on the extension of the Fife Coastal Path to Newburgh – a 'high growth' scenario of 90,000 passengers a year.

For simplicity we have assumed that all journeys are day return trips from Newburgh, but in practice – as in the case of the Fife Coastal Path – inwards leisure traffic could also be attracted to rail.

5.5 Previous mode of transport

There is a surprising lack of information within the rail industry, local government or central government in Scotland on the previous mode of transport of passengers at re-opened rail stations. However, using anecdotal information from a number of Scottish station re-openings, and some statistical information from the re-opened Ebbw Vale-Cardiff line in Wales, we have assumed the following split for previous mode of transport:

Small car	40%
Large car	25%
Bus	15%
Car to Ladybank then train	10%
Didn't travel	10%

5.6 CO2 calculation before Newburgh station opens

Small car	40 x 5.5	= 220 kgs
Large car	25 x 11.1	= 277 kgs
Bus	15 x 1.7	= 25 kgs
Car then train	10 x 4.5	= 45 kgs
TOTAL		567 kgs

[1] Letter from Chief Executive, Amanda McFarlane, to Councillor Andrew Arbuckle which supports the Newburgh station re-opening proposal and states that the path attracts "over 500,000 users per annum".

5.7 CO2 calculation after Newburgh station opens

100 passengers daily x 3.1 kgs = 310 kgs gross

less an allowance for local travel to Newburgh station (again using the Transport Direct Carbon Calculator):

- 40% travel 3 miles by small/large car (average of the two) with 1.5 occupants average = 40 x 0.67 = 27 kgs
- 20% travel 3 miles by bus = 20 x 0.6 = 12 kgs
- 40% walk / cycle = 0 kgs

Therefore local CO2 generated totals 39 kgs, and net CO2 generated after the station opens = 310+39 = 349 kgs

5.8 Net passenger CO2 saving

567 kgs minus 349 kgs (ie 218 kgs) represents the net daily CO2 saving for a total of 100 passenger journeys (ie 50 single trips of 36 miles x 2). Assuming this level of patronage each day Monday-Saturday, and 50% less on Sundays, then over a year the total number of passengers would be:

650 x 52 = 33,800

The total annual CO2 savings (for passenger movements) under the various patronage assumptions would therefore be:

- **conservative:** (33,800 /100) x 218 kgs = **74 tonnes pa** or 2,200 tonnes over a 30-year life for the station construction
- **positive:** (45,000 /100) x 218 kgs = **98 tonnes pa** or 2,940 tonnes over a 30-year life for the station construction
- **optimistic:** (60,000 /100) x 218 kgs = **131 tonnes pa** or 3,930 tonnes over a 30-year life for the station construction
- **high growth:** (90,000/100) x 218 kgs = **196 tonnes pa** or 5,886 tonnes over a 30-year life for the station construction.

5.9 CO2 from station construction / maintenance

Although the Rail Safety & Standards Board produced a 2010 report on the *Whole life carbon footprint of the rail industry*, it has not been possible to identify from this report appropriate carbon values for the construction and maintenance of a small station at Newburgh. We have therefore used indicative information from other (less rail-specific) web sources to derive figures of **100t** CO2 for one-off station construction, and **10tpa** for annual station operation / maintenance, for the following infrastructure:

- 150m length single platform

- simple shelter
- car parking for 50 vehicles
- turning circle and short (upgraded) access road of around 100m
- one pedestrian ramp (circa 60m) from road overbridge.

5.10 Net CO2 saving (passengers + construction / maintenance)

The overall net CO2 saving in the four different patronage scenarios would therefore be:

- **conservative:** 2,200 tonnes minus 100t minus (30 x 10t) = **1,800t** over a 30-year life for the station construction
- **positive:** 2,940 tonnes minus 100t minus (30 x 10t) = **2,540t** over a 30-year life for the station construction
- **optimistic:** 3,930 tonnes minus 100t minus (30 x 10t) = **3,530t** over a 30-year life for the station construction
- **high growth:** 5,886,000 tonnes minus 100t minus (30 x 10t) = **5,486t** over a 30-year life for the station construction.

6. ANALYSIS OF QUESTIONNAIRE RESPONSES

6.1 Survey questions

As part of the wider Sustainable Newburgh project, a range of rail-related questions were asked of interviewees, including:

- frequency of journeys to Perth, Cupar, Dundee, intermediate stations between Perth and Inverness, Glenrothes, Markinch, Kirkcaldy, Inverkeithing, Edinburgh Airport/Gyle, Central Edinburgh, Glasgow

- the current mode of transport and reasons for travel (eg commuting or shopping) to these destinations

- likelihood of travelling by train from Newburgh to these destinations (based on around 10 northbound and 10 southbound trains daily, with indicative journey times and fares shown in the questionnaire).

6.2 Survey responses

Of the 292 household responses to the survey (a 22% return rate), over 80% supported the re-opening of Newburgh rail station.

With regard to potential station patronage, the total number of journeys which were projected to be fairly likely / likely / very likely to be made by those responding to the rail questions was 60,848 annually. Dividing this by 365 represents a notional average of 167 rail journeys per day, but in practice Sunday travel would be less, so a Monday-Saturday daily equivalent could be of the order of 180-200.

By far the most popular projected rail destination was Perth (45% of rail journeys) – reflecting what would be a fast direct train service – followed by Cupar (19%) and Dundee (13%). In terms of destinations where rail is likely to have the greatest competitive advantage, Edinburgh (Central plus Gyle / Airport) stands out, but these together represent only 9% of current Newburgh journey destinations, and 35% of current Newburgh to Central Edinburgh journeys are already by train (presumably via Ladybank station).

6.3 Interpretation of responses

The survey has provided evidence of strong local support for re-opening Newburgh station.

With regard to projections of daily patronage of rail services at Newburgh, some caution is required in interpreting the results of a single method of forecasting based on interviewee responses. Using the current 21% sample survey results, with pro rata projection to the whole town of Newburgh, would involve annual rail patronage figures two or three times higher than the 'high growth' scenario used in our CO2 calculations and even more times a multiple of, for example, patronage at the recently-re-opened Laurencekirk station.

Such levels of patronage are unrealistic. The limitations of survey alone (as opposed to forecasts using a combination of methodologies) are illustrated by the 31 daily rail journeys (based on fairly likely + likely + very likely) projected for Newburgh to Cupar.

In practice it is very unlikely that more than a few people daily would in practice opt for a train journey of around 50 minutes (including a change of train at Markinch), at a notional price of £8.50 (peak) and £6 (peak), compared to the direct (no change) journey time and cost of current car and bus travel from Newburgh to Cupar.

Any next stage of analysis of the case for a rail station would be resourced to undertake more detailed forecasting, potentially combining three methods – the recent survey-based evidence, demographic analysis and a 'trip rate' model.

7. CONCLUSIONS & RECOMMENDATIONS

7.1 Conclusions

(i) Since previous studies were undertaken in 1999-2005, across a range of demand and supply factors there have been significantly more positive than negative changes in terms of the prospects for a station at Newburgh.

(ii) The most positive of these changes has been the increased frequency of trains which pass through Newburgh – 17 northbound and 18 southbound daily, compared to eight and nine respectively in 2005 – providing the basis for a train service of perhaps 10 stops in each direction at Newburgh.

(iii) A key negative factor which has however to be overcome is the general presumption of Transport Scotland (the Scottish Government's transport agency) against funding and permitting the creation of new intermediate stations (unless these are of a strategic nature), due to their impact on longer-distance journey times.

(iv) The most realistic option for Newburgh is potentially a 'swap stops' strategy, with perhaps a majority of stops being transferred from Ladybank (which has one of the highest frequencies of train service per head of population in Fife) and the balance from a number of the small intermediate stations on the Highland Main Line. This would raise operational train planning and political issues, but Newburgh can argue that it is in a poorly connected corner of Fife which deserves improved and sustainable accessibility (a key criterion in the Government's STAG transport appraisal process).

(v) A single new station strategy (ie only at Newburgh, rather than Newburgh plus Bridge of Earn / Oudenarde) would minimise the complexity and difficulty of a 'swap stops' strategy – it would also avoid the need for a new passing loop on the single-track Hilton Junction to Ladybank section, with associated additional capital costs in the range £5-10m and a much extended project timescale. A single-station strategy is therefore critical.

(vi) The capital cost for a single-platform station at Newburgh – excluding land purchase and any signalling changes (which are considered unlikely) – may now be closer to £1m than the £2m estimated by the Atkins report in 2005. A range of funders is likely to be required, but these would not include Transport Scotland unless a future Scottish Government changed policy.

(vii) Four future rail traffic scenarios for Newburgh station suggest that CO2 savings could range over a 30-year life from a minimum of 1,800t (30,000 passengers pa) to a maximum of 5,486t (90,000 passengers pa).

(viii) The household questionnaire survey results clearly demonstrate overwhelming community support for re-opening Newburgh station, but the projected rail patronage figures should be treated with caution. Any next stage of analysis of the case for a rail station would be resourced to undertake more detailed forecasting, potentially combining three methods – the recent survey-based evidence, demographic analysis and a 'trip rate' model.

(ix) Given that the train service is already in operation, a Newburgh station could be viably operated and maintained, almost certainly improving railway finances rather than requiring an additional revenue subsidy.

(x) Experience elsewhere, not least the successful recent example of Laurencekirk station, suggests that a strong and sustained local re-opening campaign would be required in Newburgh (and Abernethy) over a number of years.

(xi) In view of Abernethy's proximity, recent population growth and associated likely propensity to travel by rail, the questionnaire survey of Newburgh households could be supplemented by a rail-specific Abernethy household survey if it was felt that this was a critical element of a wider package of forecasting work (including demographic analysis and modelling) undertaken by specialist rail forecasters.

7.2 Recommendations

(i) Newburgh Community Trust should consult with the 'Laurencekirk Villages in Control' campaign and other rail campaign groups on their experience of successful station re-opening campaigns, and then consider the likely capacity and capability of the Newburgh and Abernethy communities to mount a strong and sustained Newburgh station re-opening campaign.

(ii) Dialogue should be entered into with Transport Scotland, the rail industry, Fife Council, SEStran and other interested parties (including representatives of the Ladybank community) to explore the acceptability of 'swap stop' options to minimise the impact of Newburgh stops on longer-distance journey times.

(iii) Funding should be sought for a pre-feasibility study to explore the key demand, supply and funding issues in more detail, as well as assessing emerging transport competition trends. If this proved positive, funding should then be sought for a full feasibility study, producing robust estimates of demand, revenues, costs, wider benefits and potential funders.

Both studies would need to take account of the objective-led Scottish Transport Appraisal Guidance ('STAG'). Only options which emerge from a STAG study will be considered where Government funding, *support or approval* is required for changes to the transport system, and therefore a full STAG Report would be likely to be required in due course as part of a Newburgh station re-opening project. Depending on the detailed brief, a pre-feasibility (STAG Part 1) study would be likely to cost in the order of £15,000 excluding any Abernethy questionnaire survey (the latter may not be required).