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Eastriggs and Surrounding Area Sustainable Transport Options STAG Appraisal

STAG Report

On behalf of **SWestrans**

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1 Introduction

1.1 Overview

1.1.1 SWestrans (the South-West of Scotland Transport Partnership) commissioned Peter Brett Associates LLP (PBA) in January 2016 to undertake a Scottish Transport Appraisal Guidance (STAG) Pre-Appraisal of sustainable transport options for the village of Eastriggs and the surrounding area in Dumfries and Galloway.

1.1.2 The work was presented to the SWestrans Board in July 2016. PBA was subsequently commissioned to undertake the STAG Part 1 Appraisal for the study in December 2016 and the STAG Part 2 Appraisal for the study in October 2017.

1.1.3 A map showing the approximate study area is provided in Figure 1.1. The area encompasses Eastriggs the nearby settlement of Dornock, with a combined total population of just over 2,000[1].

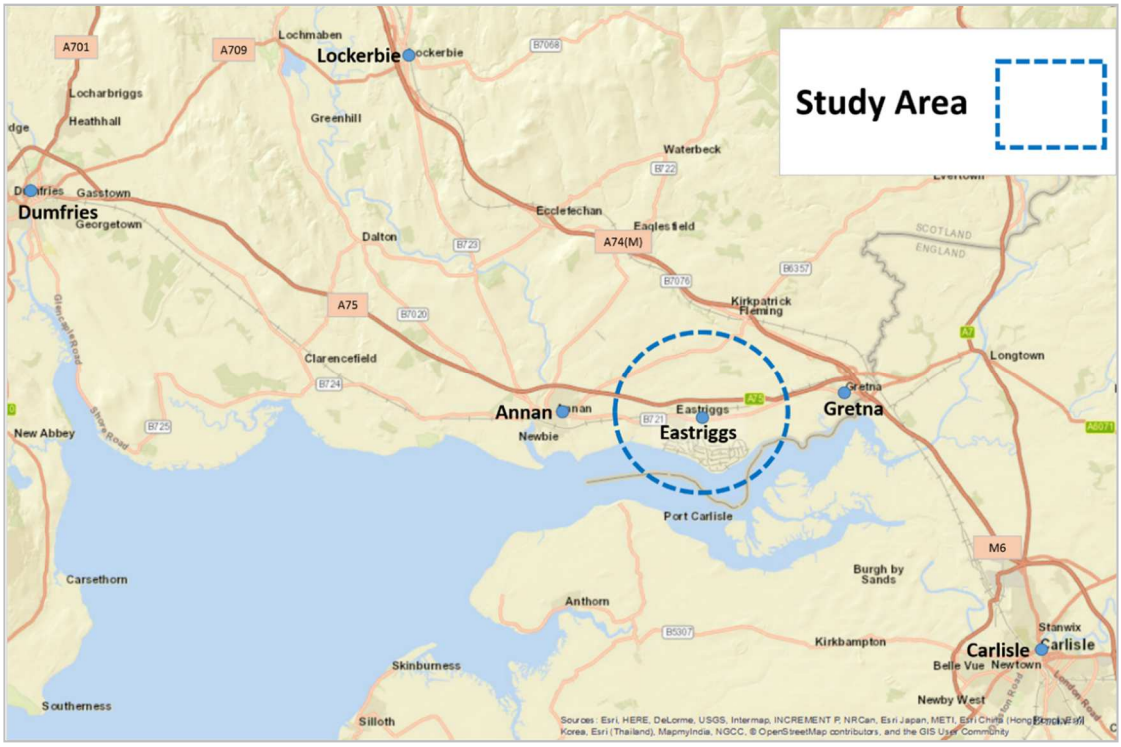

Figure 1.1: Eastriggs, Dumfries and Galloway

1.1.4 Eastriggs is located between Dumfries and Carlisle on the B721, which runs parallel with, and is linked to the nearby A75. The village is approximately 25 minutes' drive from Carlisle and 35 minutes from Dumfries.

1.1.5 The potential re-opening of stations in Dumfries and Galloway is identified in the Dumfries and Galloway Regional Transport Strategy Delivery Plan (updated 2010). Four railway stations are considered worthy of consideration including those at Eastriggs, Thornhill, Dunragit/Glenluce and Beattock. Of these, the re-opening of Eastriggs Railway Station is given joint highest priority (with Thornhill). The re-opening of Eastriggs Station is also noted in the Local Transport Strategy (where it is defined as a strategic aspiration).

[1] Population figure is based upon 2011 Census Output Area Level data broadly corresponding to the study area as defined in Figure 1.1.

1.1.6 Eastriggs station lies on the Glasgow South Western Line (GSWL) but closed to passenger traffic in 1965. Currently, the nearest stations to Eastriggs are at Gretna Green, approximately 8km east, or at Annan, approximately 6.5km west.

1.1.7 However, while the potential for a station is noted in regional and local transport strategies, there has never been either a robust audit of the transport problems and opportunities in the town and the surrounding local area, or the provision of an evidence-based case setting out why a new railway station is the most appropriate means of tackling the transport problems and opportunities.

1.1.8 In recognition of the above issues, this STAG appraisal seeks to identify and evidence the transport Problems and Opportunities within Eastriggs and the surrounding area and the most appropriate opportunities for addressing them. Whilst STAG is multi-modal in nature, the policy context driving this study means that it considers potential improvements in relation to all **sustainable modes of travel** only.

1.1.9 It should be noted that this study began in early 2016, with the final STAG 2 Report published in Summer 2019. Over the lifespan of the project, bus and rail timetables and services have altered. While base data has been revisited and updated, the analysis undertaken during the earlier stages of the project is reflective of the public transport network and services at the time it was undertaken.

1.2 Scottish Transport Appraisal Guidance

1.2.1 The study is being undertaken in line with the Scottish Transport Appraisal Guidance (STAG) and covers all stages of STAG. STAG is an objective-led framework and is based on an understanding of the transport problems, issues, opportunities and constraints; public consultation; and evidence-based objective setting. This ensures that the ultimate option or options progressed address the transport needs of the communities in question.

1.2.2 This STAG appraisal is multi-modal and seeks to identify and evidence the transport problems and opportunities within the Eastriggs study area, and the most appropriate opportunities for addressing them through the consideration of **all sustainable transport modes**.

2 Analysis of Problems and Opportunities

2.1 Overview

2.1.1 The purpose of the initial stage of a STAG study is to identify the problems, issues, opportunities and constraints within the **current and future** transport system.

2.1.2 These terms are defined within STAG as follows:

- **Problems:** Existing and future problems within the transport system, e.g. unreliable journey times
- **Opportunities:** Chances to improve the current situation by making changes to the transport system, e.g. improve journey times
- **Issues:** Uncertainties that the study may not be in a position to resolve, but must work in the context of, e.g. impact of the Local Development Plan (LDP)
- **Constraints:** The bounds within which the study is being undertaken, e.g. available funding

2.2 Methodology for Identifying Problems and Opportunities

2.2.1 Three key workstreams were undertaken as part of the study to support the identification and evidencing of problems and opportunities for the study: consultation; transport data analysis; and socio-economic data analysis.

2.2.2 **Consultation** was undertaken at various stages during the project lifetime, and has provided the backbone to understanding the problems and opportunities, and ultimately the 'Case for Change' for investment in the transport network in the Eastriggs area.

2.2.3 The key evidence to support the Case for Change is presented in this chapter of the report, with a full summary of the consultation activities undertaken provided in:

- Appendix A – for consultation undertaken during the initial stages of the study; and
- Appendix N – for consultation undertaken during later stages of the study.

2.2.4 Information established through the **consultation and engagement activities** has identified a range of problems, and data and information relating to the **local transport network, travel-to-work patterns, existing public transport connectivity** has been used to provide the evidence of the problems.

2.2.5 **Socio-economic data**, has been used to provide context for the study as well as providing an understanding of the impacts of the transport problems from a social and economic perspective.

2.2.6 The process is highlighted in Figure 2.1.

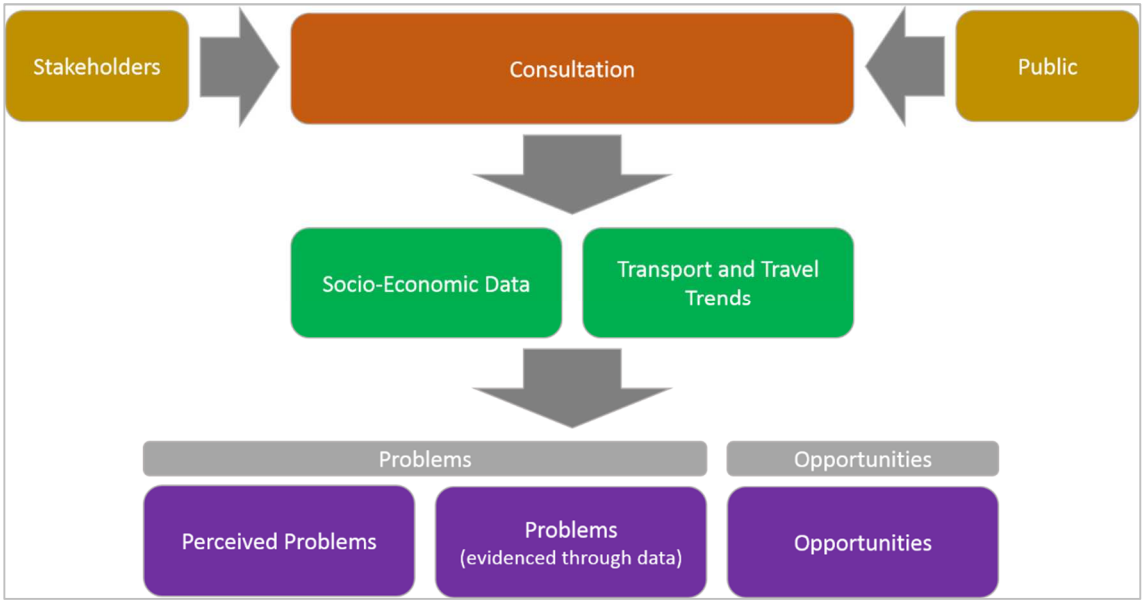

Figure 2.1: Identification of Problems and Opportunities - Process

2.2.7 The key data used in evidencing the problems and the impacts of the problems is presented in this chapter. Full details of all the data analysed is presented in:

- Appendix B and Appendix C in relation to the existing local transport network, travel-to-work patterns and existing public transport connectivity and accessibility mapping.
- Appendix D in relation to Socio-Economic data.

2.3 Engagement

2.3.1 An engagement exercise was undertaken at the outset of the study, in order to identify an initial set of problems and opportunities, and the economic and social impacts of these problems (Appendix A contains full summaries of the discussions). This included:

- An online public survey;
- Face-to-Face consultation with SWestrans and Dumfries and Galloway Council;
- Face-to-face consultation with Stagecoach (Cumbria), the largest commercial bus operator in the area;
- Telephone consultation with McCalls Coaches – a smaller bus operator in the area;
- Telephone consultation with Annandale Community Transport Services (ACTS) – a local Community Transport provider;
- Face-to-face consultation with Transport Scotland; and
- Face-to-face consultation with the rail operators including:
  - Network Rail; and

    ScotRail.

2.3.2 Further engagement at the Part 1 and Part 2 stages of the study provided more detailed insight into the transport problems and impacts (Appendix N contains full summaries of the discussions). This included:

- A public event with an associated online survey. While the event also presented the Part 1 and Part 2 appraisal findings, it also provided extensive further insight into transport problems and their impacts;
- Face-to-Face consultation with SWestrans and Dumfries and Galloway Council;
- Face-to-face consultation with Stagecoach (West Scotland – also speaking on behalf of Stagecoach Cumbria) and local bus operator Houstons;
- Face-to-face discussion with Eastriggs Station Action Group;
- Email correspondence with:
  - Network Rail;
  - ScotRail;
  - Strathclyde Partnership for Transport; and
  - East Ayrshire Council.

2.4 Key Problems and Opportunities Identified

2.4.1 From the engagement exercise, the key problems and opportunities for the study area, as perceived by the public and the key stakeholders were reviewed and assessed before being collated into a succinct list of problems and opportunities, for which data has then been analysed.

2.4.2 The key transport problems identified were as follows:

- PR1: Lack of direct strategic public transport routes
- PR2: Long journey times relative to neighbouring towns
- PR3: Limited bus operating hours
- PR4: Poor integration between bus and rail
- PR5: Poor quality active travel links

2.4.3 Each of these is presented below, alongside the key evidence of the problems

PR1: Lack of direct strategic public transport routes

PR2: Long journey times relative to neighbouring towns

2.4.4 Public transport connections directly serving Eastriggs are limited to the bus as there is no rail station in the town.

2.4.5 It was noted in the initial public consultation exercise (see Appendix A.1) that Dumfries, Carlisle, Glasgow and Edinburgh were the key locations people travelled to on a regular basis, with Carlisle the most regularly visited destination. While there are regular weekday bus connections to Carlisle and Dumfries, there are no direct bus connections to Edinburgh or Glasgow. The bus to Carlisle, while not requiring interchange, does route circuitously to the north of Carlisle (to serve a number of small communities) which adds to the overall journey time. The circuitous routeing also means the journey time by public transport is highly uncompetitive against the private car. There are also no direct public transport connections to Lockerbie (from where access to fast trains on the West Coast Main Line (WCML) is possible, removing the need to travel south to Carlisle if heading north).

2.4.6 During the initial public consultation exercise, bus users were asked what the most significant problems were for them when travelling by bus in the area. The analysis highlighted:

- A 'lack of direct routes' as a problem with the existing bus network, with 47% of respondents stating this; and
- 'Long journey times' as a significant issue when travelling by public transport, with 71% of respondents noting this issue.

2.4.7 In addition, *non-bus users* were asked why they currently did not travel by bus and 39% of respondents noted a 'lack of direct routes' as an issue.

2.4.8 Analysis of the results of the Public Event online survey (see Appendix N) also highlighted a 'lack of direct public transport routes' as a problem with 56% of respondents noting they felt this was a major problem to them.

2.4.9 The lack of direct routeing means users of the public transport network need to either interchange to reach their destination, or, as noted in the Public Event online survey, many simply use their car for the entire journey with many people in the area fully dependent on their private car for travel to and from the area.

2.4.10 It was also noted by a number of bus operators during consultation that congestion in Dumfries town centre was a cause of additional journey time on bus routes into the town, and that reducing this delay would have significant impacts in reducing bus journey times on services starting or ending in Dumfries.

Key Evidence

In terms of existing strategic public transport connections:

- **There are no direct connections to Edinburgh:** Interchange is required in Gretna Green, Annan or Dumfries to access Lockerbie Station by bus, or in Carlisle to join trains on the WCML, or in Dumfries or Annan to connect to the GSWL trains with further interchange in Glasgow;
- **There are no direct connections to Glasgow:** Interchange is required in Gretna Green, Annan or Dumfries to access Lockerbie Station by bus, or in Carlisle to join trains on the WCML, or in Dumfries or Annan to connect to GSWL trains;

- **There are no direct connections to Lockerbie:** Interchange is required in either Annan, Gretna or Dumfries to an onward bus service;
- **There are regular direct connections to Dumfries:** on bus Service 79 operating between Dumfries and Carlisle; and
- **There are regular direct connections to Carlisle:** on bus Service 79 operating between Dumfries and Carlisle, but as noted above, the routeing of the service between Eastriggs and Carlisle is such as to serve a number of small communities which makes the journey 'indirect, as shown in Figure 2.2.

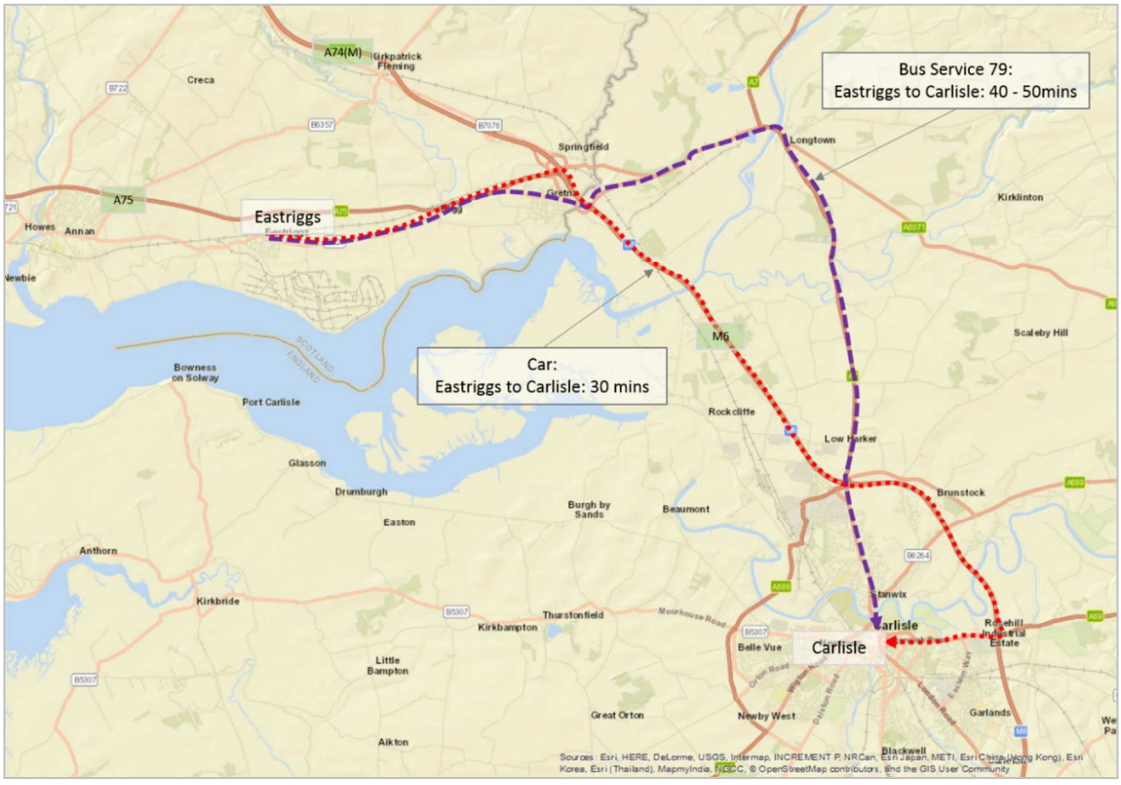

Figure 2.2: Service 79 routeing between Eastriggs and Carlisle

2.4.11 A comparison has been made between Eastriggs and other nearby towns / villages (including Gretna Green and Annan) considering the number of direct public connections on a typical weekday to key strategic locations. This 'bench-marking data' is also presented and discussed in Appendix B.2. It can be seen from Table 2.1 that Eastriggs has significantly fewer direct strategic connections than the nearby communities of Annan and Gretna.

Table 2.1: Strategic public transport connections from Eastriggs, Annan and Gretna

	Strategic Location	Number of direct public transport connections (Weekday) from…					
		Eastriggs		Annan		Gretna	
		Bus	Train	Bus	Train	Bus	Train
To…	Glasgow	0	0	0	8	0	8
	Edinburgh	0	0	0	0	0	0

	Strategic Location	Number of direct public transport connections (Weekday) from…					
		Eastriggs		Annan		Gretna	
		Bus	Train	Bus	Train	Bus	Train
	Lockerbie	0	0	10	0	10	0
	Dumfries	15	0	22	16	15	16
	Carlisle	28	0	28	18	28	18
Total Direct Connections		43		102		95	

2.4.12 Public transport travel times to and from the area from Eastriggs to Edinburgh, Glasgow, Dumfries and Carlisle have been considered, in addition to similar connections from Annan and Gretna, and are presented in Table 2.2. Note the range in travel times due to the differing levels of congestion at various times of the day. The equivalent time by car is also noted. More detailed AM and PM travel times are presented in Appendix C.2. The analysis shows that people resident in Eastriggs are subject to much longer journey times than those from neighbouring towns. In addition, for those without a car, travel times are much longer on public transport.

Table 2.2: Strategic public transport journey times from Eastriggs, Annan and Gretna

From / To	Strategic Location	Approximate public transport journey time (minutes) from…					
		Eastriggs		Annan		Gretna	
		Public Transport	Car	Public Transport	Car	Public Transport	Car
Outbound to…	Glasgow	130 - 160	80 - 110	105 - 135	80 – 110	110 - 135	80 – 110
	Edinburgh	140 - 195	120 - 135	120 - 180	110 - 140	110 - 180	110 - 140
	Lockerbie	70	22 - 28	40	20 – 22	45	18 – 22
	Dumfries	50	30	18	25	40	30
	Carlisle	40 - 50	30	25	35	20	25

Key Economic and Social Impacts

2.4.13 From both the initial public engagement, and the Public Event and associated feedback from the online survey, the lack of direct strategic connections was felt to be causing a number of economic and social problems in the study area, particularly in terms of:

- **Reduced access to employment:** The economic data analysis undertaken to support this study (presented in Appendix D) identified the smaller proportion of Eastriggs residents who are employed in professional and technical roles compared to that of Annan and Dumfries with average incomes in Eastriggs lower than the local and national averages. Discussion with local councillors (as part of the Eastriggs Station Action Group) highlighted the significant current economic challenge that the area faces due to the recent significant losses of employment in the area from the closure of both Chapelcross nuclear power station and Pinneys of Annan. This included about 50 - 100 local people from Eastriggs. Many of the people who lost jobs due to the closure were offered jobs at Two Sisters in Carlisle but some moved away to find employment elsewhere. It was noted that at this time the number of houses for sale in the area increased as people could no longer afford their mortgage. Economically active residents moved out of the area and were largely replaced by retirees who, in general, rely on public transport much more for their travel needs.

  There are very few employment opportunities in Eastriggs itself, so people now need to travel further afield for work. The lack of direct and fast journey times is therefore limiting local people's ability to access a greater range of jobs.

  Analysis has been undertaken to compare existing access to jobs using public transport from Eastriggs with the number accessible from both Annan and Gretna within 30-minutes, 45-minutes and 60-minutes (the latter considered at the higher end of what may be considered a reasonable commute time). The analysis has been undertaken considering both morning and evening access and the results are shown in Table 2.3.

Table 2.3: Number of jobs accessible using public transport from Eastriggs, Annan and Gretna

Period	Within…	Number of jobs within reach from…		
		Eastriggs	Annan	Gretna
08:00 – 12:00	30 mins	5,733	6,405	12,141
	45 mins	18,153	29,166	37,706
	60 mins	48,053	62,226	63,444
16:00 – 20:00	30 mins	5,733	6,405	11,694
	45 mins	14,726	29,166	34,037
	60 mins	42,545	62,226	68,462

Table 2.3 clearly shows the much lower number of jobs within reach of Eastriggs in both the morning and evening period, compared to those reachable from both Annan and Gretna, especially those reachable within 45 minutes. There is a strong commuter belt between Dumfries and Carlisle, with a range of employment available in both. Those residing in Eastriggs are at a disadvantage in accessing these jobs, especially those

without access to a car, those who are unable to drive, or those who would prefer not to drive.

It was noted during engagement (see Appendix N.3) that there are multiple affordable housing schemes in the area aimed at families with lower incomes. One issue with this is that given the limited local employment opportunities people have to travel for work and therefore, due to poor transport links, are often forced into owning a car which may not be affordable for the families attracted to live there due to the low house prices.

- **Reduced accessibility to higher education opportunities:** Many young people in the area attend college and university in both Dumfries and Carlisle. In addition, many young people in Eastriggs are in the catchment area to attend Annan Academy. At present, all travel has to be made by bus which can limit the opportunities young people can take. The poor connectivity of the area was felt to be a key driver in the area's inability to retain young people locally as they need to move elsewhere to access higher education opportunities and employment.

  For families on lower incomes, affording accommodation for children to go to university can place a significant financial burden on the family or mean that educational opportunities cannot be taken up. Many university courses now run as full time courses compressed into three full days. If access by public transport to higher education and university locations (in particular to the universities and colleges in Glasgow and Carlisle), was improved, it may be possible for students to remain at home during their studies, or indeed take up opportunities which would otherwise not be possible.

- **Community isolation caused by the existing poor public transport connectivity:** This was felt to be causing social problems in the local communities, particularly in terms of young people feeling isolated and unable to integrate effectively with schools and associated activities in Dumfries, the result being a reduction in social opportunities. This feeling of isolation was felt to be a key driver in the area's inability to retain young people and the associated ageing population profile as young people need to move elsewhere to access higher education opportunities and employment.

- **Limited opportunities to participate in social activities further afield:** Platform surveys undertaken at Annan and Gretna Green stations (see Appendix Q) show that of those boarding at the stations, 26% of people at Annan and 35% of people at Gretna Green indicated that they would not have made the journey if the station were not present. Therefore, the lack of direct strategic connectivity from Eastriggs is likely to be impacting on local people's ability to take up social and other opportunities further afield.

- **Access to healthcare:** There was an attempt to get a health clinic in Eastriggs, but it was unsuccessful. Therefore, locals have to travel to Annan and Gretna for health care. The economic data analysis (as presented in Appendix D) shows a slightly higher proportion of retirees in the Eastriggs study area, compared to the Scottish average. The lack of local access to healthcare, can be particularly difficult for the elderly and those less able.

- **Those without a car and reliant on public transport are at a disadvantage:** The data highlights the significantly quicker journey times that are possible from Eastriggs by car compared to public transport. The longer journey times by public transport constrain the employment and education opportunities accessible from the area. This is particularly the case in relation to Carlisle, where the journey time from Eastriggs, if it were more similar to that from Annan (25 mins) and Gretna (20 mins) would be within a very attractive commutable time.

- **Travel constraints on visitors:** The lack of direct public transport links was felt to be a constraint on tourism in the area. It was noted that the Devils Porridge Museum in Eastriggs is a 5-star attraction with the potential to attract increased visitor numbers. Better transport links would make the museum more accessible and potentially increase its popularity.

PR3: Limited bus operating hours

2.4.14 Bus services do not operate consistently across the week, with a much more limited Sunday service.

2.4.15 Analysis of the results of the Public Event online survey (see Appendix N) also highlighted that limited bus operating hours were an issue, with 88% of respondents noting it as a major or slight problem to them.

Key Evidence

Table 2.4 shows, for Service 79 (Dumfries to Carlisle) / 179 (Annan to Carlisle) serving Eastriggs, for the Weekday /Saturday and Sunday timetables:

- The first bus departure to Dumfries / Carlisle;
- The last bus departure back from Dumfries / Carlisle; and
- The number of connections of the service a day.

Table 2.4: Bus Operating Hours from and to Eastriggs

To…	Timetable	Earliest Departure from Eastriggs	Latest departure back to Eastriggs	Operating Hours	Number of connections
Westbound (to/from Dumfries)	Monday to Saturday	06:10	22:45	16:35	15
	Sunday	11:00	22:45	11:45	6
Eastbound (to/from Carlisle)	Monday to Saturday	06:00	21:57	15:57	28
	Sunday	09:50	21:10	11:20	7

2.4.16 Table 2.4 shows the much reduced connectivity to and from the area on a Sunday compared to that on a weekday / Saturday, with a much shorter operating day and far fewer connections. In particular, access to and from the area on a Sunday morning is not possible until nearly 10am.

Key Economic and Social Impacts

2.4.17 From both the initial public engagement and the Public Event and associated feedback from the online survey, the existing level of public transport connectivity on a Sunday was felt to be causing a number of social problems in the local communities, particularly in terms of:

- **Reduced employment opportunities.** The lack of Sunday bus connectivity and the much reduced Sunday services compared to a weekday / Saturday means it is difficult for those without a car or unable to drive to take up employment opportunities which require shift work or weekend working. This is particularly important given the recent job losses in the area as noted above in relation to problems PR1 and PR2.

  Reduced social opportunities: The reduced bus service on a Sunday reduces people ability to participate in social activities, including school children for whom participation in weekend extra-curriculum activities in Dumfries or Carlisle is difficult without support.

It should be noted that there is a burden on partners / friends / parents in enabling others to access locations further afield who require lifts to then connect to public transport.

PR4: Poor integration between bus and rail

2.4.18 In terms of integration between bus and rail, there are problems relating to:

- Poor integration between bus and rail timetables; and
- A lack of physical integration between bus stops and rail stations with the rail network not easily accessible, especially for those with limited mobility.

2.4.19 Analysis of the results of the Public Event online survey (see Appendix N) also highlighted poor integration between bus and rail as a problem, with 64% of respondents noting they felt this was a major problem to them.

Key Evidence

The closest stations to Eastriggs are located at:

- Annan (6km west) and Gretna Green (8km east) on the GSWL; and
- Lockerbie (23km north) and Carlisle (28km south) on the WCML.

2.4.20 Figure 2.3 shows these stations and the daily services departing from these stations.

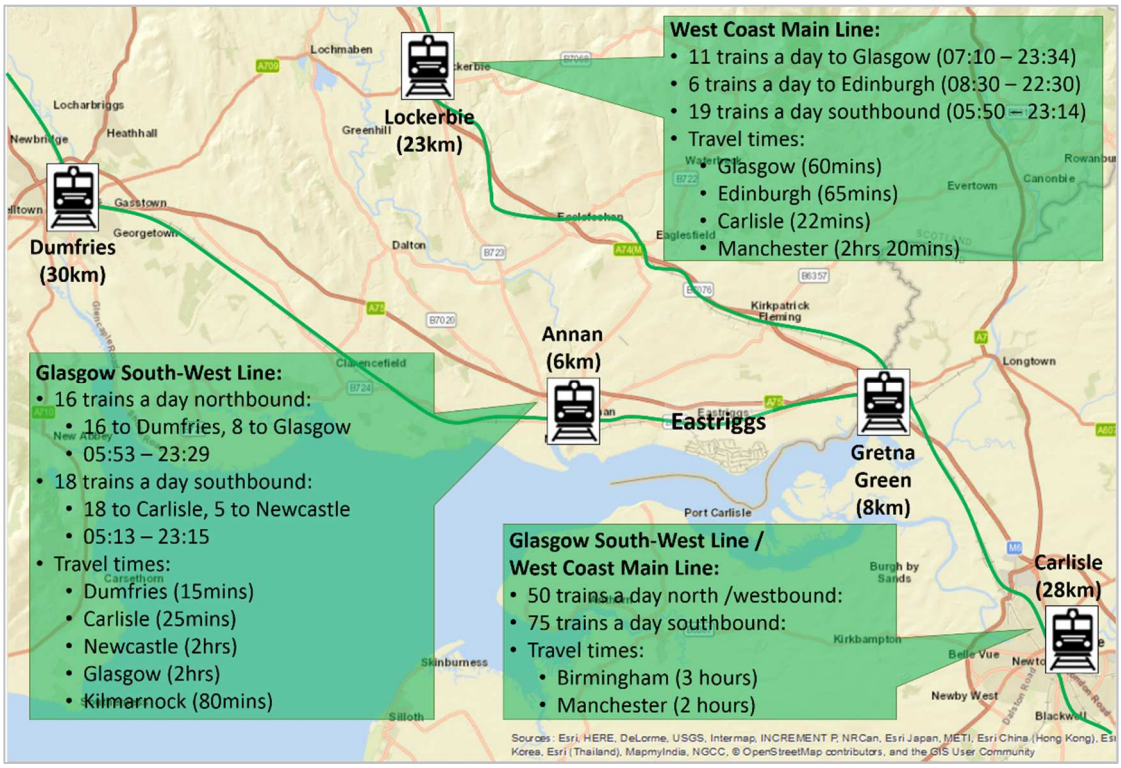

Figure 2.3: Closest railway stations

Connections between bus and rail networks

2.4.21 While bus service 79 / 179 enables access to Annan, Gretna and Carlisle:

- A 10 - 15 minute walk is required from bus stop in the centre of Gretna to Gretna Green railway station;
- A 5 - 10 minute walk is required from the 179 bus stop in Annan to the railway station – although Service 79 routes closer to the station;
- A 5 - 10 minute walk is required from the bus stop in Dumfries to the railway station; and
- A 5 - 10 minute walk is required from the bus stop in Carlisle to the railway station.

Poor integration between bus and rail timetables

2.4.22 Analysis of integration between bus and rail timetables has been undertaken (reflecting winter 2016/17 timetables at the time of the analysis) for both east and westbound services at Annan and Gretna Green and to northbound and southbound services at Lockerbie and Carlisle. The analysis has considered the available bus services connecting Eastriggs (either direct or indirect with interchange between buses) to departing and arriving train services. The analysis is shown in Appendix L .

2.4.23 The analysis considers ‘access time’ i.e. the total travel time from Eastriggs to a departing train (i.e. an outbound trip), or from an arriving train back to Eastriggs (an inbound trip) and considers bus travel time, any walk time required between bus stop and railway station and any wait time (either at the station for outbound trips) or at the appropriate bus stop (for inbound trips).

2.4.24 Appendix L.1 shows how existing bus services to and from Eastriggs tie in with rail departure times from the stations. For each rail departure the figures indicate time spent on the bus, walk time between the bus stop and station, and additionally time spent waiting at the station. For arrivals by rail (when the trip being considered is from the railway station back to Eastriggs), the figures include the walk time from the station to the required bus stop, wait time at the bus stop, and the journey time by bus back to Eastriggs. The analysis is summarised in Table 2.5 and Figure 2.4.

2.4.25 Overall, as can be seen from the table, integration between bus services to/from Eastriggs and rail services at Gretna Green and Lockerbie and can be considered to be presently poor. Note also that not all rail services heading southbound are accessible due to a lack of bus connectivity.

Table 2.5: Bus and Rail Integration for travel to and from Eastriggs

Rail Line	Direction	Destination / Origin	Outbound	Inbound
Glasgow South West Line	Northbound	Glasgow	• Average 'access' journey times to departing trains are 40 minutes including interchange times of around 25 minutes	• Average 'access' journey times back to Eastriggs from the trains are 36 minutes, including average interchange time of around 20 minutes
	Southbound	Carlisle	• Possible to connect to all rail services to Carlisle except for one early morning service • For half of the services to Carlisle (eastbound), it is actually quicker to board at Annan (i.e. head west), and spend a further ten minutes on the train due to the current poor integration of rail and bus services at Gretna Green • Average 'access' journey times from Eastriggs to Gretna Green Railway Station are around 50 minutes, including around 30 minutes' interchange time.	• At Gretna Green, there is presently an onward bus connection to Eastriggs accessible from each of the rail services from Carlisle; however, it is considered that few would actually use the final connection of the day due to an approximate 1 hour 15-minute waiting time • For seven out of ten services from Carlisle, it is quicker to spend a further ten minutes on the train and alight at Annan, due to the poor integration of existing rail and bus services at Gretna Green.
West Coast Main Line	Eastriggs residents have the option of catching WCML services from either Lockerbie or Carlisle; however, only around a quarter of WCML services actually stop at Lockerbie, meaning that in most cases there is no option but to travel via Carlisle to access the trains. For those services which stop at both stations, it might be expected that it would be quicker to travel northbound to/from Glasgow and Edinburgh via Lockerbie and then travel southbound via Carlisle; however, this is not always the case due to varying levels of public transport integration over the course of the day. Bus journey times from Eastriggs to Lockerbie are typically circa 20 minutes longer than those to Carlisle as there is not a direct service at present, but conversely, the rail journey from Carlisle is circa 20 minutes longer than that from Lockerbie due to its more southerly position.			
	Northbound	Glasgow	• If travelling via Lockerbie, it is currently possible to access all services to Glasgow except for one early morning service	• For the 10 rail services which stop at both Carlisle and Lockerbie stations, it is quicker to alight at

Rail Line	Direction	Destination / Origin	Outbound	Inbound
			• For the 10 rail services which stop at Lockerbie and Carlisle stations, it is quicker to board at Lockerbie in three instances and at Carlisle for the remainder • Average 'access' journey times from Eastriggs to Lockerbie Station are around 1 hour 35 minutes, including around 30 minutes' interchange time	Lockerbie in six instances and at Carlisle for the remainder • Average 'access' journey times to Eastriggs from Lockerbie Station are around 1 hour 35 minutes, including around 25 minutes' interchange time.
		Edinburgh	• It is currently possible to access all services to Edinburgh • Of the six services which stop at both stations, it is quicker to travel via Lockerbie in only two instances; • Average 'access' journey time of 1 hour 22 minutes, including interchange time of around 20 minutes	• Connecting bus services are available for those alighting from all rail services from Edinburgh • Only quicker to travel via Lockerbie to connect with one Edinburgh rail service per day • Average journey and interchange times circa 10 minutes longer than outbound leg
	Southbound		• It is currently possible to access all southbound trains, except the first four early morning services • For those 15 accessible rail services which stop at both Lockerbie and Carlisle, it is quicker to board at Lockerbie in one instance and at Carlisle for the remainder • Average 'access' journey times from Eastriggs to Carlisle Station of around 1 hour 20 minutes, including around 25 minutes' interchange time	• It is currently possible to access connecting bus services from all northbound trains from the south, except the final four evening services • For the 13 accessible rail services which stop at both Lockerbie and Carlisle stations, it is quicker to alight at Carlisle on all occasions • Average 'access' journey times from Eastriggs to Carlisle Station of around 1 hour 15 minutes, including 25 minutes' interchange time.

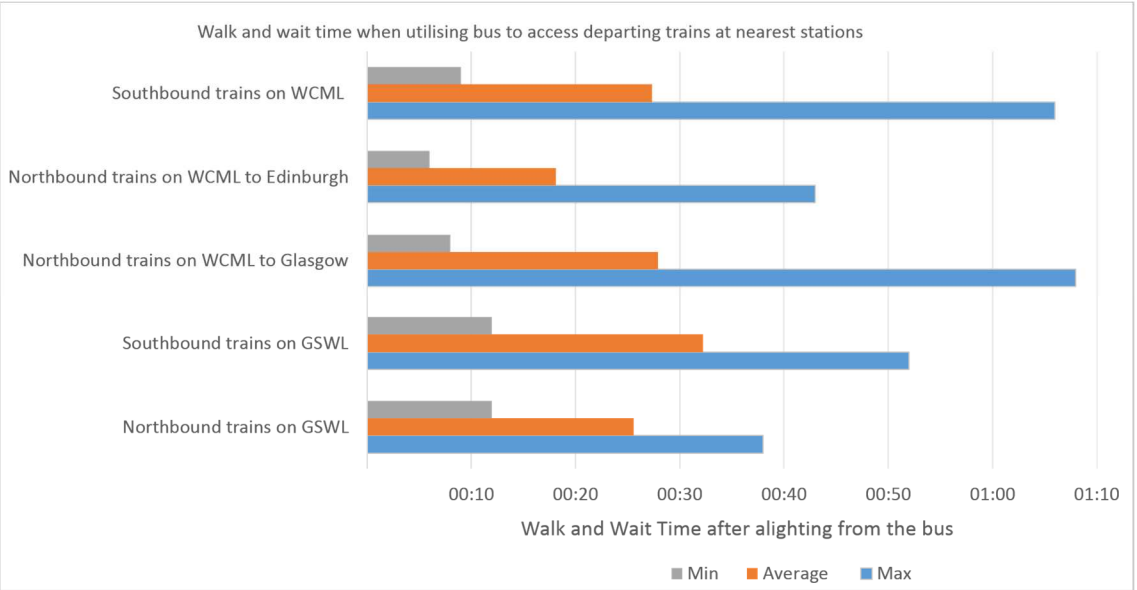

Figure 2.4: Walk and Wait time to departing trains at nearest stations

2.4.26 Figure 2.4 shows the total 'interchange' time (walk and wait time) to northbound and southbound departing trains on the GSWL and WCMLs from the most advantageous station (Gretna Green or Annan on the GSWL and Lockerbie or Carlisle on the WCML). The minimum, average and maximum interchange times are presented. The analysis shows the greatest average interchange time to southbound trains on the GSWL but with very long maximum interchange times to southbound trains on the WCML and northbound trains to Glasgow on the GSWL.

Key Economic and Social Impacts

2.4.27 From both the initial public engagement and the Public Event and associated feedback from the online survey, the existing level of public transport integration between bus and rail was felt to be causing a number of social problems in the local communities, particularly in terms of:

- **Impact on those with mobility issues**. The physical lack of integration between bus and railway stations, often with a walk across town, is particularly difficult for the elderly and those less able.

- **Reduced employment opportunities**. The lack of bus and rail integration, particularly with a lack of connecting bus services to earlier and later evening trains, limits the potential to utilise the combined public transport network for accessing employment opportunities. This is particularly pertinent for those seeking part time work, where reduced commute time may enable greater potential to take up employment opportunities.

- **Reduced social opportunities**. As above with employment opportunities, the lack of bus and rail integration, particularly with a lack of connecting bus services to later evening trains, limits the potential to utilise the combined public transport network for accessing social opportunities. It was noted during the public engagement that many respondents felt that improved access to the rail network would allow them to attend events in the evening without having to worry about either making the last bus, relying on family members to collect them or paying for a taxi from Gretna or Annan. It was noted that this would benefit young people in the area and respondents felt that improved access to the bigger cities would be more likely to encourage young people to stay in the Eastriggs area.

PR5: Poor quality active travel links

2.4.28 Consultation highlighted there are concerns over the safety of active travel routes in the area.

2.4.29 Analysis of the results of the Public Event online survey (see Appendix N) also highlighted 'poor quality local active travel links' as a problem, with 57% of respondents noting they felt this was a major problem to them.

2.4.30 It was also noted during engagement that the National Cycle Network Route 7 (NCN7) is a very popular route with cyclists.

Key Evidence

2.4.31 The distance between Eastriggs and Gretna, and between Eastriggs and Annan, is approximately 6-7km and is considered a suitable distance for cycle commuting, or for cycling to either railway station.

2.4.32 National Cycle Route 7 (NCN7), shown in Figure 2.5, routes between the towns but is an on-road route which includes:

- Sections of the route on national speed limit roads;
- Large sections of the route which are not lit; and
- Circuitous routeing west of Dornock village – while the cycle route is signed off the main B721 road onto quieter country lanes, it adds an additional 650m to the route length.

2.4.33 In addition, much of the route does not contain adjoining footway.

2.4.34 Given the above;

- The speed of traffic and lack of lighting is likely to deter use of the route for cycling by some due to safety concerns; and
- The lack of a footway and lighting along much of the route makes it difficult to use safely as a pedestrian.

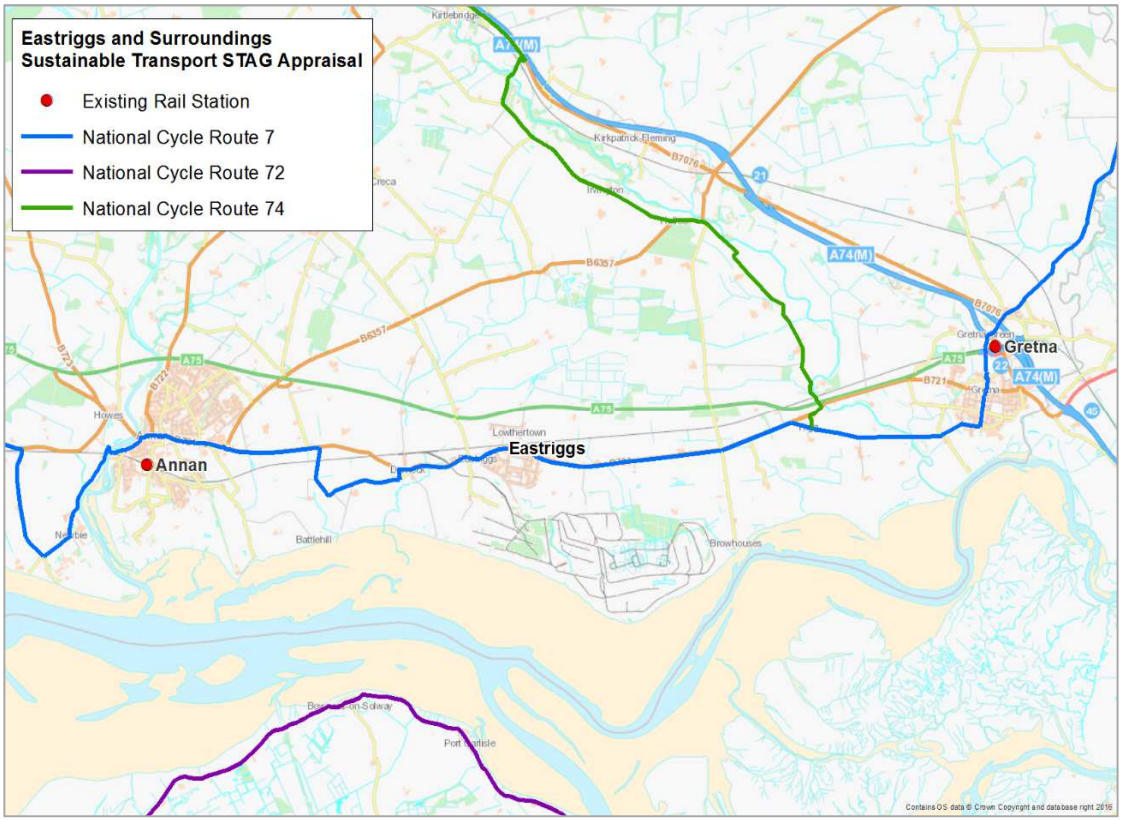

Figure 2.5: Cycle link between Gretna, Annan and Eastriggs

2.4.35 It is noted that Dumfries and Galloway Council has examined options with regards to providing a link from the NCR7 to Annan Railway Station. The suggested route would follow Solway Street; a path to the north of Hecklegirth Primary School and Annan Academy; and a link along St John's Road. An image showing the route is provided shown in Figure 2.6. As such, this option is assumed to be being developed by Dumfries and Galloway Council and has not been considered further as part of this appraisal.

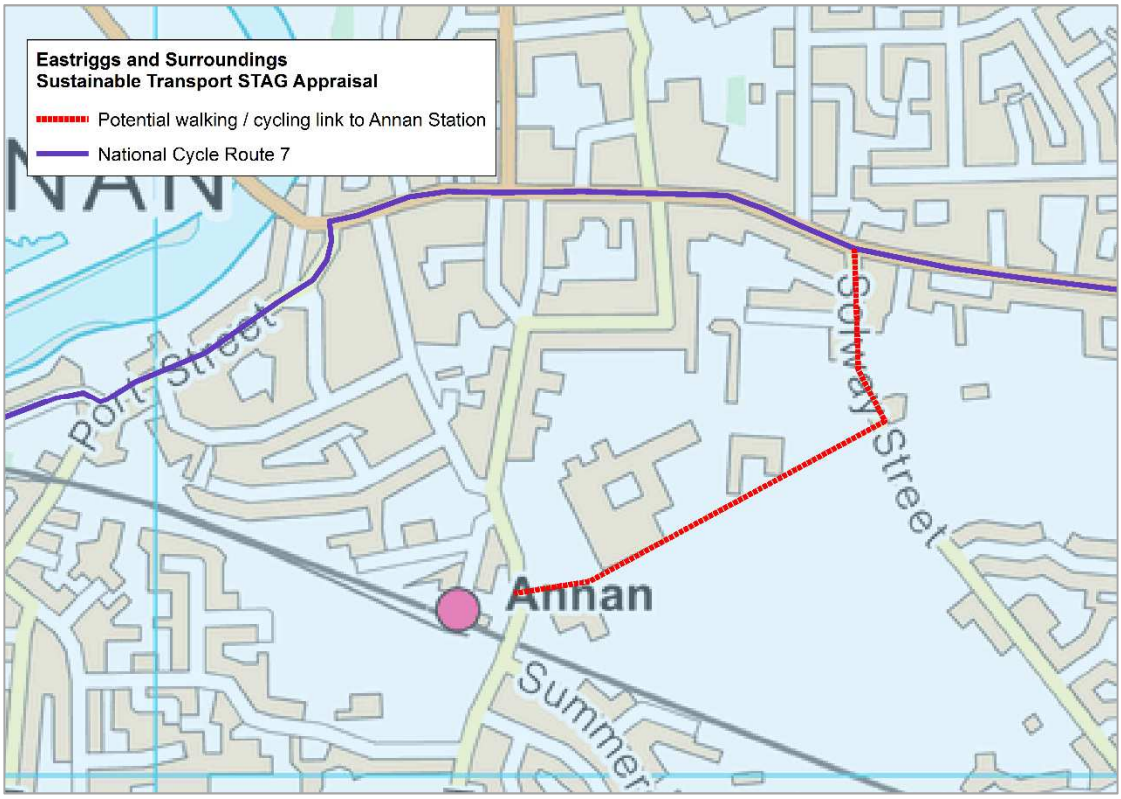

Figure 2.6: Dumfries and Galloway Council – Proposed link to Annan Railway Station

Key Economic and Social Impacts

- **Limiting access to Gretna and Annan by active travel** could be impacting on those without access to a car in terms of reduced access options to the nearby towns and the rail network; on the environment through increased car emissions; and on the general health of the local community through the inability to utilise walking and cycling as safe means of transportation.

2.5 Issues and Constraints

2.5.1 In the context of considering options, it is important to note the situation with respect to the bus industry across Dumfries and Galloway as a whole in what is a rural context.

2.5.2 A key major issue facing transport in the area is the ongoing viability of the bus network. Over half of buses operating in Dumfries and Galloway operate with partial or full subsidy from SWestrans, and this subsidy is reducing in the light of funding pressures (see Table 2.4 below). There is therefore uncertainty regarding how much funding will be available in the future for supporting bus services.

2.5.3 Figure 2.7 shows the operating commercial and subsidised buses in the area.

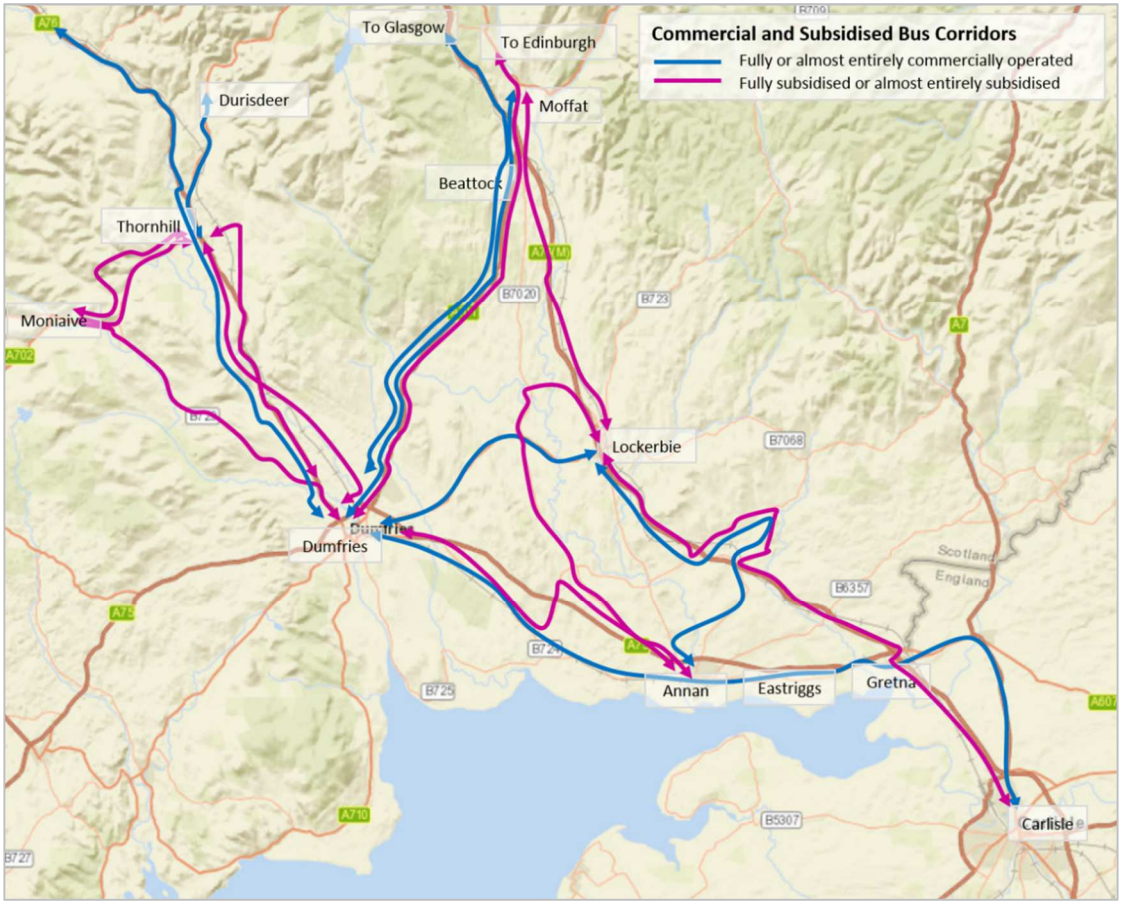

Figure 2.7: Commercial and subsidised bus services in the area (as at December 2017)

2.5.4 Table 2.6 shows SWestrans bus subsidy budget since 2015/16.

Table 2.6: Available SWestrans subsidy

Year	Available Subsidy (£)	Change in subsidy available compared to previous year
2015 / 16	£3,735,600	-
2016 / 17	£3,473,040	-7.0%
2017 / 18	£3,400,798	-2.1%
2018 / 19	£3,395,741	-0.1%
Overall subsidy reduction 2015 / 16 to 2018 / 19		-9.1%

2.5.5 The available resources (vehicles and drivers) which operate bus services across the region are heavily utilised throughout the day over a variety of routes. For commercially run services, the overall viability of services is, in many cases, only achievable due to the high use of services in the morning by school children / school contracts. As such, the overall bus network and operation across the region is fragile and even minor changes to routes or services (or indeed any new competition with rail), which have the potential to tie up resources or affect patronage, could have major consequences. This is an important point when considering any changes to

the existing bus network. In addition, for those without access to a car, there is often no alternative other than the bus, and bus services are therefore 'lifeline' in nature.

2.5.6 In addition, clear cognisance must be taken in consideration of instating any new bus services operating with subsidy which could have an impact on commercially operated services. The relevant legislation is contained in Section 63 of the Transport Act 1985 (as amended) which states:

> *(2)(a) "It shall be the duty of a council in Scotland ... to secure the provision of such public passenger transport services as the council consider it appropriate to secure to meet any public transport requirements within their area which would not in their view be met apart from any action taken by them for that purpose"*
>
> *(5) "For the purpose of securing the provision of any service under subsection (2)(a) any council shall have power to enter into an agreement providing for service subsidies; but their power to do so shall be exercisable only where the service in question would not be provided without subsidy"*

2.5.7 It should be noted that while the above Act refers to the council, this responsibility was transferred from Dumfries and Galloway Council to SWestrans via a transfer of functions order in 2006. Under the Act therefore SWestrans has a duty to secure services it thinks are required where they are not provided by the market, but it cannot secure a service already provided by the market.

2.5.8 The key issue is the interpretation of "service": there are many examples of subsidised services that partially parallel commercial services. In developing options, a clear understanding of the purpose of any new subsidised services is required in order to show that the proposals are legal.

2.6 Opportunities

Economic

2.6.1 Given recent job losses in the area, the key benefit of improvements to the transport network will be an **economic** benefit in enabling improved access to a greater number of job opportunities for local residents. Engagement highlighted the impact of these recent job losses on the local community and the need to now travel outwith the local area for employment. Analysis presented earlier in this chapter has shown that the number of jobs accessible from Eastriggs is far lower than the number accessible from the two closest communities at Annan and Gretna.

2.6.2 Improved connectivity and access to employment, as well as education and social opportunities, may help sustain the community through the retention of younger people, and reduce feelings of community isolation and remoteness. It could also be used to promote the area for in-migration.

Tourism

2.6.3 Improved connectivity could also help support local **tourism** in the area, especially given the Devil's Porridge Museum located in Eastriggs.

Social

2.6.4 In terms of **social** opportunities, the general feeling of the community (as noted in the public engagement elements of the study) is that improved connectivity had real potential in terms of the long term sustainability of their community, encouraging younger people to remain or move into the area and offering improved social accessibility for all.

2.6.5 Engagement highlighted the high dependence on the car in the area. As noted above, there are multiple affordable housing schemes in the area aimed at families with lower incomes. Due to poor public transport links, people are often forced into owning a car which may not be affordable for the families attracted to live there due to the lower house prices. Improving public transport connections from and to the area could reduce the financial burden on these families by removing the need to own a car.

2.6.6 Improved transport connectivity to and from the area has the potential to encourage and enable modal shift to sustainable means, reducing emissions and positively contributing to Scotland's climate change targets.

3 Objective Setting

3.1.1 This section sets out the Transport Planning Objectives (TPOs) for the study. The TPOs express the outcomes sought for the study and describe how the identified key problems can be alleviated (without indicating any potential solution). The objectives will form the basis for appraisal of the options at STAG Part 1 Appraisal (and subsequently, with refinement, during the more detailed STAG Part 2 Appraisal).

3.1.2 The development of the TPOs has been informed by:

- Consideration of the key problems and opportunities identified;
- The wider established transport, land use planning and economic policy context as discussed below;
- Discussions during the stakeholder engagement programme; and
- Discussion with the client group.

3.1.3 The objectives have been developed with SMART principles in mind as specified below:

- **Specific:**
  It will say in precise terms what is sought
- **Measurable:**
  There will exist means to establish to stakeholders' satisfaction whether or not the objective has been achieved
- **Attainable:**
  There is a general agreement that the objectives set can be reached
- **Relevant:**
  The objective is a sensible indicator or proxy for the change which is sought
- **Timed:**
  The objective will be associated with an agreed future point by which it will have been met.

3.2 Objective Setting Policy Hierarchy

3.2.1 The TPOs set for the study, while reflecting the identified problems, also support the range of established national, regional and local policy directives, plans and strategies.

3.2.2 Figure 3.1 shows the key transport, planning and economic policy, strategy and plan hierarchy under which the study is positioned, and to which the study objectives are aligned.

3.2.3 Details of the key aims and objectives for each of the noted policy directives, plans and strategies shown in Figure 3.1 are discussed in Appendix E .

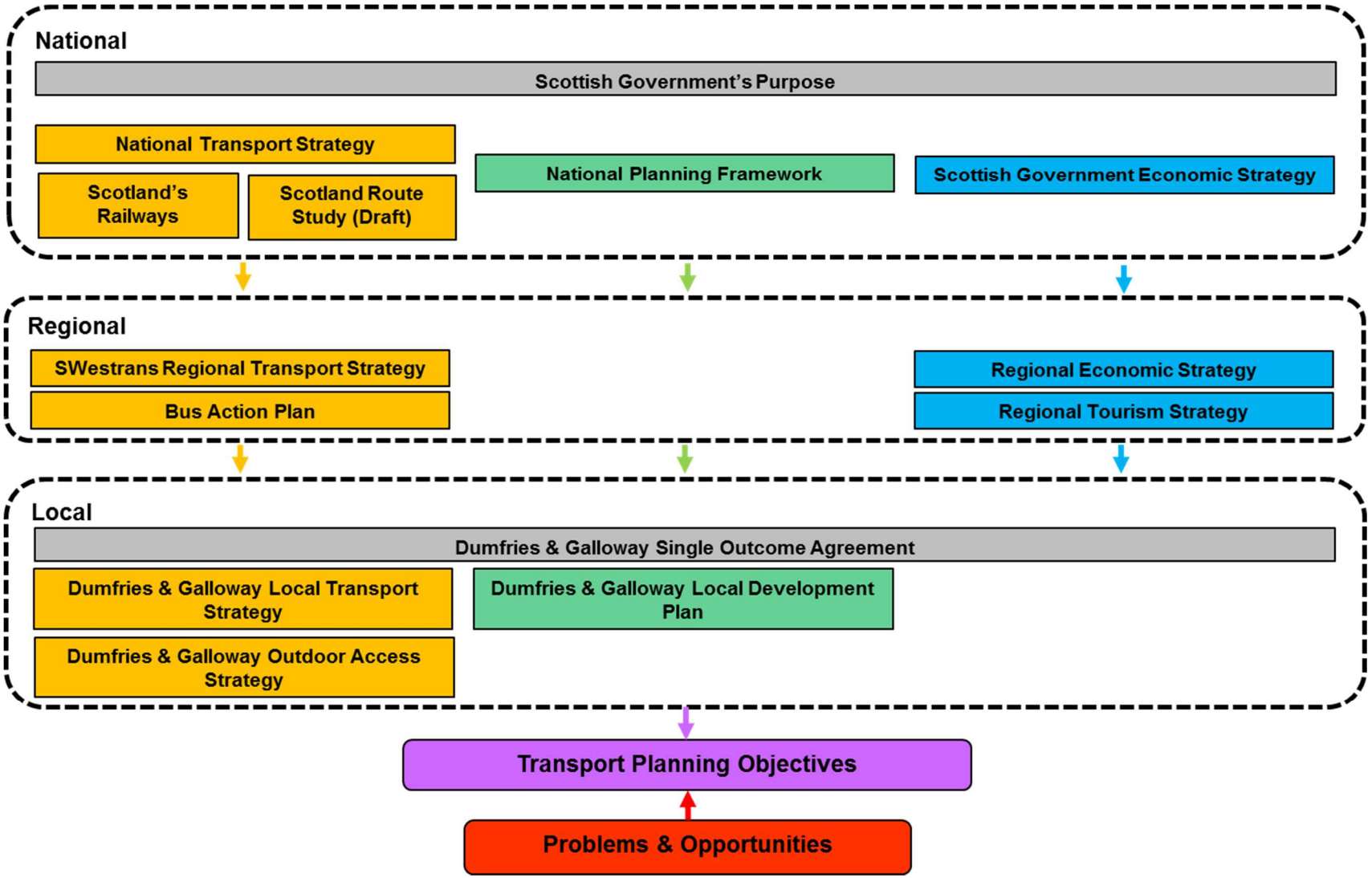

Figure 3.1: Objective Setting Policy Hierarchy

3.3 Transport Planning Objectives

3.3.1 The setting of TPOs is a key step in the STAG process, as they define what the policymaker is seeking to achieve through the transport intervention. The objectives that have been developed for this appraisal are designed to reflect and address the problems and opportunities outlined above, whilst also focussing on the delivery of the wider policy context.

3.3.2 The resulting TPOs are set out below. In line with the problems and opportunities identified, they are focussed on addressing the provision of sustainable travel options that facilitate access to employment, retail and key services.

- **TPO 1:** Reduce public transport journey times to improve access to key, commutable employment and educational centres from Eastriggs
- **TPO 2:** Provide public transport connectivity which enables travel to and from the area across the day and across the week

3.3.3 Figure 3.2 shows how the problems set out in Chapter 2 have fed into the objectives. The dotted lines linking the active travel problem to the objectives reflects that the problem partially links to the objectives. This reflects the part that active travel can play in enabling connections to the strategic transport network but recognises that it is unlikely that active travel modes would be used for an entire strategic trip, given the distances involved.

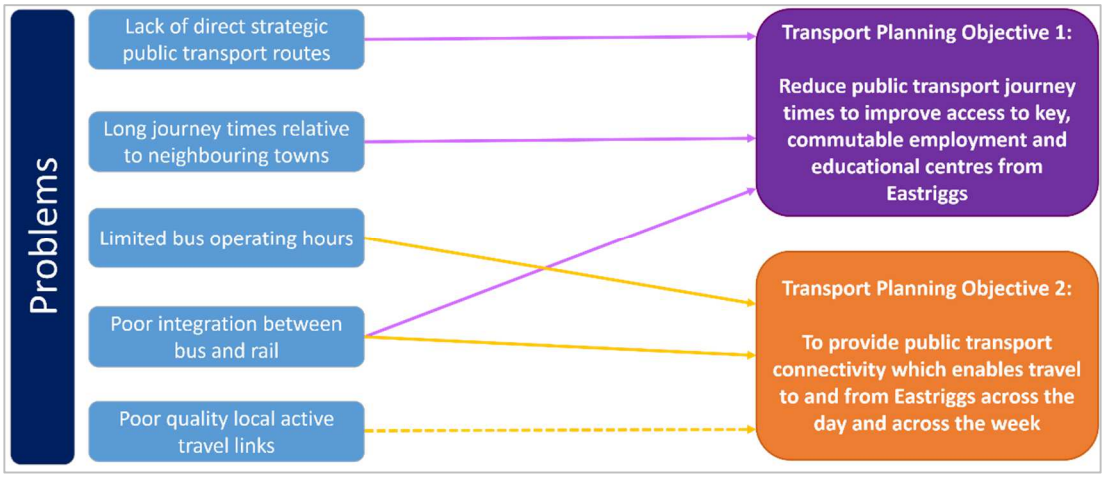

Figure 3.2: Problems mapped to Objectives

4 Option Generation, Development & Sifting

4.1 Overview

4.1.1 Drawing on the problems and opportunities identified and considering the developed objectives, an initial list of options which could potentially resolve them was developed. In line with STAG, the potential options were derived through:

- ideas / outputs from the consultation process;
- ideas / proposals that have previously been developed and remain viable options; and
- ideas / outputs from structured decision making processes, followed by our team undertaking the 'optioneering' exercise.

4.2 Option Generation

4.2.1 This section sets out the potential options which have been identified for addressing the transport problems and opportunities in Eastriggs.

Do Minimum & Reference Case

4.2.2 STAG requires the establishment of a 'Do Minimum' and 'Reference Case':

- The 'Do Minimum' is the current position plus any committed investments which have policy and funding approval. The Do Minimum is the basis against which all other options should be measured.
- The 'Reference Case' includes other non-controversial but as yet uncommitted transport schemes and / or development profiles, which can also be used as a baseline for option comparison.

4.2.3 With no committed transport improvements in the Eastriggs area, the 'Do Minimum' and 'Reference Case' for this study represent one and the same – i.e. the continuation of the current situation.

Options Generated

4.2.4 The generated options are shown in Table 4.1 alongside a high level appraisal against the Transport Planning Objectives.

Table 4.1: Generated Options

Option No.	Option Description	High-level Appraisal against Objectives	
		TPO1: Reduce public transport journey times to key centres from Eastriggs	TPO2: Connectivity across the day and week
1	Dedicated bus service operating between Eastriggs, Annan and Lockerbie Railway Station,	✓	✓
2	Bus priority measures in Dumfries including on-going investment in traffic management system and bus detection systems	✓	
3	Later running, increased Sunday services and express services between Eastriggs, Carlisle & Dumfries	✓	✓
4	Direct bus services to Edinburgh & Glasgow	✓	
5	Development and support for local Community Transport		✓
6	Re-open Eastriggs Railway Station	✓	✓
7	Improved cycling infrastructure between Eastriggs and Annan and Gretna		✓

4.3 Option Development

4.3.1 A number of the options were further developed in order to clarify the details of each to allow for informed appraisal – this is set out in Table 4.2 below.

Table 4.2: Option Development

Option	Description	Further development
1	Railbus linking the study area with Annan Railway Station and Lockerbie Railway Station (on the West Coast Main Line)	The option is focussed on improving integration between bus and rail by providing bus services which integrates with train arrival and departure times at Gretna, Annan, Dumfries and Lockerbie, providing transport integration benefits and increased accessibility. Neither of the existing services 79 (Dumfries – Carlisle) or 179 (Annan – Carlisle) which serve Eastriggs route directly to Dumfries or Carlisle railway stations, however, rather than providing a new dedicated service, the existing routes could be extended to include these which would improve accessibility to both the GSWL and WCML rail networks. There is also potential to include Annan and Gretna railway stations as stops on both routes. Some 79 and 179 services currently link in with rail times from Dumfries and Carlisle, however, there are long interchange wait times for trains to Edinburgh and Glasgow which could be better integrated to reduce overall journey times. The existing service 383 routes between Lockerbie and Annan and could be extended to Eastriggs to provide increased accessibility to the WCML for those travelling northwards. It is a reasonably frequent service (~every 1-2 hours) during the day Monday – Saturday although there are few services in the evening and none going to/from Annan on a Sunday. The option has been further developed and includes: ▪ **Option 1a:** Provision of a dedicated bus service operating between Eastriggs, Annan and Lockerbie Railway Station, integrated to reduce interchange times between bus and rail; ▪ **Option 1b:** Alterations to existing services: o Extending Service 79 such that the route includes stops at/close to Dumfries, Annan, Gretna Green and Carlisle railway stations; o Timing Service 79 and 179 such that they better integrate with rail times, especially at Carlisle, to reduce interchange waiting time and provide improved access to key destinations on the WCML (Edinburgh/Glasgow etc.); and ▪ **Option 1c:** Extending the existing Service 383 to connect Eastriggs to Lockerbie. ▪ For the three options, potentially establishing a Statutory Quality Bus Contract (SQC) specifying the rail stations at stops, minimum service frequencies and maximum interchange wait times for rail services at the rail stations to ensure provision of service.

Option	Description	Further development
		It is recognised that commercially there may not be sufficient demand to encourage the current operator to increase the headway of their services and there is very limited availability of the existing SWestrans budget to fund further subsidised services. A material change would therefore likely be required to current bus subsidy available to enable this option to be delivered.
2	Bus priority measures in Dumfries town centre	The option seeks to benefit all bus services / users within the town and reduce journey times into Dumfries. This option generated assumes journey time benefits to bus services through: ▪ Selective vehicle detection (SVD) or selective vehicle priority (SVP) at traffic signals to provide priority / 'green waves' for buses; ▪ Bus lane and bus gate implementation where appropriate; ▪ Increased implementation of signal optimisation platforms such as MOVA or SCOOT to better manage traffic flow, traffic fluctuations and congestion in the town centre. Further consideration has been given to this option with full details to the option's development provided in Appendix F . Given the discussion in Appendix F , Option 2 therefore includes: ▪ On-going investment in, and recalibration of the SCOOT system; and ▪ Investment in a wireless detection system.
3	Later running, increased Sunday services and express services between Eastriggs, Carlisle & Dumfries	Monday – Saturday services for the existing Services 79 (Dumfries – Carlisle) and 179 (Annan – Carlisle) routes are less frequent during the evenings. Sunday services for both are currently approximately every 2 hours. The option assumes: ▪ Increased frequency of Service 79 and 179 to: o Hourly in the (weekday) evenings o Every 90 minutes throughout the day on Sundays

Option	Description	Further development
		▪ Some 'express' instances of Service 79 between Dumfries and Carlisle calling only at Dumfries, Annan, Eastriggs, Gretna and Carlisle – utilising the A75 between Dumfries & M6 between Gretna and Carlisle. It is recognised that that commercially there would not be sufficient demand to encourage the current operator to increase the frequency of their services and there is very limited availability of the existing SWestrans budget to fund further subsidised services. A material change would therefore likely be required to current bus subsidy available to enable this option to be delivered.
4	Direct bus services to Edinburgh & Glasgow	Analysis was undertaken considering the potential journey times that could be achieved with direct buses. However, it was not considered that such services could provide any significant benefit over rail to Carlisle to join northbound fast services on the WCML.
5	Increased promotion and further development and support for local community transport	Community Transport can play a critical role in meeting the transport needs of a wide range of groups where conventional transport fails to do so. Annandale Community Transport Services (ACTS) offer a range of community transport services including group individual transport services for those who have difficulty using conventional bus routes. There is no specific funding through SWestrans etc. for Community Transport. However, the Community Planning Partnership have endorsed a strategic, coordinated and integrated approach to social/community transport service delivery across the partnership through the development of a Public Social Partnership (PSP). This approach involves the third sector earlier and more deeply in the redesign of Dumfries and Galloway's social and community transport services. The aim of the PSP in general terms is to improve the design of transport services delivered on behalf of the Commissioner(s) and to develop the capacity of the social and community transport sector. This is to be achieved by working in partnership to maximise the benefits to the community. The PSP is a multi-agency partnership between Dumfries and Galloway Council, the South West of Scotland Transport Partnership, NHS Dumfries and Galloway and the Community Transport operators/Third Sector Interface.

Option	Description	Further development
		The specific aims of this PSP are to develop a genuine and lasting partnership to support the remodelling of the Commissioner(s) services and to build the capacity of the sector to be able to delivery these services in the future by: ▪ Understanding the market; ▪ Increasing capability and capacity; and ▪ Responding to changing demand. Dumfries and Galloway PSP is currently seeking to engage with Third Sector organisations to work within the Public Social Partnership around three work streams: ▪ Transport Service Developments; ▪ Health and Social Care Transport Solutions; and ▪ Capability and capacity building. Initial scoping work has already begun with Third Sector and Public Sector partners through the co-produced "State of the Sector and Improvement Plan" report and the review of the non-emergency patient transport (NEPT) services. The work to redesign and pilot services will take place over a period of years. The existing community transport provider for the Eastriggs area, ACTS, highlighted their desire to explore ways to improve access to healthcare, including: ▪ The potential for a demand responsive, or similar, service in the evenings from Eastriggs and, more particularly, surrounding villages, to and from the main hospital in Dumfries, particularly to improve accessibility during the evening visiting hours. This was felt to be particularly important for more elderly residents for whom a trip bus involves interchange in central Dumfries which was considered to be potentially cold and frightening. ▪ Developing relationships and arrangements with local health centres where, on a particular afternoon, the health centre would 'block out' appointments for those coming by community transport from surrounding villages, such that access could be provided by a single coordinated community transport vehicle.

Option	Description	Further development
6	Re-open Eastriggs Railway Station	This option involves the delivery of a new railway station at Eastriggs. It is assumed that the following will be provided: ▪ Proportionate car parking and bus access; ▪ DDA complaint footbridge or public road underbridge; ▪ Passenger facilities, including waiting shelters, Customer Information System (CIS), Public Address, CCTV system, and ticket machines; and ▪ Signalling as required.
7	Improved cycling Infrastructure between Eastriggs Annan and Gretna	The distance between Eastriggs, Gretna and Annan is approximately 4 miles and is considered a suitable distance for cycle commuting. National Cycle Route 7 (NCR7) which follows the B721 provides a direct connection between the three towns. However, there is potential for improvements to be made to this route including the provision of additional lighting and signage and / or an off-road cycle link at certain locations along the route of the NCR7 between Gretna, Annan and Eastriggs. The option considers: ▪ The potential for some of the route to be off-road; ▪ Lighting improvements along the NCN7 route; and ▪ Signage improvements – with consideration given to the required directional, way-marking and on-road signage.

4.4 Option Sifting

4.4.1 Best practice in STAG is that all options should be retained until evidence is provided that the option will not deliver against the TPOs and STAG criteria (and hence will not address the problems and opportunities). At this stage, it is recommended that options which will clearly not deliver the intended outcomes should be eliminated from further consideration.

4.4.2 Many of the options developed above have the potential to contribute towards delivering against the TPOs and STAG criteria and thus could be considered in more detail at the STAG 1 appraisal stage. The options considered unlikely to meet these criteria are:

- Option 2 – Bus priority measures in Dumfries town centre
- Option 4 – Direct bus services to Edinburgh & Glasgow

4.4.3 Option 2 is being rejected as the option:

- Is not solely focused on benefitting only sustainable transport as it would likely benefit all those on the road network within Dumfries, providing improved journey times for cars also, and not encouraging greater use of the sustainable transport network; and
- Is very localised which doesn't provide improved / new connections from / to the study area – the scale of time savings would be unlikely to facilitate new connections; and thus does not strongly support the Transport Planning Objectives.

4.4.4 Option 4 is being rejected as:

- Direct buses to Edinburgh and Glasgow would struggle to provide journey times faster than an existing bus to Carlisle with onwards travel by rail on the WCML. In addition, improved access to the rail network (Options 1a, 1b and 1c) is felt to provide far greater benefits in accessing Edinburgh and Glasgow given the much quicker journey times achievable to the cities from either Lockerbie or Carlisle railway stations.

4.4.5 In addition, given the Public Social Partnership work currently being undertaken to explore healthcare and social transport solutions as discussed above, no further exploration of Option 5 has been undertaken within this study.

4.4.6 The options being taken forward to Part 1 Appraisal are therefore:

- **Option 1a**: RailBus to Annan and Lockerbie: dedicated bus from Eastriggs which integrates with train arrival and departure times at Annan and Lockerbie Railway Stations
- **Option 1b:** Alterations to existing services to better serve Dumfries, Annan, Gretna Green and Carlisle railway stations
- **Option 1c:** Extending the existing Service 383 to connect Eastriggs to Lockerbie
- **Option 3:** Later running, increased Sunday services and express services between Eastriggs, Carlisle & Dumfries
- **Option 6:** Re-open Eastriggs Railway Station
- **Option 7:** Improved cycling infrastructure between Eastriggs, Annan and Gretna

5 Part 1 Appraisal

5.1 Methodology

5.1.1 The STAG guidance sets out a range of criteria against which options should be appraised at Part 1. These include appraisal against:

- **Transport Planning Objectives**;
- **STAG criteria** (Environment, Economy, Safety, Integration and Accessibility and Social Inclusion);
- **Affordability** – which has focussed on:
  - For the bus options (Options 1a, 1b and 1c, 3 and 4), consideration of: costs of vehicle acquisition; ongoing annual operating and maintenance costs; and fare box revenue, and consideration of the level of subsidy which would be required to operate new services;
  - For the Eastriggs Railway Station option (Option 6) in particular, a high-level costing exercise for the construction of a new station; and costing for mitigation measures (signalling etc.);
- **Public Acceptability**; and
- **Feasibility**: which has specifically considered the Eastriggs Railway Station option (Option 6) where understanding the following was key:
  - Initial analysis of existing and potential future capacity on the rail routes including consideration of the existing and potential future timetables;
  - The effects of providing a new station on the wider rail network;
  - In the longer term:
    - Development of an initial high level understanding of how an extension of High Speed Rail (HS2) into Scotland may impact on the WCML, the opportunities that would enable, and the steps which might be required to engage. This seeks to understand how any changes may impact on the use of the GSWL;
    - Initially exploring the potential impact of the Scotland Route Study proposals on both the WCML and GSWL in relation to both passenger and freight services; and
    - As appropriate, exploration of the potential use of the station as rail freight hub (as well as passenger station).

5.1.2 The STAG scoring criteria has been used to assign scores to the criteria for each option using the STAG scoring scale as shown in Table 5.1.

Table 5.1: STAG Scoring

-3	-2	-1	0	1	2	3
Major Cost or Negative Impacts	Moderate Cost or Negative Impact	Minor Cost or Negative Impact	No Benefit or Impact	Minor Benefit	Moderate Benefit	Major Benefit

5.2 Do Minimum & Reference Case

5.2.1 As noted in Section 4.2, there are no committed transport improvements in the Eastriggs area, and the 'Do Minimum' and 'Reference Case' for this study represent one and the same – i.e. the continuation of the current situation.

5.3 Appraisal Against the Transport Planning Objectives

5.3.1 A qualitative appraisal of the options against the study TPOs have been undertaken and is shown in Table 5.2.

5.3.2 The TPOs are predominantly concerned with increasing the accessibility to and from Eastriggs. As such, analysis undertaken as part of the STAG Accessibility and Social Inclusion criteria has been to support the appraisal against the TPOs. This is presented in Appendix K .

Table 5.2: Part 1 Appraisal Against the TPO – Key Points

Option	TPO		Key Points	Score
1a	1	Reduce public transport journey times to improve access to key, commutable employment and educational centres from Eastriggs	The option provides reductions in the public transport to car journey time differentials, for travel to Lockerbie, Edinburgh and Glasgow (with reductions in travel time of up to around an hour and a half). These reductions are especially pronounced for trips to: • Edinburgh (where the option provides a public transport travel time that is over 10 minutes quicker than the private car in the AM period, and just over 5 minutes quicker in the PM period); • Glasgow (where the option provides a public transport travel time that is around 25 minutes quicker than the private car in the AM period). In the evening period (after 1900), trips to Glasgow have a reduced journey time by public transport of over an hour and a quarter; • Lockerbie in the evening period when trips are reduced by over an hour and a half; and • Dumfries in the evening period when trips reduce by 15 minutes. The increased accessibility of Edinburgh and Glasgow, particularly at those times when travel by public transport is quicker than the private car, has a clear benefit to public transport users and significantly improves the accessibility of retail and social opportunities further afield. Given the travel time involved, even with the travel time reductions, it is unlikely that the improved accessibility of Edinburgh and Glasgow would significantly widen employment opportunities due to the still considerable daily commute required. However, additional education opportunities may be realised at these locations where less frequent travel is perhaps required. The reduced travel times to Dumfries and Lockerbie may however open up employment opportunities in these towns to those in the study area.	2
	2	Provide public transport connectivity which enables travel to and from the area across the day and across the week	The option will provide access to departing and arriving trains across the day at Annan and Lockerbie through a direct connection from Eastriggs to the stations. The connection to Lockerbie is a new connection and will enable travel further afield from Eastriggs across the day and across the week.	2
1b	1	Reduce public transport journey times to improve access to key, commutable employment and educational centres from Eastriggs	The option provides reductions in the public transport journey time for travel to Dumfries in the PM and evening periods (when the public transport travel time is reduced by around 10 minutes), and Glasgow in the evening period (when the public transport travel time is reduced by around 25 minutes). The increased accessibility of Dumfries, will improve the accessibility of employment, retail and social opportunities for those resident in Eastriggs. Given the travel time involved and time of day when the improvement is realised, even with the travel time reduction, it is unlikely that the improved accessibility	1

Option	TPO		Key Points	Score
			of Glasgow in the evening would significantly widen the accessibility of employment or education opportunities.	
	2	Provide public transport connectivity which enables travel to and from the area across the day and across the week	The option would not increase overall operating hours for connecting bus services into and out of the area, but improved integration with rail in Carlisle may help support increased travel by public transport into and out of the study area.	0
1c	1	Reduce public transport journey times to improve access to key, commutable employment and educational centres from Eastriggs	The option provides reductions in the public transport journey times for travel to Lockerbie in the AM, PM and evening periods (13 minute, 20 minutes and 1 hour 20 minutes public transport travel time reductions respectively), and Glasgow in the AM, PM and evening periods (41 minutes, 7 minutes and 11 minutes public transport travel time reductions respectively).	1
	2	Provide public transport connectivity which enables travel to and from the area across the day and across the week	The option would not increase overall operating hours for connecting bus services into and out of the area, but improved integration with rail at Lockerbie may help support increased travel by public transport into and out of the study area (although the analysis undertaken for the integration appraisal shows this will be minor).	0
3	1	Reduce public transport journey times to improve access to key, commutable employment and educational centres from Eastriggs	The inclusion of some ‘express’ services between Eastriggs, and Dumfries and Carlisle, does provide a reduction in journey time of around 5 – 15 minutes (for trips to Carlisle) and around 12 minutes (for trips to Dumfries) depending of time of travel. This equates to up to a 28% reduction in travel time for trips to Carlisle, and up to a 25% reduction in travel time for trips to Dumfries. Travel to work data indicates that a substantial amount of people in Eastriggs commute to Carlisle (25%) and there would be reduction in travel time of up to 50 minutes to around 35 minutes on the express service. This would widen access to employment opportunities in Dumfries and Carlisle.	2
	2	Provide public transport connectivity which enables travel to and from the area	Additional evening services and increased Sunday frequency offers greater opportunities and flexibility to travel with the altered timetables and express services providing greater accessibility for: those without access to a car; older people for whom driving is no longer possible; and older school children	2

Option	TPO		Key Points	Score
		across the day and across the week	who would be able to travel independently to access recreational and social activities later in the evening and at weekends.	
6	1	Reduce public transport journey times to improve access to key, commutable employment and educational centres from Eastriggs	Comparison of car travel times, existing and 'with option' public transport travel times for trips from Eastriggs to Dumfries, Carlisle, Edinburgh and Glasgow shows that the option provides large reductions in public transport travel time over around half of the day considered (up to a 130% reduction) where an existing trip by public transport can currently be made. Where the public transport travel time is reduced by the option, the option provides a travel time which is quicker than the corresponding trip by private car (around 5-7 minutes quicker). The option also provides an additional opportunity to travel to Dumfries after 22:00. For trips to Carlisle, the option provides large reductions in public transport travel time over around 3/4 of the day considered (up to a 190% reduction) where an existing trip by public transport can currently be made and at these times provides a travel time by public transport which is quicker than the corresponding trip by private car (around 4-12 minutes quicker). For trips to Edinburgh, the option provides large reductions in public transport travel time over half of the day considered (up to a 55% reduction) where an existing trip by public transport can currently be made. However, the quickest trip by public transport is approximately the same as the private car travel time. For trips to Glasgow, the option provides up to around a 50% reduction in public transport travel time, with the largest reduction in time equating to over 90 minutes. Trips by public transport are never quicker than the private car with the quickest travel time by public transport still 15 minutes slower than the private car. The option also provides a new opportunity to travel to Glasgow after 22:00. These are significant improvements.	3
	2	Provide public transport connectivity which enables travel to and from the area across the day and across the week	The re-opening of the railway station in Eastriggs is likely to increase access to and from the area across the week through the introduction of new connections (those by rail) enabling greater flexibility in travel.	2
7	1	Reduce public transport journey times to improve access to key, commutable	The option will support a reduction in overall journey time through improved access to the strategic transport network at Annan and Gretna Green railway stations. Overall however, this benefit is felt to be minor.	0

Option	TPO		Key Points	Score
		employment and educational centres from Eastriggs		
	2	Provide public transport connectivity which enables travel to and from the area across the day and across the week	Improved lighting on the NCN7 route would enable travel between Eastriggs and Annan and Gretna Green over a larger part of the day, supporting travel to and from the area across the day.	1

5.4 STAG Criteria Appraisal

5.4.1 This section presents the appraisal against the STAG criteria:

- Environment;
- Safety;
- Economy;
- Integration; and
- Accessibility and Social Inclusion.

Environment

5.4.2 Table 5.3 shows the Part 1 appraisal against the Environment criteria.

Table 5.3: Part 1 Appraisal Against the STAG Environment Criteria – Key Points

Option	Key Points	Score
1a	It was noted during the early public engagement stage of the study that private car ownership and use is high in the study area. The options are likely to encourage some minor modal shift from private car to bus and rail. As a result, there will be some minor benefit to the environment through a reduction in vehicle emissions and noise. The options will use the current road network and as such there will be little adverse impact on the environment.	1
1b		1
1c		1
3	It was noted during the public engagement stage of the study that private car ownership and use is high in the study area. The option is likely to encourage some minor modal shift from private car to bus. As a result, there will some minor benefit to the environment through a reduction in vehicle emissions and noise. The bus service will use the current road network and as such there will be little adverse impact on the environment.	1
6	The option would involve the construction of the railway station at Eastriggs. This may have adverse effects on the environment during construction and there may also be long-term noise impacts in the area close to the station due to train deceleration and acceleration. The option does not involve the running of additional trains (just an additional stop for existing trains) and therefore there will be little adverse impact on the environment in terms of emissions. It was noted during the early public engagement stage of the study that private car ownership and use is high in the study area. Any modal shift to rail that could be achieved would reduce car use and associated noise and emissions.	1
7	The option may encourage some very minor modal shift from private car to cycle. As a result, there may be some minor benefit to the environment through a reduction in vehicle emissions and noise but this is estimated to be very minor. The option does not require any infrastructure works and as such has no adverse impact on the environment.	0

Safety

5.4.3 Table 5.4 shows the appraisal against the Safety criteria.

Table 5.4: Part 1 Appraisal Against the STAG Safety Criteria – Key Points

Option	Key Points	Score
1a	Any modal shift to sustainable transport that may be achieved (from car to bus to access the stations) would reduce private vehicles on the road network which has the potential to reduce traffic accidents, although the reduction is anticipated to be minor. The options would offer increased personal security through removing the walk time from the existing bus stops to the stations and the often long wait time at the station (for departures) or at the bus stop (for rail arrivals). This may be particularly beneficial to more vulnerable members of society such as the elderly, those less able and older unaccompanied children.	1
1b		1
1c		1
3	Any modal shift to sustainable transport that may be achieved through the improved service offering would reduce private vehicles on the road network which has the potential to reduce traffic accidents, although the reduction is anticipated to be minor.	1
6	Any modal shift to rail that may be achieved (from car to rail) would reduce private vehicles on the road network which has the potential to reduce traffic accidents, although the reduction is anticipated to be minor.	1
7	The option would provide safety benefits to those undertaking trips by active travel through improved lighting and signing allowing for increased safety and perceived personal security on journeys.	1

Economy

5.4.4 Table 5.5 shows the appraisal against the Economy criteria.

Table 5.5: Part 1 Appraisal Against the STAG Economy Criteria – Key Points

Option	Key Points	Score
1a	Option 1a and Option 1c may provide some minor benefit to the economy by improving the accessibility of employment and retail in Dumfries, Carlisle, Edinburgh and Glasgow. Option 1b may provide a moderate benefit to the local economy by improving the accessibility of employment in Dumfries and Carlisle. Any improved accessed to employment centres is especially important given the recent job losses in the area and Option 1b in particular seeks to provide access to the closest two major employment centres (Dumfries and Carlisle), whereas improved access to Edinburgh (as with Options 1a and 1c) is unlikely to be highly beneficial in accessing employment given the journey time involved. Increasing the accessibility of Edinburgh, Glasgow and Carlisle may have a negative impact on the economy of Dumfries if people are more readily able to travel further afield to retail opportunities.	1
1b		2
1c		1

Option	Key Points	Score
3	The option may provide some minor benefit to the economy by improving the accessibility of employment in Dumfries and Carlisle with the express instances of the services reducing the journey time and opening up opportunities for weekend working.	1
6	The option is likely to provide moderate benefit to the economy by improving the accessibility of employment and retail in Dumfries and especially Carlisle. This is especially important given the recent job losses in the Eastriggs area and the need to travel further afield for work. Journey time analysis (see Accessibility Appraisal) has highlighted that it would be possible to travel from Eastriggs to Carlisle in just 17 minutes by rail, and to Dumfries in just 22 minutes, significantly improving access to jobs and education.	3
7	The option is unlikely to provide any benefit to the economy.	0

Integration

5.4.5 Analysis has been undertaken, specifically focusing on transport integration (as opposed to land-use or policy integration) including:

- Potential transport integration benefits between bus and rail modes; and
- The impact of reduced interchange time on journey times by sustainable transport.

5.4.6 Only Options 1a, 1b and 1c seek to directly provide integration benefits between bus and rail modes. As such, the integration analysis has focussed on these three options.

5.4.7 In order to understand the integration benefits that may be generated in terms of improved integration between bus and rail modes, both current and 'with option' bus and rail timetables have been examined to establish interchange times at Gretna Green, Annan Dumfries, Carlisle and Lockerbie railway stations for both departing and arriving passengers on the railway network.

5.4.8 The analysis is presented in Appendix L and was discussed as part of PR4 in the Problems section of this report.

5.4.9 Table 5.6 shows a summary of the analysis as well as appraisal of the options against the land-use and policy elements of Integration criteria.

Table 5.6: Part 1 Appraisal Against the STAG Integration Criteria – Key Points

Option	Key Points	Score
1a	At present Eastriggs residents can access rail services along the GSWL via Annan or Gretna Green and those along the WCML via either Carlisle or Lockerbie. Option 1a improves connection times between Eastriggs and Annan for rail services to/from Glasgow and Carlisle, by an average of around 15 minutes in both cases. Proportional improvements to connections with WCML services may appear less pronounced; however, this is primarily driven by the fact that only one quarter of WCML services stop at Lockerbie and so are affected by this option. Considering those services which do stop at Lockerbie only, time savings of circa 40 minutes are expected for connections with Edinburgh and Glasgow trains, and circa 15 minutes for connections with those to/from Carlisle. Time savings for GSWL services are primarily driven by reductions in interchange time, and those for WCML services more so by the reduced bus journey times resulting from the provision of a direct service. As this option will involve provision of a supplementary bus service, it will broaden travel choice; however, consideration needs to be given to whether bus services which currently operate along all or part of this route remain viable.	2
1b	Option 1b optimises the existing 79 bus service timetable to align better with rail departures and arrivals at Annan, Gretna Green and Carlisle stations and adds stops nearer the stations themselves. This amended service reduces interchange to and from rail services via Annan/Gretna Green, and reduces overall connection times by an average of 5-10 minutes for trains to/from Glasgow and Carlisle. Impacts on WCML services are less favourable: average journey times to connect with rail services to Glasgow, Edinburgh and the south actually increase by an average of 5-10 minutes for all but inbound legs from Edinburgh and the south (these trips decrease by 2 minutes). Time penalties associated with connections to WCML services result from the longer bus journey times seen under Option 1b.	1
1c	Option 1c will have a very limited impact on connections with rail services from Glasgow and Carlisle, improving upon the existing 79 service for only one rail service to/from each destination each day. The option will only affect those rail services which stop at Lockerbie (around a quarter of services on WCML) and varying results have been identified. Considering those services which do stop at Lockerbie only, average time savings of circa 20-30 minutes are expected for connections with Edinburgh and Glasgow arrivals, and circa 20 minutes for outbound trains to The south. For all other connections Option 1c will generate negligible benefits, either through bringing about limited change in journey times or not providing an improvement on existing bus services. Option 1c will result in travel patterns associated with the GSWL continuing essentially as they do at present, but will provide notable benefits to certain connections with the WCML as above, yielding a small overall benefit. In addition, improving the public transport network and transport integration supports the aims of the National Transport Strategy, SWestrans Regional Transport Strategy, the Bus Action Plan and the Local Transport Strategy. The option is therefore aligned with the broader policy goals included within key national, regional and local policy documents.	1

Option	Key Points	Score
3	The option is unlikely to provide any specific transport integration benefits. However, improving the public transport network supports the aims of the National Transport Strategy, SWestrans Regional Transport Strategy, the Bus Action Plan and the Local Transport Strategy. The option is therefore aligned with the broader policy goals included within key national, regional and local policy documents.	1
6	Provision of the rail station itself does not offer any direct mode-to-mode integration benefits, but the rail network is an integrated network and providing a station opens up access to the UK wide integrated rail network. However, the development of a station with suitable facilities for cycle parking, and with safe and secure walking access routes has the potential to integrate rail and active travel modes. It is also assumed that existing bus services may redirect to serve the station, and offer bus to rail integration benefits In addition, improving the public transport network and transport integration supports the aims of the National Transport Strategy, SWestrans Regional Transport Strategy, the Bus Action Plan and the Local Transport Strategy. The option is therefore aligned with the broader policy goals included within key national, regional and local policy documents.	2
7	Improvements to the route such that it is better lit and signed may encourage cycling to access the stations in Annan and Gretna, and therefore provide greater integration between rail and cycling modes. However, the number of users of the route for this purpose is likely to be small. Improving the active travel network supports the aims of the National Transport Strategy, SWestrans Regional Transport Strategy and the Local Transport Strategy. The option is therefore aligned with the broader policy goals included within key national, regional and local policy documents.	0

Accessibility and Social Inclusion

5.4.10 Note that the TPOs set for the study relate to improving accessibility and the appraisal against this STAG criterion should be read in tandem with that presented for the TPOs.

5.4.11 The accessibility benefits arising from each option have been considered through consideration of the potential reductions in journey time, and therefore the increased accessibility, from Eastriggs to key destinations relevant to each option. In addition, the increase in opportunity to travel, through increased service frequency or earlier/later running travel provision has also been considered. All analysis for existing journey times assumes rail and bus timetables as at December 2016, when this analysis was undertaken.

Option 1a, 1b and 1c: Improved access to the rail network

5.4.12 A lack of direct public transport travel routes was identified as a key problem during the early stages of the study. Options 1a, 1b and 1c all consider improved direct access from Eastriggs to the railway network, seeking to address the problem.

5.4.13 To appraise the options against this criteria existing journey times from Eastriggs to key destinations on the railway network (Lockerbie, Carlisle, Edinburgh and Glasgow) have been considered alongside estimated journey times to these key destinations with the options in place. Appendix K shows the analysis for the options for:

- An AM trip (made at approximately 08:00);
- A PM trip (made at approximately 17:00); and
- An evening trip (made at approximately 20:00).

5.4.14 For the existing travel time, the travel time has been considered by car, bus only, and by a combination of bus and train.

5.4.15 Analysis of the change in the public transport to car travel time differential (i.e. the difference in journey time between a trip by public transport and the same trip by car, in both the existing and option situation) has also been undertaken i.e. how much more 'competitive' does the option make public transport. This analysis is also presented in Appendix K .

5.4.16 The TPOs set for the study all consider improved accessibility to the area. The key points made in the appraisal against the TPOs should be read in conjunction with the further comments in relation to the appraisal of the options against the accessibility and social inclusion criteria, as presented in Table 5.7.

Table 5.7: Part 1 Appraisal Against the STAG Accessibility and Social Inclusion Criteria – Key Points

Option	Key Points	Score
1a	See narrative for TPOs which relates directly to accessibility. The Pre-Appraisal stage of the study identified the smaller proportion of Eastriggs residents who are employed in professional and technical roles compared to that of Annan and Dumfries. Average incomes in Eastriggs are lower than the local and national averages. The proportion of young people in the study area is also below the local authority average, and educational attainment levels are lower than the local and national averages. Direct connections to the railway network would provide specific benefit to those without access to a car or who cannot drive given their age or physical ability. Reduced travel times to employment centres such as Dumfries and Carlisle (through improved access to the GSWL at Annan) would widen the employment opportunities and may reduce the potential out-migration from the study area of young people and encourage people into the area. The improved access may also provide increased educational opportunities helping to raise current attainment levels in the area. the additional connectivity may help reduce feelings of community isolation. Given the travel time involved, even with the travel time reductions, it is unlikely that the improved accessibility of Glasgow or Edinburgh would significantly widen the accessibility of employment opportunities due to the still considerable commute required. However, it is important to note that changing working habits means that some people do not attend their official place of work on a daily basis, and therefore are more likely to consider travelling further/for longer on a few days of the week. As such, there is greater flexibility for the travel time to be longer than commonly considered acceptable if making a trip every day i.e. someone may accept a commute time of 90 minutes if they are only making the trip 3 days a week, whereas someone commuting every day may only accept a much shorter travel time. In this regard, improved access to Edinburgh and Glasgow (as provided by option 1a) would be beneficial.	2
1b		1
1c		1
3	See narrative for TPOs which relates directly to accessibility.	2

Option	Key Points	Score
	The Pre-Appraisal stage of the study identified the smaller proportion of Eastriggs residents who are employed in professional and technical roles compared to that of Annan and Dumfries with average incomes in Eastriggs lower than the local and national averages as well as the proportion of young people in the study area below the local authority average, and educational attainment levels lower than the local and national averages. A key problem identified for the study area was the relatively limited bus connectivity from the area on Sundays. Additional evening services and increased Sunday bus frequency as well as 'express' services would provide specific benefit to those without access to a car or who cannot drive given their age or physical ability. Reduced travel times and a greater bus service offering to employment centres such as Dumfries and Carlisle would widen employment opportunities and may reduce the potential out-migration from the study area of young people. The improved access may also provide increased educational opportunities helping to raise current attainments level in the area.	
6	See narrative for TPOs which relates directly to accessibility. The Pre-Appraisal stage of the study identified the smaller proportion of Eastriggs residents who are employed in professional and technical roles compared to that of Annan and Dumfries with average incomes in Eastriggs lower than the local and national averages as well as the proportion of young people in the study area below the local authority average, and educational attainment levels lower than the local and national averages. A further key problem identified was the lack of transport mode choice with a reliance on the bus network. The option would provide significant public transport accessibility benefits to residents in Eastriggs and specifically for trips to Dumfries and Carlisle where the option provides travel times faster than the private car at certain times of day. Public transport accessibility to Glasgow is also improved significantly across the day. This would significantly improve the accessibility of regional employment opportunities and retail and social opportunities as well as further afield retail and social opportunities in Glasgow, specifically for those without access to a car. The improved access may also provide increased educational opportunities helping to raise attainments level in the area.	3
7	The option would provide some minor benefit, especially for those without access to a car, when making trips between Eastriggs, Annan and Gretna.	1

5.5 Feasibility Appraisal

Bus Feasibility Considerations

5.5.1 A key issue for consideration in relation to the bus options, is whether they could be run commercially or need subsidy to operate. In general, as with many other rural areas, the bus network in Dumfries and Galloway operates with a large number of services requiring either part or full subsidy.

5.5.2 It is clear that the legalities surrounding the implementation of bus services which may need some level of subsidy to operate pose key deliverability issues. This was discussed in detail in Section 2.5.

Option 1a: Dedicated direct bus service operating between Eastriggs, Annan and Lockerbie Railway Stations

What problem is the option setting out to address

5.5.3 Option 1a aims to provide direct bus access to the GSWL (at Annan Railway Station) and to the WCML (at Lockerbie Railway Station) primarily for travel to Glasgow and Edinburgh (it is assumed that southbound rail travel would be primarily on the GSWL or WCML via either Gretna Green or Carlisle). The bus service would be timed to provide good integration with as many departing and arriving rail services at both stations as possible reducing wait time at the stations for either departing trains or when alighting from arriving trains.

Current travel options to Annan

5.5.4 Currently, the journey time by car between Eastriggs and Annan Railway Station is around 11 minutes, with the equivalent journey time by bus (and then walk) around 17 minutes. Lack of parking in the vicinity of Annan railway station is not a constraint on its use for car / rail interchange.

5.5.5 For those without access to a car and reliant on public transport, the quickest ways to access **Annan** Railway Station is:

- A journey on Service 79 or 179 (operating approximately every 30-minutes) to Butts Street in Annan with a further 7-minute walk time between there and the railway station, so a total 17-minute travel time (excluding walk time to the bus stop in Eastriggs).

5.5.6 It is therefore possible to access Annan railway station at present by public transport for northbound travel from Eastriggs. The option would reduce the bus travel time to be comparable with the equivalent trip by private car (as it would run direct), and remove the walk requirement (as it would stop directly outside the station).

Current travel options to Lockerbie

5.5.7 The journey time by car between Eastriggs and Lockerbie is around 25 minutes. The equivalent trip by bus takes around 55 - 60 minutes at its quickest.

5.5.8 While parking directly at Lockerbie Railway Station is constrained, there is free parking within a 5 -10 minute walk of the station on residential streets and public car parks at McJerrow Park and corner of Well Rd, although these requires a potentially difficult interchange for those with mobility issues. The greater certainty of making a connection when accessing the station by car (rather than relying on both the bus and train to be on time) and the much quicker access time by private car (40-50 minutes by bus compared to 25 minutes by private car) means the potential market for a direct bus is likely to be those without access to a private vehicle (or potentially those with access to a car who prefer to travel free by bus using a National Entitlement Card). At the last census only, 20% of households in Eastriggs did not have access to a car (against a Dumfries and Galloway average of 22%) making the potential market for this service small.

5.5.9 For those without access to a car and reliant on public transport, the quickest way to access **Lockerbie** Railway Station is:

- **Via Annan** with: A journey on Service 79/179 (operating every 30-minutes) to Annan (Butts Street) followed by a journey on Service 383 (operating every 40 to 50 minutes) from Annan (Butts Street) to Lockerbie (with an approx. 3-minute walk to the station from the bus stop in Lockerbie) with a total journey time of around 40 – 50 minutes;

- **Via Gretna** with**:** A journey on Service 79/179 (operating every 30-minutes) to Gretna (Central Avenue) followed by a journey on Service 382 (operating approximately hourly)

from Gretna (Central Avenue) to Lockerbie (with an approx. 3-minute walk to the station from the bus stop in Lockerbie) with a total journey time of around 90 minutes;

- **Via Carlisle** with**:** A journey on Service 79/179 (operating every 30-minutes) to Carlisle followed by a 7-minute walk across Carlisle to the railway station to catch a train north to Lockerbie (operating approximately every 60 minutes) with a total journey time of around 70 - 80 minutes. However, in this instance, assuming travel to Lockerbie was to access the rail network (as is the focus of this option), access would already have been gained at Carlisle.

5.5.10 It is therefore possible to access Lockerbie station at present using public transport, so the option would not provide a new connection as such.

Legal Context

5.5.11 If the service were to be implemented with subsidy, there would be a number of legal issues requiring attention:

- The route between Eastriggs and Annan (as shown in Figure 5.1) would be in direct competition with the existing Service 79/179 run commercially;
- The route between Annan and Lockerbie would be in competition with the existing Service 383 service (as shown in Figure 5.1) which is run commercially on weekdays (but subsidised at weekends) – although the new service would only be in competition for end-to-end Annan to Lockerbie trips as it would not route through the smaller communities served by Service 383.

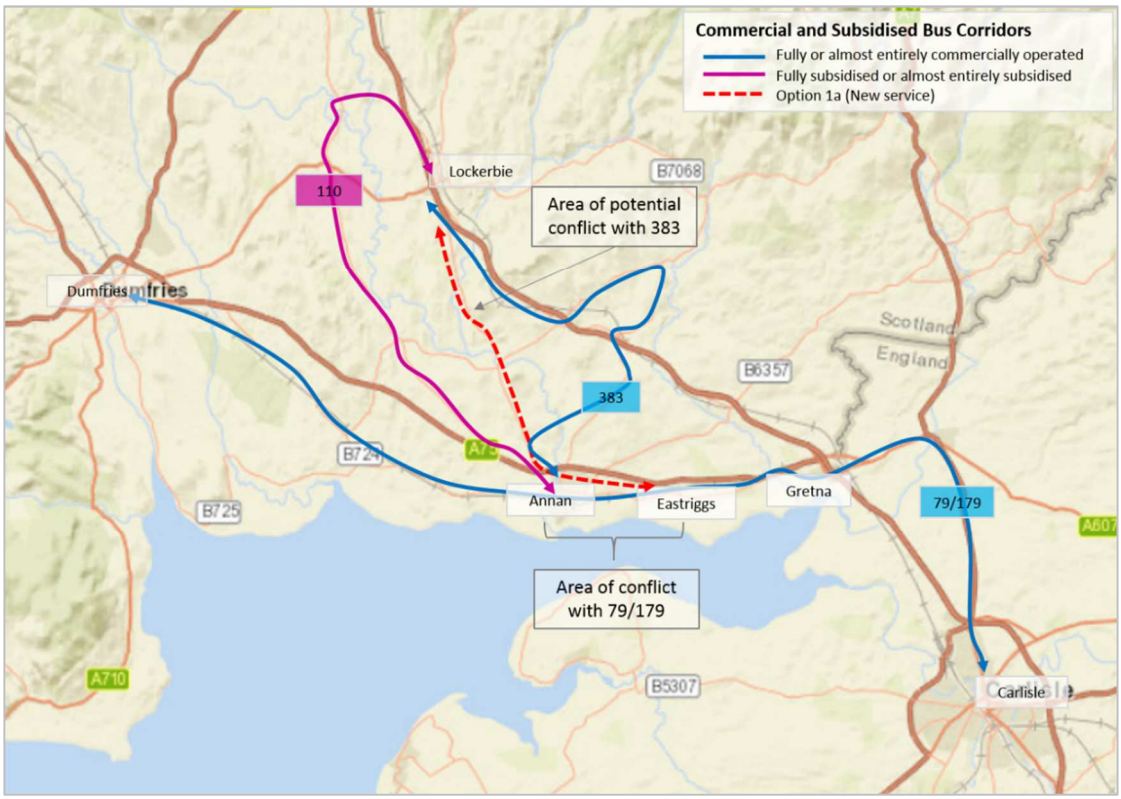

Figure 5.1: Commercial Vs. Subsidised bus operations – Option 1a

5.5.12 As noted in Section 2.5, Section 63 of the Transport Act 1985 SWestrans has a duty to secure services it thinks are required where they are not provided by the market, but it cannot secure

a service already provided by the market. The key issue is the interpretation of "service": there are many examples of subsidised services that partially parallel commercial services.

5.5.13 In this instance, in order to not run in parallel with existing services, the option would need to show a clearly different purpose to the existing services – and this may be difficult in the option's current form.

5.5.14 In addition, as intonated by bus stakeholders and SWestrans, the overall viability of services in the region is, in many cases, only achievable due to the resource intensive nature of overall bus operations. As such, the overall bus network and operation across the region is highly fragile and even minor changes to routes or services (or any new competition between services), which have the potential to tie up resources or affect patronage, can have major consequences. This is a very important factor when considering any changes to the network which may impact on existing services.

5.5.15 In this instance, it would be very difficult to show a clearly different purpose to the existing service over the Eastriggs to Annan section of the route. Given Section 63 of the Transport Act 1985 (as amended), the option is therefore undeliverable in this regard.

5.5.16 If the legal issues could be overcome, the competition over the extended section of the route would raise the further issue of antagonising the existing Service 79 / 179 operator through impacting on the services patronage. As stated above, the fragile nature of the existing region wide bus operations means minor impacts can have major consequences and there may be the unintended consequence of reducing service provision elsewhere.

Option 1b: Timing Service 79 and 179 such that they better integrate with rail times

What problem is the option setting out to address

5.5.17 Option 1b aims to provide direct access to the GSWL (at Annan and Gretna railway stations) and to the WCML (at Carlisle Railway Station) through re-routeing and retiming of the existing Service 79/179 timed to provide good integration with as many departing and arriving rail services at the stations as possible through reduced wait time at the station for either departing trains or when alighting from arriving trains.

Operational and Commercial Issues

5.5.18 It was clear from the detailed engagement with the current operator of the wholly commercially operated Service 79/179 that they would not be keen to adjust their existing service for a number of reasons, namely:

- The additional time required for routeing via the stations would significantly impact on the service by affecting existing patronage. The service already routes circuitously into Carlisle at the eastern end of the route and additional local routeing was not desired;
- There was a lack of desire to improve connections to the rail network which may take away from their market share – they would rather ensure bus-to-bus connectivity; and
- Reiterating the region wide issue of the highly intensive nature of bus operations to ensure overall regional commercial viability, the operator made it clear that even making minor adjustment to the timing of the service, or altering the routeing to serve the stations (and in doing so extending the overall bus journey time) could have unintended consequences on other service/routes. In addition, the re-timing of the service could adversely impact on existing service users and negatively impact on patronage if journey times were extended or overall bus times were altered.

5.5.19 Given the above, it seems highly unlikely that the changes to the service would be deliverable. In addition, as noted in the discussion above in relation to Option 1a, it is possible to access

Annan Railway Station at present by public transport and Service 79/179 offers frequent travel to Carlisle.

Option 1c: Extending the existing Service 383 to connect Eastriggs to Lockerbie

What problem is the option setting out to address

5.5.20 Option 1c aims to provide direct access to the WCML (at Lockerbie Railway Station) primarily for travel to Edinburgh (it is assumed that southbound rail travel would be primarily via Carlisle) through an extension of an existing bus service (rather than implementation of an entirely new service as per Option 1a).

5.5.21 As noted above, Service 383 currently routes between Annan and Lockerbie and if travelling by public transport between Eastriggs and Lockerbie, forms the second part of the public transport link when accessing Lockerbie. Extending the existing service east to Eastriggs would remove the need to interchange in Annan and provide a direct link between Eastriggs and Lockerbie.

Legal Context

5.5.22 If the service were to be implemented with subsidy, similar legal issues to those noted for Option 1a would require attention namely that:

- The extended route between Annan and Eastriggs would be in direct competition with the existing Service 79/179 operating commercially (as shown in Figure 5.2).

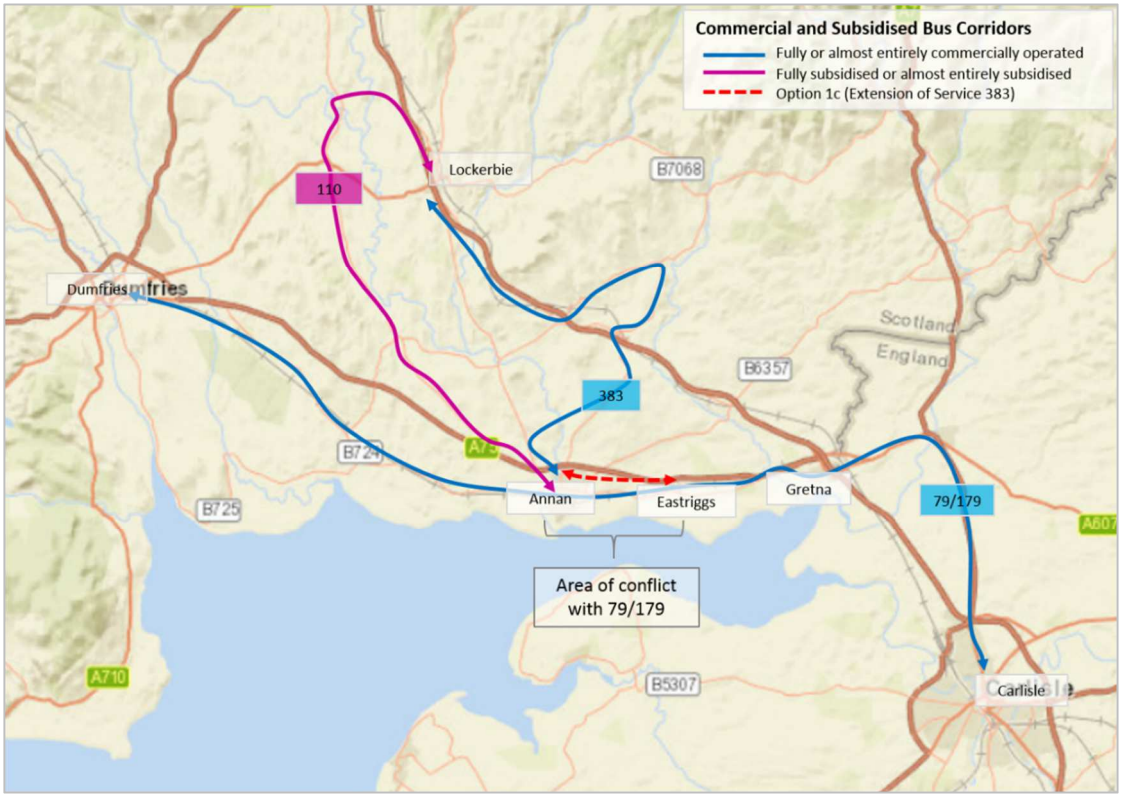

Figure 5.2: Commercial Vs. Subsidised bus operations – Option 1c

5.5.23 As noted in the discussion for Option 1a above, Section 63 of the Transport Act 1985 (as amended) means the Council cannot secure a service already provided by the market. In this instance, it would be very difficult to show a clearly different purpose to the existing service over the Anna to Eastriggs section of the route. The option is therefore undeliverable in this regard.

5.5.24 The existing Service 383 is only commercially viable through its routeing through smaller communities between Lockerbie and Annan. While extending the route to Eastriggs would provide direct access to Lockerbie, the routeing between Annan and Lockerbie is not direct and is unlikely to provide a journey time that would encourage passengers to switch from the private car.

5.5.25 Aside from the legal issues of operating in parallel to Service 79/179, extending the service to Eastriggs and impacting on the existing 79/179 operator's patronage could antagonise the existing bus operator. The fragile nature of the existing region wide bus operations means minor impacts can have major consequences and there may be the unintended consequence of reducing service provision to smaller communities on the route or impacting on an unrelated service elsewhere.

Rail Feasibility Considerations

5.5.26 For Option 6, in relation to the feasibility of the railway station re-opening, the following was considered, with full details in Appendix G :

- How an extension of High Speed Rail 2 (HS2) into Scotland may impact on the GSWL, the opportunities that would enable and the steps which might be required to engage;
- The potential impact of the Scotland Route Study proposals on both the WCML and GSWL line in relation to both passenger and freight services;
- The role of the GSWL;
- Existing and potential future capacity on the rail routes;
- The effects of providing any new station(s) on the wider rail network;
- The potential impacts of more than one new station re-opening on the GSWL; and
- The potential use of the stations as rail freight hubs (as well as passenger stations).

5.5.27 In summary, the work highlighted:

- The Scotland Route Study and the Rail Delivery Group's "Investing in the Future Choices for Scotland's Railways 2019 and beyond" publications, in line with established policy, do not propose any new stations or routes. However, they do create an opportunity for dialogue on a more integrated approach to developing the GSWL and to providing benefits which will enable Eastriggs station to be delivered.
- In terms of the role of the GSWL, it is clear from the documents that:
  - The rail industry considers that the GSWL has a role as a diversionary route for freight;
  - The passenger capability proposals are all in the Glasgow suburban area; and
  - Outwith the Glasgow suburban area, the status of the rest of the GSWL is seen as part of the "Rural railway".
- A key opportunity is potentially how this move to becoming the WCML freight (possibly passenger) diversionary route presents an opportunity to secure upgrades and improve services for the Dumfries and Galloway area**. The publications present an opportunity for Dumfries and Galloway Council and SWestrans to enter into dialogue with the railway industry as there is a need for both the local authorities and the railway industry to work together to achieve their individual outcomes.** This offers a more balanced dialogue than is often the case. In addition, while any future extension of an HS2

route into Scotland is unlikely to have any significant impact on services on the GSWL, it may offer an opportunity to upgrade the infrastructure on the route if it is required as a diversionary route during HS2 construction works.

- In terms of the addition of a new station stop at Eastriggs, the retiming of trains at both the northern or southern end of the GSWL route to accommodate the additional stop has been considered. At the northern end, retiming issues are apparent and what appears to be a relatively simple retiming becomes complex when the wider network is considered. Any significant retiming at the north end of the route could require a comprehensive re-planning of all the services on this route, including the Barrhead and East Kilbride suburban services and the impact would be right into Glasgow Central station. Extending train journey times at the southern end of the route to provide the additional stop would cause interaction with trains running on the WCML due to the 'single lead' Gretna junction (where the twin tracks of the GSWL route come together into a short section of single line which then joins the northbound WCML). The retiming of trains at the southern end of the GSWL line to accommodate the additional stop at Eastriggs has the potential to impact a number of currently published connections. As such, there is no generic solution to this issue and each train would need to be considered on its merits.

- However, a potential reduction in unnecessary pathing time, increases in the generic line speed, the potential for new trains (as noted in the Scotland Route Study) or improvements made as part of the Abellio ScotRail franchise agreement do offer alternative opportunities for the introduction of a stop at Eastriggs Railway Station.

- A similar study is being undertaken for the Thornhill area, for which a rail station re-opening option is also being considered. As both stations are on the same rail line, consideration has been made of the impact if both were to be reopened. It is clear that should both stations be promoted, then additional, more detailed, timetabling work will be required to assess the impact of opening both stations on the operation of the whole GSWL route. Other rural communities on the GSWL route in East Ayrshire may also benefit from the provision of a station and there is a need to consider the strategic role of the full GSWL route in this part of Scotland and the potential implications of all potential additional stations and train services.

- The wider generic mismatch between passenger station and freight railheads on the modern railway, means there is limited potential for a dual-use freight-passenger facility at Eastriggs. However, the potential future freight use of the Ministry of Defence connection – around one mile west of the passenger station site should be noted.

Feasibility Appraisal Summary

5.5.28 Table 5.8 summarises the key feasibility issues.

Table 5.8: Part 1 Appraisal Against the Feasibility Criteria – Key Points

Option	Key Points
1a	From an engineering perspective, the option does not require the build of any infrastructure or any land purchase and as such is unlikely to present any physical feasibility challenges. Section 63 of the Transport Act 1985 says a council / partnership has a duty to secure services it thinks are required where they are not provided by the market, but it cannot secure a service already provided by the market. The key issue is the interpretation of "service": there are many examples of subsidised services that partially parallel commercial services. In this instance, in order to not run in parallel with existing services, the option would need to show a clearly different purpose to the existing services (Service 79 / 179

Option	Key Points
	between Eastriggs and Annan and Service 383 operating between Annan and Lockerbie) – and this may be difficult in the option's current form. In addition, as intonated by bus stakeholders and SWestrans, the overall viability of services in the region is, in many cases, only achievable due to the resource intensive nature of overall bus operations. As such, the overall bus network and operation across the region is highly fragile and even minor changes to routes or services (or any new competition between services), which have the potential to tie up resources or affect patronage, can have major consequences. This is a very important factor when considering any changes to the network which may impact on existing services
1b	From an engineering perspective, the option does not require the build of any infrastructure or any land purchase and as such is unlikely to present any physical feasibility challenges. The option requires alterations to an existing bus service. Discussion with the existing operator highlighted: • The operator does not wish to impact on the timing of the service and its existing connections; • The re-timing of the service could adversely impact on existing service users and negatively impact on patronage if journey times were extended or overall bus times were altered. • A lack of desire to improve connections to the rail network which may take away from bus market share; and • The region wide issue of the highly intensive nature of bus operations to ensure overall regional commercial viability. The operator made it clear that even making minor adjustment to the timing of the service, or altering the routeing to serve the station could have unintended consequences on other service/routes. Given the above, it seems highly unlikely that the changes to the service would be deliverable.
1c	From an engineering perspective, the option does not require the build of any infrastructure or any land purchase and as such is unlikely to present any physical feasibility challenges. As noted above, in order to not run in parallel with existing services, the option would need to show a clearly different purpose to the existing services (Service 79 / 179 between Eastriggs and Annan) – and this may be difficult in the option's current form. In addition, if the legal issues could be overcome, the competition over the extended section of the route would raise the further issue of antagonising the existing Service 79 / 179 operator through impacting on the services patronage. As stated above, the fragile nature of the existing region wide bus operations means minor impacts can have major consequences and there may be the unintended consequence of reducing service provision elsewhere.
3	From an engineering perspective, the option does not require the build of any infrastructure or any land purchase and as such is unlikely to present any physical feasibility challenges.

Option	Key Points
6	In terms of the feasibility to implement a stop at the railway station in light of current established policy, the Scotland Route Study and RDG's "Investing in the Future Choices for Scotland's Railways 2019 and beyond" publications, do not propose any new stations or routes. However, they do create an opportunity for dialogue on a more integrated approach to developing the GSWL and to providing benefits which will enable Eastriggs station to be delivered. A move towards the GSWL becoming the WCML freight (possibly passenger) diversionary route presents an opportunity to secure upgrades and improve services for the Dumfries and Galloway area with an opportunity for Dumfries and Galloway Council and SWestrans to enter into dialogue with the railway industry. While any future extension of an HS2 route into Scotland is unlikely to have any significant impact on services on the GSWL, it may offer an opportunity to upgrade the infrastructure on the route if it is required as a diversionary route during HS2 construction works. In terms of the feasibility to accommodate a new stop at Eastriggs, re-timing trains at the northern end of the GSWL route is complex when the wider network is considered with a comprehensive re-planning of all the services on this route, including the Barrhead and East Kilbride suburban services required. The impact would be seen into Glasgow Central Station. Extending train journey times at the southern end of the route would cause interaction with trains running on the WCML due to the 'single lead' Gretna junction and has the potential to impact on a number of currently published connections. However, a potential reduction in unnecessary pathing time, increases in the generic line speed, and the potential for new trains or improvements made as part of the Abellio ScotRail franchise agreement, do offer alternative opportunities for the introduction of a stop at Eastriggs Railway Station. The station itself would require: two platforms; a cross-track, DDA compliant footbridge; and passenger facilities (including waiting shelters, Customer Information System (CIS), Public Address (PA) & CCTV systems with one ticket machine). Given its location between Annan and Gretna Green, only limited car parking is required, but future space for car park expansion would be beneficial. Overall, no major engineering feasibility issues are therefore envisaged.
7	From an engineering perspective, the option does not require the build of any infrastructure or any land purchase and as such is unlikely to present any feasibility challenges.

5.6 Affordability

5.6.1 The **affordability** appraisal has focussed on:

- For the **bus options** (Options 1a, 1b, 1c, and 3): consideration of: operating and maintenance costs; fare box revenue; and the level of subsidy which would be required to operate new services;
- For the **railway station option** (Option 6): in particular, a high-level costing exercise for the construction of a new station; and costing for mitigation measures (with the latter considered in collaboration with Network Rail and other stakeholders); and

- For the **active travel option** (Option 7): the capital cost of all elements of the option including surfacing, lighting, signage etc.

Bus Options Affordability Methodology

5.6.2 For the bus options, the methodology adopted has been to design service schedules for each of the options and to estimate the resources required to deliver them. These have then been costed using PBA's bus industry costing model, calibrated for local labour rates. For Option 1a and 1b, which seek to integrate bus and rail times, the schedules have been designed with rail departure and arrival times in mind and consider providing services which connect with as many rail arrivals/departures as possible. For Option 1c the existing timetable has just been extended to Eastriggs without any change to the existing service times to better integrate with rail arrivals/departures at Lockerbie.

5.6.3 Where sufficient base data exists, demand and passenger fares revenue have then been estimated and the results compared to the costs to establish the viability of each option. In cases where there is insufficient base demand data, 'break-even' analysis has been undertaken to establish how many passengers would be required for the service to achieve viability.

Option 1a: Provision of a dedicated bus service operating between Eastriggs, and Annan and Lockerbie railway stations, integrated to reduce interchange times between bus and rail.

5.6.4 Four buses would be required to operate the rail link service to Annan and Lockerbie on Monday to Sunday. Total operating hours would be approximately 17,000 per year.

5.6.5 The total annual cost of service provision for Option 1a would be £475k.

5.6.6 There is insufficient data available to forecast demand for the service; therefore, a break-even analysis has been undertaken to identify the number of passengers that would be required for the service to cover its costs and reach viability. To do this, an average single fare has been estimated through consideration of the cost of an adult single and return fare, a child return fare, the prevailing concession reimbursement rate and the proportion of trips made by adults, children and concessionary pass holders (split taken from the National Travel Survey), to reach an estimated average single fare of £2.97 per passenger.

5.6.7 Dividing the annual costs of £475k by the average fare of £2.97 means that the service would require 160,000 passengers to break even.

5.6.8 The Office of Rail and Road (ORR) estimates of station usage for 2014-2015 shows total annual passengers station entries and exits of approximately:

- 127,000 at Annan Railway Station; and
- 215,000 at Lockerbie Railway Station; and therefore
- 342,000 at both Annan and Lockerbie Railway Stations.

5.6.9 The National Rail Travel Survey (NRTS, 2007)[2] shows that 10% of users accessing a railway station have arrived by bus/coach.

5.6.10 Rural areas and small towns will typically have a lower share of bus-based access to railway stations than this due to the nature of the bus network. For example, bespoke surveys of

[2] http://www.transport.gov.scot/system/files/documents/reports/NRTSProvisional2007.pdf - Table 6

passengers at rural stations previously undertaken by the team have shown a bus access mode share of 5% or less.

5.6.11 Assuming that 5% of passengers to both Annan and Lockerbie Railway Stations arrive by bus equates to a total of 17,100 passengers annually arriving or departing by bus. The required number of passengers for the Eastriggs service to break even is far in excess of this (160,000) and **therefore the service is likely to require substantial subsidy to operate.**

5.6.12 In addition, the population of Eastriggs itself is 2,124 (at the 2011 Census). 50,000 trips per year to enable the service to break even equates to 75 trips per person per year i.e. around six trips on the service every month. This demand is unlikely to be generated.

5.6.13 The bus schedule for the option has been developed to integrate the bus times with as many rail arrival/departure times as possible i.e. provide a fully comprehensive connection to the rail network. It may be possible to 'scale back' the number of connecting bus services to concentrate on peak time rail arrivals/departures only to minimise the cost of the service and hence make the service more likely to be commercially viable/require a lesser subsidy.

Option 1b: Alterations to existing services to better serve Dumfries, Annan, Gretna Green and Carlisle railway stations

- Extending Service 79 such that the route includes stops at/close to Dumfries, Annan, Gretna Green and Carlisle railway stations;
- Timing Service 79 and 179 such that they better integrate with rail times, especially at Carlisle, to reduce interchange waiting time and provide improved access to key destinations on the WCML (Edinburgh/Glasgow etc.); and

5.6.14 The amendment of services 79/179 (Dumfries – Carlisle) to serve railway stations would require the route changes shown in Table 5.9.

Table 5.9: Services 79/179 Route Alterations and Impacts

Fares	Route Description	Aditional Distance (km)	Additional Time (mins)	Note
Carlisle	Nearest stop is English Street, already served outbound	1.0	3.0	Inbound only
Gretna Green	Dogleg via Glasgow Road from Gateway Village roundabout	1.6	5.0	Both ways
Annan	Diversion via St.Johns Road and Station Road	1.0	3.0	Both ways
Dumfries	Diversion via Cornwall Mount, St. Mary's Street, Lovers Walk and Station Road	0.8	3.0	Both ways
Total			25.0	

5.6.15 The combined impact of these changes is to add 25 minutes to the round trip journey time.

5.6.16 Total additional annual cost of service provision for Option 1b would be approximately £175,000.

5.6.17 As with Options 1a and 1b, an average fare has been calculated as £3.10.

5.6.18 Dividing the annual costs of £175k by the average fare of £3.10 means that the option would require approximately 56,000 passengers to break even.

5.6.19 The Office of Rail and Road (ORR) estimates of station usage for 2014-2015 shows total annual passengers station entries and exits (for all the stations the option would serve) of approximately:

- 381,000 at Dumfries Railway Station;
- 127,000 at Annan Railway Station;
- 40,000 at Gretna Green Railway Station;
- 1,908,900 at Carlisle Railway Station; and therefore
- 2,456,900 at all the above railway stations.

5.6.20 The National Rail Travel Survey (NRTS, 2007)[3] shows that 10% of users accessing a railway station have arrived by bus/coach. Rural areas and small towns will typically have a lower share of bus-based access to railway stations than this due to the nature of the rural bus network. For example, bespoke surveys of passengers at rural stations previously undertaken by the project team have shown a bus access mode share of 5% or less.

5.6.21 Assuming that 5% of passengers to all railway stations arrive by bus equates to a total of 122,845 passengers annually arriving or departing by bus. The required number of passengers for the option to break even (56,000) equates to 45% of this total. Given the urbanised areas of Dumfries and Carlisle which are likely to generate the greater volume of users accessing the stations by bus, it is unlikely that those resident in Eastriggs would account for such a large proportion. In addition, the population of Eastriggs is 2,124 (at the 2011 Census). 56,000 trips per year to enable the service to break even equates to 26 trips per person per year i.e. around two trips on the service every month. This demand is unlikely to be generated and **therefore the service is highly unlikely to be commercially viable and would require subsidy to operate.**

5.6.22 Again, as with Option 1a, the bus schedule for the option has been developed to integrate the bus times with as many rail arrival/departure times as possible i.e. provide a fully comprehensive connection to the rail network. It may be possible to 'scale back' the number of connecting bus services to concentrate on peak time rail arrivals/departures only to minimise the cost of the service and hence make the service more commercially viable/require a lesser subsidy.

Option 1c: An extension of the existing Service 383 operating between Lockerbie and Annan to extend to Eastriggs

5.6.23 The extension of service 383 (Lockerbie – Annan) to Eastriggs would require an additional bus on a Saturday and two buses on a Sunday.

5.6.24 Total annual cost of service provision for Option 1c would be £440,000.

5.6.25 An average fare per passenger was calculated through consideration of the existing fares on Service 383 and similar to Option 1a, applying the passenger type split to generate an average fare per passenger of £4.01

5.6.26 Dividing the annual costs of £440k by the average fare of £4.01 means that the option would require 110,000 passengers to break even.

5.6.27 The Office of Rail and Road (ORR) estimates of station usage for 2014-2015 shows total annual passengers station entries and exits of approximately:

- 215,000 at Lockerbie Railway Station.

[3] http://www.transport.gov.scot/system/files/documents/reports/NRTSProvisional2007.pdf - Table 6

5.6.28 As noted above, the National Rail Travel Survey (NRTS, 2007)[4] show that 10% of users accessing a railway station have arrived by bus/coach. Rural areas and small towns will typically have a lower share of bus-based access to railway stations than this due to the nature of the rural bus network. For example, bespoke surveys of passengers at rural stations previously undertaken by the project team have shown a bus access mode share of 5% or less.

5.6.29 Assuming that 5% of passengers to Lockerbie Railway Stations arrive by bus equates to a total of 10,750 passengers annually arriving or departing by bus. The required number of passengers for the option to break even (110,000) is far in excess of this **and therefore the service is highly unlikely to be commercially viable and would therefore require subsidy to operate.**

5.6.30 Again, the bus schedule for the option has extended the service over the full existing operating day. It may be possible to 'scale back' the number of extended bus services to concentrate on peak time rail arrivals/departures only to minimise the cost of the service and hence make the service more commercially viable/require a lesser subsidy.

Option 3: Later running, increased Sunday services and express services between Eastriggs, Carlisle & Dumfries

5.6.31 The option assumes:

- Increased frequency of Service 79 and 179 to:
  - Hourly in the (weekday) evenings
  - Every 90 minutes throughout the day on Sundays
- Some 'express' instances of Service 79 between Dumfries and Carlisle calling only at Dumfries, Annan, Eastriggs, Gretna and Carlisle – utilising the A75 between Dumfries and the M6 between Gretna and Carlisle.

5.6.32 Option 3 consists of an enhanced evening and Sunday timetable on services 79/179 and a new express service on Monday to Saturday. The evening and Sunday timetable adds 4 hours per day Monday to Saturday and 10 hours on Sunday. The express, given the existing number X79, has been assumed to use 2 buses to give a generally 2-hourly service, adding approximately 17 hours per day, Monday to Saturday.

5.6.33 The total annual cost of service provision for Option 3 would be £261k.

5.6.34 Current demand data for services 79/179 is not available because the services are operated commercially and this information is confidential. Therefore, it has been assumed that current demand generates revenue that is sufficient to meet the costs of operation and profit margin.

5.6.35 The current operation consists of 90 hours daily Monday to Friday, 86 hours on Saturday and 21 hours on Sunday. Applying the cost model rates gives an annual cost of £855k. This has then been divided by an average fare to give an estimate of current demand.

5.6.36 The average fares for Annan, Dumfries, Gretna and Carlisle, which are all served by services 79/179 have been considered to estimate an average fare for the service, estimated at £3.77, giving annual demand of 230,000. This demand has been distributed by time of day and day of week using NTS derived data on the time profile of public transport trip making[5]. The NTS data is summarised in Table 5.10.

[4] http://www.transport.gov.scot/system/files/documents/reports/NRTSProvisional2007.pdf - Table 6

[5] Data from Table NTS0501, Trips in progress by time of day and day of week - index: Great Britain, 2012

Table 5.10: Public Transport Trip Making by Time of Day and Day of Week

	Non Car Driver or Passenger Trips		
Time of day	**Mon-Fri**	**Saturday**	**Sunday**
0000 - 0059	5	13	11
0100 - 0159	1	3	5
0200 - 0259	1	1	4
0300 - 0359	1	0	3
0400 - 0459	2	2	2
0500 - 0559	7	2	3
0600 - 0659	24	9	5
0700 - 0759	103	17	10
0800 - 0859	340	48	32
0900 - 0959	165	91	70
1000 - 1059	135	150	102
1100 - 1159	151	183	133
1200 - 1259	142	154	125
1300 - 1359	142	168	124
1400 - 1459	145	152	111
1500 - 1559	318	149	115
1600 - 1659	195	126	102
1700 - 1759	152	132	78
1800 - 1859	138	96	55
1900 - 1959	94	86	51
2000 - 2059	59	53	30
2100 - 2159	33	41	21
2200 - 2259	26	38	12
2300 - 2359	19	35	8
Total	**2398**	**1749**	**1212**

5.6.37 This time profile has been used to distribute the estimated 230,000 current annual trips and elasticity factors have then been applied as follows:

- **Monday to Saturday evening**: net 33% increase in service giving additional annual revenue of £5k;
- **Sunday:** 47% increase in service giving additional annual revenue of £5k; and
- **Express 79:** 23% reduction in average trip duration but with a limited timetable. Using elasticity factors for service level, and for journey times of (-0.4[6]), gives an additional annual revenue of £82k.

5.6.38 Comparing annual costs of £261k and total revenue of £92k, Option 3 would incur losses of £169k and **would not be commercially viable and would therefore require subsidy to operate.**

Option 6: Re-open Eastriggs Railway Station

Station Construction Cost

5.6.39 There are a number of factors which influence the cost of new stations, all of which are likely to be site specific, which makes accurate costing, or even comparison based costing difficult.

5.6.40 Some key features at most or all stations are:

[6] The Demand for Public Transport, TRL 593, TRL, 2004, section 7.2

- **Land costs**: although this is probably not a big cost at Eastriggs;
- **Access to public roads**: although this should not a big cost at Eastriggs as the railway is quite close to local roads;
- **Size of car parks**: Eastriggs will serve a local catchment area and therefore car park requirements would be modest but providing space for future car park expansion would be beneficial. Bus access will also be required;
- **Length of platforms**: at least sufficient for a four car 23m unit (ScotRail Class 156), so 100m required which is about the same, or shorter than, most recent new stations or those under construction;
- **Cross-track, DDA compliant footbridge:** generally, a standard design so similar costs at sites that need independent cross-track access. It may be possible to use a public road underbridge at Eastriggs which could save costs on a free-standing structure;
- **Passenger Facilities:** will be similar at all new (small) stations, some being linked to the number of platforms. Facilities will include waiting shelters, Customer Information System (CIS), Public Address (PA) & CCTV systems. Ticket Machines would tend to be provided at a base level of one per station;
- **Access to build**: where the level of complexity is driven by reduced working time due to the regular passage of trains which drives costs up. The train service at Eastriggs is not intense and the night offers a period which is largely train free, so the costs are likely to be proportionately less. Access issues also drive Train Company compensation costs, which can be substantial; and
- **Signalling:** There may be requirements to move signals, as the station is close to the pointwork which provides access to the MoD site.

Comparative Costs

5.6.41 Appendix J presents a summary of the detail of a number of stations currently being constructed, or recently reopened - note that pedestrian access and any new footbridge/underpass will be to full Mobility Impaired Access (MIA) standards. The data suggests outturn costs for these stations in the range **£8m - £14m**.

Eastriggs Railway Station Capital Construction Cost

5.6.42 Of particular note is that:

- The **land value will be relatively low**;
- The **public road** is not far away suggesting relative ease of access; and
- **The platforms will likely need to be about the same or shorter** than have been provided at most new stations.

5.6.43 For Eastriggs, it is therefore suggested that the capital construction cost of the station would be in the range **£8m - £11m**.

5.6.44 In order provide an indication of the catchment area for a potential Eastriggs Railway Station, analysis has been undertaken mapping the population catchment areas for existing railway stations in the region, and then repeated with Eastriggs Station assumed to be operational.

5.6.45 Figure 5.3 and Figure 5.4 show the existing and 'with station' catchment areas respectively (mapped with no 'cap' on the drive time to the nearest station). The analysis shows:

- A potential Eastriggs Railway Station catchment population of 2,725 (with no limit on drive time to the station); and

- A potential Eastriggs Railway Station catchment population of 2,725 (if a 30-minute and 15-minute drive time 'cap' to the station is assumed), indicating that all potential patronage is located close to the station (within a 15-minute drive time). This is expected given the existing stations at Gretna Green and Annan around 6-7km to the east and west of Eastriggs respectively.

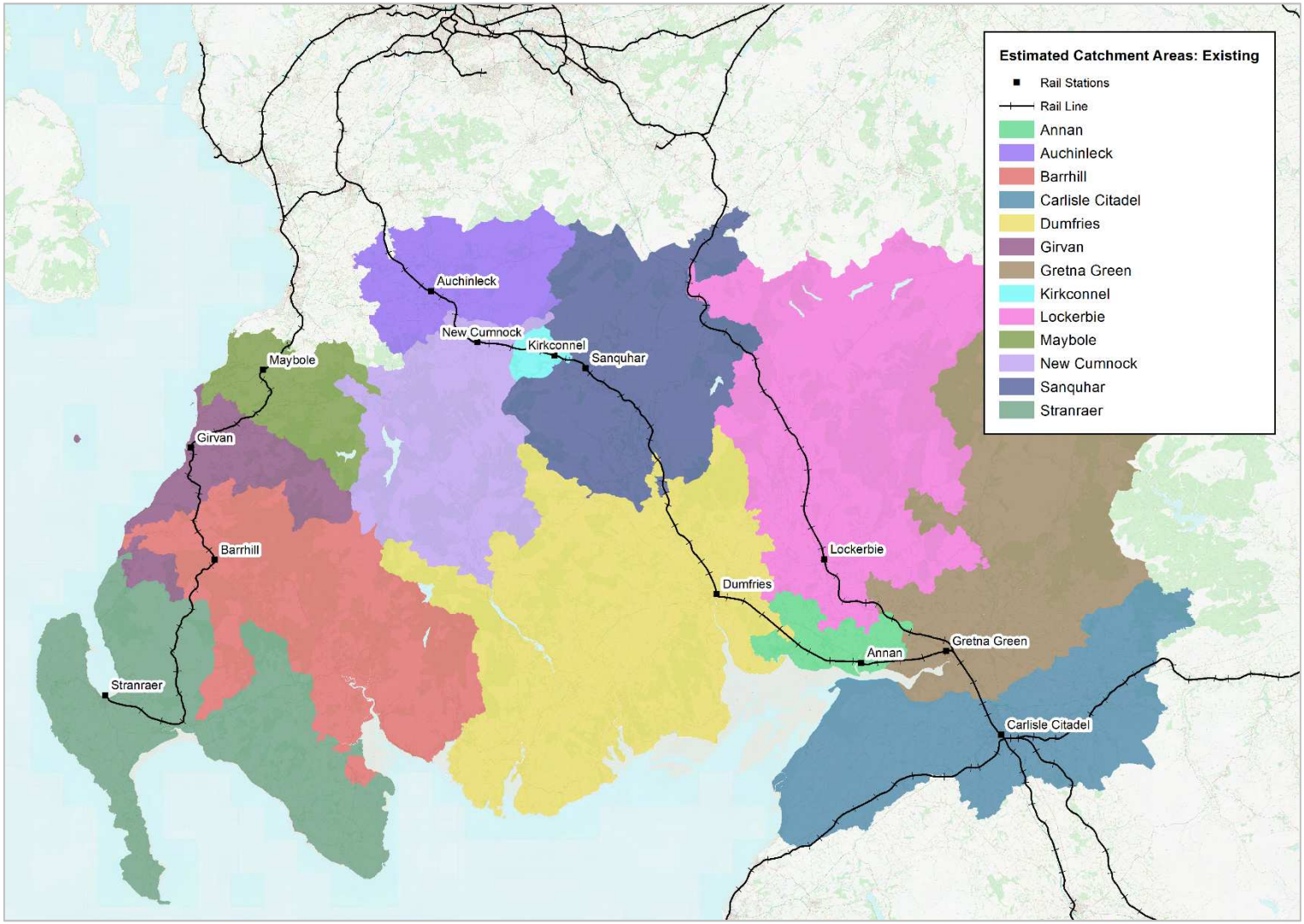

Figure 5.3: Existing Railway Station Population Catchment Areas (uncapped drive time)

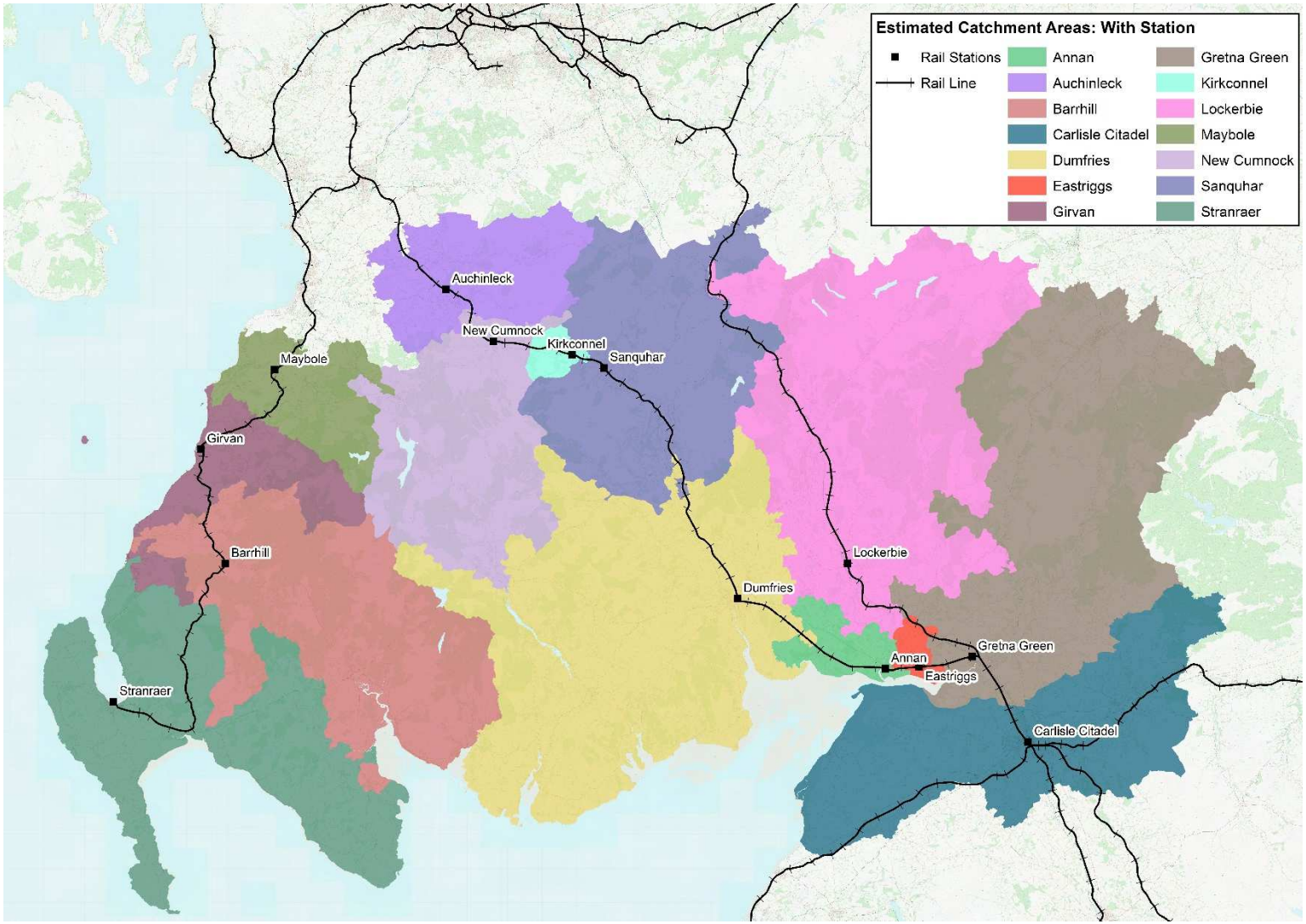

Figure 5.4: With Eastriggs Station - Railway Station Population Catchment Areas (uncapped drive time)

Option 7: Improved cycling infrastructure between Eastriggs, Annan and Gretna

5.6.46 A high level appraisal has been undertaken to estimate the capital cost of implementing improvements along the route of the NCR7 between Gretna and Annan. This has considered:

- The potential for sections of the route to be off-road;
- Lighting – assuming a spacing of 30m between lighting columns; and
- Signage – with consideration given to the required directional, way-marking and on-road signage

5.6.47 Infrastructure costs assume:

- A lighting cost of £850 per light[7] with an assumed 30m between lighting columns; and
- A cost of £140 per sign[8] with appropriate signs every 50-200m (as suggested by Sustrans[9])

5.6.48 No allowance has been made in the costings for:

- Any required land purchase;
- Any required public utility relocations;
- Traffic management during construction;
- Legal costs;
- Design work;
- Any investigation or site supervision requirements; or
- On-going maintenance costs – given the inherent difficulty in estimating this without detailed information on the volume of users.

5.6.49 On reviewing the rural nature of the route at the affordability stage and the high cost of implementing new lighting where there is currently none provided, it is not proposed that any new lighting be implemented along the route and it would be very difficult to justify the cost.

5.6.50 The overall cost of the improvements over six identified sections of the route as shown in Figure 5.5 and detailed in shown in Table 5.11. The total cost for the full route improvements is approximately **£16,500.**

[7] From recent pricing examples

[8] SPON's Architect's and Builder's Price Book 2016

[9] http://www.sustrans.org.uk/sites/default/files/images/files/Route-Design-Resources/Technical%20Note%205%20-%20Signs%2006.pdf

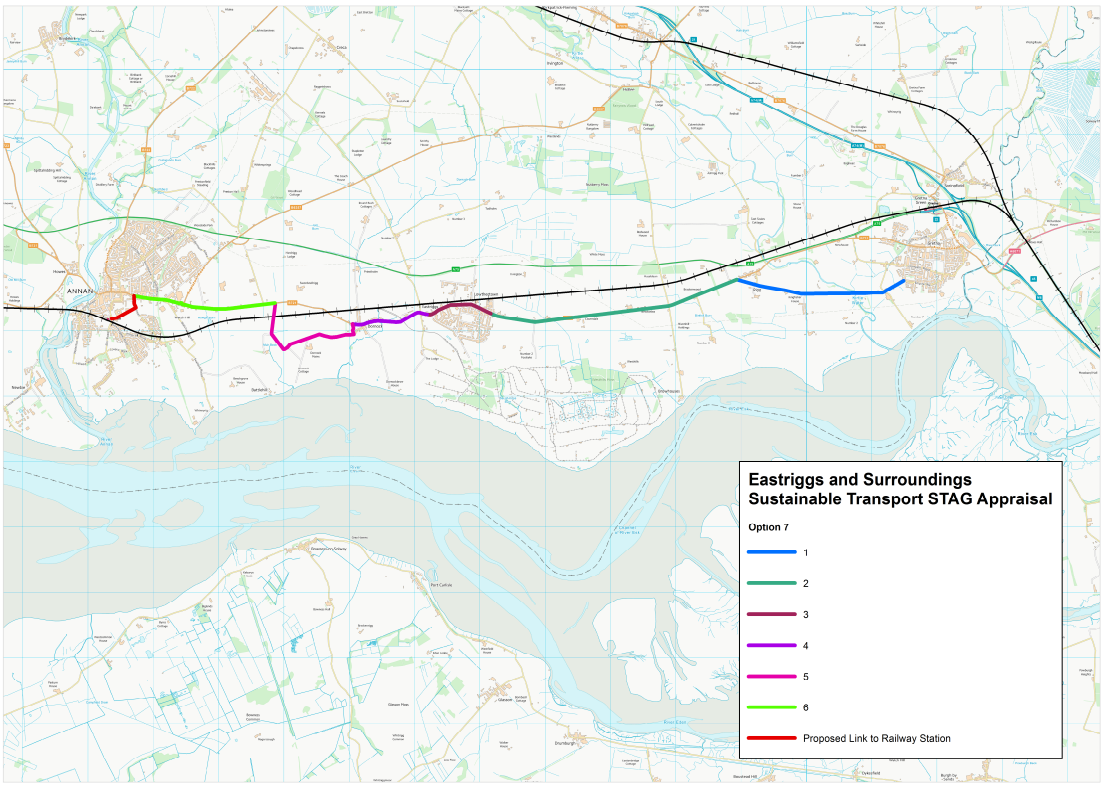

Figure 5.5: Option 7 Capital Costs – Route Sections

Table 5.11: Option 7 Capital Costs

Section	Section Description	Existing			Proposed			
		Description	Length (m)	Lighting	Type	Element Costs (rounded to nearest £500)		Total Cost (rounded to nearest £500)
						Lighting	Signage	
1	Connection adjacent to Old Graitney Road	Old Graitney Road is a two-way national speed limit country lane. The route forms part of National Cycle Route 7 but there is no footway or dedicated cycle provision on the route. The road is currently unlit.	2629	No	Signage	£0	£4,000	£4,000
2	Connection (B721) between Old Graitney Road and 30mph speed limit change (entering Eastriggs)	The B721 is a national speed limit road. The route is unlit.	3870	No	On-road cycleway with signage	£0	£5,000	£5,000
3	Connection on the B721 through Eastriggs	The speed limit on the B721 drops down to 30mph through Eastriggs. There are a number of minor routes off the B721 which would limit the potential of a shared use footway / cycleway and may necessitate additional cycle route road markings (i.e. more cycle markings or coloured surfacing) across the junctions. The cost of these additional markings is not included in the cost estimates shown here, with more detailed assessment necessary to determine requirements.	1040	Yes	On-road cycleway with signage	£0	£2,000	£2,000

Section	Section Description	Existing			Proposed			
		Description	Length (m)	Lighting	Type	Element Costs (rounded to nearest £500)		Total Cost (rounded to nearest £500)
						Lighting	Signage	
4	Connection on the B721 between Eastriggs and Dornock	The speed limit on the B721 between Eastriggs and Dornock is 40mph, falling to 30mph as the road enters Dornock. There is housing on either side of the route, with some close to the edge of the carriageway. Providing a separate off-road route would be unfeasible. There may be potential for on road provision and / or additional signage. Additional assessment would be required to determine the feasibility and desirability.	1194	Yes	On-road cycleway with signage	£0	£2,200	£2,000
5	Connection between Dornock and B721	NCR7 travels south from Dornock along a narrow country lane before travelling north to meet the B721. The route is national speed limit and is unlit. The diversion along the country lane is elongated but is quieter than the B721 which is also national speed limit on this section.	2075	No	Signage	£0	£1,000	£1,000
6	Connection between the B721 and Scott's Street / Solway Street Junction in the centre of Annan	There is a 40mph speed limit on this section of the B721, dropping down to 30mph on the approach to Annan. The route is lit.	2205	Yes	On-road cycleway with signage	£0	£2,500	£2,500

5.6.51 The key points in relation to the affordability appraisal are presented in Table 5.12.

Table 5.12: Part 1 Appraisal Against the Affordability Criteria – Key Points

Option	Key Points
1a	Analysis of the operating costs for the service indicates an annual operating cost of £465k, requiring approximately 160,000 passengers annually to break even. Consideration of Office of Rail and Road station usage estimates and consideration of National Rail Travel Survey data shows that the service is unlikely to generate sufficient demand to cover operating costs and as such is not considered to be commercially viable unless the service is subsidised. SWestrans budget for the operation of subsidised bus services has recently reduced. It is therefore unlikely that funding is available to operate the service. It should be noted however, that the bus schedule for the option, has been developed to integrate the bus times with as many rail arrival/departure times as possible i.e. provide a fully comprehensive connection to the rail network. It may be possible to 'scale back' the number of connecting bus services to concentrate on peak time rail arrivals/departures only to minimise the cost of the service and hence make the service more commercially viable/require a lesser subsidy.
1b	Analysis of the operating costs for the service indicates an annual operating cost of £175k, requiring approximately 56,000 passengers annually to break even. Consideration of Office of Rail and Road station usage estimates and consideration of National Rail Travel Survey data shows that the service is unlikely to generate sufficient demand to cover operating costs and as such is not considered to be commercially viable unless the service is subsidised. SWestrans budget for the operation of subsidised bus services has recently reduced. It is therefore unlikely that funding is available to operate the service. It should be noted however, that the bus schedule for the option, has been developed to integrate the bus times with as many rail arrival/departure times as possible i.e. provide a fully comprehensive connection to the rail network. It may be possible to 'scale back' the number of connecting bus services to concentrate on peak time rail arrivals/departures only to minimise the cost of the service and hence make the service more commercially viable/require a lesser subsidy.
1c	The extension of service 383 (Lockerbie - Annan) to Eastriggs would require an additional bus on a Saturday and two buses and two buses on a Sunday. Total annual costs of service provision for Option 1c would be £440,000. Consideration of Office of Rail and Road station usage estimates and consideration of National Rail Travel Survey data shows that the service is unlikely to generate sufficient demand to cover operating costs and as such is not considered to be commercially viable unless the service is subsidised. SWestrans budget for the operations of subsidised bus services has recently reduced. it is therefore unlikely that funding is available to operate the service. It should be noted that the bus schedule for the option has been extended such that the service covers the full existing operating day. it may be possible to 'scale back' the number of connecting bus services to concentrate on peak time rail arrivals/departures only to minimise the cost of the service and hence make the service commercially viable/require a lesser subsidy.
3	Analysis of the operating costs for the service indicates an annual operating cost for the additional service operation of £261k and an estimated existing service operations cost of £855k. Demand for the service has been estimated at 230,000. A time profile developed to distribute trips was utilised to estimate additional revenue associated with the service and estimated additional revenue of £92k. The additional annual

Option	Key Points
	operating cost of £261k is far in excess of the estimated revenue and as such the service is not considered commercial viable. SWestrans budget for the operation of subsidised bus services has recently reduced. It is therefore unlikely that subsidy funding is available to operate the service.
6	The option requires the build of the railway station requiring two platforms whose length must be at least sufficient for a four car 23m unit (100m length is required which is about the same, or shorter than, most recent new stations or those under construction); a Cross-track, DDA compliant footbridge; and passenger facilities (including waiting shelters, Customer Information System (CIS), Public Address (PA) & CCTV systems with one ticket machine). Comparisons with other stations currently being constructed, or recently reopened stations has allowed for an estimated station construction cost of £8m - £11m. While no analysis of potential revenue generation has been made, an estimate of the potential station catchment area has been made and shows: • A potential Eastriggs Railway Station catchment population of 2,725 (with no limit on drive time to the station; • A potential Eastriggs Railway Station catchment population of 2,725 (if a 30-minute and 15-minute drive time 'cap' to the station is assumed), indicating that all potential patronage is located close to the station. This is expected given the existing stations at Gretna Green and Annan around 6-7km to the east and west of Eastriggs respectively.
7	The total cost for the improvements has been estimated to be approximately £16,500 for implementing new signage along the route.

5.7 Public Acceptability

5.7.1 Table 5.13 shows the appraisal against the Public Acceptability criteria.

Table 5.13: Part 1 Appraisal Against the STAG Public Acceptability Criteria – Key Points

Option	Key Points
1a	Integration between bus and rail was highlighted in the public consultation exercise undertaken during the initial stage of the study. As the option offers direct connections between bus and rail, and to stations on the GSWL and WCML, it is likely to carry a low public acceptability risk. Furthermore, the public consultation highlighted sentiment that the biggest transport problem faced by respondents was limited travel mode choice. Improving access to the rail network is likely to therefore be publicly acceptable, although there may be disappointment that a railway station in Eastriggs itself is not provided. For Option 1b, current users of the existing 79 and 179 services may not find timetable changes acceptable if the existing running times suit their needs. For Option 1c, current users of the existing 383 services may not find timetable changes acceptable if the existing running times suit their needs.
3	During public consultation, long journey times was the most significant problem citied when traveling by bus, and was also a key reason cited for why people preferred to travel by car as opposed to by bus. The improved availability of buses would increase accessibility for Eastriggs residents which is likely to be readily accepted, particularly by existing service users. Introducing 'express' instances of the bus between

Option	Key Points
	Eastriggs and Dumfries/Carlisle is likely to address this problem to some extent. However, introducing express instances of the service for Eastriggs residents could potentially irritate users of the service from other locales for whom no express service is available.
6	The option is likely to be widely accepted by the public given the Pre-Appraisal survey responses which showed the most common transport problem faced was considered to be limited modal choice. The public consultation also highlighted a preference for rail improvement over road, bus and active travel. Eastriggs Railway Station Action Group has been formed and there have been a number of recent meetings of the group, further highlighting the public desire to see the station re-opened. If the station were to be re-opened, there would be some minor impact to existing rail users due to the additional rail stop at Eastriggs. However, this is anticipated to be of the order of two minutes and is therefore relatively minor. Existing users may also oppose any required timetable changes that may occur. The reopening of the station may impact on bus services running between Eastriggs and Dumfries/Carlisle, with potential for these services to reduce in frequency if patronage is lost to rail. If so, smaller communities served by these buses (who would not benefit from Eastriggs station) would see their overall accessibility reduce. This is unlikely to be publically acceptable to these communities. It may also not be welcomed by those who hold Concessionary Fares passes for the bus and who whom improved rail access, with a loss of bus service provision, would impact financially.
7	The option is likely to be accepted by the public but given its very minor benefits - which will only be felt by those with a desire to cycle - while not likely to be met with any negativity - is also unlikely to be met with any significant positivity by the public.

5.8 STAG Criteria Appraisal Summary

5.8.1 Appendix M shows the Appraisal Summary Tables (ASTs) for all options in full, with Table 5.14 showing a summary of the scoring for each option against all the appraisal criteria.

Table 5.14: Appraisal Summary Table - Part 1 Appraisal Score Summary

		Transport Planning Objectives		STAG Criteria				
		TPO1	TPO2					
Option	**Decription**	TPO1: Reduce public transport journey times to improve access to key, commutable employment and educational centres from Eastriggs	TPO2: Provide public transport connectivity which enables travel to and from the area across the day and across the week	Environment	Safety	Economy	Integration	Accessibility & Social Inclusion
1a	RailBus	2	2	1	1	1	2	2
1b	Improved direct access to rail	1	0	1	1	2	1	1
1c	Bus priority measures	1	0	1	1	1	1	1
3	Later running, increased Sunday services and express service	2	2	1	1	1	1	2
6	Re-open Eastriggs Railway Station	3	2	1	1	3	2	3
7	Improved off-road cycling Infrastructure between Eastriggs and Annan and Gretna	0	1	0	1	0	0	0

5.9 Option Selection or Rejection

5.9.1 An option selection or rejection process has been undertaken to establish which options are worthy of further consideration and could be examined further at the STAG Part 2 Appraisal stage. Table 5.15 also shows whether each option has been selected or rejected at this stage of the appraisal.

Table 5.15: Key Appraisal Findings

Option	Option Description	Key Appraisal Findings	Select or Reject
1a	Dedicated bus service operating between Eastriggs, Annan and Lockerbie Railway Stations, integrated with train times	• Scores well against the TPOs • Improved public transport access to both GSWL and WCML opening up opportunities to more easily travel further afield • Reductions in the public transport to car journey time differentials, for travel to Lockerbie, Carlisle, Edinburgh and Glasgow • Time savings in station access times of around 40 minutes for connections with Edinburgh and Glasgow trains • Provides additional connectivity across a longer operating day • Would provide improved integration between bus and rail services • Would require significant subsidy • Sections of the route between Eastriggs and Annan and between Annan and Lockerbie would be in direct competition with existing commercial service creating legal issues with subsidy • Likely to be publicly acceptable given the improved direct access to the rail network	Select
1b	Extending Service 79 such that the route includes stops at/close to Dumfries, Annan, Gretna Green and Carlisle railway stations Timing Service 79 and 179 such that they better integrate with rail times	• Improved public transport access to GSWL trains (with some improved connectivity to WCML trains at Carlisle although this is variable) • Removes the need for interchange across Gretna and Dumfries town centres as service would directly serve rail stations • Unlikely that bus operator would consider re-routeing the service to serve the stations as this would impact heavily on the service and current users • Bus operator unlikely to want to improve connections to the rail network which may take away from their market share – likely that bus operators would rather ensure bus-to-bus connectivity	Reject

Option	Option Description	Key Appraisal Findings	Select or Reject
		• Would require subsidy • Likely to be publicly acceptable to Eastriggs residents given the improved direct access to the rail network however existing users of the bus services may be negatively impacted given the increased journey time (to serve the stations)	
1c	Extending bus Service 383 to connect Eastriggs directly to Lockerbie	• Extending the route to Eastriggs would provide direct access to Lockerbie railway station with improved public transport access to the WCML (although the improvement is minor) opening up some opportunity to more easily travel further afield • The extended (subsidised) section of Service 383 between Annan and Eastriggs would be in direct competition with the existing commercially operated Service 79 / 179. This would raise two clear issues: o Legal issues with subsidising a service against existing commercial operations o Impacting on the patronage and commercially viability of Service 79 / 179 • Would require subsidy	Reject
3	Later running, increased Sunday services and express services between Eastriggs, Carlisle & Dumfries	• Scores well against the TPOs • Express service offers a significant decrease in travel time to Dumfries and Carlisle. Travel to work data indicates that a substantial amount of people in Eastriggs commute to Carlisle and a reduction in public transport journey time would provide particular accessibility benefits to those making the commute by public transport, as well as widening the accessibility of employment opportunities in Dumfries and Carlisle – specifically jobs that involve shift or weekend working which currently can only be accessed by those with a car • Would enable people to participate in additional cultural and social activities • Likely to be publicly acceptable to Eastriggs residents given the improved community connectivity • Would require subsidy	Select

Option	Option Description	Key Appraisal Findings	Select or Reject
6	Re-open Eastriggs Railway Station	• Scores well against the TPOs • Reduced travel time to Dumfries and Carlisle – to Carlisle travel time would often be quicker than by car • Additional modal choice for travellers • Additional connectivity would open up opportunities for employment that requires shift / weekend working • Likely to provide a very significant increase in the number of people able to access Eastriggs from further afield • Impacts to existing users of the rail line with additional journey time due to rail stop at Eastriggs • Existing timetable structure would provide appropriate commuter access to Dumfries / Carlisle • High public acceptability of the option likely given sentiment expressed in public engagement	Select
7	Improved cycling Infrastructure between Eastriggs Annan and Gretna	• Does not score highly against the TPOs • Low cost option • Unlikely to help significantly alleviate the key transport problems identified	Reject

5.10 Further Engagement and Option Development

5.10.1 Given the points raised during the Part 1 appraisal, a stage of further option development was undertaken in light of the outcomes of the Part 1 appraisal stage, in order to better define the options for appraisal at STAG Part 2. This was undertaken through further discussions with the client and key stakeholders.

5.10.2 The main thrust of the further option development involved engagement including:

- A workshop with **SWestrans and Dumfries and Galloway Council Officers** (Transportation, Planning, Environment and Economic Development officers) to discuss all the options and fully explore the benefits and issues associated with each.
- In relation to the **bus options**, face-to-face meetings with SWestrans, Stagecoach (West Scotland – also speaking on behalf of Stagecoach Cumbria) and Houstons Coaches, with the discussions focussing on:
  - Establishing views on the feasibility of the proposed new service timetables and route changes;
  - Discussing the outcomes of the Part 1 commercial viability appraisal work;

- Discussing potential grant/subsidy requirements; and
- Discussing the potential to alter the proposed options to adjust services at specific times of day to concentrate on peak time services only to minimise the cost of the new/altered services and move closer to commercial viability.

- In relation to the **rail options, engagement was undertaken, via email, with:**
  - Network Rail;
  - ScotRail;
  - East Ayrshire Council; and
  - Strathclyde Partnership for Transport.

5.10.3 Appendix N presents the comprehensive outcomes of the engagement with the key points discussed here.

Option 1a: Dedicated direct bus service operating between Eastriggs and Annan and Lockerbie railway stations

5.10.4 Given the outcomes of the Part 1 appraisal and the further engagement, the option was felt to be unlikely to be deliverable in its current form. Therefore, a variant of Option 1a was discussed and agreed with SWestrans.

Variant Option

5.10.5 There are a number of possibilities for adapting the option to ensure it would not directly compete against existing commercial services:

- Provide a direct service from Eastriggs to Lockerbie Railway Station **only** which routed along the A75 from Eastriggs to the B723 north to Lockerbie, i.e. not routeing via Annan and thus avoiding the Eastriggs to Annan, and Annan to Lockerbie markets, and operating uniquely as a 'rail-link' between Eastriggs and Lockerbie. While potentially removing the legal issues, removing the inter-town markets from the potential patronage would create a service requiring far larger subsidy. Such a service, with such a narrow focus to its purpose, would only capture a small target market and is likely to have to be more of a taxi-bus type offering. There is no precedent of a bespoke direct rail-bus in Dumfries and Galloway and implementing such a service would likely lead to calls for similar services from other communities.

- Consider using a fare structure which would deter use for trips other than between Eastriggs and Lockerbie i.e. a structure which ensured it was still cheaper to travel by existing services between Eastriggs and Annan and Annan and Lockerbie. However, given the existing Service 383 operates at the commercial margins, any transfer of patronage from this service to the new service could impact heavily on the ability of the service to operate without subsidy. One potential impact could be the withdrawal of the operator from the route, leaving the Council with an additional route to subsidise. If no available subsidy were available, the end result could be the new service operating between Eastriggs, Annan and Lockerbie (on the more direct route) with the loss of a bus serving the smaller communities e.g. Eaglesfield and Ecclefechan, not an entirely desirable outcome.

5.10.6 In addition, as intonated by bus stakeholders and SWestrans, the overall viability of services in the region is, in many cases, only achievable due to the resource intensive nature of overall bus operations. As such, the overall bus network and operation across the region is highly fragile and even minor changes to routes or services (or any new competition between services), which have the potential to tie up resources or affect patronage, can have major consequences. This

is a very important factor when considering any changes to the network which may impact on existing services.

Conclusion

5.10.7 Given the combination of the potentially very low demand and the legal environment, it is considered that the option is not deliverable in its current form. A variant of the option with a direct route from Eastriggs to Lockerbie (as discussed in the first bullet point in Paragraph 5.10.5) is therefore proposed operating as a more 'taxi-bus' type offering. It must be noted however, that such a service would still require significant subsidy and may also impact at the margins on the patronage of existing services with potentially adverse consequences on these services.

Option 6: Re-open Eastriggs Railway Station

5.10.8 To inform discussion with rail industry stakeholders, two key option development tasks were undertaken in relation to the rail option:

- **Engineering Feasibility Work** – which involved a site visit to Eastriggs to establish the potential viability for a railway station within/close to the village with key considerations being station access from the road network. A paper was produced which was provided to the stakeholders for comment and is provided in Appendix O . The work highlighted:
  - The former station site is not suitable for a new station;
  - The most appropriate station site was one located to the north of the village (as shown in Figure 5.6), accessed via an existing field immediately to the west of the H&I Engineering works on the B721 Annan Road; and
  - A rail pedestrian overbridge will be required.

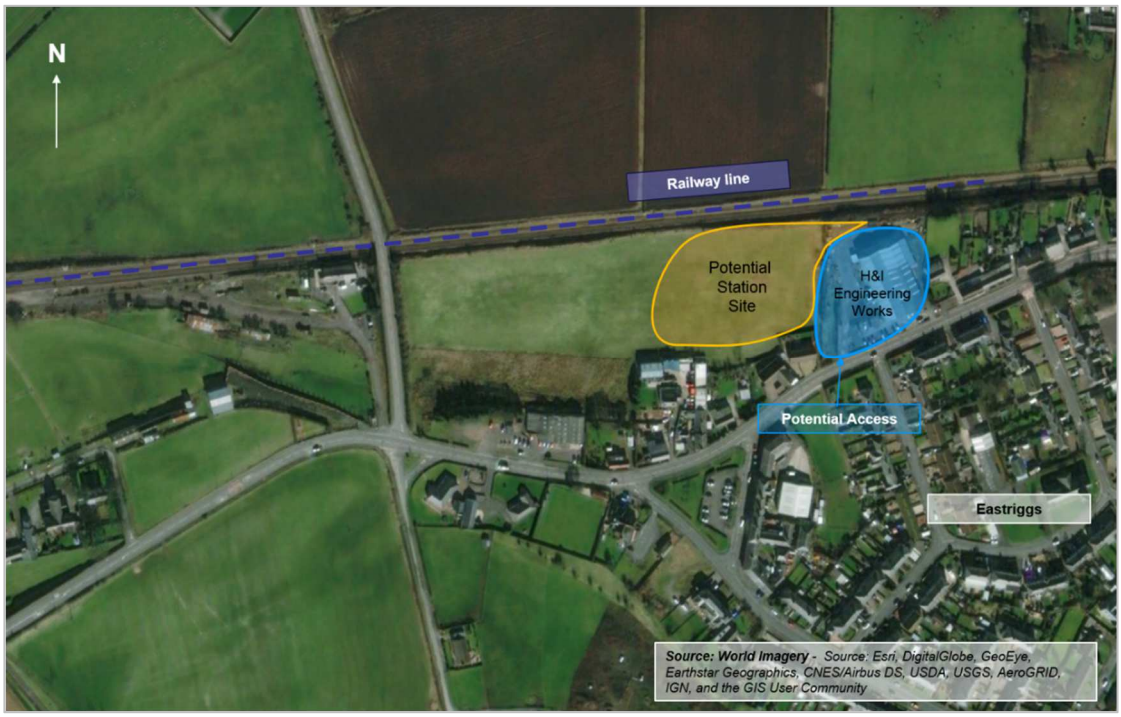

Figure 5.6: Potential Station Site

- **Development of a potential timetable for the GSWL** which included a stop at Eastriggs (and given the parallel study for Thornhill, a potential timetable for the GSWL which included stops at both Eastriggs and Thornhill). The timetable was shared with the stakeholders for comment, and is included in Appendix P .The work highlighted the potential to adjust existing timetables (December 2017 timetables) to allow for a rail stop at Eastriggs (and potentially another new stop) on all currently passing services, without significant structural alterations.

5.10.9 As noted above, Appendix N presents the comprehensive outcomes of the engagement. The key points raised were:

- The timetable developed to include Eastriggs railway station was considered appropriate and at a level of detail suitable for this stage in the project lifecycle by the rail industry stakeholders; and

- The existing rail timetable structure offers good commuting and leisure journey opportunities to both Dumfries and Carlisle.

5.10.10 It was therefore considered feasible for Option 6 to be considered further at Part 2 Appraisal, with cognisance taken of the key points noted above.

6 Part 2 Appraisal

6.1 Introduction

6.1.1 The STAG Part 2 Appraisal phase requires a more detailed appraisal of the options taken forward from Part 1 and includes detailed appraisal of the selected option's performance against the:

- TPO's;
- STAG criteria;
- Cost to Government; and
- Risk and Uncertainty.

6.2 Options for Appraisal

6.2.1 Given the outcomes further option development, the options to be appraised at STAG Part 2 are noted in Table 6.1.

Table 6.1: STAG Part 2 – Options for Appraisal

Option	Option Description	Comment
1a	Railbus linking the study area with and Lockerbie Railway Station	The option assumes: ▪ A direct service between Eastriggs and Lockerbie railway station – that does not route via Annan ▪ A mini-bus type service offering
3	Later running, increased Sunday services and express services between Eastriggs, Carlisle & Dumfries	The option assumes: o Increased frequency of Service 79 and 179 to: o Hourly in the (weekday) evenings o Every 90 minutes throughout the day on Sundays o Some 'express' instances of Service 79 between Dumfries and Carlisle calling only at Dumfries, Annan, Eastriggs, Gretna and Carlisle – utilising the A75 between Dumfries and the M6 between Gretna and Carlisle.
6	Re-open Eastriggs Railway Station	The option assumes: ▪ The station is located at the site immediately west of the H&I Engineering works ▪ The station will operate as a two-platform station

Option	Option Description	Comment
		▪ A timetable as that presented in Appendix O is assumed.

6.3 Data Collection

Station Usage Surveys – Annan and Gretna Green Stations

6.3.1 In order to assess the likely demand for travel from a new railway station at Eastriggs, PBA commissioned ProTel Fieldwork to undertake boarding/alighting counts and platform interview surveys at Annan and Gretna Green Railway Stations. The two stations were selected as the best fit for comparator stations for Eastriggs. The data has been used in the development of a Demand Forecasting Tool used to forecast revenue and travel time benefits, as discussed in Section 6.6. This section presents the high level findings of the surveys. Appendix Q presents the full survey analysis in detail.

6.3.2 Three types of surveys were undertaken. These were as follows:

- Passenger Counts – Annan and Gretna Green
  - Survey teams undertook passenger counts from 0600-1300 on Thursday 1st, from 0700-1400 on Friday 2nd and from 0830-1530 on Saturday 3rd February 2018 at Annan Station;
  - Survey teams undertook passenger counts from 0700-1400 on Tuesday 23rd, from 0600-1300 on Thursday 25th and from 0830-1530 on Saturday 27th January 2018 at Gretna Green Station;
  - Surveyors counted how many passengers boarded and alighted all trains which visited the stations during the survey period; and
  - These counts allowed a sample rate to be estimated for the platform surveys.
- Platform Surveys – Annan and Gretna Green
  - Survey dates and times were as per platform surveys; and
  - Surveyors asked departing passengers about their current journey and wider usage of the respective stations. Where it was not possible to surveys all passengers during the time available, then passengers were provided with a paper copy of the survey and a postage paid return envelope.

6.3.3 A total of:

- 363 passengers boarded trains and 143 passengers alighted from trains at Annan station over the 21-hour survey period;
- A total of 146 passengers boarded trains and 69 passengers alighted trains at Gretna Green station over the 21-hour survey period;
- Platform surveys were completed with 133 departing railway passengers at Annan railway station. However, four of the surveys had been completed with multiple errors, requiring them to be discarded, so the true sample size is 129. This represents a sample rate of 36%;

- Platform surveys were also completed with 31 departing railway passengers at Gretna Green railway station. This represents a sample rate of 21%.

6.3.4 Detailed analysis of survey results can be found in Appendix Q , but key findings are presented here. These findings relate to the passenger count and platform surveys only.

Annan

- Weekend demand is approximately twice as high as weekday demand.
- Throughout the week, the majority of trips to/from Annan are made to destinations in the east (e.g. Carlisle).
- Approximately 89% of respondents reported origins within 2km. This shows that the catchment area is predominantly local.
- The majority of respondents walked to Annan station (63%) and circa 26% used the car.
- 78% of rail trips recorded from Annan were being made for leisure or personal business purposes, and 22% for the purposes of commuting to work or education.
- 60% of respondents surveyed were found to be travelling to Carlisle and 26% to Dumfries.
- Overall, more than half of respondents also report using the train at some point to travel to Carlisle (84%) and Dumfries (57%), and approximately 48% use the train for trips to Glasgow.
- The most commonly cited reason for using the train is that it is quicker than other options (48% of respondents).
- Platform surveys suggest that Annan rail users undertake an average of 2.3 rail trips per week (outbound + inbound).
- Approximately 65% of respondents were in employment, and approximately 35% were not.
- Respondents were less likely to have access to a car than the Annan average – 57% of respondents have one or more cars in their household versus the Annan average of 70%.

Gretna Green

- Weekend demand at Gretna Green Station is approximately nine times as high as weekday demand. This is very high compared to the difference seen at other stations locally, and possibly reflects the attractiveness of Gretna Green as a shopping destination.
- Approximately 77% of respondents reported origins within 2km of the station. This shows that the catchment area is predominantly local, although to a lesser degree than Annan.
- The majority of respondents walked to Gretna Green station (65%) and the remainder travelled by car.
- 78% of rail trips recorded from Annan were being made for leisure or personal business purposes, and 22% for the purposes of commuting to work or education.
- 61% of respondents were found to travelling to Carlisle, and 22% to Dumfries. These values are very similar to those recorded at Annan station.

- Overall, more than half of respondents also report using the train at some point to travel to Carlisle (71%), while 39% also report using the train to access Dumfries and Glasgow respectively.

- The most commonly cited reason for using the train is that it is quicker than other options (48% of respondents).

- Approximately 80% of respondents indicated that they were in employment, and remainder stated that they were either retired (10%), in education (7%) or unemployed (3%).

- 80% of respondents have one or more cars in their household. This aligns closely with the Gretna average of 78% (2011 census).

6.4 Option Appraisal

6.4.1 The following section presents the appraisal of the options against the STAG Part 2 criteria:

- TPO's;

- STAG criteria;

- Cost to Government; and

- Risk and Uncertainty.

6.5 Appraisal against the Transport Planning Objectives

6.5.1 The appraisal of the options against the TPOs is shown in the section which follow, with the detailed analysis undertaken to support the appraisal shown in Appendix R . Firstly, the overall approach to each is described.

Transport Planning Objective 1: Appraisal

Reduce public transport journey times to improve access to key, commutable employment and educational centres from Eastriggs

6.5.2 In order to appraise the options, TRACC accessibility software was utilised to assess the number of jobs accessible from Eastriggs within 30 minutes, 45 minutes and 60 minutes, during both the morning (08:00 – 12:00) and evening (16:00 – 20:00) periods.

6.5.3 For comparison purposes the same analysis was undertaken for Annan and Gretna.

Transport Planning Objective 2: Appraisal

Provide public transport connectivity which enables travel to and from the area across the day and across the week

6.5.4 This TPO has been assessed through consideration of:

- For Option 1a:

  - The earliest available northbound connections **from** Eastriggs to Lockerbie in both the existing and 'with option' situations; and

  - The latest available southbound connections **to** Eastriggs from Lockerbie in both the existing and 'with option' situations.

- For Options 3 and 6:
  - The earliest available eastbound and westbound connections **from** Eastriggs to Dumfries / Carlisle in both the existing and 'with option' situations; and
  - The latest available eastbound and westbound connections **to** Eastriggs from Dumfries / Carlisle in both the existing and 'with option' situations.

6.5.5 The key points relating to each option are shown in the table below.

Table 6.2: Part 1 Appraisal Against the TPO – Key Points

Option	TPO		Key Points	Score
1a	1	Enable effective day trip by public transport to key commutable employment and education centres	Option 1a provides direct access to the WCML through a direct bus connection to Lockerbie station. When considering access to jobs however, a maximum commute time of 60 minutes has been utilised as an upper bound. As such, increased access to jobs in Edinburgh and Glasgow has not been considered as the travel time to these two locations would be well outwith the 60-minute band. There is an approximate increase of 3-4% in the number of jobs accessible from Eastriggs in the morning and evening period. This is likely due to the increased access to jobs in Lockerbie. It is important to note that changing working habits do however mean that some people do not attend their official place of work on a daily basis, and therefore are more likely to consider travelling further/for longer on a few days of the week. As such, there is greater flexibility for the travel time to be longer than commonly considered acceptable if making a trip every day i.e. someone may accept a commute time of 90 minutes if they are only making the trip 3 days a week, whereas someone commuting every day may only accept a much shorter travel time. In this regard, improved access to Edinburgh and Glasgow would be beneficial.	2
	2	Provide public transport connectivity which enables travel to and from the area across the day and across the week	The option provides new direct connections to Lockerbie with operating hours across the day of nearly 15 hours Monday to Friday, over 14 hours on a Saturday and nearly 11 hours on a Sunday.	2
3	1	Enable effective day trip by public transport to key commutable employment and education centres	The analysis shows the increased access to jobs (around 4%) within the 45 – 60 minute time range, indicative of the increased access to jobs in Carlisle. Note there is also a benefit for Gretna and Annan, given the route of the express service also passes through these communities. The accessibility analysis undertaken at Part 1 also showed: ▪ Improved access to jobs, further & higher education, retail and social opportunities in Edinburgh and Glasgow with reductions in public transport travel time which are: o Up to an hour and a half quicker to Glasgow o Quicker than the private car to Edinburgh in the morning and evening periods	2

Option	TPO		Key Points	Score
			o Quicker than the private car to Glasgow in the morning period o Up to an hour and a half quicker to Lockerbie and 15 minutes quicker to Dumfries The option therefore provides a positive benefit against this TPO.	
	2	Provide public transport connectivity which enables travel to and from the area across the day and across the week	The analysis shows: For access to Dumfries: o No increase in the operating hours on a Monday to Saturday but with seven new connections; o An increase in operating hours of 90 minutes on a Sunday, at the start of the day, allowing access to Dumfries much earlier and with an additional three connections; For access to Carlisle: o No increase in the operating hours on a Monday to Saturday but with ten new connections; o An increase in operating hours of over 3 hours on a Sunday, mostly extending the operating day into the evening, allowing access back from Carlisle much later and with an additional three connections.	2
6	1	Enable effective day trip by public transport to key commutable employment and education centres	It can be seen from the results that: ■ There is a significant increase in the number of jobs accessible from Eastriggs in both the morning and evening periods, highlighting the much improved accessibility to employment opportunities with the rail station in place; and ■ The alternations to the rail timetable to accommodate Eastriggs cause some decrease to the number of jobs accessible from Annan, especially those in the morning period more between 30 and 60 minutes away. In addition, analysis of the potential rail timetable highlights:	3

Option	TPO		Key Points	Score
			▪ A rail commute time to Carlisle of 17 minutes and to Dumfries of 22 minutes; ▪ Journey time reductions by public transport (depending on time of travel) of: o Around 30 minutes to Dumfries o Between 25 and 45 minutes to Carlisle o Up to an hour to Glasgow and Edinburgh ▪ Travel time to Dumfries around 8 minutes quicker than by car and to Carlisle around 13 minutes quicker than by car The option provides a major positive benefit to against this TPO when considering the accessibility of employment from Eastriggs, but the reduction in accessibility from Annan should be noted. However, the rail timetable is only altered at Annan by 2 minutes, and as such, the changes in accessibility are likely due to the public transport journey time from Annan to employment around the Carlisle area just 'tipping' over the 60-minute band and not a wholescale significant reduction in access to jobs through lost connectivity	
	2	Provide public transport connectivity which enables travel to and from the area across the day and across the week	The analysis shows: For access to Dumfries: o Only a 30-minute increase in operating hours on Monday to Saturday but with 18 new connections; o No increase in operating hours on a Sunday but with 5 new connections. For access to Carlisle: o Over a 2-hour increase in the operating hours on a Monday to Saturday with 16 new connections; o A very marginal increase in operating hours on a Sunday, with an additional 5 connections.	2

6.6 STAG Criteria Appraisal

6.6.1 This section sets out the approach taken and key points in relation for appraisal of the options against the STAG criteria. The outcome of the appraisal can be found in Table 6.11.

Environment

6.6.2 The Part 2 environmental appraisal considers

- Noise and vibration;
- Global air quality – carbon dioxide (CO2);
- Local air quality – particulates (PM10) and nitrogen dioxide (NO2);
- Water quality, drainage and flood defence;
- Geology;
- Biodiversity and habitats;
- Landscape;
- Visual amenity;
- Agriculture and soils; and
- Cultural heritage;

6.6.3 The methodology employed in assessing each sub-criteria and the completed option assessment tables are presented in Appendix S with a summary of the key findings provided in Table 6.3.

Table 6.3: STAG Environmental Appraisal Criteria – Summary

Option	Option Description	Key Findings	Score
1a	Dedicated direct bus operating between Eastriggs and Lockerbie	An environmental appraisal of this option found it would have a minor positive effect on the environment. The option would be likely to encourage some minor modal shift from private car to bus and rail and as a result would see a reduction in vehicle greenhouse gas emissions, air pollution and noise. The option would also benefit public health through improving access to essential facilitates and services (such as the major hospitals in Edinburgh and Glasgow), and promoting social inclusion for those without a car. As the option would utilise the existing road network it would not require acquisition of new land - as such there will no likely impact on biodiversity, geology, soils, the water environment, landscape and cultural heritage.	1
3	Later running, increased Sunday services	An environmental appraisal of this option found it would have a minor positive effect on the environment. The option would be likely to encourage some minor modal shift from private car to bus and as a result would see a reduction in vehicle greenhouse gas emissions, air pollution and noise. The option	1

Option	Option Description	Key Findings	Score
	and express services between Eastriggs, Carlisle & Dumfries	would also benefit public health through improving access to an increased range of job opportunities and social activities, and promoting social inclusion for those without a car. As the option would utilise the existing road network it would not require acquisition of new land - as such there will no likely impact on biodiversity, geology, soils, the water environment, landscape and cultural heritage.	
6	Re-open Eastriggs Railway Station	The construction of the railway station at Eastriggs requires land acquisition and construction may have a potential negative impact on local biodiversity, geology and soils, the water environment and cultural heritage. Further assessment is required to understand these impacts fully. There may also be long-term noise impacts in the area close to the station due to train deceleration and acceleration. However, the option does not involve the running of additional trains (just an additional stop for existing trains) and therefore there would be little adverse impact on the environment in terms of additional greenhouse gas emissions. It was noted during the initial stages of the study that private car ownership and use is high in the study area. Any modal shift to rail that could be achieved would reduce car use and associated noise, air pollution and greenhouse gas emissions.	-1

Safety

6.6.4 The STAG safety criteria includes two sub-criteria:

- Accidents; and
- Security.

6.6.5 The options being appraised are unlikely to generate enough modal shift from private car to public transport to materially impact on the quantum of road accidents. Given this, it is not considered that the options will have a measurable impact on the number of transport related accidents and/or their severity. The appraisal against the safety criteria has therefore been largely qualitative and has focussed on the security sub-criteria.

6.6.6 The full option appraisal against the Safety criteria is shown in Appendix T with a summary of the key findings provided in Table 6.4.

Table 6.4: STAG Safely Appraisal Criteria – Summary

Option	Option Description	Key Findings	Score
1a	Dedicated direct bus operating between Eastriggs	No material impact anticipated for accident rates or severity due to the option. For Option 1a, security benefits for public transport users no longer requiring the interchange in Annan, Dumfries or Gretna to reach Lockerbie Railway station.	1

Option	Option Description	Key Findings	Score
	and Lockerbie		
3	Later running, increased Sunday services and express services between Eastriggs, Carlisle & Dumfries	No material impact anticipated for accident rates or severity due to the option. No significant security benefits as the option uses existing bus stops.	0
6	Re-open Eastriggs Railway Station	No material impact anticipated for accident rates or severity due to the option. Whilst the proposed station is unlikely to be staffed, it is assumed that a CCTV system will be installed to ensure a formal surveillance. No such surveillance system currently exists for bus stops in the area. In addition, the lighting in the station environment is likely to be of a better quality than existing lighting at bus stops in the area, leading to real and perceived security improvements for public transport users.	1

Economy

6.6.7 At the Part 2 stage, the economy has focused on:

- Transport Economic Efficiency (TEE) - the benefits ordinarily captured by standard cost-benefit analysis, with a modelling exercise undertaken for Option 6, informed by the data collected during the platform surveys at Annan and Gretna Green stations. A demand, revenue and benefits generation modelling exercise for the station re-opening was undertaken which is described in Appendix U .

Option 1a (Dedicated direct bus service operating between Eastriggs and Annan and Lockerbie railway stations) and Option 3 (Later running, increased Sunday services and express services between Eastriggs, Carlisle & Dumfries)

6.6.8 A detailed exercise has not been undertaken for the bus options, Options 1a and 3, as the options are entirely new services or new instances of services. TEE benefits are typically primarily made up of travel time savings and changes in the cost of travel.

6.6.9 Users of the new bus services will be primarily either:

- People who previously drove to the station to go to the same destination
  - These people will likely have a longer journey times and potentially higher 'out of pocket' costs – the benefits to them will be more qualitative and convenience based
- People who previously walked / cycled to the station to go to the same destination

- The options here are aimed at longer distance connections where active travel is much less likely

- People who previously got a lift to the station to go to the same destination
  - There may be cost savings here due to the 'double-trip' nature of these trips but travel time savings would be unlikely

- People who were not previously train users and have switched their destination

- People who were not previously travelling at all and are making new trips
  - For both these groups, it is not possible to evidence how these journey patterns may change and hence what the scale of benefits would be

6.6.10 For the rail options, we have established from the station surveys how existing rail passengers would have travelled in the absence of rail. So, by implication we can estimate how users of the new stations would have travelled previously and therefore determine the benefits to them of switching to rail. It was not possible to undertake a similar 'counterfactual' exercise for rail-link bus services as there are no equivalents.

Option 6: Re-open Eastriggs Railway Station

Demand and Revenue Modelling

6.6.11 A demand forecasting exercise was undertaken to estimate the passenger demand and revenue generated by a new railway station at Eastriggs. This exercise also considered the knock-on effects of a new station upon demand and revenue at the adjacent Gretna Green and Annan railway stations, in addition to the journey time costs borne by through traffic on the line. This allowed calculation of a net base year impact in terms of journeys and revenue – i.e. how many additional rail journeys would be generated overall and how much additional revenue would this raise if the station were to open today.

6.6.12 The approach taken to the calculation of these impacts is discussed in Appendix U.1, and split into the following elements:

- Outbound demand at Eastriggs Station;
- Inbound demand at Eastriggs Station;
- Transfer of existing rail passengers to Eastriggs Station;
- Journey time impacts on through passengers.

6.6.13 Table 6.5 sets out the Base Year demand and revenue results.

Table 6.5: Base Year Results

Market Segment	Journeys	Revenue
Outbound Demand	16,982	£68,576
Inbound Demand	13,712	£76,910
Eastriggs Station Usage	**30,695**	**£145,486**
Transfer from Adjacent Stations	-919	-£4,265

Impact on Through Pax	-10,754	-£39,132
Overall Net Impact	**19,022**	**£102,089**

Benefit Cost Ratio Calculations

6.6.14 In order to calculate a Benefit Cost Ratio (BCR) for the potential station re-opening, the calculated anticipated demand and revenue impacts have been estimated over the 60-year appraisal period along with the costs and the overall financial impacts have been discounted to 2010.

6.6.15 The associated journey time benefits have been calculated and discounted to 2010, to then generate an overall BCR for the option.

6.6.16 To calculate the benefits, the following steps were undertaken:

- The demand figures calculated above comprised of:
  - **'Station Switchers'** – existing train users switching from other stations;
  - **New rail trips**, either:
    - Entirely new trips;
    - Those switching from car; or
    - Those switching from public transport.

  The proportions were estimated on the basis of the platform surveys where people were asked how they would have made that journey in the absence of a train service.
- For trips switching from other modes:
  - LENNON data was utilised to consider the distribution of these trips based on trip origins and destinations at Annan and Gretna Green stations; and
  - Time savings from these trips was estimated to determine the benefits based on the assumptions on journey purpose.
- Overall demand was projected forward for 30 years using a 2.5% per annum growth rate (based on recent local trends in rail passenger growth), with no further growth for the following 30 years;
- The volume of through passengers was estimated from the LENNON data, with each affected passenger assigned a 2-minute travel time disbenefit (again based on an assumed purpose split);
- The figures were combined to provide an estimate of the overall net benefits assuming an opening year of 2023;
- The benefits were then discounted to a base year of 2010 to provide the Present Value of Benefits (PVB).

6.6.17 The station costs were estimated as set out in Appendix J and a number of differing cost assumptions were used to sensitivity test the impacts on the BCR:

- £11m - the higher end of the estimated range;
- £8m - the lower end of the estimated range;
- £5m and £2m - to account for a level of optimism bias already inherent in the cost figures as they are based on other station build ***outturn*** costs.

6.6.18 The full resulting BCR figures are presented in Table U.5 in Appendix U . Assuming a station cost of £8m is estimated to achieve a BCR of -0.24 (if revenue is also included in the benefits). The negative BCR figure is due to the disbenefits to existing passengers on the line outweighing the benefit of the users of Eastriggs station, generating an overall negative Present Value of Benefits. In this regard, even a station cost of zero would not be enough to generate a positive BCR figure.

6.6.19 A low BCR figure is not untypical of rural stations where the case for the station is driven more by social need than monetary benefits.

6.6.20 It should be noted that, for rail passengers on the train passing through Eastriggs, the disbenefit of the additional stop at Eastriggs is around 2-3 minutes, which when multiplied by the number of passengers equates to a disbenefit which outweighs the benefits to new passengers of the rail halt at Eastriggs. For the existing passengers, the additional 2-3 minutes is unlikely to significantly impact on their overall journey. Whereas the benefit to those living in Eastriggs and now able to travel to Dumfries and Carlisle in a significantly reduced time is potentially transformational in accessing employment, education and social opportunities.

Economy Appraisal Summary

6.6.21 The full option appraisal against the Economy criteria is provided in Table 6.6

Table 6.6: STAG Economy Appraisal Criteria – Summary

Option	Option Description	Key Findings	Score
1a	Dedicated direct bus operating between Eastriggs and Lockerbie	As noted above, it is not meaningful to calculate a BCR figure for this option, however the service operational costs are highly likely to outweigh the benefits, even if the potential revenue is considered (details of the estimated Cost to Government are provided in Section 6.7). A bus service offering a direct connection between Eastriggs and Lockerbie is unlikely to provide journey times quicker than by private car. As such, users accessing Lockerbie station at present are unlikely to switch modes based on journey time benefits alone. However, for those who are being 'dropped off' at the station, the option has the potential to save around 50 minutes of drive time (Eastriggs to Lockerbie and back) for those ferrying the passenger to and from the station.	-2
3	Later running, increased Sunday services and express services between	As noted above, it is not meaningful to calculate a BCR figure for this option, however the service operational costs are highly likely to outweigh the benefits, even if the potential revenue is considered (details of the estimated Cost to Government are provided in Section 6.7).	-1

Option	Option Description	Key Findings	Score
	Eastriggs, Carlisle & Dumfries		
6	Re-open Eastriggs Railway Station	The appraisal has highlighted that the station would not achieve a BCR at the lower end of the assumed cost banding for the station construction (£8m). Assuming a station cost of £8m is estimated to achieve a BCR of -0.24 (if revenue is also included in the benefits). The negative BCR figure is due to the disbenefits to existing passengers on the line outweighing the benefit of the users of Eastriggs station, generating an overall negative Present Value of Benefits. In this regard, even a station cost of zero would not be enough to generate a positive BCR figure. Low BCR figures are not untypical of rural stations where the case for the station is driven more by social need than monetary benefits. It should be noted that there are people in the area who hold a concessionary bus pass and are therefore entitled to free bus travel across Scotland. If new rail services were to be introduced which subsequently led to a reduction in bus services serving the area (potentially Services 79 and 179), this could have financial implications on those who would then have to pay for rail (for which only a part-fare discount is applied). In general, rail fares are higher than the equivalent trip by bus, and therefore a reduction in bus service, with a need to utilise rail, could impact financially on all those who currently use the local bus network.	-3

Integration

6.6.22 The STAG integration criteria focuses on three key integration elements:

- Transport integration;
- Transport and Land-use Integration; and
- Policy Integration.

6.6.23 Detailed appraisal was undertaken at the Part 1 stage of the study, focussing on the transport integration elements of the integration criteria, and specifically focussing on the bus options.

6.6.24 At this stage of the appraisal, further appraisal building on the Part 1 work and further considering the options against all three elements of the integration criteria has been undertaken.

6.6.25 The full option appraisal against the Integration criteria is shown in Appendix V (including appraisal against the Policy Assessment Framework) with a summary of the key findings provided in Table 6.7.

Table 6.7: STAG Integration Appraisal Criteria – Summary

Option	Option Description	Key Findings	Score
1a	Dedicated direct bus operating between Eastriggs and Lockerbie	As discussed in the Part 1 Appraisal, the option offers significant improvements in transport integration with reductions in interchange time for public transport users between Eastriggs and onward rail connections from Lockerbie Railway Station. Time savings of circa 40 minutes are anticipated for connections with Edinburgh and Glasgow trains, and circa 15 minutes for connections with those to/from the south. The option would remove the need to interchange between bus services in Annan, Dumfries or Gretna en-route to Lockerbie station. In terms of transport and land-use integration, an improved connection to Lockerbie Railway Station, offering improved access to Edinburgh and Glasgow, may encourage housing development in the village as noted in the Local Development Plan. The former nuclear station at Chapelcross, located approximately 5 miles north of the village, is currently being decommissioned. It's long term redevelopment as a Business Park could trigger residential redevelopment in Eastriggs. The proposed Option 1a bus service is highly likely to route very close to the site and could offer direct access from the Eastriggs to the site, en-route to Lockerbie. The former Ministry of Defence site to the south of Eastriggs is currently being considered for redevelopment. The site is mentioned in the Council's Economic Strategy, where it is stated that *"The former MOD site at Eastriggs is likely to be available during the plan period and may provide scope for business/industry use and/or tourism sector development."* A direct service from Lockerbie to Eastriggs may enable improved public transport access to the site from the north, however, the proposals are long-term and should not be relied upon to provide support for the option in the short term. The assessment of the option against the STAG Policy Assessment Framework shows the option scoring neutrally or positively against all national objectives and sub-objectives.	2
3	Later running, increased Sunday services and express services between Eastriggs, Carlisle & Dumfries	The option is unlikely to provide any specific transport integration benefits but increased connections to Carlisle and Dumfries, may encourage housing development in Eastriggs as noted in the Local Development Plan. The assessment of the option against the STAG Policy Assessment Framework shows the option scoring neutrally or positively against all national objectives and sub-objectives.	1

Option	Option Description	Key Findings	Score
6	Re-open Eastriggs Railway Station	As the option considers the reopening of a railway station in Eastriggs, it does not provide mode-to-mode integration benefits but the rail network is an integrated network and providing a station opens up access to the UK wide integrated rail network. The station's implementation would remove the need for transfer between bus and rail modes. The presence of a rail station in Eastriggs is likely to encourage housing development as noted in the Local Development Plan – although it should be noted that the proposed housing is all located to the north-east of the village, and if built out would be some of the furthest dwellings from the station (although only around 1km away). As noted for Option 1a, the former nuclear station at Chapelcross, located approximately 5 miles north of the village, is currently being decommissioned. It's long term redevelopment as a Business Park could trigger residential redevelopment in Eastriggs, although this is very long term and the Chapelcross site is in closer proximity to Annan, which would provide the closer access by rail. Also noted in the Option 1a appraisal, the former Ministry of Defence site to the south of Eastriggs is currently being considered for redevelopment. The MoD is looking at various options for Eastriggs but are still at a fairly early stage. However, it was felt that potentially re-opening the station at Eastriggs would be beneficial regardless of what is ultimately decided for the future of the site and may assist in making the case for development of the site if the transport links were improved in this way. The MoD have previously had discussions with parties from the rail industry who mentioned the possibility of doing so. The assessment of the option against the STAG Policy Assessment Framework shows the option scoring neutrally or positively against all national objectives and sub-objectives.	2

Accessibility and Social Inclusion

6.6.26 The TPOs for the study are mainly focussed on connectivity and the accessibility of the area in terms improving connectivity for commuting to employment and education by public transport and ensuring the public transport connectivity of the area across the day and across the week. Building on the analysis for the TPOs, as presented in Appendix R and summarised in Section 6.5, Appendix W explores the further benefits in terms of:

- Community Accessibility considering public transport network coverage and local accessibility and;
- Comparative Accessibility considering the distribution of impacts by people groups and geographical location.

6.6.27 As noted above, the full option appraisal against the Accessibility and Social Inclusion criteria is shown in Appendix W with a summary of the key findings provided in Table 6.8.

Table 6.8: STAG Accessibility and Social Inclusion Appraisal Criteria – Summary

Option	Option Description	Key Findings	Score
1a	Dedicated direct bus operating between Eastriggs and Lockerbie	The option provides increased public transport coverage for the area with the new direct link to Lockerbie. The option is particularly beneficially to those without a private car or unable to drive. This includes: • Those on lower incomes and those less-abled for whom driving is not an option or for whom owning a car is not possible due to the costs involved, with the increased accessibility may open up new job opportunities further afield; • The elderly who have stopped driving and others with healthcare needs, through improved accessibility to the major hospitals in Edinburgh and Glasgow; • Those seeking Higher Education opportunities, through improved accessibility to Edinburgh and Glasgow which may be of particular benefit to those for whom living away from home is not affordable; • Children under the age of 17, through increased ability to travel independently, with access to a greater range of extra-curriculum and social activities in which to participate. Eastriggs is located in a rural location. The improved access to the WCML would connect the community to trains offering travel to much further afield. It is important to note that a key benefit of improved accessibility to and from the study area will be in reducing the feelings of remoteness of the community and enabling local people to feel connected and part of a wider Scotland. This is especially important in terms of the long term sustainability of the community and the retention of younger people in the area. The option provides better equality of access to all enabling fair access to the wider opportunities.	2
3	Later running, increased Sunday services and express services between Eastriggs, Carlisle & Dumfries	The option does not provide increased geographical coverage for the area but does provide increased coverage in terms of the times / days over which services are operational. The option is particularly beneficially to those without a private car or unable to drive. This includes: • Those on lower incomes and those less-abled for whom driving is not an option or for whom owning a car is not possible due to the costs involved, with the increased accessibility to Carlisle and Dumfries opening up new job opportunities which require shift or weekend working. • School children, for whom the option would provide an increased ability to travel independently, providing access to greater range of extra-curriculum and social	2

Option	Option Description	Key Findings	Score
		activities in which to participate in Carlisle and Dumfries. The option may help support local tourism through enabling improved access to the Devil's Porridge Museum in Eastriggs. Eastriggs is located in a rural location. The improved access to Dumfries and Carlisle would enable the community to participate in a greater range of activities in the region's biggest town. This may help combat feelings of community isolation.	
6	Re-open Eastriggs Railway Station	The option provides increased public transport coverage for the area with new direct access to the rail network. This enables improved connectivity and reduced access time to locations on the GSWL including Glasgow, Dumfries and Carlisle. The option is particularly beneficially to those without a private car or unable to drive. This includes: • Those on lower incomes for whom owning a car is not possible due to the costs and the less abled by opening up new job opportunities. This may be particularly true for opportunities in Carlisle, for which the travel time with the option reduces from just under an hour to under 20 minutes, which would be considered a very satisfactory commute time, making part time working more possible. It should be noted that the train would in fact be quicker than the private car to both Dumfries and Carlisle. • The elderly who have stopped driving, and others with greater healthcare needs, for whom the improved access may enable improved accessibility to the nearest GPs in Annan and Gretna Green and to the major hospitals in Dumfries, Carlisle, Edinburgh and Glasgow; • Those seeking Higher Education opportunities; • Children under the age of 17 through providing an increased ability to travel independently, providing access to a greater range of extra-curriculum and social activities in which to participate in both Dumfries and Carlisle. It should be noted that the station is located near the centre of the community allowing for safe and easy access for all. Eastriggs is located in a rural location. The improved access to Dumfries and Carlisle would enable the community to participate in a greater range of activities in the region's biggest town. As with Option 1, it is important to note that a key benefit of improved accessibility to and from the study area will be in reducing the feelings of remoteness of the community and enabling local people to feel connected and part of a wider Scotland. This is especially important in terms	3

Option	Option Description	Key Findings	Score
		of the long term sustainability of the community and the retention of younger people in the area. The option provides better equality of access to all enabling fair access to the wider opportunities. In addition, the 'fixed' permanence of a railway station could provide reassurance in the future connectivity and accessibility of the community, potentially impacting on people choices as to where to live and work.	

6.7 Cost to Government

Option 1a: An extension of the existing Service 383 operating between Lockerbie and Annan to extend to Eastriggs

6.7.1 The commercial viability of Option 1a, has been revisited in light of the changes made to the service routeing (not routeing into Annan to avoid competition with commercially run services).

6.7.2 Previously it assumed that standard single decker buses of the type used by Stagecoach on inter-urban routes would be utilised to run the service. This was on the basis that the service would route via Dumfries (and the station) and therefore would be open to passengers generally on the corridors being served.

6.7.3 In order to not compete directly with existing commercial services, the new direct Eastriggs to Lockerbie proposals would only be likely to attract rail passengers. As such, demand is likely to be lower and as such smaller buses can be assumed to be utilised on the route. These smaller buses would still comply with DDA legislation with low floor, easy access for wheelchair users etc.

6.7.4 Maintenance and fuel costs of the smaller buses are much lower than a full-size single decker and as such the estimated operating costs per bus have come down considerably, and therefore the overall operational costs for the service has also reduced.

6.7.5 In addition, the journey time and operating miles have also reduced given the shortened route which avoids Annan.

6.7.6 The cost for the provision of Option 1a is now £233,000 (down from £475,000).

6.7.7 Given the service is now a direct Eastriggs to Lockerbie station service, the average fare costs have been revisited. Previously an average fare of £2.97 was assumed (but that accounted for shorter trips on the bus i.e. those between Eastriggs and Annan). Average fares for comparable distances are around £4.00 for a single and £7.30 for a return. Similar average fare calculations have therefore been undertaken using the same assumptions applied at Part 1 regarding trip categories to calculate a revised average single fare of £3.03.

6.7.8 Dividing the annual costs of £233,000 by the average fare of £3.03 means that the service would require approximately **77,000** single trips annually to break even.

6.7.9 The Office of Rail and Road (ORR) estimates of station usage for 2014-2015 shows total annual passengers station entries and exits of approximately:

- 215,000 at Lockerbie Railway Station.

6.7.10 The National Rail Travel Survey (NRTS, 2007)[10] shows that 10% of users accessing a railway station have arrived by bus/coach. Rural areas and small towns will typically have a lower share of bus-based access to railway stations than this due to the nature of the rural bus network. For example, bespoke surveys of passengers at rural stations previously undertaken by the project team have shown a bus access mode share of 5% or less.

6.7.11 The platform surveys undertaken at Lockerbie station were considered and showed, of those surveyed, 4% had accessed the station by bus. Assuming 4% of passengers to Lockerbie Railway Stations arrive by bus equates to a total of 8,600 passengers annually arriving or departing by bus. The required number of passengers for the Eastriggs service to break even is far in excess of this (77,000) and therefore the service is highly unlikely to be commercially viable.

6.7.12 It should be noted that the bus schedule for the option, extends to all services over the full rail operating day. It may be possible to 'scale back' the number of connecting bus services to concentrate on peak time rail arrivals/departures only to minimise the cost of the service and hence make the service more likely to be commercially viable/require a lesser subsidy.

6.7.13 A high level assessment was undertaken to estimate the level of subsidy required to support the service. The following was undertaken:

- Lockerbie platform surveys which were undertaken as part of a separate study (but were identical to those undertaken at Gretna Green and Annan), were used to establish the number of rail passengers alighting at Lockerbie who came from Eastriggs or the surrounding area;
- Passenger figures were uplifted to a total day count using ORR LENNON entries and exits data;
- From the Lockerbie platform surveys, the percentage of users arriving at the station by bus was established (4%);
- The percentage arriving by bus was then applied to the estimated number of daily passengers arriving from Eastriggs to estimate the total number of rail users assumed to arrive at Lockerbie by bus from Eastriggs;
- Using the average single fare calculated of £3.03, and the estimated passengers using the service, an overall annual revenue figure was calculated;
- Increasing levels of modal shift were assumed to establish how the revenue figure would change if a greater number of passengers utilised the service.

6.7.14 The results showed the low passenger use of the service (based on current travel habits) and the high subsidy that would be required, around £227,000 - £232,000 annually, to operate the service. This equates to around 7% of SWestrans total bus subsidy.

6.7.15 If the service were to be implemented, in could require reducing services elsewhere in order to meet SWestrans budgetary constraint for the procurement of subsidised services. The very narrow focus as a 'RailBus', only capturing a small target market may mean a more 'taxi-bus' type offering would be more appropriate. In addition, given there are no other bespoke RailBus' type offerings in Dumfries and Galloway, implementing such a service for Eastriggs may lead to calls for similar services from other rural communities with high cost implications.

6.7.16 It should however be noted that the service would provide a connection not currently available and as such may entice a number of new users who are not captured in this analysis.

[10] http://www.transport.gov.scot/system/files/documents/reports/NRTSProvisional2007.pdf - Table 6

6.7.17 In terms of bus services which require subsidy, the Transport Act 1985, which governs the operation of local bus services sets out how a local transport authority can procure a bus service that is not being provided by the market. It also includes cases where new services need to be pump primed, i.e. where short term start-up funding is required until passenger demand reaches a level where the service becomes viable. If SWestrans wished to secure services, there would be an element of risk surrounding the uptake for the service and the patronage that may be achieved. It would be more likely that a gross cost contract be appropriate in order to encourage operator bids. The major risk would then be borne by the SWestrans.

Option 3: Later running, increased Sunday services and express services between Eastriggs, Carlisle & Dumfries

6.7.18 There have been no changes to the anticipated services to be provided as part of this option. As such, the work undertaken at STAG Part 1 remains valid in terms of the estimated operational costs and revenue.

6.7.19 The total annual operating cost were estimated £261k with total revenue estimated at £92k. Therefore, Option 3 would require around £170k in subsidy to 'break-even'. This equates to around 5% of SWestrans total bus subsidy.

6.7.20 As noted for Option 1a, it would be more likely that a gross cost contract be appropriate in order to encourage operator bids. The major risk would then be borne by the Council.

Option 6: Re-open Eastriggs Railway Station

6.7.21 For Option 6, over the 60-year appraisal period, Table 6.9 below shows:

- Assumed station cost, based on a range of values (in today's prices) as set out in Appendix U.1);
- Present Value of Benefits (PVB): discounted to 2010 values;
- Present Value of Cost (PVC): the station costs with optimism bias, discounted to 2010 values; and
- Net Present Value (NPV): PVB-PVC.

Table 6.9: Option 6 – Cost to Government (PVC and PVB discounted to 2010)

Assumed Station Cost (£m)	PVB (£m)	PVC (£m)	NPV (£m)
£11.0	-£1.9	£10.7	-£12.5
£8.0	-£1.9	£7.8	-£9.6
£5.0	-£1.9	£4.8	-£6.7
£2.0	-£1.9	£1.9	-£3.8

6.8 Risk and Uncertainty

6.8.1 The overall risk and uncertainty inherent in the implementation of the options has been considered and is summarised in Table 6.10.

Table 6.10: Risk and Uncertainty

Risk	Risk Type	Comments	Potential Mitigation
Delivery Risk	Infrastructure Risk	Options 1a and 3 propose new bus routes / services. These services would operate on existing roads and utilise existing bus stops. Therefore, there is no infrastructure risk associated with them. Option 6 requires the build of a new station. The site visits undertaken during Part 2 Appraisal highlighted a potential site for the station at the north of the village. Note that for both sites, access, car parking and overbridge requirements would need to be considered in detail to establish their feasibility and further detailed design work is required to investigate the suitability of the site.	Ensure detailed design work considers fully the implementation issues at an early stage to ensure the feasibility of the station. This would include ensuring adequate parking was available.
	Planning Risk	In terms of Option 6, there is a risk that detailed planning permission may not be able to be obtained due to the land required for implementation of station.	Ensure early consideration and discussion with land owners to obtain agreement on the infrastructure to be provided and the land requirements.
	Construction Risk	For Option 6, the implementation of the station represents a not insignificant infrastructure project and there is a risk around the budget required for this increasing particularly given that construction is unlikely to start until some years from now if this were taken forward. To make some allowance for this, Optimism Bias of 44% has been applied to the station build capital costs to account for the degree of uncertainty at this stage. However, it should be noted that the capital station costs have been drawn from *outturn* costs of recently build stations and as such the level of optimism biased applied is very robust and could	On-going revisiting of the costs of the infrastructure as design work progresses to ensure the cost estimates are as robust as possible. In addition, the costs should have optimism bias applied reflective of the stage in the design process.

Risk	Risk Type	Comments	Potential Mitigation
		potentially be reduced or even removed.	
Operational Risk	Operational Risk	In terms of Options 1a and 3, the main operational risk in taking options forward pertains to the likelihood of bus operators to be encouraged to operate the services. The work undertaken to establish the commercial viability of the services has highlighted that the options would not be commercially viable. Operators are unlikely to operate services which are not deemed commercial and as such the options would require a level of subsidy to operate. While estimates of potential service demand have been made, it is not yet known what the overall patronage of the services may end up being. As such there would be a short to medium term financial burden and risk on the Council in offering a level of subsidy during the procurement process – which may be in excess of that required. There is additionally the ongoing risk that, once operational, at a future date operators will withdraw their support for a service, and / or public funding becomes more constrained and the required subsidy to operate the service can no longer be provided. In terms of Option 6, rail services are already operational on the line through Eastriggs and as such the operational risk should be minimal. This however assumes the feasibility of adding the additional rail halt into existing timetables and securing agreement on this from Transport Scotland / Scotrail etc. The initial work undertaken to establish this feasibility has highlighted the need to adjust services at the Southern end of the route (i.e. into / out of Carlisle). This therefore requires consideration of trains on the WCML. Further discussion with Network Rail / TransPennine Express / Virgin Trains etc. is required to buy-in and	For Option 1a and 3, ongoing discussion with bus operators as to their willingness to operate service and the levels of patronage on the routes. For Option 6, ongoing discussion with all rail industry parties throughout any Business Case and GRIP process.

Risk	Risk Type	Comments	Potential Mitigation
		awareness by all parties throughout of process.	
	Demand Risk	For Options 1a and 3, the greatest uncertainty surrounding the operation of the options and their viability relates to the demand for the services and the level of subsidy required. There is a risk that the demand for the services will be lower than estimated. Patronage on the services which proves to be lower than estimated would create a risk to the Council if subsidy were being provided and a risk to the operator through reduced revenue. It may be that a service, if implemented, may be subsequently removed, impacting on the areas accessibility and sustainability. For Option 6, the level of demand anticipated would need to be considered in detail during the GRIP process, to ensure robust estimates to allow for an appropriate understanding during any franchise tendering process.	For Options 1a and 3, revising the estimates of demand. using a more detailed bus patronage model. For Option 6, detailed demand modelling work during the GRIP process.
	Financial Risk	For Option 1a and 3, there is a risk around the estimated operational costs for the services increasing particularly given that option implementation is unlikely to start until some years from now if this were taken forward.	On-going revisiting of the operational costs for the services to ensure the estimates are as robust as possible.

6.9 Part 2 Engagement

6.9.1 A Public Event was held on 23rd January 2019 in Eastriggs from 16:00 – 20:00 at Eastriggs Community Centre. The purpose of the event was to present information about the study, covering all stages of the study including the problems identified, the options generated and the option appraisal process and key appraisal findings. The events were publicised via social media by the Council and also communicated to local people through Eastriggs Railway Station Action Group.

6.9.2 A feedback form was available for completion at the event asking participants about the severity of the problems identified, the impacts of the problems on them and their community, and their thoughts on the options and how they would benefit them. Pre-paid envelopes were also made available if people wished to complete the feedback form at home and post back. Furthermore, the feedback survey (identical to that handed out at the event) was made available online for completion.

6.9.3 The Public Event material was also made available online after the event, with the link to the online version of the feedback survey alongside it. The Council further publicised that the material was available.

6.9.4 In total 100 people attended the event on the night, with a total of 405 feedback surveys completed (combined paper, posted and online surveys completed).

6.9.5 Full analysis of the feedback survey is presented in N.2.

6.9.6 In terms of public acceptability of the options:

- 89% (n=339) of respondents felt that Option 6 would have a major positive impact for travelling to and from the Eastriggs area;
- 27% (n=103) thought that Option 3 would have a major positive impact on the area; and
- 23% (n=88) felt that Option 1a would have a major positive impact on the area.

6.9.7 Respondents were asked to state which was there preferred option for the future. 591 respondents answered this question (as shown in Figure 6.1):

- 96% (n=366) stated that their preferred option was Option 6, to re-open Eastriggs Railway Station;
- 2% (n=9) selected Option 3; and
- 2% (n=8) selected Option 1a.

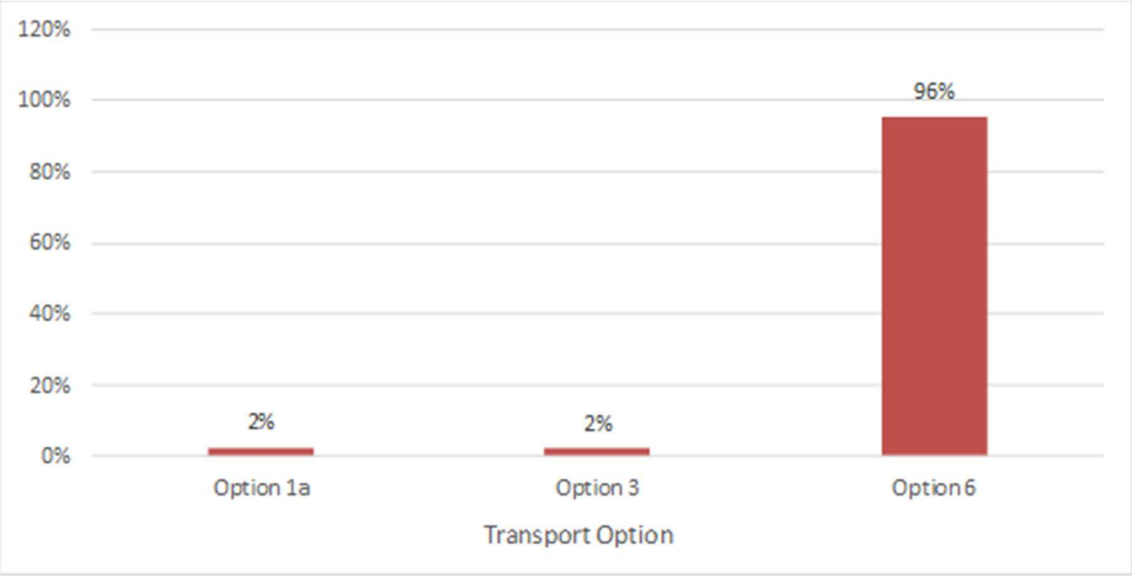

Figure 6.1 Preferred Option

6.9.8 Prior to the Public Event on 23rd January 2019, a face-to-face meeting was held in Eastriggs with members of Eastriggs Station Action Group. Appendix N presents the discussion at this meeting.

6.10 Overall Option Scoring

6.10.1 A concise overview of the Part 2 Appraisal scoring is shown in Table 6.11.

Table 6.11: Appraisal Overview against the TPO's and STAG Criteria

		Transport Planning Objectives		STAG Criteria				
		TPO1	TPO2					
Option	**Decription**	Reduce public transport journey times to improve access to key, commutable employment and educational centres from Eastriggs	Provide public transport connectivity which enables travel to and from the area across the day and across the week	Environment	Safety	Economy	Integration	Accessibility & Social Inclusion
1a	Dedicated direct bus operating between Eastriggs and Lockerbie	2	2	1	1	-2	2	2
3	Later running, increased Sunday services and express services between Eastriggs, Carlisle & Dumfries	2	2	1	0	-1	1	2
6	Re-open Eastriggs Railway Station	3	2	-1	1	-3	2	3

7 Conclusions

7.1 Introduction

7.1.1 This study has identified and evidenced the transport problems and opportunities for Eastriggs and the surrounding area, developed a set of Transport Planning Objectives to express the outcomes sought for the study, and generated and appraised a number of transport options to provide solution(s) to meet the objectives and alleviate the problems.

7.2 Problems and Opportunities Summary

7.2.1 Eastriggs is a rural community, which while connected reasonably well to Dumfries and Carlisle by bus, suffers from a lack of strategic public transport connectivity further afield in terms of a lack of direct routes and long journey times. This is especially pertinent given the recent job losses in the area now requiring people to travel further afield for work. In addition, the accessibility to and from the area impacts more significantly on those without access to a car (those who cannot afford, or prefer not to buy or run a vehicle) and those unable to drive (the young, the elderly and those less able). The current lack of strategic public transport accessibility results in a high reliance on the private car in the study area by those who do have access to a car but could and would use public transport if it provided the necessary connectivity.

7.2.2 This lack of strategic connectivity is felt across the community and particularly in terms of:

- Constrained access to employment;
- Constrained access to higher education, particularly in terms of the need of young people to leave the area to further their education after secondary school;
- Constrained access to social activities, for all.
- Making it difficult to access healthcare given the lack of a local GP in Eastriggs; and
- Making the area a less attractive proposition for in-migration.

7.2.3 The much reduced Sunday bus service operating hours curtail the ability of the local community to access employment opportunities (e.g. those requiring weekend working), and participate in social opportunities.

7.2.4 While access to the rail network can be gained at Annan and Gretna Green railway stations to join the GSWL, or at Lockerbie or Carlisle to join the WCML, poor integration between the bus and rail networks, in terms of both the integration of timetables and a lack of physical integration between bus stops with rail stations, means the rail network is not easily accessible.

7.2.5 Long interchange times create extended journey times, with analysis presented in this report highlighting the reduced connectivity to and from Eastriggs compared to the nearby similar rural communities at Annan and Gretna Green which benefit from stations. The requirement to interchange, particularly in Gretna Green, requires a 10-15 minute walk from the town centre to the station, presenting difficulty for anyone with mobility issues. Connections by public transport to Lockerbie with no direct connections and bus to bus interchange required in Annan, Gretna Green or Dumfries. Those without access to a car are significantly disadvantaged in this regard.

7.2.6 It is important to note that Carlisle is a key economic, retail and social centre for the area. Public transport access to Carlisle is by bus with a journey time far in excess of that by car and in excess of the public transport time from the neighbouring communities of Annan and Greta Green. In this regard, those resident in Eastriggs are at a significant disadvantage compared to Annan, further geographically from Carlisle, but much closer in terms of access time.

7.2.7 It is clear from the identification of problems and through the engagement exercises undertaken, that the community requires stronger strategic connectivity to access employment and further / higher education. There is potential for active travel connections to provide connections to the strategic transport network and also form part of the tourist offering of the area.

7.2.8 An important issue when considering public transport across not just the study area, but also more widely across the region, is the fragile nature of existing bus operations, with many local services reliant on local government subsidy. Budget cuts means the level of available subsidy has been reducing year on year over the last 5 years. This is undermining people's faith in the bus network and future dependence on services.

7.2.9 It is clear that a key benefit of improved connectivity to and from the study area will be in reducing the feelings of remoteness of the community and enabling local people to feel connected and part of a wider Scotland. This is especially important in terms of the long term sustainability of the community, and the retention of the economically active population and younger people in the area, while ensuring equality of access for all to the wider opportunities.

7.2.10 As such, the Transport Planning Objectives for the study were set to reflect the above:

- **TPO 1:** Reduce public transport journey times to improve access to key, commutable employment and educational centres from Eastriggs
- **TPO 2:** Provide public transport connectivity which enables travel to and from the area across the day and across the week

7.3 Options and Appraisal Findings

7.3.1 Seven options were initially developed with three options taken forward to the end of the appraisal. These were:

- **Option 1a:** RailBus to Lockerbie station: dedicated bus from Eastriggs which integrates with train arrival and departure times at Lockerbie Railway Station.
- **Option 3:** Later running, increased Sunday services and express services between Eastriggs, Carlisle & Dumfries
- **Option 6:** Re-open Eastriggs Railway Station

7.3.2 The appraisal of the options has highlighted some key points. It is not the purpose of this report to recommend one option over another, but to present the key appraisal findings for all options.

7.3.3 It is recognised that there is limited subsidy available to subsidise further bus services in the area, and that any new services, such as those proposed in Options 1a and 3 may have to come at the expense of subsidised services elsewhere.

7.3.4 Option 1a has the potential to enable improved access to Edinburgh and Glasgow, reducing the journey time differential between: public transport and the private car; and also the differential in public transport journey times from Eastriggs and those from neighbouring Annan and Gretna Green. The additional connectivity to the WCML offers increased opportunities for the community to access locations further afield as well as providing ease of access into the area from the north. The option would also help alleviate the current pressure on parking at Lockerbie station.

7.3.5 It should be noted that Option 1a is unlikely to be heavily used and unless substantially more demand for the service could be generated, would require significant support from the public purse to operate. Given the likely low passenger numbers, a much reduced 'on-demand' taxi-bus type offering is likely to be more proportionate than a schedule service bus.

7.3.6 The key benefits of Option 3 are focussed on reducing the time constraints on access to and from the area, enabling better access on a Sunday. This has specific advantages in terms of employment and social access from Eastriggs, especially in terms of shift and weekend working.

7.3.7 It is clear that there is strong local support for the reopening of a railway station in Eastriggs, with public engagement over the course of the study strongly emphasising the desire of the local community for this. While the case for Option 6, the reopening the station in Eastriggs, is highly unlikely to 'stack up' from an economic perspective, the case for such an intervention, like in many other rural locations, will be heavily focussed on the connectivity and accessibility benefits such an intervention could bring to the community. The case for intervention cannot perhaps be judged in the same way as other rail schemes and must be considered in terms of the wider social benefits to the local community and ensuring the community has equality of access. There was a very strong public preference for the opening over the station over other options.

7.3.8 The analysis undertaken has highlighted the much improved connectivity of the area that could be achieved if the station were reopened including the key benefit of significantly increasing access to jobs. In addition, the improved access to Carlisle offers greater retail and social opportunities for younger people. Journey times to key strategic centres would also be more closely aligned to those available from Annan and Gretna Green, allowing for quality of access from Eastriggs.

7.3.9 Cognisance must also be taken of the potential impact on existing bus services in the area if the rail station were to reopen. Smaller communities served by local buses i.e. Dornock may experience a reduction in bus service if the rail station were reinstated and this impacted significantly on bus patronage and hence commercial bus operation viability. This would be detrimental to the connectivity of this smaller communities. It is also important to note the financial penalty of undertaking trips by rail for those who are entitled to concessionary bus passes and the financial burden reduced bus operations may place on those even within Eastriggs (for whom the station / rail network is easily accessible but not easily *financially* accessible).

7.4 Summary

7.4.1 Overall, all options offer a number of key benefits, with Options 1a and 6 offering greater strategic connectivity potential than Option 3, but with an attached heavier financial requirement. While Option 1a provides improved connectivity to Edinburgh, Option 6 significantly improves direct public transport connectivity to Dumfries and Carlisle enabling much quicker access to jobs, social opportunities and healthcare in these major employment, social and retail centres.

Appendix A Initial Engagement and Consultation

A.1 Initial Public Consultation

A.1.1 An online public survey was produced and made available over the period 26th February 2016 – 27th May 2016. The survey asked questions on:

- Modal use;
- Most frequented destinations and the purpose of these trips;
- Problems when using various travel modes; and
- Suggested improvements to the transport network.

A.1.2 For those unable to complete the survey online, a telephone number was made available through which paper copies could be requested.

A.1.3 The survey was publicised by a variety of means as follows:

- Leaflets were delivered to 2921 households within the DG12 6 postcode area. The extent of this area is shown in Figure A.1, with Figure A.2 showing a copy of the leaflet distributed.
- Information on the survey was provided to each of the Community Councils in the study area (Eastriggs, Dornock and Creca) as well as the Royal Burgh of Annan for distribution via their internal communication network;
- A Press Release on the survey was issued; and
- Information and links to the surveys were included on the SWestrans website.

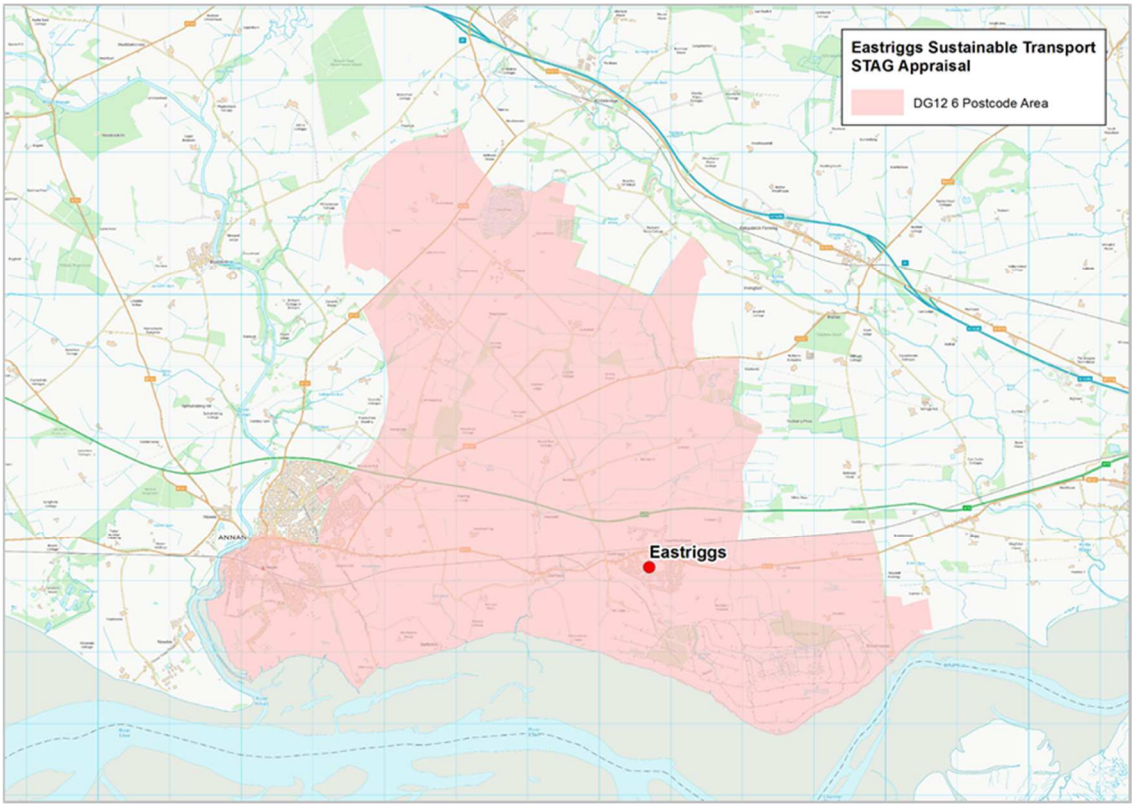

Figure A.1: Postcode Area to which Leaflets were distributed

Figure A.2: Leaflet distributed

A.1.4 In total, **176** responses were received from the survey, with the majority of respondents (82%) living within the Eastriggs area itself. A further 3% live in the surrounding area, specifically the village of Dornock. A further 14% resided in the wider Dumfries and Galloway area, with the small number of remaining respondents living outwith the region.

A.1.5 More responses were received from females (54%) (n=164) than males (43%), with a small number of people preferring not to respond to the question.

A.1.6 The survey was completed by a wide range of age groups, with the highest level of responses being generated by the 35 – 44 year old group. Figure A.1 shows the breakdown of responses by gender and age groups.

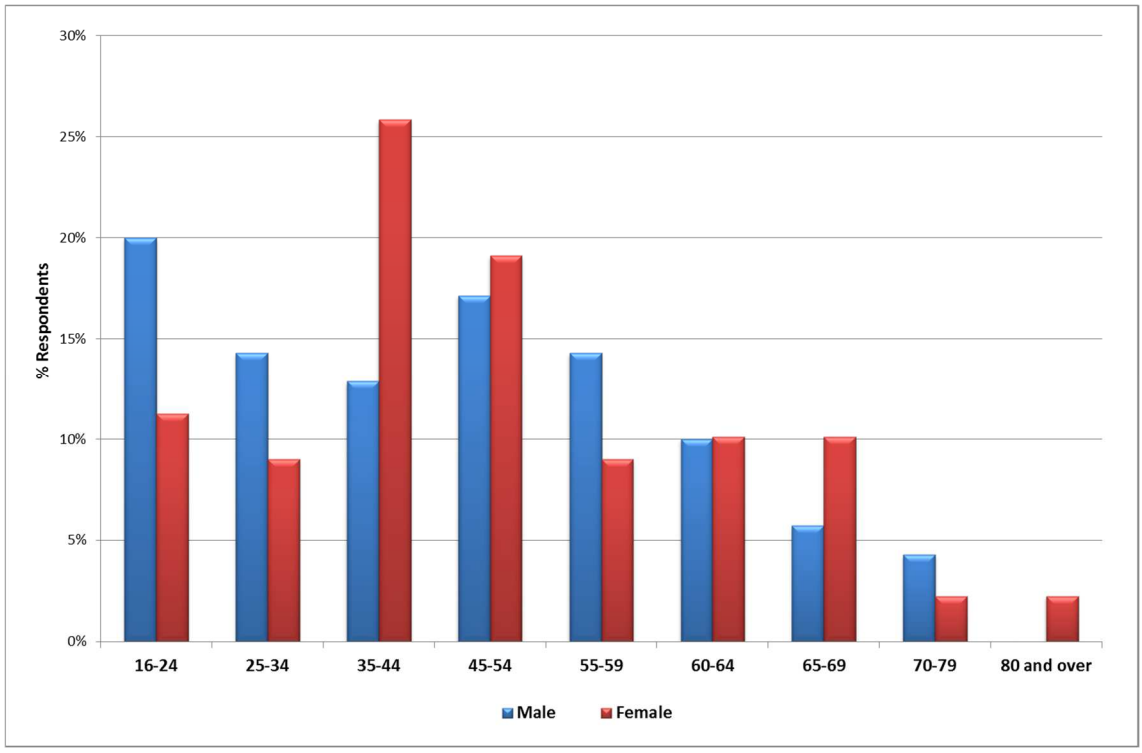

Figure A.1: Age / Gender breakdown

A.1.7 Car is the most dominant mode for those who travel in the study area, with 68% of respondents (n=176) indicating they either drive or travel as a passenger in a car as their main mode of travel on a daily basis. 23% travel by bus with a further 4% utilising rail. Active modes account for 5% of responses. Figure A.2 illustrates main mode of travel across the study area.

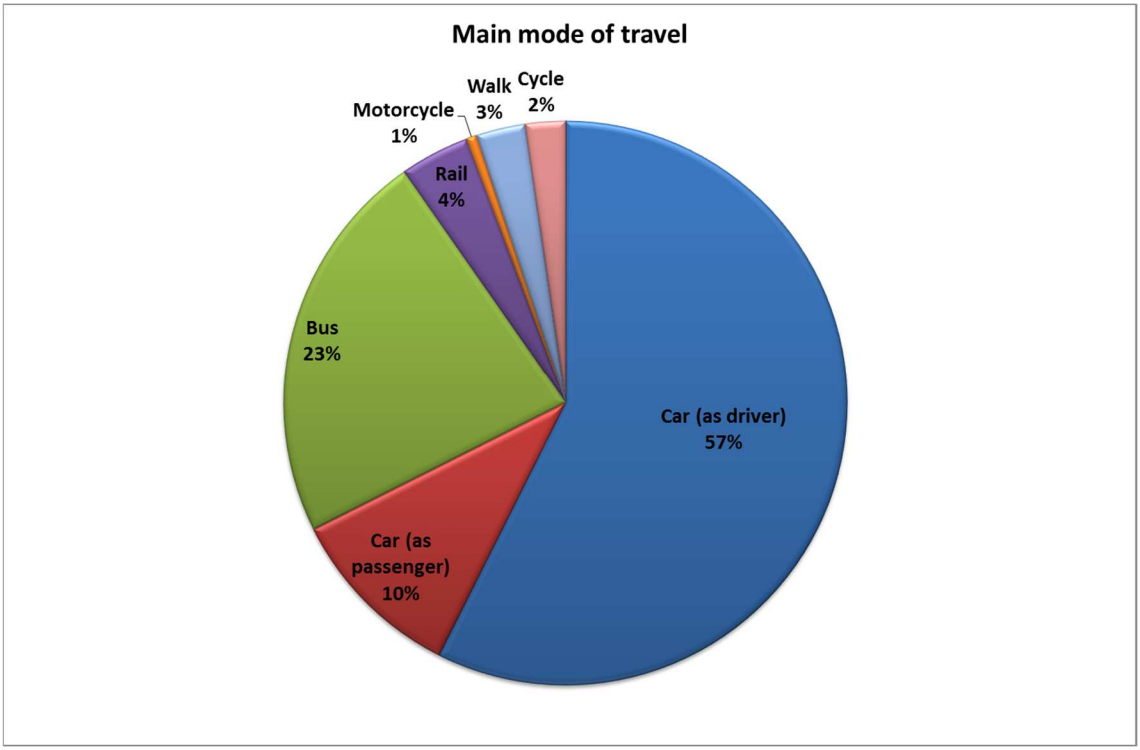

Figure A.2: Main mode of travel

A.1.8 Respondents were asked which locations they regularly travel to and the journey purpose for each location. The results are shown in Figure A.3. Results from the survey suggest that Carlisle is a key destination for the people of the area - mostly driven by retail/shopping, leisure and entertainment opportunities. There is also significant travel to Dumfries, again driven by retail and shopping.

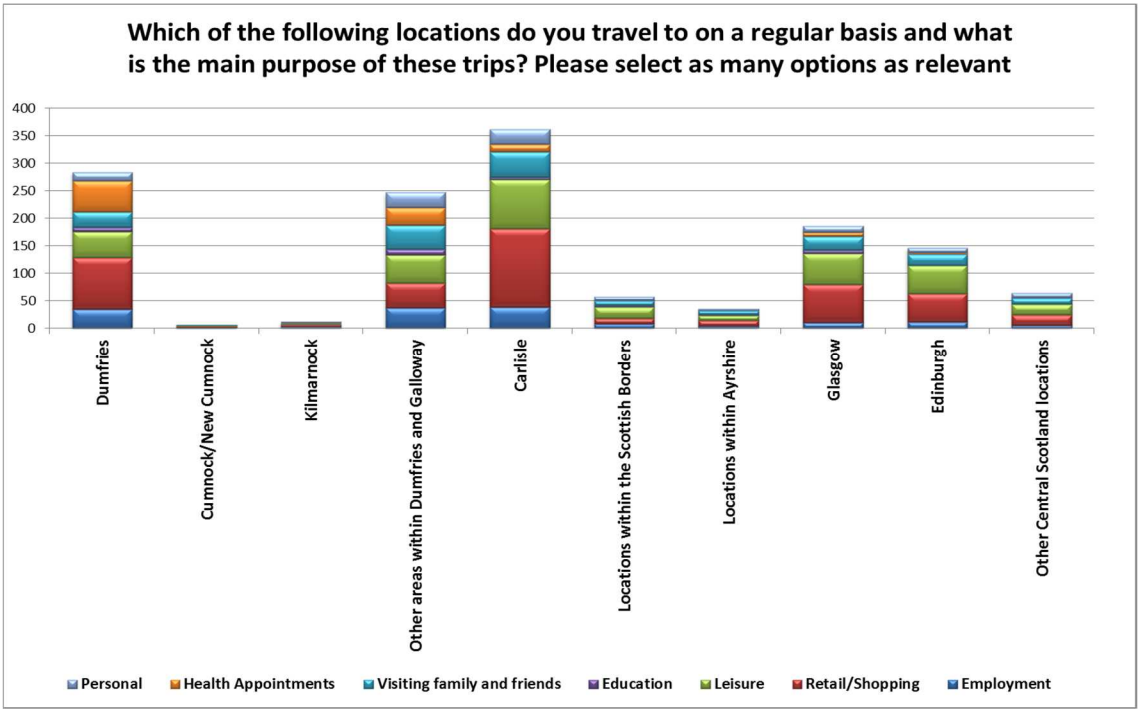

Figure A.3: Locations people regularly travel to and Journey Purpose

Problems on the Transport Network

A.1.9 Respondents were asked two questions with regards transport problems faced in the area. The initial question asked respondents to note if they believed each stated transport problem represented an issue to them. This was a multiple response question with respondents free to comment on each (n=175). Results showed that by far the most common problems were:

- Limited choice of travel modes (78%)
- Long travel times to get to destinations (57%)
- Cost of public transport (48%)
- Lack of direct public transport routes (47%)

A.1.10 The second question asked respondents to note what they believed to be **the single biggest transport problem in the area**. Whilst the three options listed above were again listed as the biggest issues, limited choice of travel modes was noted as the single biggest transport issue by 39% of respondents (n=174). Results can be seen in Figure A.4.

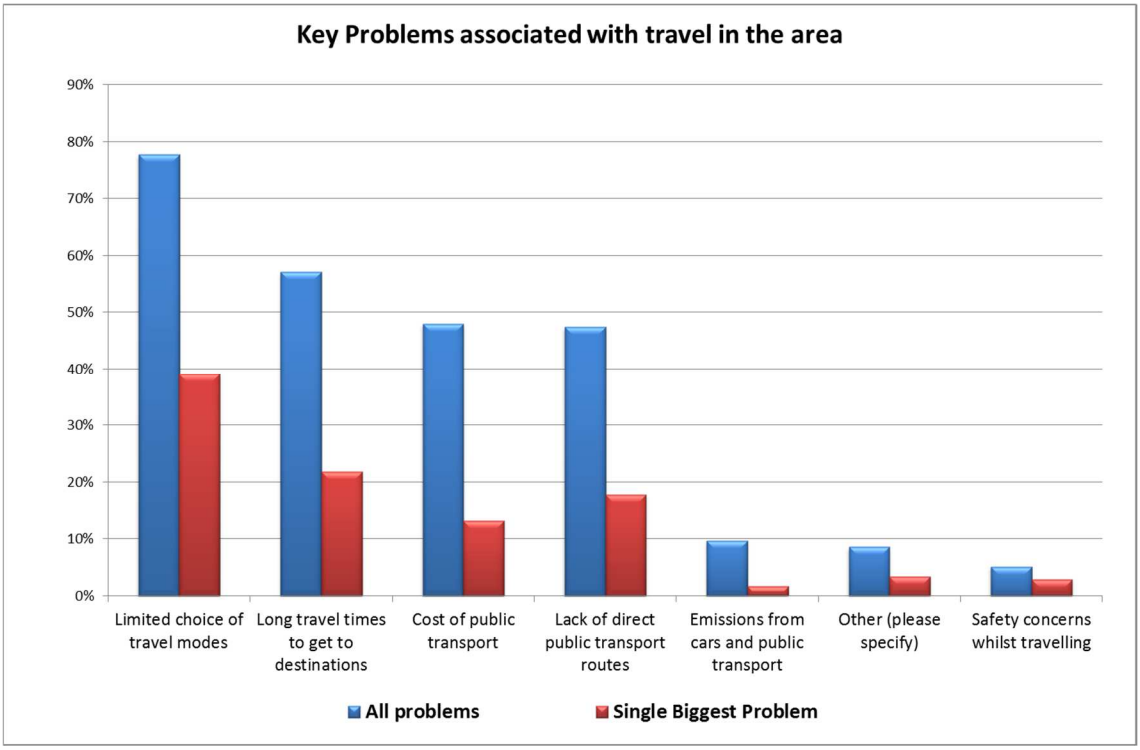

Figure A.4: Key Problems Associated with the Transport Network

Road Network

A.1.11 In total, 157 respondents identified themselves as regular drivers/passengers and were routed to the following questions with regards the road network.

A.1.12 Road users were asked to note the key issues they faced on a regular basis when travelling. Poor quality of roads was the largest issue, noted by 76% of respondents (n=155). Being caught behind HGVs and slow moving vehicles (45%) and Congestion and Delay (30%) were also noted as key issues. Figure A.5 shows the key problems faced on the road network.

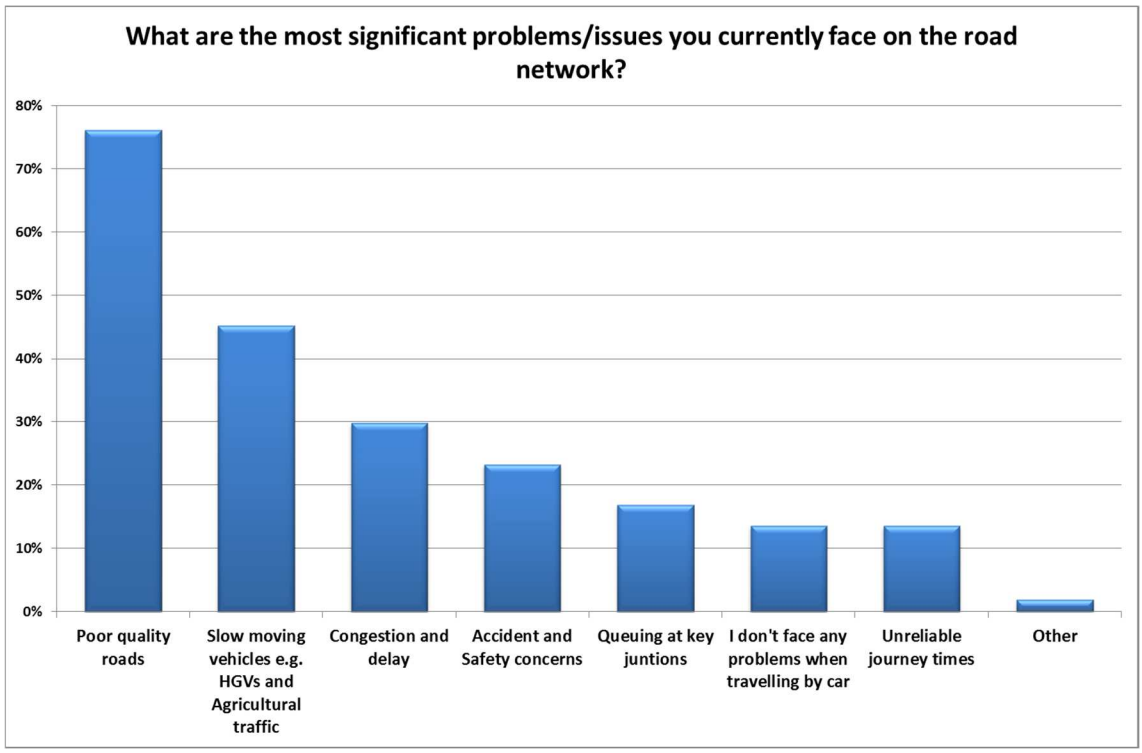

Figure A.5: Issues on the road network

A.1.13 Respondents were asked to consider how the identified problems with the road network impacted upon them. Figure A.6 show that 54% of respondents (n=139) noted that they had to begin their journey early or late to avoid delays. 'Difficulties in accessing key services such as health, education and shopping' was also a problem, as was being 'late for and missing appointments.'

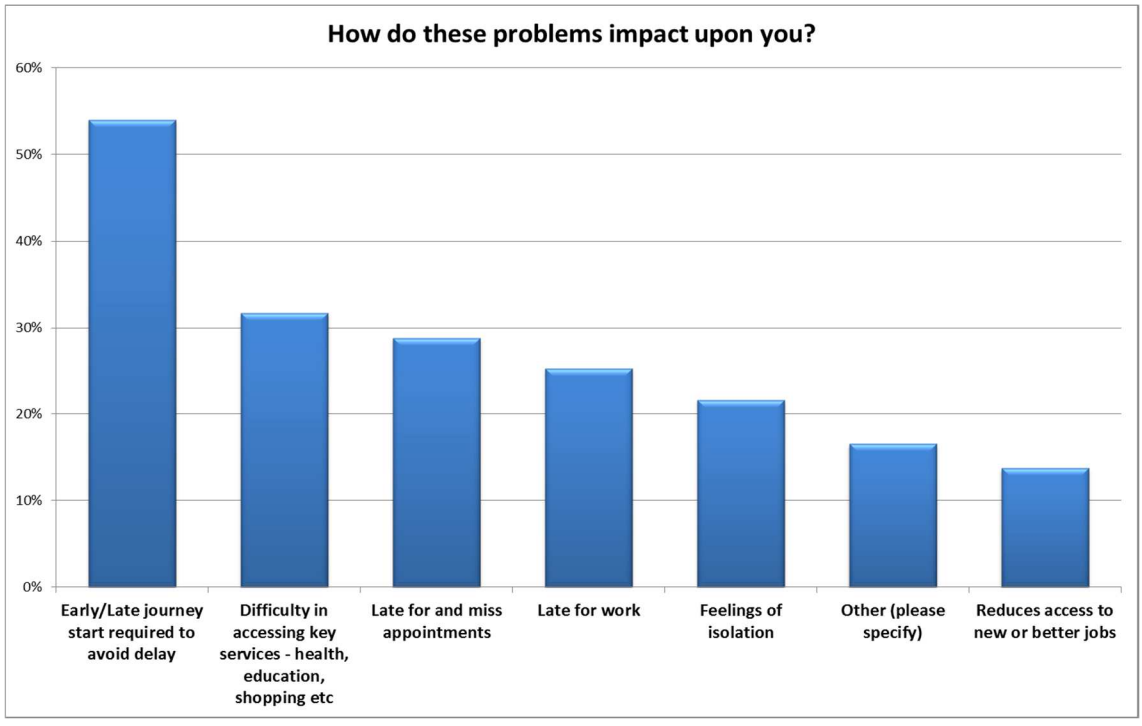

Figure A.6: Impacts of Problems on the road network

Bus Travel

A.1.14 In total, 80 respondents identified themselves as regular bus users. The remaining 91 respondents were asked why they do not currently travel by bus in the study area. 'Preferring to travel by car' and 'Long Journey Times' were the biggest reasons to not travel by bus as noted by 48% and 43% of respondents respectively (n=91). Other common reasons given were, 'Lack of direct routes to destinations', (39%) and high bus fares in the area (37%).

A.1.15 Bus users were asked to note the key issues they faced on a regular basis when travelling. Three issues were clearly prevalent, 'Long journey times' was the largest issue, noted by 71% of respondents (n=80). 'Service Frequency' (53%) and 'Journey time reliability' (48%) were also noted as key issues. Figure A.7 shows the key problems faced on the bus network.

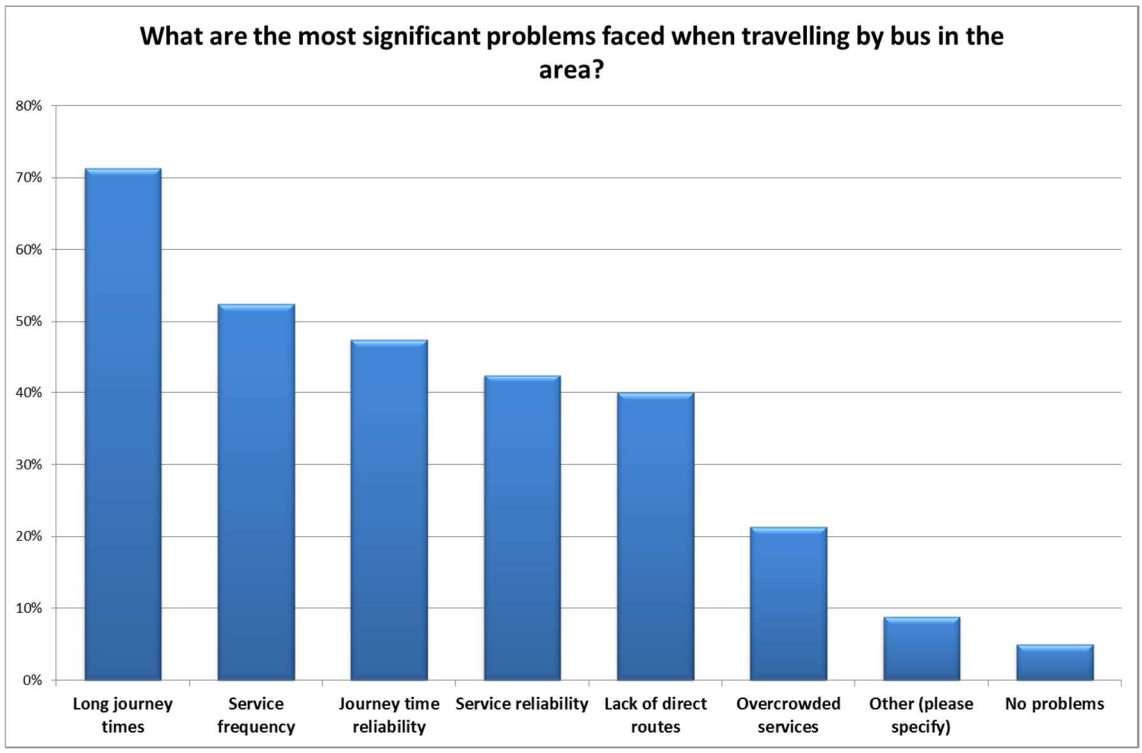

Figure A.7: Problems faced when travelling by bus

A.1.16 Respondents were asked to consider how the identified problems with bus travel impacted upon them. Figure A.8 shows that problems were broadly consistent with those faced by car users. Beginning journeys early or late to avoid delay was the biggest issue as indicated by 65% of respondents (n=77). Difficulty in accessing key services such as health, education and shopping' was also a key issue, indicated by 48% of respondents.

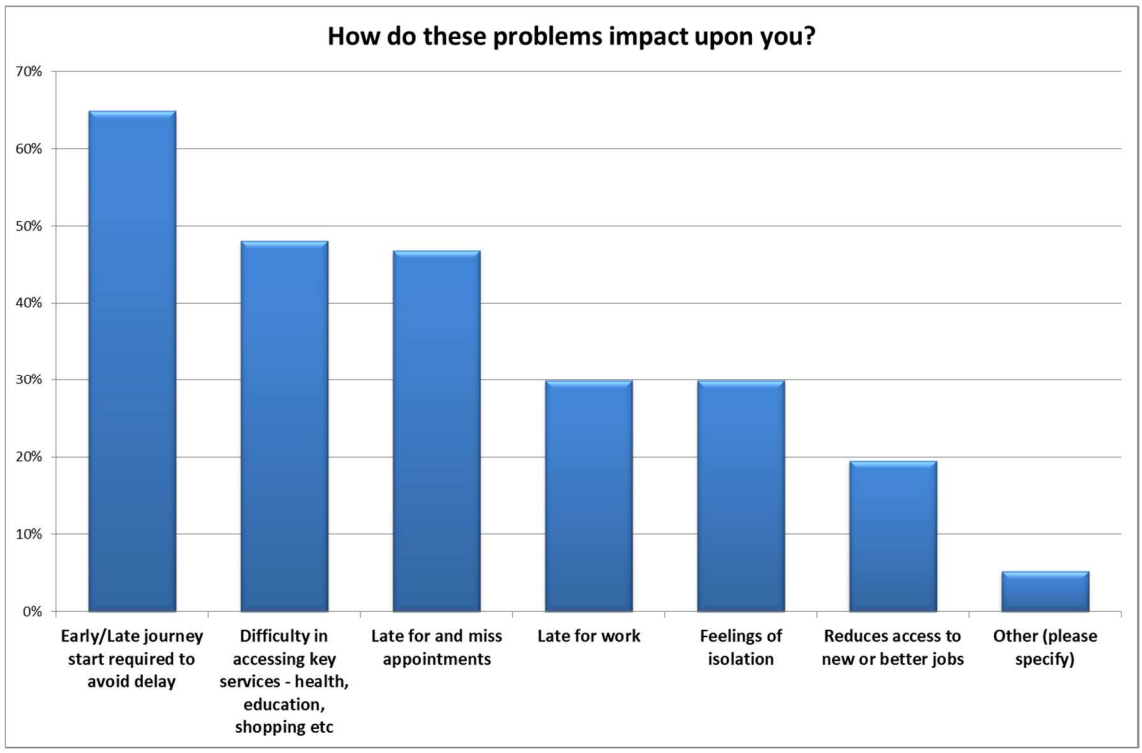

Figure A.8: Impacts of Problems with the bus network

A.1.17 All respondents were asked which improvements to the bus network would have a positive effect on them. Note that this question was not limited to bus users only. 'Reduced fares' and 'Increased bus frequencies' were judged to be the most popular improvements, suggested by 50% and 39% of respondents respectively. (n=167). 'Increased direct bus services' and 'services which run earlier in the morning and later in the evening' were also judged to be important, both being raised by 35% of respondents. Results are shown in Figure A.9.

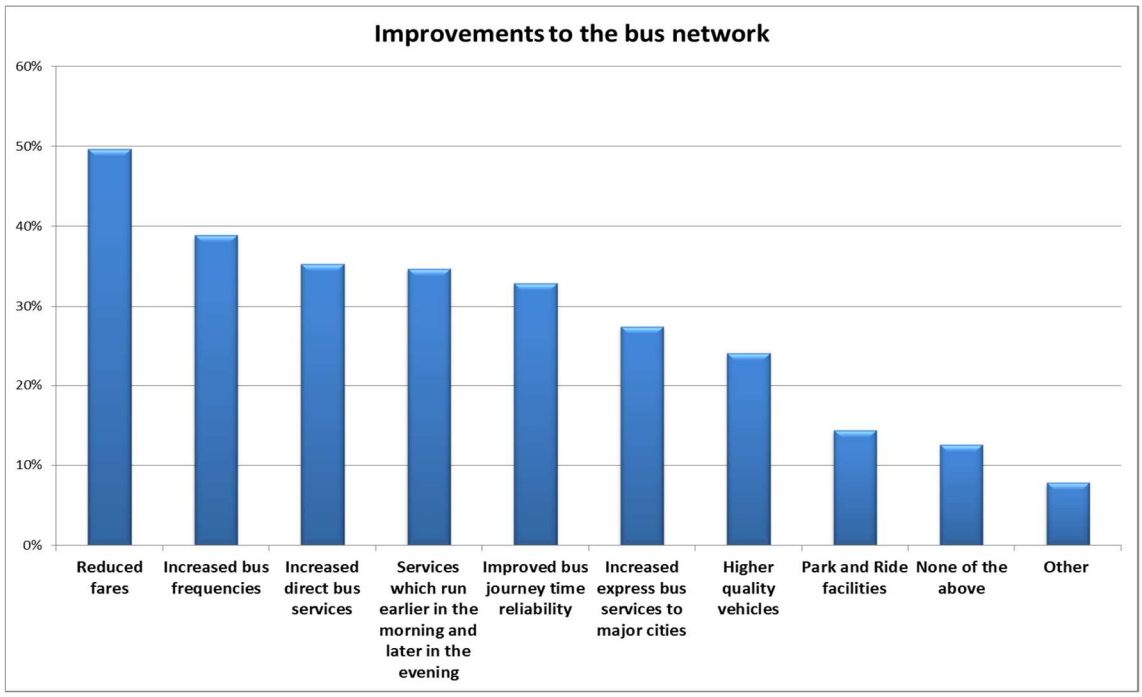

Figure A.9: Improvements to bus services

Rail Travel

A.1.18 In total, 93 respondents identified themselves as regular rail users. The remaining 80 respondents were asked why they do not currently travel by rail in the study area. Unsurprisingly, 'Nearest station is located too far away' was the biggest reasons to not travel by rail as noted by 71% of respondents (n=80). Other common reasons given were, 'Easier options than to travel to a rail station and make an onward journey (31%) and the cost of rail travel (28%).

A.1.19 Rail users were asked to note the key issues they faced on a regular basis when travelling. Given the lack of a station in the immediate area, it was unsurprising that 'No rail station close enough' was the most common answer, as noted by 76% of respondents (n=90). Long journey times to get to the rail station (41%) and rail journey times from station to destination (24%) were also noted as key issues. Figure A.10 shows the key problems faced when travelling by rail.

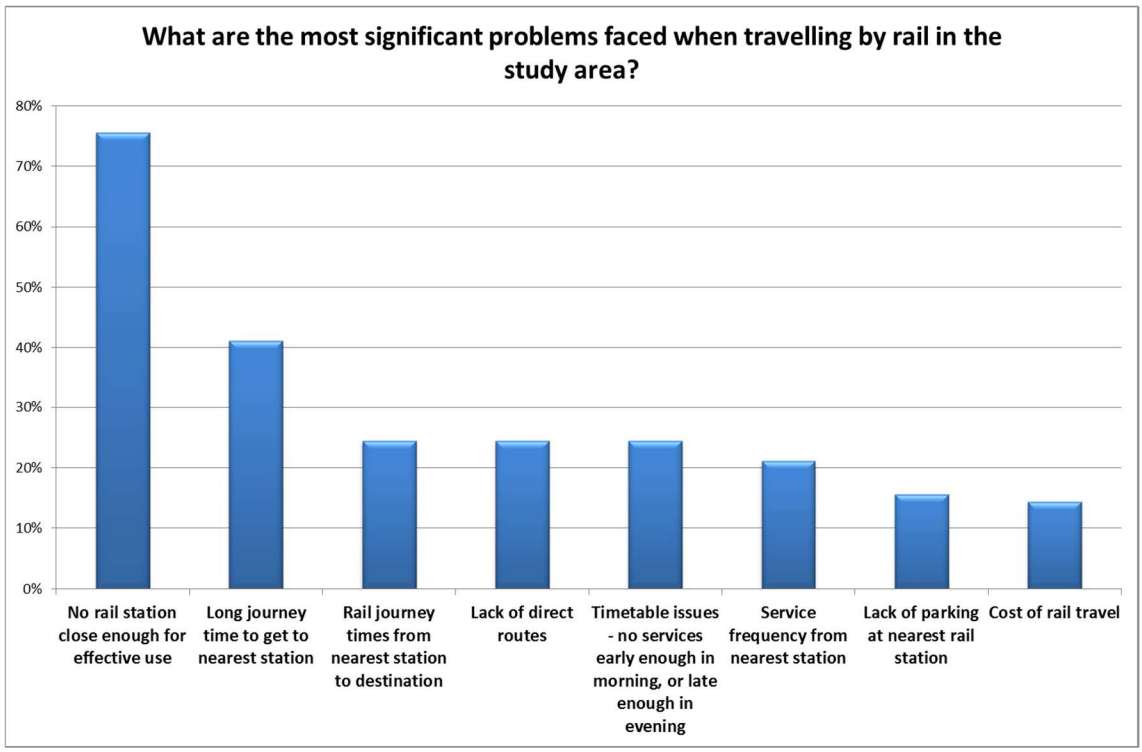

Figure A.10: Impacts of Problems faced when travelling by rail

A.1.20 Respondents were asked to consider if the introduction of a rail station within the study area would have any impact/effect upon them. In total 89% of respondents (n=171) stated there would be an impact or effect upon them should a station be opened.

A.1.21 A further question asked how the presence of a new station would impact upon the respondent. The most common answers provided included 'Increased access to retail and leisure opportunities further afield' 82% (n=152), 'Reduce journey times for travel to access services (health, social)' 70%, and 'Reduce the feeling of distance from towns and cities', 69%. Full details are provided within Figure A.11. Interestingly, the results correlate well with earlier questions on where and why people travel to and their trip purposes, suggesting travel for leisure and entertainment opportunities are important in the study area.

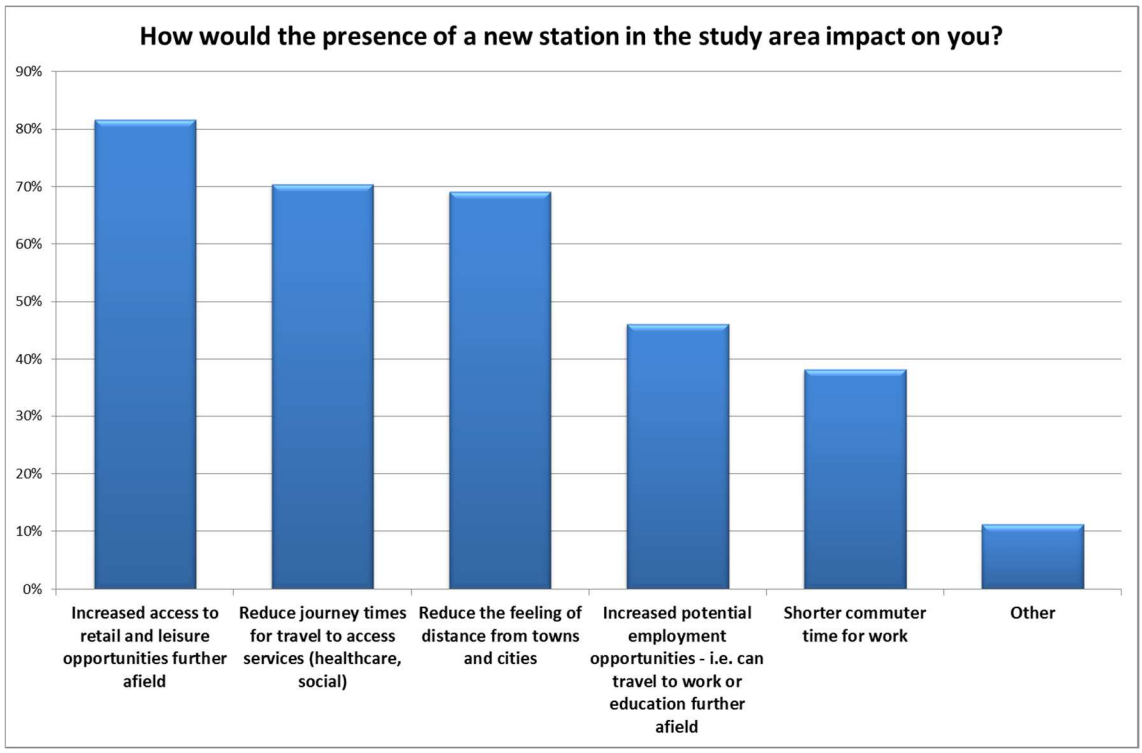

Figure A.11: Impacts of a new rail station in the study area

Active Travel

A.1.22 In total, 57 respondents identified themselves as people who regularly use active travel (walking and cycling).

A.1.23 All respondents were asked what the main barriers to using active modes of travel were. The most common response was that distances were too far to use active modes. This was suggested by (57%) (n=168). This type of answer is typical within a rural location. 'Weather' (36%), 'concerns over safety' (30%), and 'lack of available walking and cycling routes' (26%), were also deemed as barriers to active travel. The full responses are shown in Figure A.12.

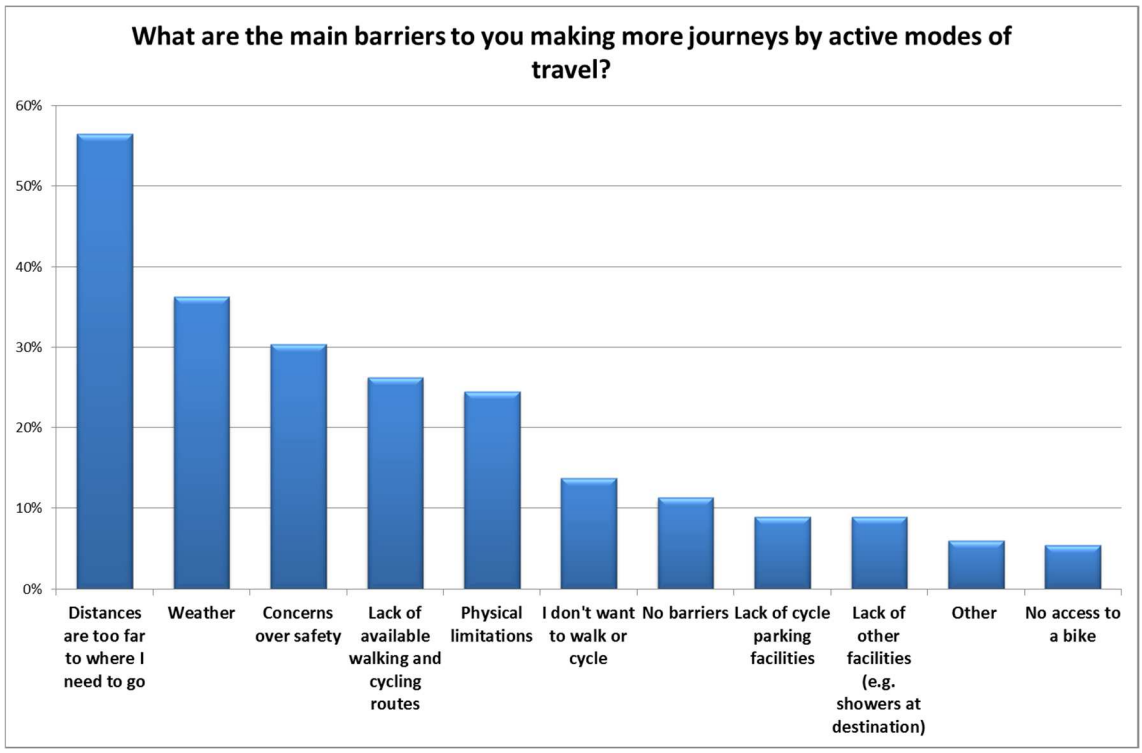

Figure A.12: Barriers to active travel

Suggested Interventions

A.1.24 Respondents were provided a list of mode specific interventions and asked to convey what sort of benefits each would have on them personally, should they be delivered. Interventions included the following:

- Road based improvements
- Additional/enhanced bus services
- Rail station at Eastriggs with appropriate rail services;
- Improved walking and cycling facilities.

A.1.25 Figure A.13 shows that respondents believe road, bus, rail and active travel improvements will all provide benefits however, respondents clearly believe the provision of a rail station at Eastriggs will provide significant benefits, with 88% of those who answered the rail intervention question (n=165) noting it would provide a major benefit.

A.1.26 Road based improvements were judged to provide major benefits by 56% (n=151), while just under half (45%) (n=146) believed additional and enhanced buses would provide only minor benefits. Interestingly, almost one third (32%) (n=145) thought that improved walking and cycling facilities would have no benefit at all.

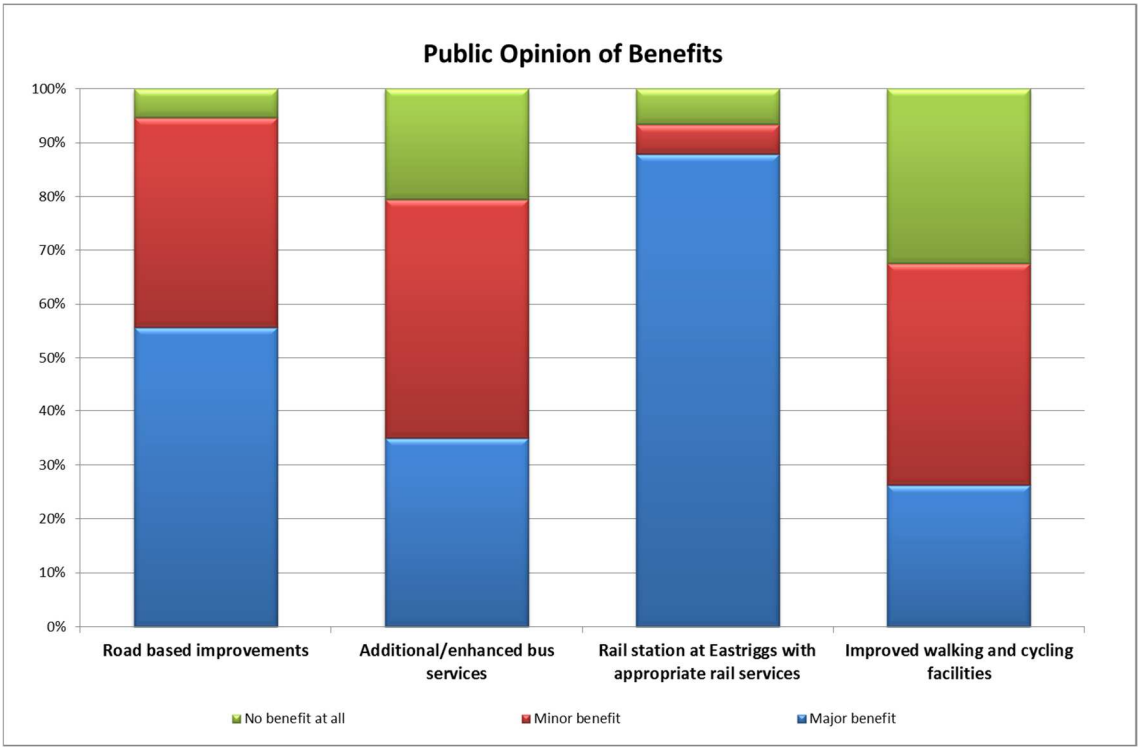

Figure A.13: Opinions on scale of benefits from mode based improvements

Open Responses

A.1.27 The survey also provided the opportunity for people to provide open comments. There were many calls for a new rail station in Eastriggs, with participants citing better disability access, improved connectivity to neighbouring towns and the cost of driving as key factors in this.

"I did live in Eastriggs but now live in Carlisle due to the lack of transport for work. I still visit friends and family there which I am put off by cost of the long expensive bus journey"

A.1.28 The timetabling and reliability of bus services was another common theme. Participants noted the services are often late, not properly integrated with trains for onward journeys, and that there is not enough information available to passengers.

"Public transport information at bus stops is very minimal making it very difficult to know when / where buses are going to be available"

"No bus service arriving at Gretna gateway for 10am on a Sunday…most gateway staff start at 10…Monday to Sat bus at 9am this is also unsuitable...please can we have a bus arriving at gateway 9.45 to suit all the workers who start at 10...there are lots of us"

A.1.29 Cycling infrastructure was also mentioned with respondents commenting on poor road condition and that they do not currently feel safe. A new cycle path from Gretna to Eastriggs was suggested.

A.2 Stagecoach (Cumbria)

A.2.1 A Meeting with Stagecoach Cumbria was held on the 8th March 2016. The consultation highlighted:

- That service 79 / 179 is a particularly well used service. Typical journey purposes vary by time of day and include access to work, education, healthcare and social activities. The busiest direction of flow on the service was felt to be from Eastriggs to Carlisle. This accords with the results of the travel to work analysis which highlights Carlisle as the key destination for employment amongst Eastriggs residents.

- In terms of specific transport issues in and around Eastriggs, Stagecoach **does not feel there are any particular issues**. While congestion in Carlisle and Dumfries can introduce delays, the effect on the service in Eastriggs is minimal and there are no issues in terms of loading or capacity.

- Overall, it was felt that **Eastriggs is currently well served by public transport**, particularly given the small size of the town.

A.3 Local bus operators

A.3.1 Discussion with **SWestrans** highlighted their current subsidising of the operation of 51 timetabled local bus services. Recent budget cuts, seeing the overall subsidy available drop from £3.74m in 2015/16 to £3.40m in 2018/19, has led to the reduction of a number of services. Reductions were aimed at services with the lowest demand level at evenings and on Sunday's in order to minimise the impact to bus users. The on-going constrained budget for subsidised services is a key issue when considering option generation for this study.

A.3.2 Telephone consultation was undertaken with **McCalls Coaches** on 14th June 2016. The discussion highlighted:

- McCalls Coaches does not provide any services in Eastriggs. The area is covered by Stagecoach. McCalls operate service 379 which connects Gretna and Annan. However, this service does not run through Eastriggs so as to not encroach on the Stagecoach operating area. Passengers on the service have noted that they would like to run through Eastriggs.

- McCalls are not aware of any issues with transport connections in Eastriggs. There is no congestion and bus stop infrastructure is adequate.

A.4 Community Transport

A.4.1 Telephone consultation was undertaken with **Annandale Community Transport Services (ACTS)** on 4th May 2016. Annandale Transport Initiative provides community transport services covering the Andale area, within which Eastriggs is located. The services provided include:

- Group transport – where vehicles are hired out to voluntary and community groups in the Annandale area. There are minibuses based in Moffat, Annan and Gretna which are available to hire;

- Registered bus services – with the organisation running two bus routes between Annan-Peebles (last Thursday of the month) and Moffat – Carlisle (1st and 3rd Thursday) under Section 22 permits which pick up in Beattock; and

- Individual transport – door to door transport for people who have difficulty using conventional public transport. This service is available for Eastriggs residents.

A.4.2 The discussion highlighted:

- The organisation has not experienced any issues when providing the above services and has not experienced any issues with congestion and bus stop infrastructure which they consider is fit for purpose; and

- They are not aware of any demand for any other services in Eastriggs and they have not been approached to provide any other services.

A.5 Transport Scotland

A.5.1 A meeting with Transport Scotland was held on 16th March 2016. Transport Scotland explained that they would need to see the outcome of the STAG Case for Change before they would be able to consider any transport proposals and provide comment. A discussion was held with Transport Scotland on 22 November 2018 to discuss their comments on the report overall. Cognisance of Transport Scotland's comments has been undertaken in the development of this report.

A.6 Rail Operators

Network Rail

A.6.1 A meeting with a representative from Network Rail was held on 27th May 2016. A number of general comments (which apply to the more detailed stages of the STAG appraisal) were noted as follows:

- Where new stations are proposed, the full STAG appraisal should include: a detailed analysis of capacity on the entire route; the timetable on the entire route; a costing exercise for construction of a new station; and costing for all mitigation measures (with the latter considered in collaboration with Network Rail and other stakeholders);
- It was noted that the effect of providing a new station on the wider rail network and the associated mitigation costs are often given insufficient consideration in appraisals; and
- In the first instance only suitably accessible stations should be considered with 'low cost' stations such as Conon Bridge (which did not meet all modern standards in terms of accessibility and provisions) to be avoided.

A.6.2 With respect to Eastriggs specifically, the following was noted:

- A significant amount of freight is carried on the Glasgow South Western line route, particularly coal, and it would be important to understand both the existing timetable and the paths reserved for freight in order to accurately assess the implications of an additional stop on the line;
- Questions were raised as to whether there would be sufficient demand for a new station at Eastriggs given the proximity of Lockerbie, Carlisle and Dumfries Rail Stations;
- This section of the route has 'closed boxes' meaning that infrastructure improvements or more signallers would likely be required in order to deliver a new station;
- The section of the route towards Gretna is single tracked which could introduce issues in terms of timetabling.

Scotrail

A.6.3 A meeting with a representative from ScotRail was held on 29th April 2016. It was noted that:

- At the moment, ScotRail is focussed on the existing commitments providing station expansions and redevelopments at and including the following areas: Perth, Stirling, Motherwell and Aberdeen;

- Whilst ScotRail does get involved with Network Rail and Transport Scotland with discussions on moving potential new stations forward, it is not ScotRail's role to identify and pursue new stations. ScotRail take guidance from the priorities set by Transport Scotland. ScotRail does suggest additional projects to Transport Scotland, but generally not in terms of new stations. Projects that ScotRail identify and suggest will often be at existing stations which it can further develop. Enhancements to parking stock being a key example. At present, the majority of activity is focussed on the North East and Inverness region.

A.6.4 It should be noted that ScotRail explicitly said it is not its role to judge station viability but it did note a number of concerns with a potential station at Eastriggs, including:

- General concerns about the population of the catchment area;
- That there are stations located relatively close to Eastriggs which may weaken the case for any additional station; and
- In areas with larger populations, such proximity to existing stations may make development of a business case difficult.

Appendix B Transport Supply and Trends

B.1 Existing Bus Services

B.1.1 There are two existing services providing bus connectivity for Eastriggs. Service 79, operated predominantly by Stagecoach (but with McCalls providing some services, running as Service 379) which runs from Dumfries to Carlisle via Annan and passes through Eastriggs. Service 179 operated Stagecoach runs from Annan to Carlisle also passing through Eastriggs. All three routes are commercial in nature.

B.1.2 On Monday – Saturday, the services together provide a half hourly service between Eastriggs and Carlisle (with a journey time of approximately 45-60 minutes) and an hourly service between Eastriggs and Dumfries (with a journey time of approximately 45 minutes). The first departure from Eastriggs to Dumfries is at 0610 and the last departure from Dumfries to Eastriggs is 2245 while the first departure from Eastriggs to Carlisle is 0600 and the last departure from Carlisle to Eastriggs is 2157.

B.1.3 Sunday services are slightly less frequent. There are six departures from Eastriggs to both Carlisle and Dumfries respectively. The first departure from Eastriggs to Carlisle is at 0950 and the last departure from Carlisle to Eastriggs is at 1820, while the first departure from Eastriggs to Dumfries is 1100 and the last departure from Dumfries is 2245.

B.1.4 While services 79 and 179 connect to Annan and Gretna Green there are no direct bus services to either rail station

B.1.5 In addition to the above scheduled services, Annandale Transport Initiative provide a range of community transport services in the area including group transport services, a door to door dial-a-ride service for those who experience difficulty using conventional bus services and a twice monthly service to Carlisle operated under a Section 22 permit.

B.1.6 Overall, services from Eastriggs to Annan, Dumfries and Carlisle are relatively regular and provide direct connections to both Annan and Carlisle Rail Stations, although a 12-minute walk is required from the Central Avenue bus terminus in Gretna to access the rail station at Gretna Green. In addition, interchange is required for any onward travel beyond Dumfries and Carlisle.

Existing Train Services

B.1.7 The nearest railway stations are Annan, 6kms to the west and Gretna Green, 8kms east of Eastriggs, both of which are on the Glasgow South Western Line.

B.1.8 From both stations there are two hourly services southbound to Carlisle and northbound to Dumfries, Kilmarnock and Glasgow Central. There are also a number of southbound trains which extend beyond Carlisle to Newcastle.

B.1.9 Table B.1 shows the typical journey times and adult fares from Annan and Gretna Green to a range of destinations.

Table B.1: Approximate Journey Times and Typical Fares

From	To	Approximate Journey Time (minutes)	Anytime single	Anytime return	Off-peak return
Annan	Carlisle	22	£7.70	£11.60	£5.40

From	To	Approximate Journey Time (minutes)	Anytime single	Anytime return	Off-peak return
	Dumfries	18	£5.40	£8.70	£5.10
	Glasgow Central	120	£17.60	£34.90	£21.70
	Edinburgh	130	£75.50	£151.00	£81.50
Gretna Green	Carlisle	13	£5.10	£8.60	£5.40
	Dumfries	26	£9.30	£13.70	£5.10
	Glasgow Central	130	£17.60	£34.90	£21.70
	Edinburgh	130	£75.50	£151.00	£151.00

B.2 Public Transport Benchmarking

B.2.1 Table B.2 compares the number of buses / trains and the average journey time to key destinations from Eastriggs and a number of other towns in Dumfries and Galloway.

Table B.2: Public Transport Benchmarking

		Eastriggs	Lockerbie	Annan	Castle Douglas
Rail Station		No	Yes	Yes	No
PT Mode Share		4%	4%	3%	5%
To Glasgow (Weekday) Number of:	Bus	0	0	0	0
	Trains	0	13	8	0
To Edinburgh (Weekday) Number of:	Bus	0	0	0	0
	Trains	0	7	0	0
To Dumfries (Weekday) Number of:	Bus	15	24	22	25
	Trains	0	0	16	0
To Carlisle (Weekday) Number of:	Bus	28	4	28	1
	Trains	0	20	18	0
To Glasgow Average	Bus	0	80	0	0

		Eastriggs	Lockerbie	Annan	Castle Douglas
Journey Time:	Trains	0	62	126	0
To Edinburgh Average Journey Time:	Bus	0	0	0	0
	Trains	0	67	0	0
To Dumfries Average Journey Time:	Bus	48	35	37	34
	Trains	0	0	18	0
To Carlisle Average Journey Time:	Bus	48	80	64	70
	Trains	0	23	22	0

B.3 Census Travel-to-Work

B.3.1 In 2011, the majority of households in both Eastriggs (80%) had access to one or more cars or vans. This is above that of both Dumfries and Galloway (78.1%) and the Scottish average (69.5%).

B.3.2 The travel-to-work analysis below makes use of 2011 Census data for Scotland at Output Area level for the mode of travel to work and at Intermediate Geography level for the distribution of travel to work patterns (as explained in Appendix D of this report). Figure B.1 shows the main mode of travel-to-work for Eastriggs residents.

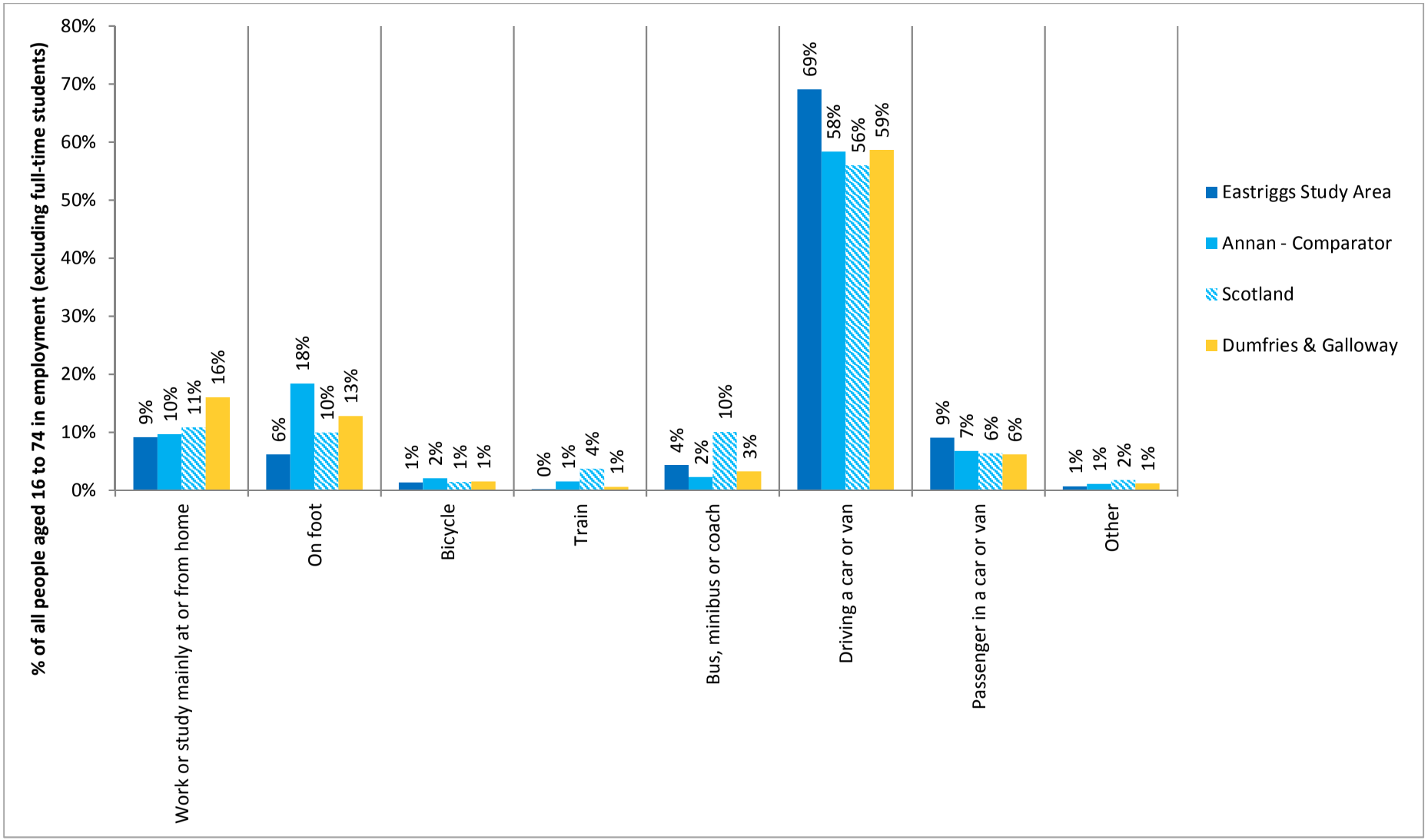

Figure B.1: Method of Travel-to-Work (Source: Census 2011)

B.3.3 As shown, the car or van is the main mode of travel-to-work for residents of Eastriggs, with 69% of residents choosing to drive to work and a further 9% travelling as car passengers. This is above that of the local and national averages and is in keeping with the data on car ownership discussed above.

B.3.4 Overall public transport use in Eastriggs (4%) is higher than that of Annan (3%), with higher levels of bus use (4%) than both Annan (2%) and Dumfries and Galloway as a whole (3%). This suggests that the bus market in Eastriggs is very competitive to enable a similar mode share.

B.3.5 Levels of walking to work are lower in Eastriggs than Annan and the Dumfries and Galloway average. This may be a reflection of the distances involved, with significant proportions commuting to Carlisle and other local towns (see below).

Key Point

The travel-to-work market is dominated by the private car / van. However, bus use is relatively high, with an overall public transport mode share which is higher than Annan and equivalent to Dumfries and Galloway as a whole. This suggests the bus market is relatively well developed.

B.3.6 Table B.3 shows the main work destinations for people living in Eastriggs - the key points are:

- the majority of those who live in Eastriggs work in other towns within the Dumfries and Galloway local authority area;
- the residents from Eastriggs mainly commute to Gretna and Eastriggs (669 people), Annan (415 people), Dumfries South (72 people) and Lockerbie and Mid Annandale (71 people);
- outside of Dumfries and Galloway, the main destination is Carlisle, with 24% of Eastriggs residents commuting to the city; and
- the proportion of residents working at or from home is high at 12%[11].

B.3.7 It should be noted that since the 2011 Census, there have been a number of large job losses in the area, specifically at Pinneys of Annan. As such, these figures are likely to have altered.

Table B.3: Distribution of Travel-to-Work Patterns – Main Work Destinations (Source: Census 2011)

Destination	Proportion of Eastriggs Residents	% of Eastriggs Residents
Carlisle	773	25%
Gretna and Eastriggs	669	22%
Working at home	373	12%
No fixed place of work	293	9%
Annan North	265	9%
Annan South	150	5%
Dumfries South	72	2%

B.3.8 Figure B.2 constitutes the graphic representation of the figures included in Table B.3 and reinforces the idea that residents in the study area mostly commute locally.

[11] The figure for working from home differs from that reported in Figure B.1 because of the different geographic level at which data is reported (see D.1.3)

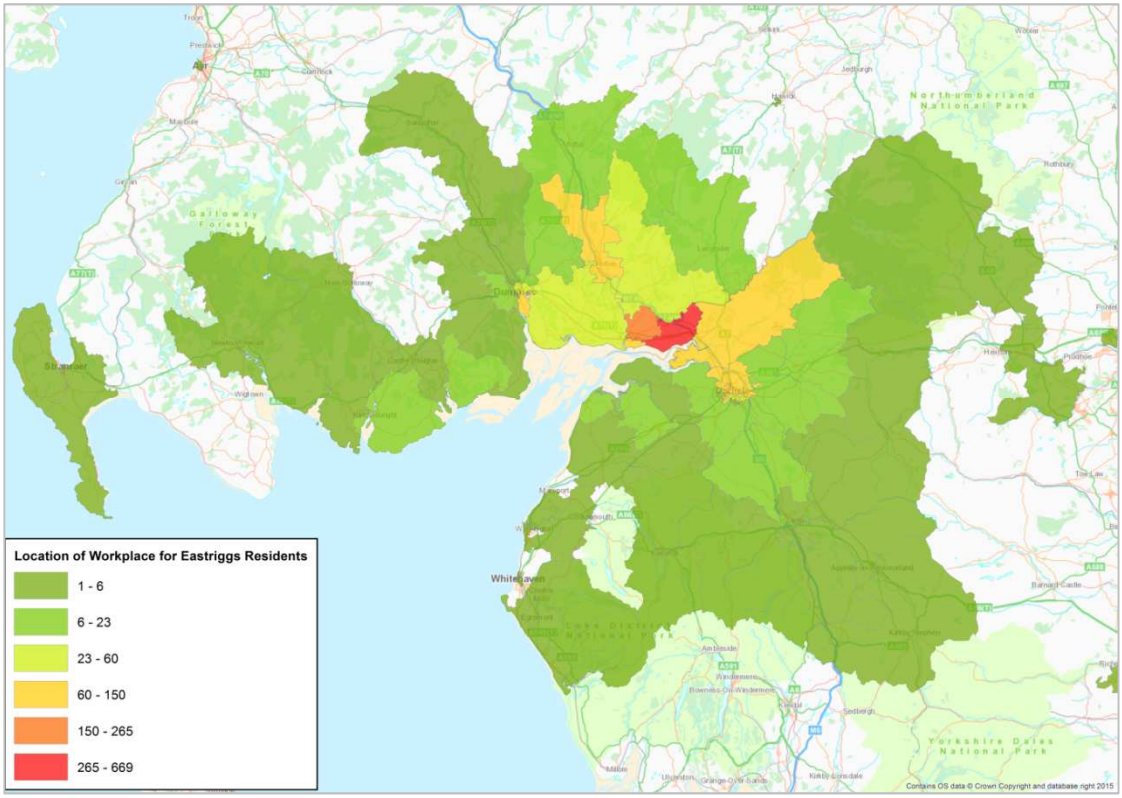

Figure B.2: Distribution of Travel-to-Work patterns – Main Work Destinations (Source: Census 2011)

B.3.9 Table B.4 displays the origins of those people who normally reside in Scotland and work in Eastriggs. As shown, the majority of people residing in Scotland who work in Eastriggs live in Gretna and Eastriggs (51%) and other local towns within Dumfries and Galloway.

B.3.10 It is noted that the Scottish Census travel to work dataset only reports on the employment location of those people who reside in Scotland. **As a result, the figures below do not include people who reside in England and work in Eastriggs**.

B.3.11 Again, it should be noted that since the 2011 Census, there have been a number of large job losses in the area, specifically at Pinneys of Annan. As such, these figures are likely to have altered.

Table B.4: Distribution of Travel-to-Work Patterns – Main Places of Residence (Source: Census 2011)

Origin	Number of people working in Eastriggs	% of Eastriggs Workforce
Gretna and Eastriggs	669	51%
Annan North	185	14%
Boreland and Ecclefechan	114	9%
Annan South	96	7%
Langholm and Canonbie	38	3%
Lockerbie and Mid Annandale	28	2%
Lower Annandale and South East Dumfries	28	2%

Key Point

The majority of residents in Eastriggs commute locally within Dumfries and Galloway, however 25% of study area residents commute to Carlisle for employment, highlighting Carlisle as a key economic centre from the area.

Appendix C Accessibility Baselining

C.1 Car Drive Time Accessibility

C.1.1 Experian UK data was used to calculate car drive time accessibility for the study area. Figure C.1 illustrates car drive times in the AM peak period (0700-0959) from a central point in Eastriggs. The isochrones indicate the differing drive times in five minute bands from 5 minutes to 30 minutes, which was chosen as the upmost value someone would drive to use a potential rail station at this location.

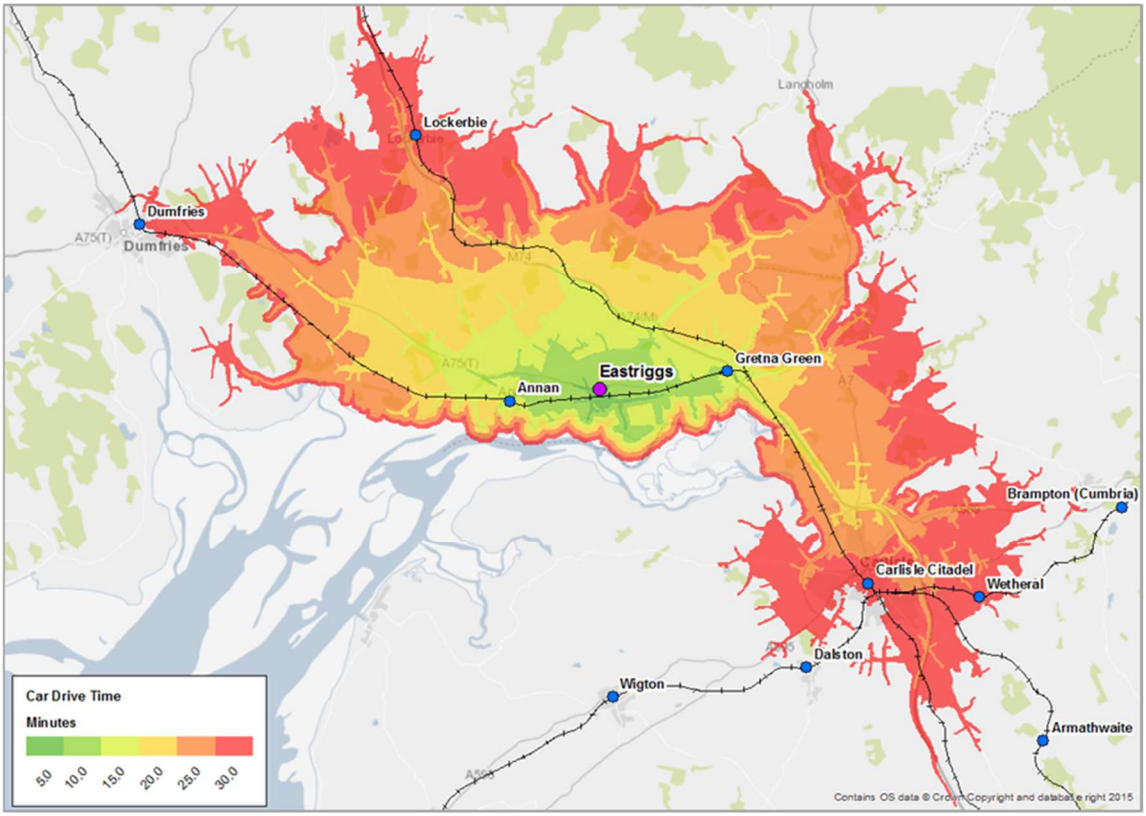

Figure C.1: Car Drive Times in the AM Peak Period (0700-0959)

C.1.2 Figure C.2 highlights the potential population catchment within each of these five-minute time bands. The numbers produced are based on 2011 census population data and represent total population. Each person in the figure represents 1,000 people.

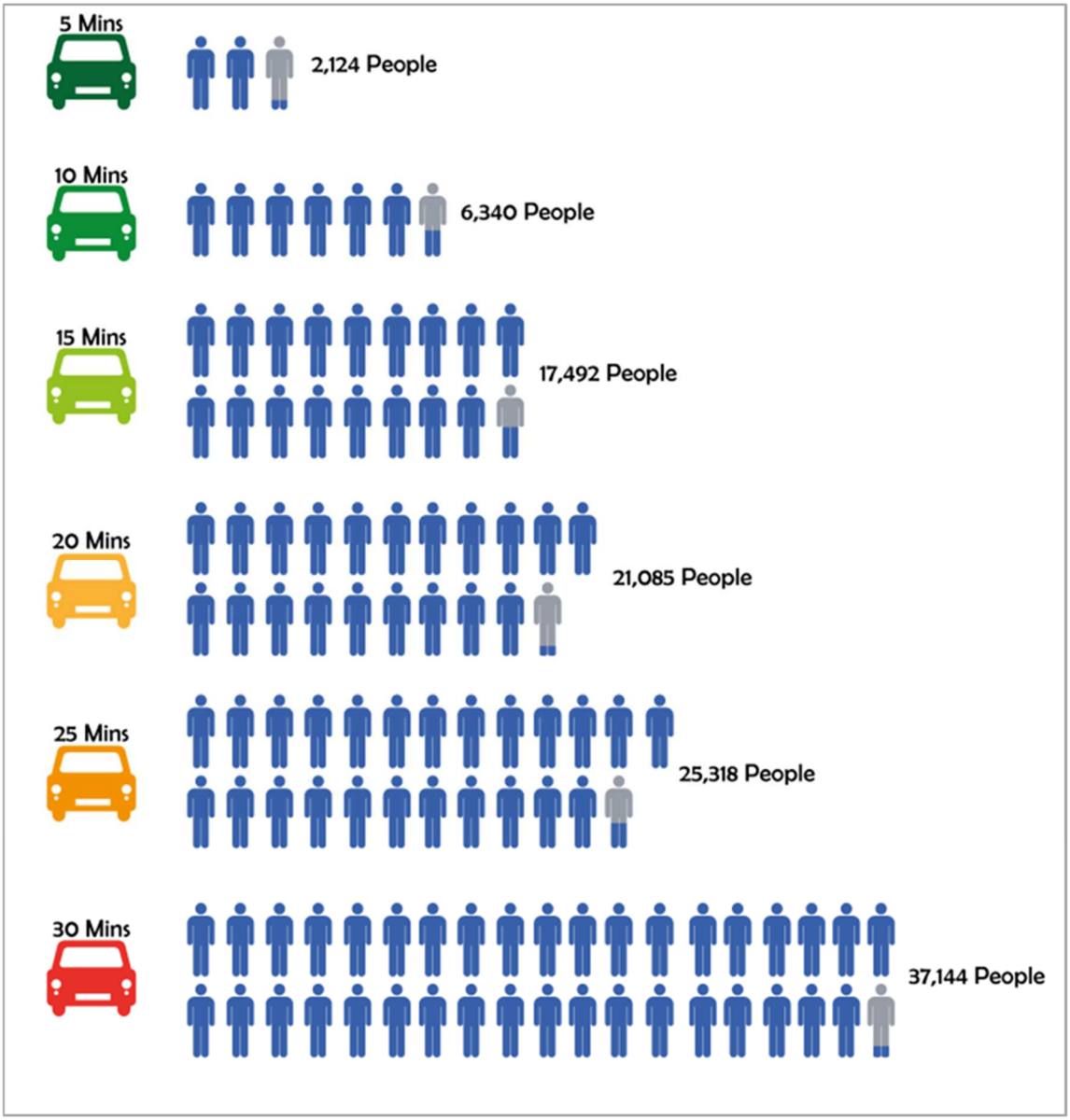

Figure C.2: Population Catchment in Five Minute Time Bands

C.1.3 As can be seen in Figure C.2 there is a considerable population catchment within 30 minutes of Eastriggs. As time progresses past 10 minutes, the population increases by almost triple the value within 10 minutes. Using a more conservative travel time of 20 minutes would still provide a potential population catchment of over 21,000 people.

C.1.4 Due to the geographic location of Eastriggs, it sits within two catchment areas for Annan rail station to the west and Gretna Rail Station to the east and, therefore, these figures will include a significant proportion of people who are currently already travelling by rail by either one of these stations. It is also important to look at the destination of travel in this analysis, as it may prove more beneficial to travel to Lockerbie rail station which sits on the West Coast Mainline and provides quicker connections to both Glasgow and Edinburgh. Lockerbie can be reached within 25 minutes of Eastriggs.

C.2 Public Transport Accessibility

C.2.1 TRACC software can be used to map the public transport accessibility of a settlement. It takes account of timetables in their entirety, including frequency, length of operating day and interchange times. However, it does not account for walk times to bus stops / rail stations or the quality / reliability of the services.

C.2.2 Figure C.3 shows the output from TRACC Accessibility software which shows how far people can travel using the current public transport services from Eastriggs in the AM Peak (0700-0959).

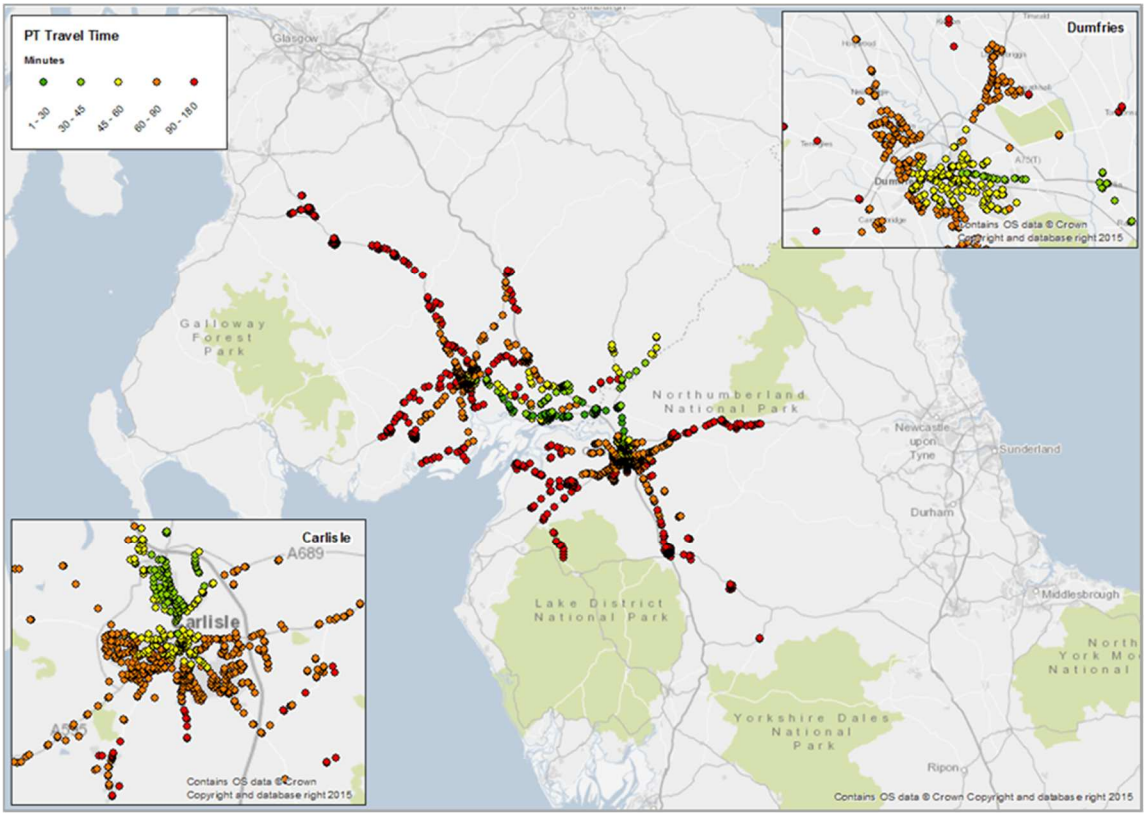

Figure C.3: Public Transport Accessibility - AM Peak

C.2.3 As can be seen in Figure C.3, travel is mainly restricted to within the Dumfries and Galloway local authority and northern Cumbria. Dumfries and Carlisle can both be reached within an hour, but beyond these two main towns, accessibility is mainly localised. This is especially true in terms of travel within an hour of Eastriggs which is mainly limited to the local area.

C.2.4 Travel times in the AM Peak are further highlighted in Figure C.4, which sets out the travel time by public transport from Eastriggs in the AM Peak to each of the 8 main towns in the local area. Between 0700 and 0959, Kirkconnel Rail Station is the most northerly extent that can be reached using public transport. Both Dumfries and Carlisle can be reached within 50 minutes.

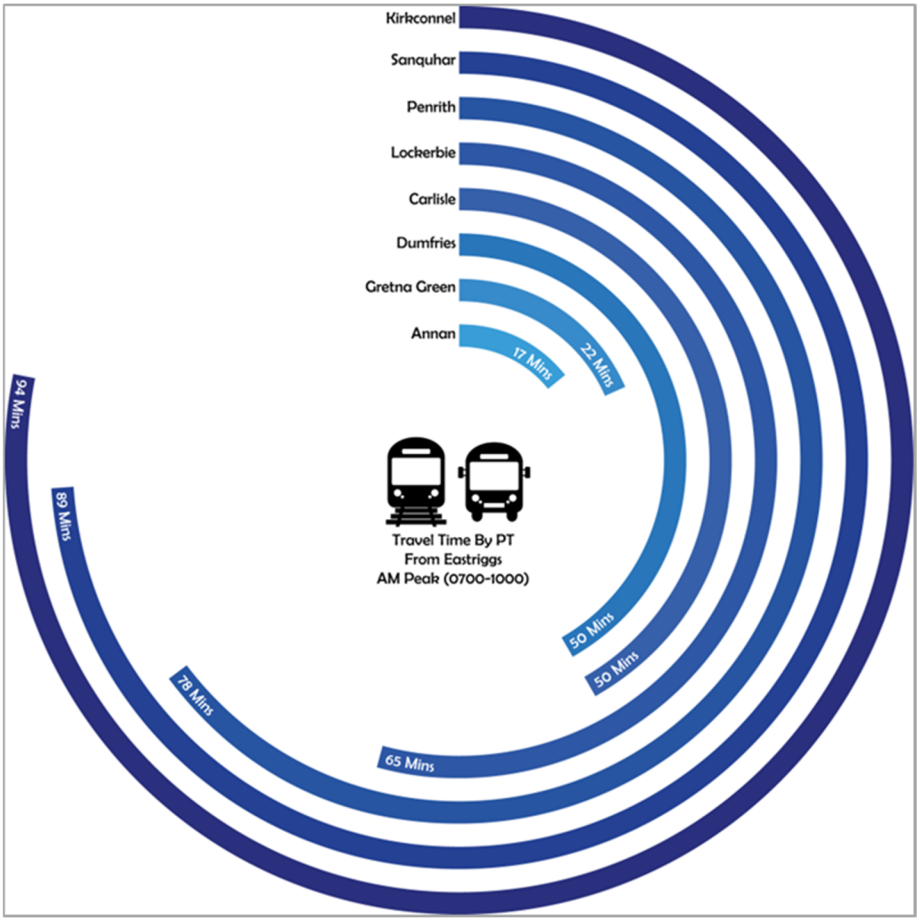

Figure C.4: Public Transport Accessibility – AM Peak - Travel times

C.2.5 Figure C.5 shows how far people can travel using the current public transport services to Eastriggs in the PM Peak (1600-1900).

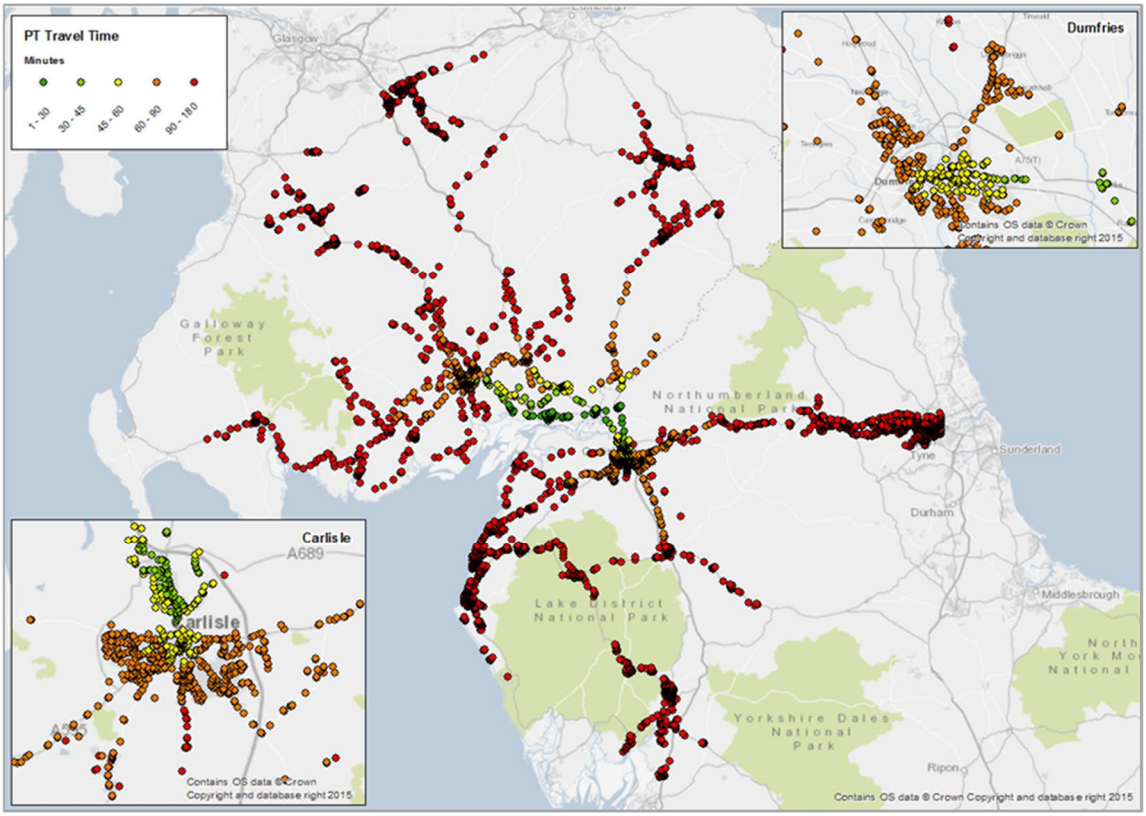

Figure C.5: Public Transport Accessibility - PM Peak

C.2.6 Figure C.5 demonstrates that:

- It is possible to travel to Eastriggs in the PM peak from a further extent by public transport than vice versa in the AM Peak. Eastriggs can be reached from as far north as Motherwell, Newcastle in the east, Newton Stewart in the west and Kendal to the south. Travel times from Dumfries and Carlisle stay relatively similar, although access from Carlisle becomes quicker. Again within an hour's travel time, only really local movements can be made.

C.2.7 Travel times in the PM Peak are further highlighted in Figure C.6 which sets out the travel time by public transport to Eastriggs in the PM Peak to each of the 8 main towns in the local area. In general, between 1600 and 1900, travel times to Eastriggs from these towns is marginally quicker than travelling from Eastriggs in the AM Peak.

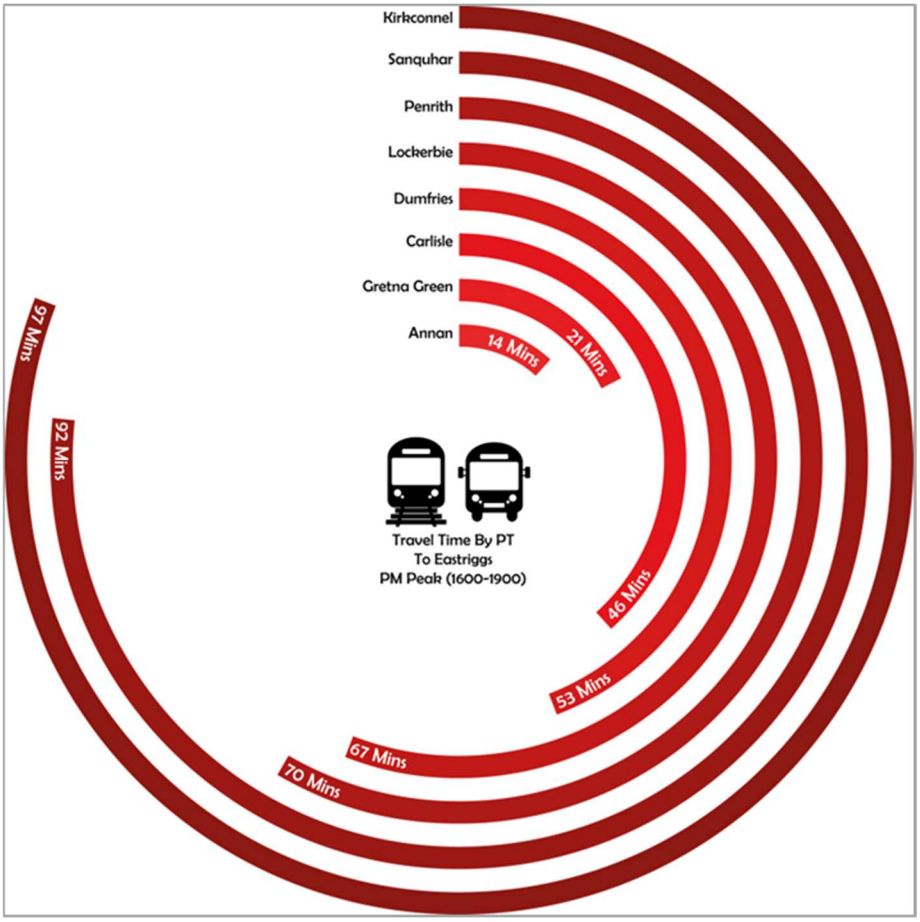

Figure C.6: Public Transport Accessibility – PM Peak - Travel times

C.2.8 Table C.1 shows a comparison of approximate public transport travel times compared to that of the private car and shows, in most cases, the much longer public transport times compared to travel time by car. The exception to this is travel to Gretna (and also Annan) for which public transport travel time is approximately equivalent to the car. Note that the travel times are taken in uncongested conditions for the car, and for public transport travel times take the fastest journey time possible over the entire day without any inclusion of walk or wait time at bus/rail stops at journey origin.

Table C.1: Approximate Public Transport vs. Private Car Journey Times

	Travel Time To (minutes)									
	Dumfries		Gretna		Lockerbie		Carlisle		Edinburgh	
From	Car	PT	Car	PT	Car	PT	Car	PT	Car	PT
Eastriggs	25	50	12	12	25	70	30	45	110	140

C.3 Access to Employment - Hansen Indicators

C.3.1 An important consideration is access to the jobs market. Fast, frequent and reliable connectivity to employment is of considerable importance to the study area. Such accessibility can be modelled using what are known as 'Hansen Indicators', which provide a measure of accessibility from one datazone to all other datazones, weighted by the number of jobs in each, with high scores indicating good accessibility and low scores suggesting there is poor accessibility to jobs.

C.3.2 Figure C.7 shows the Hansen related accessibility indicators for Eastriggs. In developing this indicator, accessibility was measured from the settlement to all datazones within the Dumfries and Galloway local authority boundary. Areas in dark red have the poorest accessibility to the jobs, progressively improving through to the green areas, which have the best accessibility.

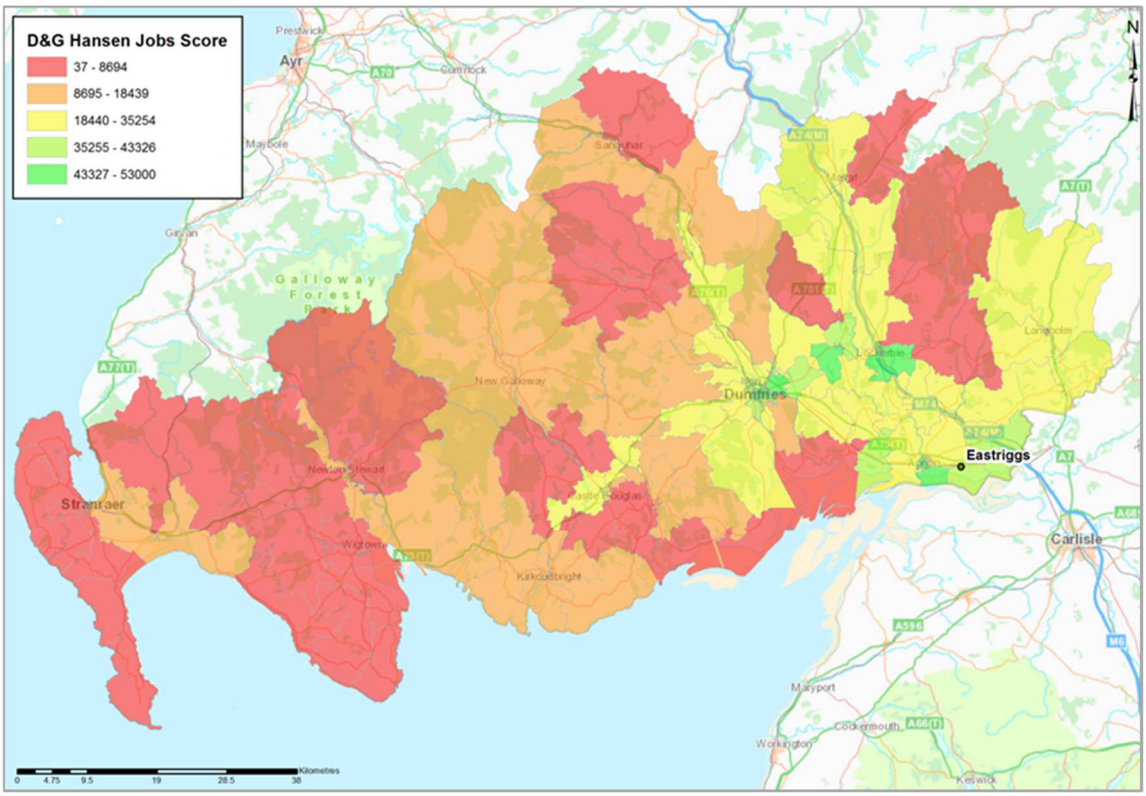

Figure C.7: Hansen Accessibility Indicators for the Eastriggs Study Area

Appendix D Socio-Economic Data Analysis

D.1 Introduction

D.1.1 To support the identification of problems and opportunities, and recognising that transport is a critical enabler of economic development and regeneration, a key step in the process of identifying problems and opportunities was to review the socio-economic profile of the Eastriggs study area. The review considered the socio-economic profile of the study area considering key issues such as population, the labour market, deprivation and property.

D.1.2 The guidance is clear that the resource invested in STAG appraisals should be proportionate to the size of the study area and schemes in question. The analysis undertaken has been based on a review of the relevant secondary data sources and attempts to draw out the main points of relevance rather than provide an exhaustive review of every area. The data for Eastriggs is set against the local authority and national averages. In addition, for comparison purposes, data is also provided for Annan, the closest town to Eastriggs with an existing rail station.

Data Geography

D.1.3 Due to the need to provide complete anonymity when reporting socio-economic data, the various datasets used in this chapter are only made available at specific geographic levels, as shown in Figure D.1.

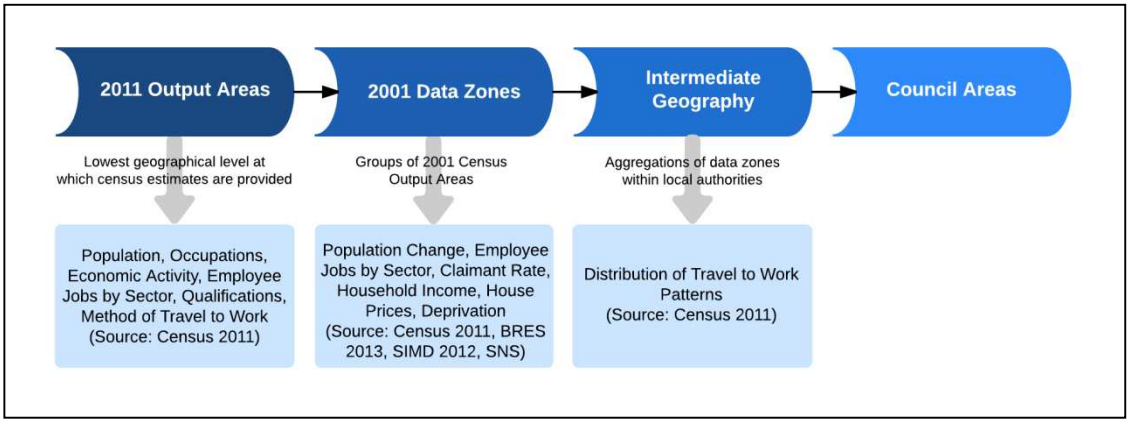

Figure D.1: Data Used for Analysis by Different Geographic Levels

D.1.4 Figure D.2, Figure D.3, and Figure D.4 show the geographic area covered by each of the above geographic levels for both the study area and Annan. As shown, while the output area and datazone level boundaries are comparable, the intermediate zone level (the lowest level at which origin destination travel to work data is available), covers a much larger area, with one zone extending to Gretna and east of the A74(M). This will introduce a bias in the data which should be borne in mind when interpreting the results.

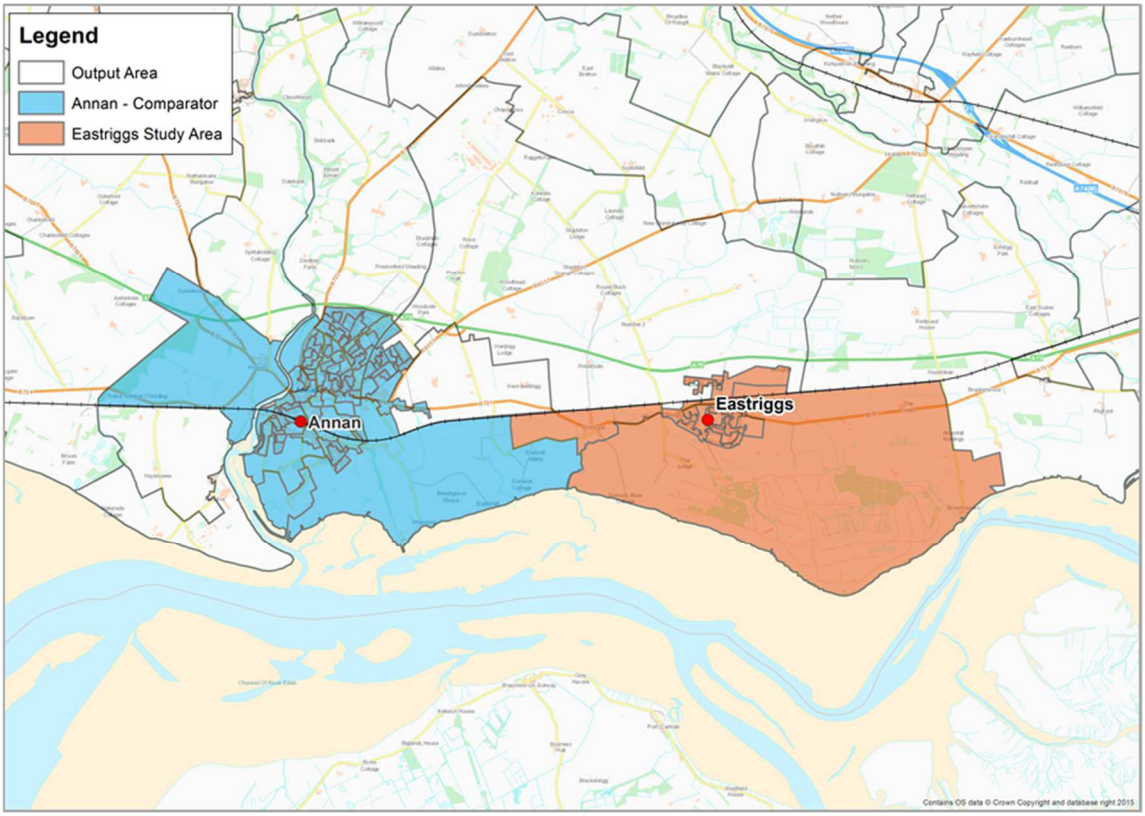

Figure D.2: Study Area and Annan Output Area Boundaries

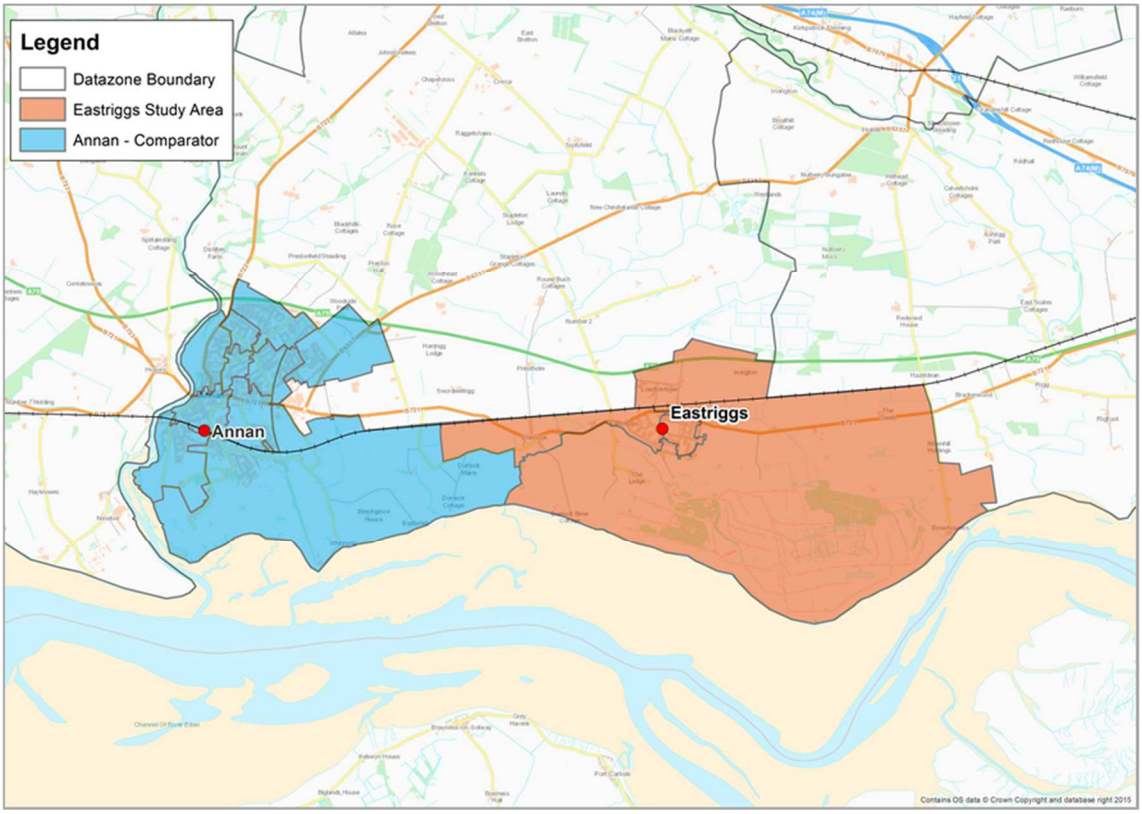

Figure D.3: Study Area and Annan Datazone Boundaries

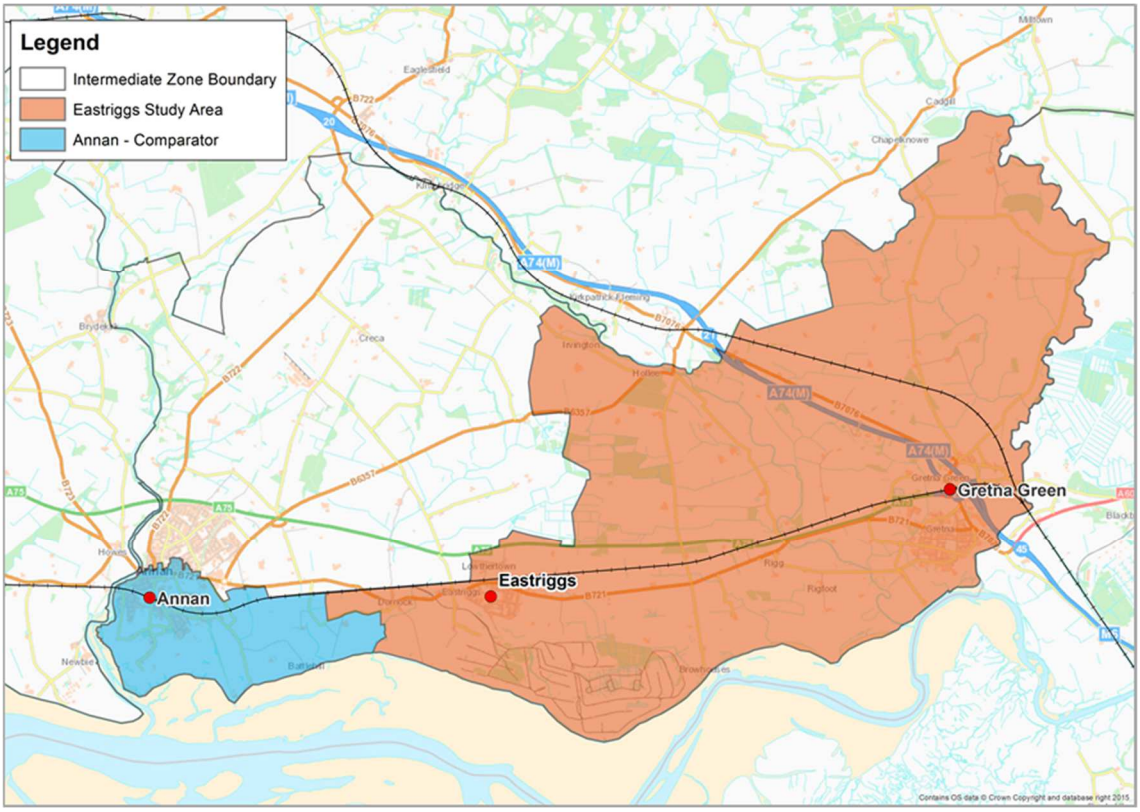

Figure D.4: Study Area and Annan Intermediate Zone Boundaries

D.2 Population

D.2.1 The population of Eastriggs increased by 2% between 2002 and 2013 according to mid-year population estimates as shown in Figure D.5. This is equivalent to that of Dumfries and Galloway as a whole (2%) but lower than that of Scotland (5%). Over the same time period, the population of Annan grew by 4%, suggesting that Annan is a more popular location, perhaps, in part, as a consequence of the enhanced transport connections offered by the town.

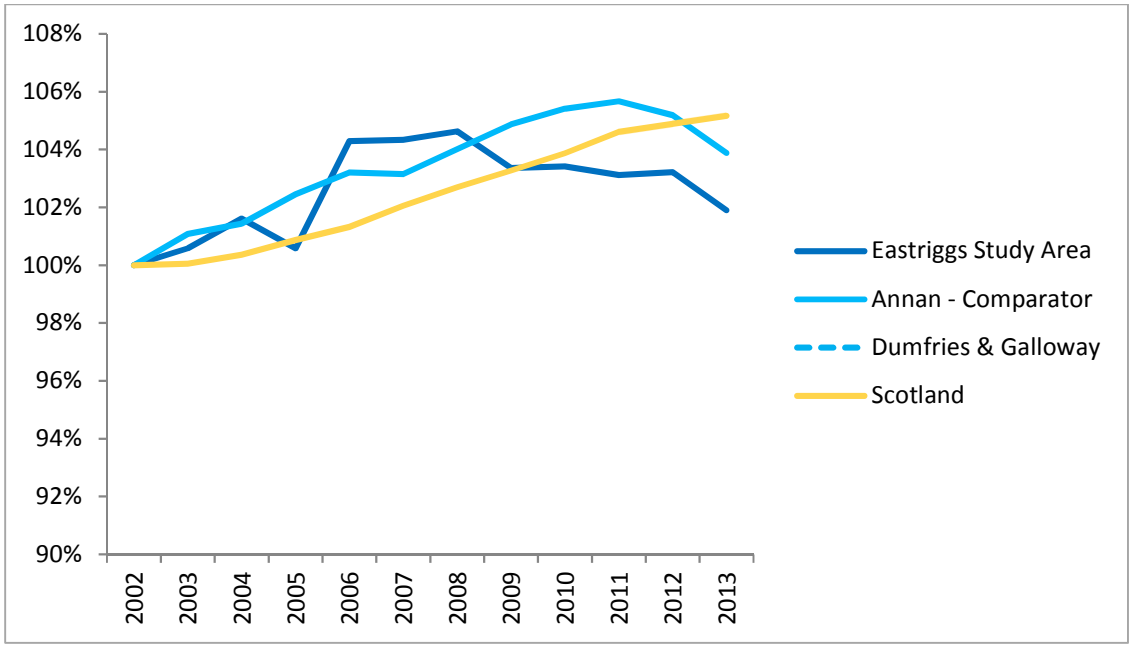

Figure D.5: Population Trend at Datazone Level 2002-2013 (Source: NRS mid-year population estimates)

Key Point

The population of Eastriggs increased by 2% between 2002 and 2013 while the population of Annan increased by 4% over the same period.

Population Age Structure

D.2.2 Figure D.6 illustrates the age structure of Eastriggs as well as that of Annan, Dumfries and Galloway and Scotland as a whole. Eastriggs has a higher proportion of people of working age (65%) compared to that of Dumfries and Galloway as a whole (61%) and a lower proportion of people aged 65 and over (19% compared to 21%).

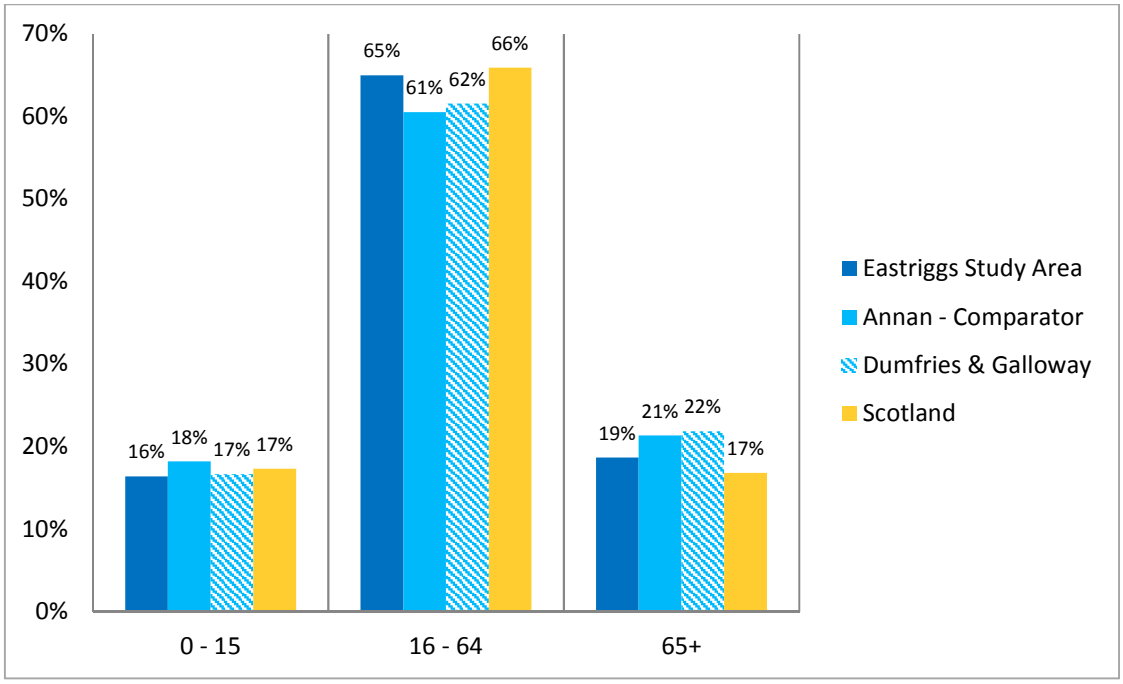

Figure D.6: Population Age Profile (Source: 2011 Census)

D.2.3 Overall, Eastriggs therefore appears to have a relatively favourable demographic balance. However, the proportion of the population aged 16-24 that make up the working age population is lower in Eastriggs (14%) compared to both Annan (16%) and Dumfries and Galloway (16%) suggesting that there may be some outmigration of the younger cohorts.

Key Point

Eastriggs has a relatively favourable demographic mix, with a higher proportion of working age people than Dumfries and Galloway as a whole. However, the proportion of people aged 16-24 is below the local authority average.

D.3 Labour Market

Occupations

D.3.1 Table D.1 shows the range of occupations of residents aged 16 to 74 in employment in Eastriggs as well as Dumfries and Galloway and Scotland as a whole. It is useful to compare occupations across different locations as the occupations often reflect the range of skills in those locations. For instance, residents employed within the occupational categories of managers, and senior officials, professional occupations and associate professional and technical occupations are typically highly skilled and well-paid, whereas those employed within the occupational categories of elementary occupations and process, plant and machine operatives typically possess a lower skill level and receive lower wages.

Table D.1: Occupation Categories (Source: 2011 Census)

Occupation	Eastriggs	Annan	Dumfries and Galloway	Scotland
Managers, directors and senior officials	7%	6%	8%	8%
Professional occupations	8%	10%	13%	17%

Occupation	Eastriggs	Annan	Dumfries and Galloway	Scotland
Associate professional and technical occupations	8%	9%	9%	13%
Administrative and secretarial	11%	10%	10%	11%
Skilled trades occupations	18%	15%	17%	13%
Caring, leisure and other service	8%	11%	11%	10%
Sales and customer service	12%	9%	8%	9%
Process, plant and machine	15%	16%	10%	8%
Elementary occupations	13%	13%	13%	12%

D.3.2 As shown, the largest category of occupation in Eastriggs in 2011 was 'skilled trades occupations' which accounted for 18% of all employed people aged 16 to 74 (compared to the local authority and national averages of 17% and 13%).

D.3.3 In comparison to Dumfries and Galloway as a whole, Eastriggs has a higher proportion of people in both the 'process, plant and machine operative' and 'sales and customer service' categories and comparatively smaller numbers in the professional occupations.

D.3.4 A key question which this study will explore is whether and the extent to which transport connectivity in Eastriggs is constraining access to higher value employment. In addition, it will be important to explore whether connectivity is a significant factor in encouraging out-migration / deterring in-migration of the more highly skilled cohorts.

Key Point

Resident employment in Eastriggs is typically weighted towards the 'skilled trades' and 'process, plant and machine operative' occupational categories, with lower numbers of professional and technical roles.

Economic Activity

D.3.5 The economic activity rate is a critical indicator of the economic wellbeing of an area. The economically active are those defined as in work or actively looking for work, whilst the economically inactive are defined as those neither in work nor seeking employment (e.g. retirees, students, long-term sick, unpaid carers etc.). The usual measure of economic activity is based on the working age population (16-64) but the Census uses 16-74.

D.3.6 Of the 1,061 people in Eastriggs aged between 16 and 74 in employment in 2011, 70.2% were economically active (either in or looking for work) compared to 67.7% in Dumfries and Galloway and 69% in Scotland (Census 2011).

D.3.7 Figure D.7 shows the breakdown of usual residents aged 16 to 74 in Eastriggs by economic status. Overall, Eastriggs has a higher proportion of people (65%) in employment compared to Annan (61%) and the local authority and Scottish averages (61% respectively), with smaller proportions of both the unemployed and students. In comparison to Dumfries and Galloway as a whole, Eastriggs also has a smaller proportion of retired individuals (19% compared to 20%).

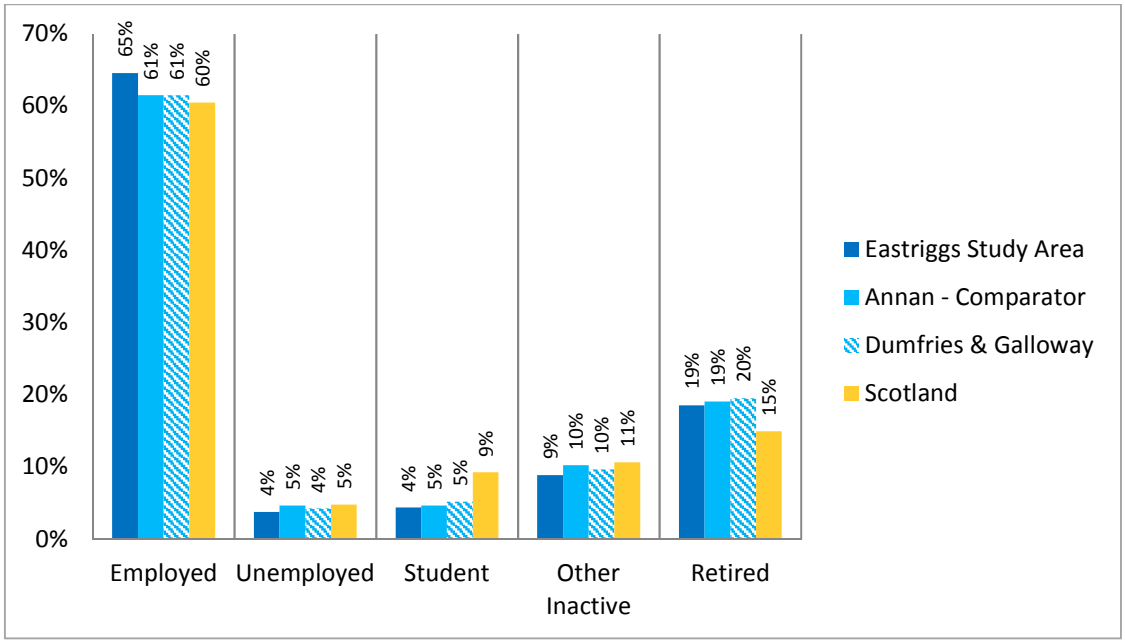

Figure D.7: Economic Status (Source: Census 2011)

Key Point

Eastriggs performs comparably well in terms of the economic activity rate of its population. However, as discussed above, in terms of occupation there are relatively few professional and technical roles.

Key Benefits and Job Seekers Allowance Claimant Rate

D.3.8 The proportion of the population aged 16-64 claiming Key Benefits[12] and/or Job Seekers Allowance (JSA) are important socio-economic indicators, with the former often used as a proxy measures for those on low incomes and the latter used as a measure of unemployment in an area[13].

D.3.9 In Eastriggs, approximately 14.4% of the working age population received key benefits in 2012 according to Scottish Neighbourhood Statistics data. This was below that of Dumfries and Galloway (15.9%), Scotland as a whole (16.3%) and the comparator town of Annan (18.2%). The JSA claimant rate was also lower with 3.1% of the working age population in Eastriggs claiming JSA compared to 3.7% in Dumfries and Galloway and 3.9% in Annan and Scotland as a whole.

Key Point

The claimant rate for Eastriggs is significantly lower than the regional and national rates and that of the comparator town of Annan.

[12] Job Seekers Allowance; Employment Support Allowance or Incapacity Benefit or Severe Disablement Allowance; Lone Parents Income support; Carers Allowance; Income Related Benefit or other income support (including IS Disability premium) or Pension Credit; Disabled Disability Living Allowance (DLA); Bereaved Widows Benefit, Bereavement Benefit or Industrial Death Benefit claimants.

[13] The figure for total unemployment tends to be underestimated by JSA claimant counts as JSA only counts those people who claim unemployment benefit and does not count those who are unemployed but do not claim JSA.

Employee Jobs by Sector

D.3.10 Workplace employment by industry, irrespective of whether employees are residents or otherwise in an area can be found in 2013 BRES data. It makes use of two different measures of employment, as follows:

- **Resident Employment** – this measure considers the industry in which the settlements' residents are employed and is based on the 2011 Census.

- **Workplace Employment** – this measure considers the employment by industry of those who work in the settlements, irrespective of whether they are residents or otherwise, and is based on 2013 BRES data.

D.3.11 It is noted that due to the thresholds required to maintain anonymity, it is not possible to reproduce this data at the level required for meaningful analysis for the Eastriggs area.

D.3.12 Figure D.8 however shows the proportion of resident employees by sector in Eastriggs, Annan, Dumfries and Galloway and Scotland as a whole as defined in the 2011 Census. This measure is a resident based analysis in that it considers the industry in which the residents of each settlement are employed.

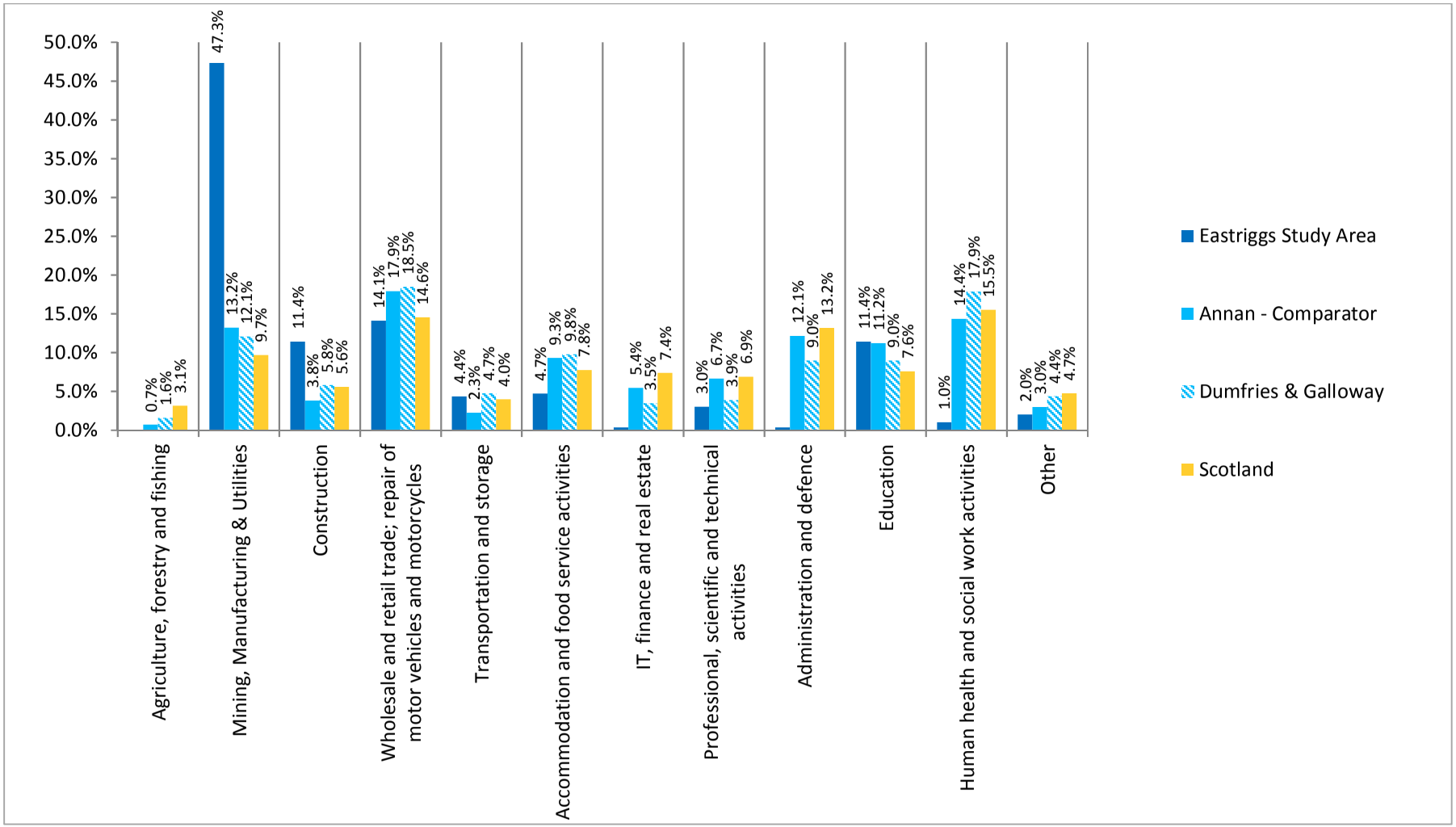

Figure D.8: Proportion of Resident Employees by Sector (Source: Census 2011)

D.3.13 The key points from the above figure are:

- There is a considerably higher concentration of employees in 'mining, manufacturing and utilities', 'construction', 'wholesale and retail trade' and 'transportation and storage' in Eastriggs compared to the local and / or national levels;
- There is a lower concentration of employees in sectors such as 'IT, finance and real estate' and 'professional, scientific and technical activities' than the local authority and Scotland figures; and
- Public sector employment (administration and defence, education and human health) in Eastriggs is below that of Dumfries and Galloway and the Scottish average.

Key Points

Overall, a smaller proportion of residents in Eastriggs are employed in higher value sectors than that of the local authority and Scotland figures.

Tourism

D.3.14 While the tourist potential is modest, Eastriggs does host "The Devil's Porridge Museum" which is dedicated to the history of the munitions factory to which the town owes its existence. Enhancing transport access could increase the potential for inbound visits and the range of facilities and opportunities on offer.

Key Points

While the tourist offering in Eastriggs is relatively modest, there is potential for improvements in accessibility to increase the number of inbound visits and the range of facilities and opportunities offered by the village.

Residents

Qualifications

D.3.15 The level of qualifications held by the population of an area is seen to be an indicator of economic performance. Areas with a high proportion of well qualified people tend to perform comparatively better (in terms of occupational classification, average wages etc.) than areas characterised by low educational attainment.

D.3.16 Figure D.9 shows the highest level of qualification[14] attained by the population in the study area.

[14] The dataset is split across four levels as follows:

- Level 1: 0 Grade, Standard Grade, Access 3 Cluster, Intermediate 1 or 2, GCSE, CSE, Senior Certification or equivalent; GSVQ Foundation or Intermediate, SVQ level 1 or 2, SCOTVEC Module, City and Guilds Craft or equivalent; Other school qualifications not already mentioned (including foreign qualifications);
- Level 2: SCE Higher Grade, Higher, Advanced Higher, CSYS, A Level, AS Level, Advanced Senior Certificate or equivalent; GSVQ Advanced, SVQ level 3, ONC, OND, SCOTVEC National Diploma, City and Guilds Advanced Craft or equivalent;
- Level 3: HNC, HND, SVQ level 4 or equivalent; Other post-school but pre-Higher Education qualifications not already mentioned (including foreign qualifications); and

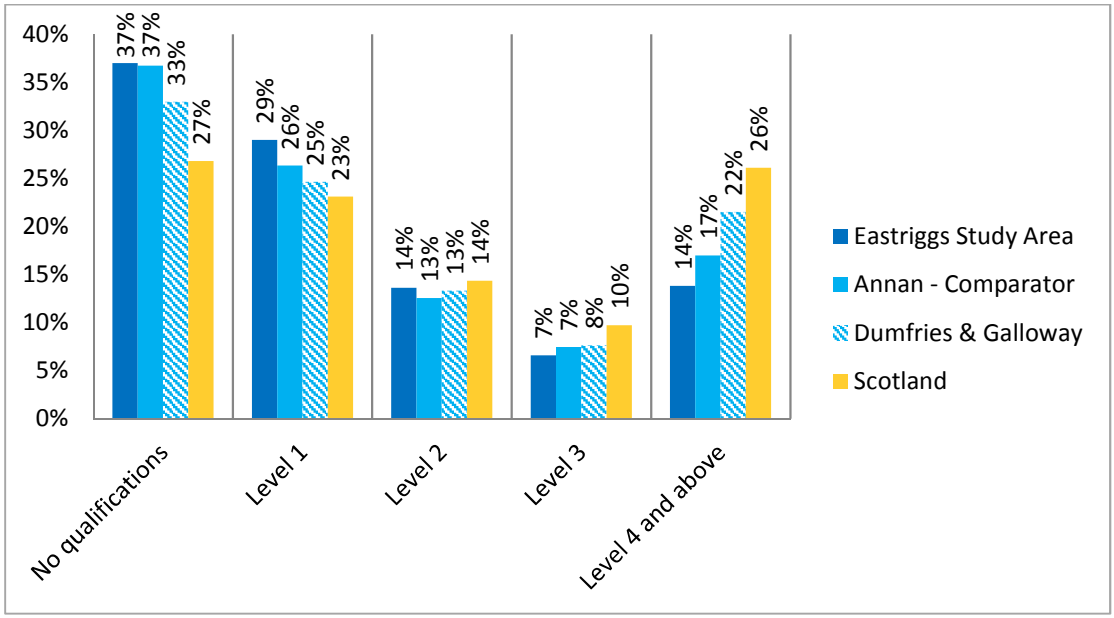

Figure D.9: Highest Level of Qualification (Source: Census 2011)

D.3.17 As shown, the majority of residents in Eastriggs (37%) have no qualifications. This compares to just 33% in Dumfries and Galloway and 27% in Scotland. Similarly, a smaller proportion have qualifications at level 4 and above (14%) compared to the local authority and Scottish averages (22% and 26% respectively).

D.3.18 Whilst there are likely to be a plethora of reasons for varying attainment levels, one potential explanation relevant to this study is the extent to which poor connectivity to colleges / universities is making people leave home when studying. Also of interest is whether residents who do obtain a high level qualification move out of Eastriggs and, if this is the case, why they choose to do so.

Key Point

Eastriggs performs less well than both the local and national averages in terms of educational attainment levels.

Household Income

D.3.19 Household income is a further barometer of the economic wellbeing of an area. The most recent data on household income available is for 2008-9. The median household weekly income in Eastriggs at this time was £346, 3% lower than the Dumfries and Galloway household income and 11% lower than the average national household income. Furthermore, it is likely that average household income has declined since this date as a result of the economic downturn.

Key Point

Average income in Eastriggs is lower than the local and national averages, which is in keeping with the data on resident employment, qualifications etc.

- Level 4 and above: Degree, Postgraduate qualifications, Masters, PhD, SVQ level 5 or equivalent; Professional qualifications (for example, teaching, nursing, accountancy); Other Higher Education qualifications not already mentioned (including foreign qualifications).

House Prices

D.3.20 The price of property reflects the balance between the demand to live in an area and the supply of different types of property. Areas with lower than average house prices are generally seen as less 'in-demand' than those with higher average house prices (which in turn affects development viability). Transport connectivity is one of a number of factors which impact on house prices (although obtaining an empirical estimation of the extent of this influence has always been challenging).

D.3.21 In 2013, the mean house price in Eastriggs was £99,885 which was 26% lower than the average house price in Dumfries and Galloway and 37% lower than the average price of houses in Scotland.

Key Point

House prices in Eastriggs are lower than both the local and national averages.

Deprivation

D.3.22 The Scottish Government regularly produces the Scottish Indices of Multiple Deprivation (SIMD), which "identifies small area concentrations of multiple deprivation across all of Scotland in a fair way. It allows effective targeting of policies and funding where the aim is to wholly or partly tackle or take account of area concentrations of multiple deprivation". SIMD combines 38 indicators across 7 domains, namely: income, employment, health, education, skills and training, housing, geographic access and crime. SIMD is essentially a social tool (i.e. it measures the performance of 'society') and it can act as detailed statistical barometer of the social performance / social capital in a given area.

D.3.23 The generally accepted point at which an area is defined as deprived is when it is classified in the '20% most deprived'. Figure D.10 shows the levels of deprivation within Eastriggs and the surrounding area in 2012 by percentile.

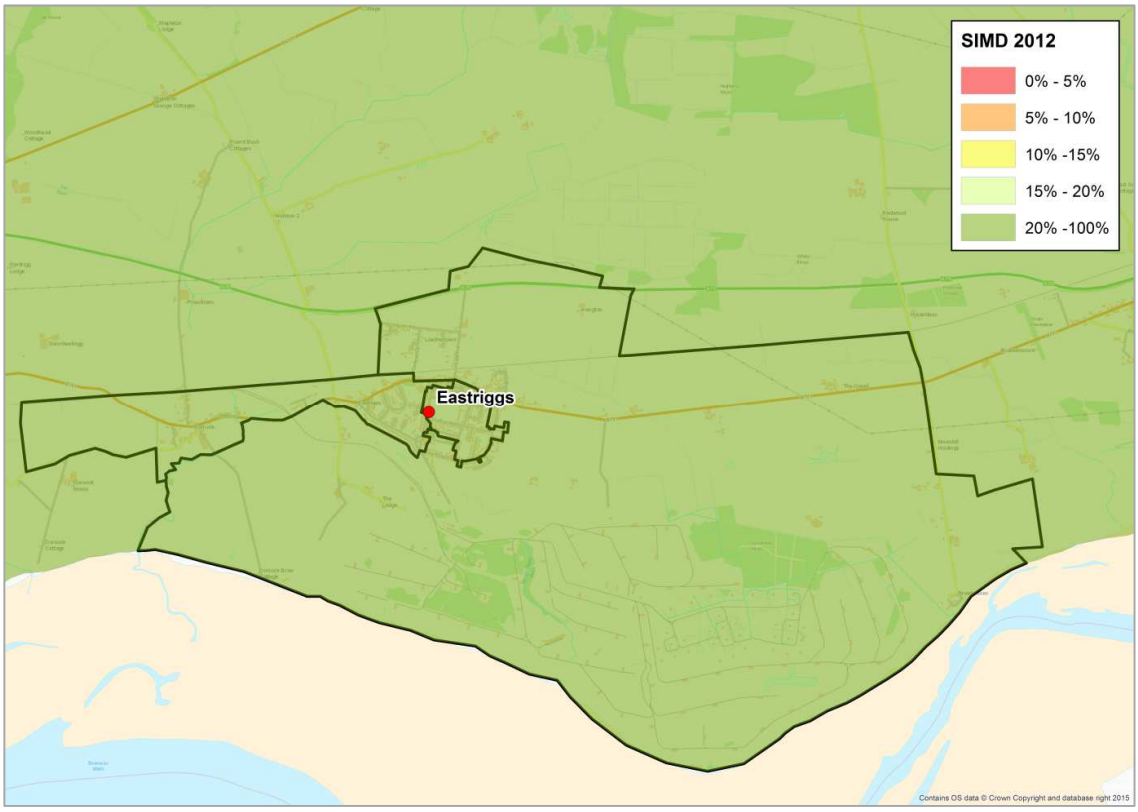

Figure D.10: Deprivation by percentile (Source: SIMD 2012)

D.3.24 As shown above, all of the three datazones that cover Eastriggs are outside the 20% most deprived. In fact, all four zones rank in the 30% percentile and above.

D.3.25 Figure D.11 shows the change in deprivation in Eastriggs between 2006 and 2012. As shown, there has been a decline in relative deprivation within the centre of Eastriggs of 15 percentile points but a slight increase in relative deprivation (by 7 and 8 percentile points respectively) in the surrounding zones.

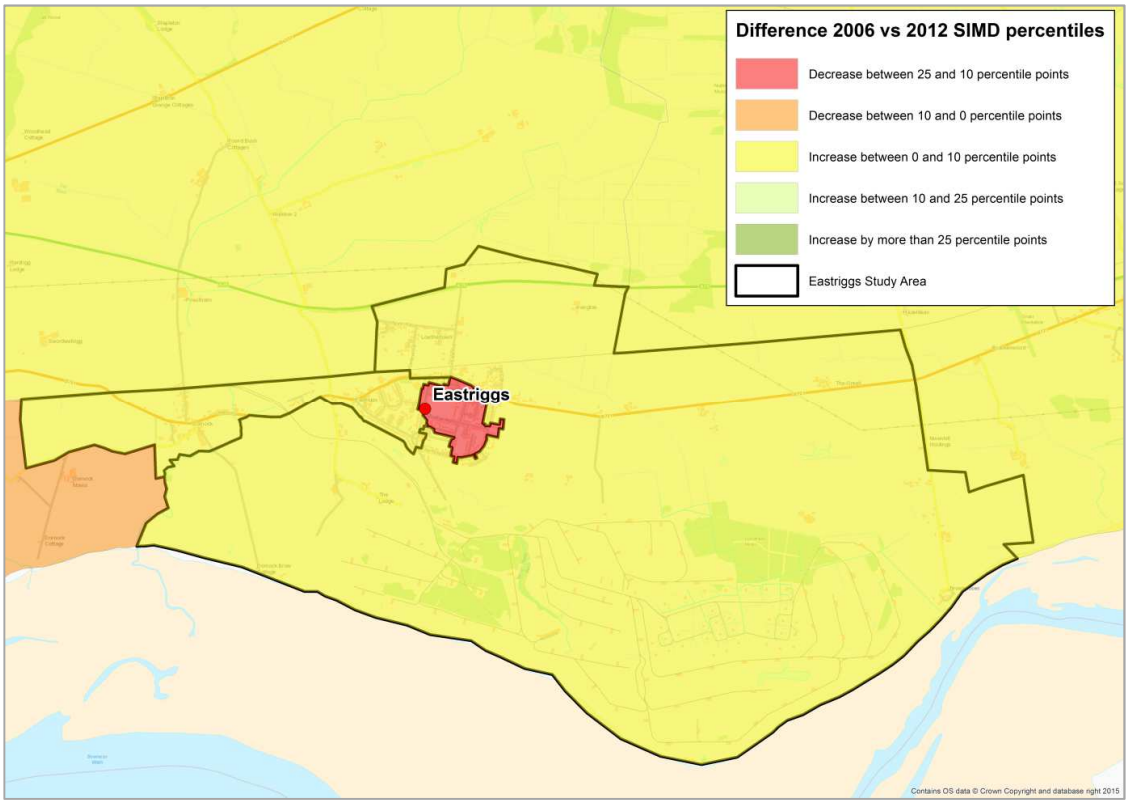

Figure D.11: Change in Deprivation between 2006 and 2012 (Source: SIMD 2006 and SIMD 2012)

Key Point

Eastriggs has a relatively low level of deprivation with none of the datazones within the 20% most deprived in Scotland. However, over time there has been a slight decline in the ranking of the central zone.

D.4 Housing and Employment Development

D.4.1 Table D.2 outlines the Local Development Plan (LDP) allocations and the Housing Land Audit (HLA) indicative build out rates for Eastriggs.

Table D.2: Eastriggs Local Development Plan Allocation and Housing Land Audit Indicative Build Out Rates[15]

Location	Site	LDP Allocation up to 2024 (units)	Completions									
			2015 - 16	2016 - 17	2017 - 18	2018 - 19	2019 - 20	2020 - 21	2021 - 22	2022 - 23	2023 - 24	Post 2024
Eastriggs	Gillwood Road	10	0	0	0	0	0	5	5	0	0	0
	Victoria Gardens	11	4	4	2	0	0	0	0	0	0	0
	Land northwest of Stanfield Farm	24	0	2	5	5	5	5	5	0	0	0
	Stanfield Farm	200	0	0	0	10	10	10	10	10	10	140
	Stanfield Farm Phases 1 - 3	n/a	1	1	0	0	0	0	0	0	0	0
	Total	245	5	7	7	15	15	20	20	10	10	140

D.4.2 Overall, Eastriggs is allocated for 248 houses up to 2024, split across four sites with 109 completions anticipated over the period 2015-2024.

D.4.3 Table D.3 shows the allocated employment land in the Eastriggs study area as well as the proportions which are immediately available (defined as marketable land that has planning permission, is serviced and has no other constraints to immediate development) and constrained (defined as land which is constrained due to issues with ownership, marketability, contamination, infrastructure or physical barriers). Overall, the area is allocated for 0.87ha of employment land all of which is classified as constrained although there is developer interest in the site.

[15] Dumfries and Galloway Local Development Plan 2014 and Dumfries and Galloway Housing Land Audit 2015

Table D.3: Employment Land Supply[16]

Location	Site Name	Site Area (ha)	Immediately Available	Marketable (1-5 years)	Constrained (Beyond 5 years)	Comments
Eastriggs	Stanfield Farm	0.87	0	0	0.87	Greenfield site under private ownership. Owner advises developer interest. Located on edge of settlement and unserviced. Requires transport assessment.

Key Point

There are housing allocations within the Eastriggs study area as well as allocated employment land. Should these sites be built out, there would be an increase in population and transport demand within the local area.

[16] Dumfries and Galloway Local Development Plan Business and Industry Land Audit 2015

Appendix E Policy Overview

Level	Policy, Plan or Strategy	Purpose	Objectives
National	National Transport Strategy (Transport Scotland, 2016)	To act as an enabler of economic growth – to support businesses in achieving their local, national and international objectives and to improve the lives of individuals and communities by connecting them with their economic future.	• Improved journey times and connections, to tackle congestion and lack of integration and connections in transport; • Reduced emissions, to tackle climate change, air quality, health improvement; • Improved quality, accessibility and affordability, to give choice of public transport, better quality services and value for money, or alternative to car; • Promote economic growth by building, enhancing managing and maintaining transport services, infrastructure and networks to maximise their efficiency; • Promote social inclusion by connecting remote and disadvantaged communities and increasing the accessibility of the transport network; • Protect our environment and improve health by building and investing in public transport and other types of efficient and sustainable transport which minimise emissions and consumption of resources and energy; • Improve safety of journeys by reducing accidents and enhancing the personal safety of pedestrians, drivers, passengers and staff; and • Improve integration by making journey planning and ticketing easier and working to ensure smooth connection between different forms of transport.
	Scotland's Railways (Transport Scotland, 2006)	The document sets out Transport Scotland's plan over the next 20 years for potential intervention over the short, medium and longer term to ensure that Scotland's railway network continues to improve.	Objectives for Anglo-Scottish Routes: • Capacity enhancements on the Glasgow and South Western route to assist freight movements. Objectives for Rural Routes: •Revise train services in the light of changing travel patterns and markets including tourism developments. •Take advantage of synergies with upgrade of Glasgow and South Western (GSW) route to improve passenger service journey times to Carlisle. It is noted that promoting social inclusion is a driver in these areas as is economic growth through tourism.
	National Planning Framework 3 (Scottish Government, 2014)	The NPF3 sets out the long-term vision for the spatial development of Scotland and is	**Dumfries** recognised as a gateway town. "*Dumfries is the regional capital of the south west of Scotland. Demonstrating the potential of rural towns to make a unique and significant contribution to the national spatial strategy, regeneration of the Crichton Quarter and the Learning Town initiative*

Level	Policy, Plan or Strategy	Purpose	Objectives
		the spatial expression of the Government Economic Strategy.	*are providing opportunities for local learning, skills development and innovation, including in carbon management and rural development. Tourism, food and drink and primary industries will continue to be important for Dumfries. A new hospital will be developed, strengthening the role of Dumfries as an important service centre. The Solway has significant opportunities for marine renewable energy generation, which could help to further diversify the local economy over the long-term. Wider opportunities for economic growth are also likely to be located along the A74 corridor.* ***The area has a close relationship with Carlisle, and connections, including by rail and via the A77 and A75, will continue to be important locally and for longer distance links to Ireland, England and Europe."*** *"Stranraer and Cairnryan are Scotland's gateway to Northern Ireland. Since relocation of the ferry terminal from the centre of Stranraer, regeneration plans for the waterfront have become of critical importance to the town and wider region.* *It is important that the momentum gained from designating Port Facilities at Loch Ryan as a national development in NPF2 is not lost – following opening of the new facilities in 2011, targeted interventions are being made to improve the A77 and A75 and a new electric bus service is providing a low carbon transport link from the new port facilities to the town centre. The A75 is a Euroroute, providing a vital link from Northern Ireland across the region to the rest of Scotland, England and Europe."*
Regional	Regional Transport Strategy (SWestrans, 2008)	The purpose of this Strategy is to determine and deliver better transport solutions, both regionally and nationally, and to act as a catalyst for regeneration of the region's economy.	To deliver genuine travel choices and improve connectivity internally between key locations and communities, and externally to Glasgow, Edinburgh, England and Northern Ireland. It is about providing access to jobs and public services, enabling goods to reach their markets and providing the links that promote social inclusion and support quality of life. The strategy vision is *"a transport system for the South West of Scotland that delivers the internal and external connectivity required to sustain and enhance the region's economy and communities whilst minimising the impact of transport on the environment."* Objectives: • Improve transport links within Dumfries and

Level	Policy, Plan or Strategy	Purpose	Objectives
			Galloway and provide fast, safe and reliable journey opportunities to significant markets, including the national economic centres of Edinburgh and Glasgow, as well as England and Northern Ireland; • Contribute to improved economic growth and social inclusion in the region whilst minimising the environmental impacts of transport; • Support the national transport target of road traffic stabilisation; • Add value to the broader Scottish economy and underpin increased sustainable national economic growth; • Assist in getting visitors/tourists to the region from other parts of Scotland, England, Ireland and beyond; • Making it possible for more people to do business in and from Dumfries and Galloway by providing sustainable connections to key business centres in the Central Belt and other locations such as Ayrshire and Cumbria; • Support vibrant places that provide employment, healthcare, educational and other services that people need and want, so that their quality of life is maximised; • Reduce the constraint of peripherality, both between the region's main settlements and its outlying areas, and between the region and its external markets; • Capitalise on improvements to critical long distance corridors to create new transport services, nodes and development opportunities for Dumfries and Galloway; • Pursue certain transport schemes in the context of local and national economic development, while at the same time recognising wider context of economic, social and environmental imperatives.
	Regional Economic Strategy (2015 - 2020)	The RES was developed to ensure that the strategic economic priorities for the region are clearly identified and that interventions to support these are prioritised	The vision for the strategy is "*By 2020, Dumfries and Galloway will have a more diverse and resilient economy. One which is capable of taking advantage of opportunities by combining an appropriately skilled workforce and connected infrastructure to support more prosperous and inclusive communities where every member of every community has equality of access to that prosperity".* *The document includes six strategic objectives. Those of particular relevance are as follows:* • *Developing Places: Empower the region's communities to address their distinct economic*

Level	Policy, Plan or Strategy	Purpose	Objectives
		by all Partners involved. The Strategy is founded on the key principle of addressing inequality through economic growth.	*challenges and opportunities;* • *Better Skills, Better Opportunities: Create a vibrant culture of opportunity in the region to retain and attract people of working age and improve the competitiveness of individual businesses;* • *Well Developed Infrastructure - Enhancing regional connectivity, removing barriers to business competitiveness and improving access to economic opportunities for individuals and businesses;* • *Investment Projects - Large investment projects that will make a significant impact on the regional economy; and*
	Dumfries and Galloway Regional Tourism Strategy (2011-2016)	The Regional Tourism Strategy outlines Dumfries and Galloway Council, Destination Dumfries, and Visit Scotland's strategy for developing tourism in the county.	The vision is "To establish Dumfries and Galloway as a world-class destination in which our visitors receive a superb quality of service, where our products and services exceed their expectations. This will maximise the long-term economic and social benefits which sustainable tourism can bring to the region". The document outlines 6 objectives including increasing the volume of Visitors to Dumfries and Galloway.
	Bus Action Plan (2009)	The Bus Action Plan provides an outline of the situation in terms of the bus network in Dumfries and Galloway.	The document includes information on the status (as of 2009) and planned improvements in each of the following areas: communication strategy; quality of buses; bus stop infrastructure; community transport; schools transport; and funding interventions. The document highlights the cost of bus travel as an issue. In addition, it notes that connections between Dumfries, Glasgow and Edinburgh are limited. The Dumfries to Glasgow service has a journey time of two hours but because of the high ticket cost demand is low. The Dumfries to Edinburgh service is supported by a number of authorities and has a running time of three hours as it is a series of joined up local bus services serving the main towns rather than a fast link to Edinburgh. The document notes that the South West of Scotland would benefit from a national long distance express coach operation, on say a 2 hourly headway, throughout the day, to improve connectivity with Glasgow and Edinburgh. The document also supports integrated ticketing, noting that there would be particular benefit if all the

Level	Policy, Plan or Strategy	Purpose	Objectives
			bus and train companies in the South West were included.
Local	Local Transport Strategy (Dumfries and Galloway Council, 2011-2016)	The Local Transport Strategy (LTS) sets out Dumfries and Galloway Council's Action Plan for transport in the area between 2011 and 2016. SWestrans and Dumfries and Galloway Council share the same boundary and the RTS and LTS consequently cover the same geographic area. However, the LTS is focussed upon local networks and services whilst the RTS focuses upon wider connectivity.	The Vision for the LTS is defined as: "To develop better transport systems where they are most needed to support an ambitious, prosperous and confident Dumfries and Galloway where people achieve their potential". Five strategic objectives are identified, as follows: • Assist Economic Growth through the provision of the best possible transport infrastructure and services; • Promote Social Inclusion through the provision of transport services suitable for all residents; • Protect our Environment by coordinating land use planning and transport and, where travel is necessary, encourage efficient and sustainable transport; • Improve Road Safety by reducing the likelihood of accidents through Engineering, Education and Enforcement initiatives; and • Improve Integration of Journeys through the encouragement of better transport. The document outlines a strategy which balances demand management and the promotion of alternative modes of transport and includes an action plan of key measures.
	Local Development Plan (Dumfries and Galloway Council, 2014)	The LDP sets out the strategy to guide future land use and development within Dumfries and Galloway until 2024	Vision includes: *"It will be a thriving region with a sustainable economy built on sustainable principles that safeguard the landscape, natural and historic environment, promote growth, maximise the use of existing infrastructure and enhance connectivity. It will have maximised its location to attract investment to create employment and investment opportunities which will in turn attract people of working age to the region. There will be opportunities in the rural area for economic development, housing and recreation."*

Level	Policy, Plan or Strategy	Purpose	Objectives
			"A viable rural economy and community characterised by: • *access to sustainable transport* • *ready access to higher education"* *"Vibrant towns and villages that have:* • *access to a wide range of sports, recreation and leisure activities"*
	Single Outcome Agreement (Dumfries and Galloway Council, 2013 - 2016)	The Single Outcome Agreement sets out Dumfries and Galloway Strategic Partnership's vision for Dumfries and Galloway and is the main partnership planning document for the region.	The overarching vision is *"working together to create an ambitious, prosperous and confident Dumfries and Galloway where people achieve their potential"*. Relevant aims include: • *Priority 4: We will support and stimulate our local economy - To do this we will provide the right type of physical infrastructure including strategic transport links with Northern Ireland, north of England and the rest of Scotland (particularly Ayrshire and the Scottish Borders)* • *Priority 6: We will protect and sustain our environment - We want people to choose active travel - our cycling and walking facilities - as that will bring us benefits in health improvement, tourism and carbon reduction and we want to have a fully integrated and accessible transport system including taxis, buses, trains and ferries.* It is noted that the over-65s population is likely to grow by 21% by 2020 and 46% by 2035 (20% for those aged 65-74 and 77% for those aged 75 and over) . There is therefore a growing requirement for suitable transport.
	Dumfries and Galloway Outdoor Access Strategy (2012-2017)	The Dumfries and Galloway Outdoor Access Strategy provides a vision for outdoor access and the strategic framework for planning, managing and developing access in	The vision for the document is that within the next five years: • barriers to access will be reduced following the enhancement and promotion of core paths; • communities will have developed a sense of responsibility for local paths; • residents will be leading more active lifestyles; • the countryside will be used to support and promote local enterprise; • developers will be contributing to enhancing and developing access; and • public bodies will be working in partnership to support communities, reduce health inequalities, promote the region and protect the environment. The strategy aims to help residents lead more

Level	Policy, Plan or Strategy	Purpose	Objectives
		Dumfries and Galloway	active lifestyles and increase opportunities for outdoor recreation and sustainable travel.

Appendix F Part 1: Option 2 Development

F.1 SCOOT System

F.1.1 Option 2 relates to bus priority measures within Dumfries town centre.

F.1.2 Through discussion with council representatives it was established that:

- A Split Cycle Offset Optimisation Technique (SCOOT) system was implemented in Dumfries in 2000 with the system installed at just under 20 junctions in the town centre. As part of the implementation, selective vehicle detection loops were installed with all buses fitted with transponders to enable bus prioritisation at signals. However, there were issues with the reliability of the system and the varying and conflicting patterns of bus movements in the town centre meant the system was 'fighting itself' to give priority. As a consequence, the bus prioritisation capability was disabled at all but a bus gate on Glasgow Street.

- At some locations an alternative system was subsequently implemented which utilised loop detection of buses to provide a hurry call at signals. However, its implementation had a significantly detrimental impact on general traffic capacity and was subsequently removed. The only SVD system now operational is a video detection system at the Glasgow Street bus gate at the end of the related bus lane. This system utilises two virtual loops which requires both loops to be occupied in order to be triggered, and as a consequence, any large vehicle abusing the bus lane would be registered as a bus on the loops and activate the bus gate. In addition, there were issues with car headlights activating the system at night. The system is currently still operational despite these issues, operated by a TrafiCam video recorder.

- The SCOOT system is still operational, working to optimise the town centre signals. The system currently has thirteen junctions and four pedestrian crossings. A further junction just outwith the SCOOT area (Three Road Ends) was upgraded from VA control to MOVA control in October 2015, with the option to convert to SCOOT control should the need arise in the future. However, the majority of the existing SCOOT network has not undergone any form of detailed recalibration since its initial installation in 2000, something which is advised on an annual basis. The most recent re-evaluation of any part of the SCOOT network was Buccluech Street Bridge in 2011. This did not however involve any link validation or calibration. Congestion and delays on the network, and therefore delays to public transport, could be addressed by comprehensive examination and analysis of the operation of the existing SCOOT network and the implementation of improved SCOOT translation plans, an automatic plan selection strategy, improved standalone pedestrian crossing strategies within the network, and a robust incident management strategy to then be reviewed on a more regular basis. The recalibration of parameters is essentially a two stage process. The first, link validation, can be carried out at any time. The second more detailed part of the process is SCOOT parameter validation which could not be carried out until after the Dumfries and Galloway Royal Infirmary migration to the new site is complete and traffic patterns have settled. Investment in a recalibration of the system, while not providing prioritisation for bus movements, would likely provide an overall improvement in town centre traffic movements and as such would benefit bus movements as a consequence.

- Investment in smarter technology, with wireless detection would also provide a more intelligent system which could enable information to be feed directly back to bus companies on bus movements and journey times, providing an opportunity for service providers to understand bus performance across the network and identify any timetable alterations required. It would also enable the existing bus gate on Glasgow Street to operate more reliably.

- Investment in the SCOOT system with annual recalibration of parameters within the system would provide an adaptable traffic management system capable of adjustment when needed. This may be highly beneficial in instances where any significant traffic management change was implemented or land-use change/development occurred. A key example of this is the upcoming move of the Dumfries and Galloway Royal Infirmary site to a new site to the west of the town – a move which is likely to alter transport access by both staff, patients and visitors. In addition, any traffic modelling work outcomes undertaken to support the relocation of the hospital could be fed into the system to improve overall network performance. In addition, the development of Dumfries Learning Town has the potential to impact on traffic movement due to the busing of students between the four secondary schools and to the new 'The Bridge' facility. Any changes to traffic flows as a result could also be taken account of in the SCOOT system.

Appendix G Part 1: Feasibility - Option 6

G.1 Introduction

G.1.1 This appendix develops an understanding of the following in light of a potential railway station in Eastriggs:

- How an extension of High Speed Rail 2 (HS2) into Scotland may impact on the GSWL, the opportunities that would enable and the steps which might be required to engage;
- The potential impact of the Scotland Route Study proposals on both the WCML and GSWL line in relation to both passenger and freight services;
- The role of the GSWL;
- Existing and potential future capacity on the rail routes;
- The effects of providing any new station(s) on the wider rail network;
- The potential impacts of more than one new station re-opening on the GSWL; and
- The potential use of the stations as rail freight hubs (as well as passenger stations).

G.2 HS2 Extension into Scotland Impacts

G.2.1 A review of the HS2 publication *"Broad options for upgraded and high speed railways to the North of England and Scotland"*, jointly commissioned by DfT and Transport Scotland, and published in March 2016 has been undertaken to understand if and/or how the potential impacts of HS2 could support the case for a rail station at Eastriggs.

G.2.2 The review has highlighted that:

- Any future extension of an HS2 route into Scotland is unlikely to have any significant impact on services on the GSWL (Carlisle – Dumfries – Kilmarnock – Glasgow route);
- Implementation of HS2 may free up capacity on the existing WCML which in turn may take pressure off the GSWL to act as a diversionary route in the longer term;
- Provision of significant new HS2 infrastructure in Scotland may reduce the pressure for the GSWL to become a freight route, as freight should be able to be accommodated on the WCML where the line is bypassed by the HS2 route; and
- During the HS2 construction phase, the GSWL line may be needed as a diversionary route whilst construction work is carried out. This might require an upgrade to the infrastructure (line speeds to 90/100 mph, extra signalling sections to deliver more capacity and complete redoubling of the Kilmarnock – Barrhead section) to provide for the diverted WCML services. If GSWL infrastructure is upgraded this will provide a long term opportunity to improve the local services offered. Infrastructure upgrades for freight are now becoming part of rail industry thinking in Scotland.

Conclusion

Any future extension of an HS2 route into Scotland is unlikely to have any significant impact on services on the GSWL although it may offer an opportunity to upgrade the infrastructure on the route if it is required as a diversionary route during HS2 construction works.

G.3 Scotland Route Study Review

G.3.1 A review has been undertaken of the Scotland Route Study which was published on 14th July 2016 and was the culmination of extensive work within the Scottish rail industry and consultation with wider stakeholders. The review of the study has been undertaken to identify if/how the study outcomes could support the case for a rail station at Eastriggs.

G.3.2 The review highlighted:

- The Scotland Route Study has relatively little to offer the rural routes of which the GSWL route is probably the busiest;
- Bespoke analysis was limited, with growth to 2023 suggested as 4.4%, and longer term growth rates ranging from 0.3% to 2.4%, dependent on the scenario;
- Suggested infrastructure upgrades are limited and restricted to freight – gauge clearance for W10, possibly W12, as a diversionary route for the WCML, and electrification. This is outlined in the "Choices for Funders in CP6 and CP7 (2019 – 2029)" Section, where it is mentioned under Item 5 - Gauge enhancement;
- There are some significant suggested enhancements at the north end of the route, with East Kilbride and Barrhead/Kilmarnock electrification being proposed, coupled with redoubling some or all of the Barrhead to Kilmarnock section. **Redoubling would relieve a major constraint on timetabling over the whole route**;
- There are no proposals to change any infrastructure south of Kilmarnock, other than the potential freight gauge enhancement.

G.3.3 However, the 2043 Indicative Train Service Specification (ITSS) suggests that an hourly Glasgow – Kilmarnock – Dumfries – Carlisle service should be provided, plus an additional hourly Dumfries – Carlisle shuttle service, creating a half-hourly frequency service between Dumfries and Carlisle.

G.3.4 This compares with the current, somewhat randomly structured, timetable which offers an approximately two hourly end to end frequency but with bigger and smaller gaps. Peak time services into and out of Glasgow are broadly hourly.

G.3.5 The apparently random timetable is partly driven by the need to make as many class 156 diesel units as possible available for Glasgow peak services including East Kilbride. This will change if East Kilbride is electrified, as the Glasgow area peak services will need to be covered from a dedicated local electric fleet. **This presents an opportunity to revise the GSWL line services to make full use of a captive diesel fleet more suited to long distance rural operation.**

G.4 Investing in the Future Choices for Scotland's Railways 2019 and beyond – Review

G.4.1 The Rail Delivery Group (RDG) published "Investing in the Future Choices for Scotland's Railways 2019 and beyond[17]" on 23rd September 2016.

G.4.2 It follows on from the Scotland Route Study and makes specific recommendations for possible investment in Scotland's railway in the medium term. There are no major surprises or changes of direction from the options considered and developed in the Scotland Route Study.

G.4.3 However, it does set the agenda for the funding discussions which will take place with Scottish Government, through Transport Scotland, over the next two years and set the course for the

[17] *http://www.raildeliverygroup.com/media-centre/press-releases/2016/469762882-2016-09-23.html*

railway well into the 2020s. For this reason, it is important. Key points in the context of the GSWL are:

- A more detailed "Industry Advice to Ministers" will be published in early 2017;
- It uses the Borders Railway as a Case Study as part of a regeneration package;
- There is a section (Chapter 4) linking the railway into the Scottish Government's Economic Strategy, which includes specific reference to Rural Policy;
- It recognises the possible trade-offs including journey times vs connectivity, although in the context of "Key corridors", not the rural routes;
- A long-term rolling stock strategy is raised – something of importance for the GSWL;
- Glasgow Central Capacity issues are presented as a Case Study which might present an opportunity for the GSWL;
- The approach to delivery is set out and offers a template for future work on the GSWL; and
- The most important section is "A connected Scotland" which sets out the priorities.

G.4.4 The "A connected Scotland" section includes reference to potential projects that will or could impact on the GSWL. These include:

- **Gauge enhancements** – Glasgow to Carlisle via Dumfries

This is suggested to offer benefits for freight capacity and reliability – "Upgrading gauges to key alternative routes into Scotland such as the Glasgow and South Western line will improve railway resilience by enabling trains to be diverted during disruption". It is suggested to be in the cost range £100m - £300m.

However as witnessed during the service disruption to local services during the Lamington diversions, there is a need to do more than just gauge enhancement. In particular, there is a need to reduce the headways by increasing the number of signal sections and remove the capacity constraints caused by the single line sections between Kilmarnock and Barrhead. Ideally raising the line speed to 75 mph for multi-modal freight and, if the route is required for passenger train diversions, raising the speeds to 90/100mph for passenger trains should be on the agenda as well. Re-signalling Mauchline – Newton-on-Ayr could assist with freight diversions at the north end, but will not help with passenger services.

- **Carstairs Area Enhancement**

Whilst not immediately impacting on the GSWL this major work will be highly disruptive, and could potentially lead to disruption on the GSWL. This creates pressure to bring forward some aspects of the GSWL gauge enhancement work, and especially with regards creating capacity for diverted passenger trains.

- **High Speed Enabling Projects**

This is for development work, not delivery, with delivery likely to be in the later 2020s. However, it is a time to start to engage actively with Network Rail to press the case for avoiding disruption to the GSWL services.

- **Greater Glasgow Improvements**

This includes reference to Glasgow Central High Level station enhancement which may include timetable changes to reduce the time trains occupy platforms at Central, transferring longer dwell times to outer stations.

Additional capacity is proposed on the Barrhead and East Kilbride routes by "providing additional infrastructure – potentially including electrification – to deliver additional services with more seats as well as optimising operations at Glasgow Central."

Electrification and enhancement to Kilmarnock/Barassie route is also proposed – "Making best use of the available capacity and providing a more resilient network delivering greater connectivity."

G.4.5 These proposals come with significant price tags.

G.4.6 There are proposals to continue with the "Ring Fenced Funds" which include the Stations Fund, the Level Crossing Fund and the Network Improvement Fund all of which may prove of value to the GSWL to create capacity for Eastriggs Railway Station as well as provide part funding for the station, although the station fund will only provide a maximum of 50%.

G.4.7 There is, however, nothing in this document specifically for any of the rural routes, although there are a number of proposals for the major routes and suburban areas.

Conclusion

At first sight, the "Investing in the Future Choices for Scotland's Railways 2019 and beyond" document offers little for the GSWL. In line with established policy, it does not propose any new stations or routes. However, it does create an opportunity for dialogue on a more integrated approach to developing the GSWL and to providing benefits which should enable Eastriggs station to be considered further.

G.5 The Role of the Glasgow South West line

G.5.1 The Scotland Route Study and RDG's "Investing in the Future Choices for Scotland's Railways 2019 and beyond" publications discussed above are complimentary in respect to the GSWL.

G.5.2 It is clear from these documents that:

- **The rail industry considers that the GSWL has a role as a diversionary route for freight** that uses the WCML, but nothing is suggested about the line's use for passenger service diversions.

There is a need to develop the freight diversionary capability to ensure that rail freight can continue to offer a reliable service and remain a viable transport option. The potential disruption arising from the condition driven work at Carstairs lends some urgency to this. In addition, the diversionary route could be viewed as timeous advance works for longer term HS2 works, but that is not stated.

What is not stated is how these additional trains might impact on the current train service on the GSWL. The Lamington passenger diversions in early 2016 resulted is a curtailment of the local service on the Barrhead – Kilmarnock section of line, to the detriment of the smaller communities. This cannot be an acceptable long term outcome. Some freight was routed via Mauchline – Ayr – Paisley, but this is a very long and time consuming route. Both documents are silent on any intention to provide sufficient route capacity for these diverted trains.

- **The passenger capability proposals are all in the Glasgow suburban area**. They fall into two broad groups: relatively minor infrastructure alterations to enable more trains to run and also potentially to release capacity at Glasgow Central and electrification of parts of or all of the East Kilbride and Barrhead/Kilmarnock/Barassie routes. The implication is that there is going to be no major work to reduce the impact of the single line sections between Barrhead and Kilmarnock. This needs to happen prior to any electrification if it is to happen at all.

- **Outwith the Glasgow suburban area, the status of the rest of the GSWL is seen as part of the "Rural railway" as opposed to the Interurban railway** – which is branded "Seven Cities Connectivity" in the Investing in the Future Choices for Scotland's Railways 2019 and beyond" publication. The implication of the "Rural railway" designation is that **investment for enhancement is going to be more difficult to secure**. But conversely, the potential to open new stations to improve connectivity is probably greater as journey time is not seen as so critical.

G.5.3 A key opportunity is potentially how this move to becoming the WCML freight (possibly passenger) diversionary route presents an opportunity to secure upgrades and improved services for the Dumfries and Galloway area.

G.5.4 Key points are:

- The railway industry only looks at the current network, not new stations or routes;
- The industry is silent on the role of the GSWL as a passenger diversionary route;
- The industry is only considering the Glasgow suburban services in its thinking north of Kilmarnock;
- The freight route upgrade is only stated as considering freight gauge with no apparent view on the capacity required;
- The long term (2043) rural passenger service proposals are attractive, but they are a long time away;
- The current fleet of class 156 diesel units are approaching 30 years old. Their replacement will be an issue for the next franchise (post 2025); and
- The issues for Dumfries and Galloway are intimately bound up with the issues for East Ayrshire, south of Kilmarnock.

G.5.5 This is the biggest focus on the GSWL since the Hunterston – Yorkshire coal route upgrade over ten years ago. However, that was a "panic measure" whereas the current focus is part of a wider strategic view of the whole of the railway in Scotland.

Conclusion

There is a current opportunity for Dumfries and Galloway Council and SWestrans to enter into dialogue with the railway industry as there is a need for both the local authorities and the railway to work together to achieve their individual outcomes. This offers a more balanced dialogue than is often the case.

G.6 Existing Capacity of the Glasgow South West Line

G.6.1 The GSWL can be divided into four sections for the purposes of considering the capacity available:

- Glasgow – Kilmarnock;

- Kilmarnock – Mauchline;
- Mauchline – Dumfries; and
- Dumfries – Gretna Junction/Carlisle.

Glasgow – Kilmarnock

G.6.2 This section of the route is currently operating at 100% of its effective capacity; with two Glasgow – Kilmarnock (and beyond) trains per hour in each direction passing on the Lugton – Stewarton double track, dynamic loop. Any additional train service is likely to require additional double track to permit two trains to run in each direction and to be able to pass one of two trains in the other direction on an extended dynamic loop. Full redoubling would be preferable as this would not link the times of the trains in opposite directions and would allow greater flexibility in managing other pinch points or connections. Redoubling should ideally be carried out prior to any electrification works, but if it is not, the electrification works should be designed to accommodate future redoubling in the future.

Kilmarnock – Mauchline

G.6.3 This is the least used section of the route as much of the remaining coal traffic comes from Hunterston via Ayr and bypasses this section of the route, so it only accommodates one train an hour in each direction, which for a section that only takes a passenger train 12 minutes to traverse is a low use of capacity.

G.6.4 Mauchline Junction can be a constraint, as “up” freight trains (i.e. from the Ayr direction) have to restart on a gradient, having stopped to give up the single line token. This means that the “down” line is blocked for some five minute taking into account the published junction margins.

Mauchline – Dumfries

G.6.5 This is a long section of the route (49 miles) with only four intermediate signal boxes; New Cumnock, Kirkconnel, Thornhill and Holywell, thus creating, on average, ten-mile-long signal sections. The longest section is Kirkconnel to Thornhill at 15 miles and takes a passenger train 17 minutes to traverse, including a stop at Sanquhar, and 19½ minutes for a loaded coal train in the southbound direction.

Dumfries - Gretna Junction - (Carlisle)

G.6.6 The GSWL section (Dumfries to Gretna Junction) is 24½ miles with an additional almost 9 miles from Gretna Junction to Carlisle on the WCML. The 8 mile Annan - Gretna Junction section was redoubled in 2008 to provide capacity for the, then burgeoning, coal traffic between Hunterston port and English power stations especially in the Aire Valley. This removed a traditional bottleneck and, now the coal traffic has diminished to a trickle, there is spare capacity along this section of the route.

G.6.7 Capacity along the WCML is more constrained, especially for the one-mile southbound twin track section between Gretna Junction and Mossband, where the “up” freight lines diverge to go through Kingmoor Yards. The single “down” line is longer (2½ miles) stretching from Floriston to Gretna Junction. Gretna Junction - Carlisle is provided with 4 aspect signalling and will provide a three-minute headway.

G.6.8 Gretna Junction is a single lead junction because of the need to provide as high a speed as possible on the WCML. This is currently less of a constraint with the low volume of freight traffic using the GSWL, but it does restrict the timetabling options.

G.6.9 Additionally, there is a short (½ mile) twin track section just to the north of Carlisle station to Caldew Junction – the access to the south end of Kingmoor Yards.

G.6.10 The headways here are dominated by the Annan - Dumfries section where passenger trains take around 15 minutes, stopping at both stations. The running time is 19 minutes for a loaded coal train (south bound), which is limited to 60 mph (and has to accelerate from the 40 mph speed restriction through Dumfries station), but only 14 minutes for an empty coal train running in the opposite direction, which is permitted to run at 75mph.

G.6.11 This section will be operating at close to 100% of capacity if a half hourly frequency passenger service is operated as suggested in the Scotland Route Study for 2043.

G.7 Future Potential Capacity of the Glasgow South West Line

G.7.1 The future capacity of the GSWL is difficult to predict as it depends of the future use of the route and investment or dis-investment in capacity.

Carlisle – Gretna Junction – Dumfries

G.7.2 The 2043 view in the Scotland Route Study would result in two passenger trains per hour on the Gretna Junction – Dumfries section and up to (depending on the wider cross-border freight routing strategy adopted) one class 4 (75 mph) or class 6 (60 mph) freight train in each hour in each direction.

G.7.3 In addition, the Gretna Junction – Carlisle route section would see a total of six freight trains per hour (including those t/from GSWL ones) plus potentially up to eight passenger trains an hour (including the GSWL services) in each direction.

G.7.4 This level of train service with eleven WCML trains and three GSWL trains per hour in each direction is likely to be in excess of the capacity of Gretna Junction or the short twin track sections between Gretna Junction and Mossband and also into Carlisle station. However, these major strategic issues and their solutions will be driven by strategic decisions on cross border freight and passenger operations including HS2. Consequently, they will not be considered further in this report.

G.7.5 On the GSWL itself, the Gretna Junction – Dumfries section will be operating at virtually full capacity with the half hourly train service suggested for 2043. This will not permit the operation of the additional freight trains. The solution is relatively simple – to provide additional intermediate signals (probably two sets, giving a seven or eight-minute headway from Gretna Junction as far as Holywood (3½ miles north of Dumfries) to break up the long Annan to Dumfries section. This is possible using the same technology as was originally proposed or could be introduced if the route is to be re-signalled with modern radio based cab signalling – European Train Control System (ETCS), sometimes known as ERTMS (European Rail Traffic Management System).

G.7.6 The coal route upgrade project had included the provision of intermediate block signals to break up the long sections, in addition to the Annan - Gretna Junction redoubling. However, a large part of the funding was used to achieve the required approvals, through the Network Rail Approvals process, for the equipment chosen. Consequently, these extra signals were not installed on the GSWL, although intermediate signals were provided to break up key long sections on the Settle - Carlisle route in Cumbria and North Yorkshire.

Dumfries – Kilmarnock

G.7.7 North of Dumfries there is capacity for the proposed two trains per hour (one each passenger and freight) over the Dumfries to New Cumnock section. North of New Cumnock to Kilmarnock, two passenger trains per hour are suggested by the Scotland Route Study. This is unlikely to require much extra signalling, as the section lengths are around 10 to 12 minutes. There should therefore be sufficient capacity to operate the half hourly passenger train service and still run freight trains in between them, especially if some are only running south of Mauchline, making use of the freight line to Ayr, rather than the route to Kilmarnock.

G.7.8 However, it may be necessary to provide intermediate signals between New Cumnock and Thornhill to provide more flexibility in timetabling by reducing the minimum interval between trains.

Kilmarnock - Glasgow

G.7.9 North of Kilmarnock, the current part single track infrastructure is unable to support the operation of more trains. However, the key driver for change here will be electrification and the provision of more capacity will be driven by this, so it will not be considered in this report.

G.8 Impacts of re-opening Eastriggs Station on the Wider Rail Network

G.8.1 The addition of an extra station call into the timetable for Eastriggs will add additional time to a train compared with running non-stop. The current timetable is obviously planned running between Gretna Green and Annan non-stop. As a general rule it is suggested that the minimum addition of two minutes to non-stop running times would allow time for a station call. This time extension has been used in this report to illustrate the issues that will arise from the extra station call.

G.8.2 The extension of journey time means that trains will arrive later and/or start earlier compared with the current timetable so that the general integrity of the timetable is maintained. The GSWL only has two major points of interaction with the wider railway:

- At the northern end: north of Kilmarnock; and
- At the southern end: Gretna Junction.

G.8.3 At Gretna Junction the interaction is with the WCML where it is necessary to thread the GSWL services between the long distance cross border passenger and freight services. These services are planned around numerous network constraints and pinch points so the times that trains cross Gretna Junction may not be easily moveable.

North-end retiming

G.8.4 At the north end, the two single line sections between Kilmarnock and Barrhead are a major constraint as they limit the number of trains that can be operated (two per hour in each direction) and also tie together the times of trains in opposite directions because of the need to cross on the double track sections; north of Barrhead and between Lugton and Stewarton. This limits the degree of flexibility in timetabling, especially as adding a station south of Kilmarnock could result, for example, in a northbound train being two minutes later in this area and a southbound train being two minutes earlier. Appendix F shows the effect over a representative afternoon period and shows:

- There is generally only one train to or from Carlisle in every hour and in some hours there are currently none, as the Glasgow - Dumfries/Carlisle service is less than hourly;
- The critical factors are that many of the trains cross in or very close to Barrhead station and the addition of an extra call at Eastriggs, which adds two minutes to the running time, is likely to result in a potential clash on the Lugton – Barrhead single line to the south of Barrhead. This will delay the southbound train, although it does not impact on the crossing on the longer loop (with two stations) between Lugton and Stewarton (Lockridge Junction);
- In the south bound direction a Carlisle bound train will not be able to leave Barrhead two minutes earlier as it will clash with a northbound train which is still on the single line from Lugton; and

G.8.5 As a consequence, there is a potential need to retime one Glasgow - Kilmarnock train for every Glasgow – Carlisle train that is retimed in each direction. No attempt has been made to assess

the timetabling consequences at Barrhead, Busby Junction, or on the approaches to Glasgow Central, where there are numerous other trains and thus potential conflicts.

G.8.6 This illustrates that what appears to be a relatively simple retiming becomes complex when the wider network is considered. Any significant retiming at the north end of the route could require a comprehensive re-planning of all the services on this route, including the Barrhead and East Kilbride suburban services and the impact would be right into Glasgow Central station.

G.8.7 Realistically this is unlikely to be an option unless, as suggested in the Scotland Route Study and the RDG's ""Investing in the Future Choices for Scotland's Railways 2019 and beyond", these routes are proposed for additional infrastructure and/or electrification, which would drive a retiming to take advantage of the faster acceleration offered by electric trains.

Conclusion

Retiming issues apparent at the northern end of the GSWL. If a new stop were to be provided at Eastriggs, the retiming required to cater for the new station might best be accommodated by retiming at the southern (Gretna/Carlisle) end of the route.

South-end retiming

G.8.8 Gretna Junction is a "Single Lead Junction" where the twin tracks of the GSWL route (the southbound (up) & northbound (down) lines) come together into a short section of single line which then joins the northbound (down) WCML. There is a trailing crossover immediately to the south of this connection which permits southbound trains from the GSWL to reach the southbound WCML and run into Carlisle. Therefore, the southbound GSWL trains occupy the northbound lines of both the GSWL and WCML) for a short time and prevent northbound trains running. These southbound GSWL trains are therefore a potential constraint on the 'flexing' of the northbound GSWL train operations. (The single lead junction is a constraint, but it is designed to deliver higher WCML speeds than would be possible with a double junction, where this conflict would not occur).

G.8.9 The two tables in Appendix I show, simplistically, train operations in the Gretna to Carlisle area as it impacts on the GSWL passenger services.

G.8.10 Appendix H shows the northbound train times for trains operating on the WCML and GSWL Lines and indicates where there is potential conflict with southbound GSWL services.

G.8.11 Appendix I shows similar information for southbound trains on the WCML and GSWL and indicates where there is potential conflict with northbound GSWL and WCML services. In this table, the times shown are the arrival times of trains into Carlisle. The reference to 'departing 2 minutes later' applies only to WCML trains passing through Carlisle (and not to the GSWL trains). This is shown so that the connectional allowance can be seen. The *connectional allowance'* is the time required between the public arrival time of a train and the public departure of a following train to generate connections in timetable engines. The *connectional allowance* at Carlisle is 8 minutes. If the connection time from a train from the GSWL onto a WCML train going south is currently 8 or 9 minutes, then adding 2 minutes for a call at Eastriggs will reduce these times to 6 or 7 minutes respectively and thus break that published connection.

G.8.12 For trains only operating between Carlisle and Dumfries, some re-timings can apply only between Eastriggs and Dumfries for the current services, with the two morning trains starting at Dumfries two minutes earlier:

- There are two services that turnaround in Dumfries, at 0610 / 0618 and 1656 / 1707, which provide turnaround times of 8 minutes and 11 minutes respectively. Clearly if two minutes has to be added for calls at Eastriggs in both directions the trains will arrive two minutes later and depart two minutes earlier reducing the turn round by four minutes. This is not possible for the morning turnaround although, as there is two minutes pathing time in the

Carlisle – Dumfries leg, the turnaround could still be reduced by only two minutes, but it would still be a probably unacceptable six minutes. This suggests some minor retiming is required, probably to retime the 0610 arrival from Carlisle to 0606 allowing ten minutes before the 0616 departure. This would move the current 0531 departure earlier, but as it is a connection out of the sleeper service from Euston it can only move a few minutes (not earlier than 0525) to retain the minimum connection allowance at Carlisle. This will be sufficient to provide the Eastriggs call. The current path for the 0618 from Dumfries needs to be retained at Gretna Junction to retain the connection on the London.

- In the afternoon/evening a reduced turnaround time at Dumfries may be acceptable although the resulting seven minutes does not give much scope for error. This train is heavily constrained between connections at Carlisle in both directions, so a reduction in the turnaround time imports a performance risk. There may need to be some slight retiming of freight paths, but with the current decline in coal workings expected to continue, this is unlikely to present a problem at the time the station is opened. If additional Carlisle – Dumfries shuttle services are introduced before the station at Eastriggs is opened it is recommended that the extra time for a call at Eastriggs is included in the timetable, possibly by providing longer for the turnaround at Dumfries.

- The Carlisle – Dumfries shuttle services on Saturdays and Sundays all have sufficient time to enable them to be retimed between Eastriggs and Dumfries without an impact on the wider railway

G.8.13 **However, the options for the much larger number of trains that run to or from Glasgow Central is not so clear.**

G.8.14 The tables demonstrate that merely extending the journey times of GSWL trains by two minutes (at the southern end) will cause interaction with trains running on the WCML. There is the potential to destroy a number of current published connections which are already, in some cases, substandard. It is clear that there is no generic solution to this issue and that each train would need to be considered on its merits.

Conclusion

Extending train journey times by two minutes at the southern end of the route will cause interaction with trains running on the WCML with the potential to destroy a number of currently published connections. There is no generic solution to this issue and each train would need to be considered on its merits.

Other potential solutions

G.8.15 Other than north or south end retiming of GSWL services to accommodate the additional time required for a rail stop at Eastriggs, there are a number of other possible options to consider:

- **Reduction in engineering or pathing allowance:** Some trains have pathing time which is likely to be unnecessary and thus can be removed as use of the GSWL for coal diminishes - but it is unevenly spread about the route and between trains depending on the specific circumstances of each conflict. The level of engineering allowance is considerable – a total of six minutes spread along the route: two minutes south of Dumfries, two minutes between Dumfries and Kilmarnock and two minutes north of Kilmarnock. This may be excessive with the cessation of heavy coal traffic, especially once any remedial track work required as a consequence of the coal traffic has been completed;

- **Changes in line speed:**

  - A potential generic upgrade would be to raise the generally blanket line speed of 70 mph (there are some 80 mph sections) to 75 mph - the maximum speed for the class

156 units currently used on the route. This was considered and rejected in the past, but a new station may offer more justification;

- o A differential line speed for diesel multiple units might be appropriate, especially with the reduction in heavy freight traffic;

- o Longer term the provision of more modern 90 or 100 mph diesel units and the use of the GSWL as a diversionary route for the WCML during HS2 or other WCML capacity driven upgrades might suggest a wholesale upgrade in line speeds. Some of this potential journey time improvement could then be traded for a call at Eastriggs.

- **Additional train services:** If there is a move to introduce the half hourly frequency service as is suggested in the Scotland Route Study, then Eastriggs might be served by these addition trains which can be planned to incorporate the stop, although this would result in an hourly frequency service at Eastriggs - it may be possible to do slightly better at peak times. This is similar to the outcome at Stow on the new Borders Railway.

- **Abellio ScotRail Franchise Agreement**: The Abellio ScotRail franchise agreement includes some service upgrades on the GSWL route. Section 15.11 of the agreement sets out the agreed changes:

  - o 3 additional through passenger services, two of which are new and one an extension of an existing passenger service;

  - o 2 further extensions of passenger services to provide better through connectivity and consistency of service pattern;

  - o 1 additional Dumfries and Carlisle shuttle;

  - o A reduction in the longest and average interval between passenger services. The longest interval to reduce from 3 hours to 2 hours and the average time between passenger services on this route will be reduced by a little over about half an hour; and

  - o A greater number of daytime connections.

G.8.16 All this is required to happen by December 2017.

G.8.17 None of the detail of what this means is currently in the public domain. But it will require at least one additional class 156 multiple unit to be allocated to the route.

G.8.18 The rail industry timetable process will require detailed timetabling to be available by March 2017. It is expected that ScotRail will consult with SWestrans and SPT over the new timetable, but this has tended to happen after the March date. Transport Scotland will be aware of the proposed timetable prior to that date.

G.8.19 The key point about this service improvement, which is the first major upgrade since the introduction of the class 156s in the late 1980s, is that it will significantly reduce the generalised journey times as a result of the increased numbers of trains, hence the reduction in the service interval. This could permit the introduction of calls at Eastriggs with a much reduced adverse impact on other journeys currently being made. As a major service retiming and resource plan will be required this gives the opportunity to add the time for a call at Eastriggs into the timetable to future proof it, as happened with Conon Bridge on the Inverness – Wick/Thurso route.

Conclusion

The retiming of existing services, at either the northern or southern end of the GSWL route to allow for a call at Eastriggs station presents clashes with other train paths and would require a comprehensive re-planning of all the services on the route, and at the southern end has the

potential to destroy a number of published connections. However, a potential reduction in unnecessary pathing time, increases in the generic line speed, the potential for new trains (as noted in the Scotland Route Study) or improvements made as part of the Abellio ScotRail franchise agreement offer alternative opportunities for the introduction of a stop at Eastriggs.

G.9 Impacts of re-opening two stations

G.9.1 In terms of the rail station re-opening at Eastriggs, this option is considering the re-opening of the station in isolation. However, a similar study is being undertaken for the Thornhill area, for which a rail station re-opening option is also being considered. As both stations are on the same rail line, if both were to be built there are potential interactions to be considered, which are discussed here.

Demand

G.9.2 The provision of both Eastriggs and Thornhill railway stations would not have a great impact on the commercial aspects of the route as they are 38 miles apart and either side of Dumfries - the key passenger station at the south end of the route.

G.9.3 The only journeys that would have their journey time impacted are Gretna Green and Annan to Kilmarnock and Glasgow, and Kilmarnock and the Cumnock Valley stations to Carlisle.

Train Service

G.9.4 Of more importance is the impact on the train service: timetable and potentially resourcing.

G.9.5 It is suggested that it may be possible to introduce either of the two new stations with some adjustments to the existing timetables, as the impact of one station call is about two minutes. However, the combined effect of introducing two calls and adding four minutes to the end-to-end running times is likely to require a more comprehensive recast of the timetable.

G.9.6 The addition of four minutes additional running time in each direction will reduce the turn round time at one end of the route by eight minutes. This may have a material impact on operation of the timetable as there are instances where trains will not arrive early enough to be available to make their next journey. In such circumstances a comprehensive re-timetabling exercise will need to take place and this may require additional rolling stock and/or train crew. Note that this has not been explored further but is flagged as a potential issue depending on the outcome of the initial individual station appraisals.

G.9.7 In summary - **should both Thornhill and Eastriggs Railway Stations be promoted, then additional, more detailed, timetabling work will be required to assess the impact of opening both stations on the operation of the whole GSWL route**.

Consequences

G.9.8 If both Eastriggs and Thornhill railway stations were considered as suitable for funding, and the delivery of one station is an early priority, then there may need to be a choice made through a prioritisation process. This could be the one that was least disruptive to the timetable to deliver.

Other potential new stations on the GSWL

G.9.9 There are potentially four communities in East Ayrshire between Kilmarnock and New Cumnock which might also benefit from the provision of a station.

G.9.10 These are (listed in order south from Kilmarnock and with approximate populations):

- Hurlford: pop. 5,000;

- Catrine: pop. 2,500;
- Mauchine: pop. 4,000; and
- Cumnock: pop. 13,000.

G.9.11 Clearly any new stations on this stretch of line will be for East Ayrshire Council and/or Strathclyde Passenger Transport (SPT) to consider and promote. However, should they do so, there will be an impact on the train service into the Dumfries and Galloway Council area and an impact on the train service that is being considered to serve potential new stations at Eastriggs and Thornhill.

G.9.12 It is possible that the provision of new stations at some or all of these new stations would happen at the same time as the suggested Glasgow - New Cumnock hourly train service, which would become a service completely focused on this northern section of the route. In these circumstances calls in the longer distance trains serving Dumfries and Galloway stations would not have any additional calls added, although there may be a desire for redistribution of the current calls within the new suite of East Ayrshire stations.

G.9.13 However, if only one new station is proposed with the existing service it would, in timetable terms, have the same impact as Thornhill on the service pattern and effectively be in competition with Thornhill for the space in the timetable, creating the difficulty for Eastriggs of providing two additional calls in the GSWL services.

G.9.14 This suggests that there is a need to consider the strategic role of the GSWL in this part of Scotland and the potential implications of additional stations and train services.

G.10 Rail Freight Hub Potential

G.10.1 The potential for a re-opened Eastriggs Railway Station to operate as a dual use passenger-freight station has been explored and is discussed here.

G.10.2 Traditionally there has been some overlap between passenger and freight station activities in the era of labour-intensive railway operation. On today's capital-intensive railway – although common *route* infrastructure is routinely involved – these are now highly separate activities in terms of local demand and supply, with different locational requirements for stations / terminals (both macro and micro), site footprints, site infrastructure, staffing and neighbour impacts.

G.10.3 On occasions, there may be conflicts between passenger and freight requirements, for example where a new passenger station might encroach on sidings or loop lines otherwise used by, or potentially usable for, rail freight traffic.

G.10.4 The inherent technical characteristics of rail operation (guided track, steel wheel on steel rail, and a segregated and signalled right of way) give rail freight particular strengths for transits which involve:

- Large regular volumes – ideally trainloads of typically 500+ tonnes payload;
- Long hauls – particularly important when both ends of the transit are not directly rail-connected; and
- Direct rail connection at one end of the transit at least – saving the cost of rail to road transfer and local road collection/delivery.

G.10.5 Until very recently, coal had long been the dominant commodity on Britain's freight railway – particularly electricity supply industry coal from mine to power station, but also industrial coal to large processing plants such as cement and steel works. In recent decades, with the major decline in deep mining, the pattern of rail movement in Scotland changed significantly –

substantially switching away from short hauls from local deep mines to power stations, to long hauls, typified by Anglo-Scottish movements of imported (via Hunterston) coal and domestic opencast (largely Ayrshire) coal to English power stations.

G.10.6 In the regional context, in recent years, the coal market has moved into severe decline, and this has had a particular impact on the GSWL line from Ayrshire through Dumfries and Eastriggs to Carlisle – along which infrastructure capacity was substantially enhanced 5-10 years ago, but whose coal traffic levels are now substantially reduced.

G.10.7 In the case of traditional bulk rail traffics – such as coal, cement, oil, aggregates, etc. – rail's high-volume movement, direct from private siding to private siding (with no road legs involved) can be very competitive with road haulage, even over relatively short distances. Currently there are no bulk rail freight terminals in the SWestrans area, although timber from the south of Scotland is loaded to rail at a railhead in Carlisle.

G.10.8 The non-bulk (or 'unitised') rail freight business in Scotland is overwhelmingly dominated by the intermodal load-carrying method, i.e. in containers – typically through multi-user hub or regional railheads, with local collection / delivery by road from the traffic origin / destination. Currently there are no intermodal railheads in the SWestrans area, the nearest being within Central Scotland at Coatbridge, Grangemouth and Mossend. A small railhead in Carlisle handles bulk and non-bulk traffics on an irregular basis, but not in containers.

G.10.9 Over the past twenty years there have been a range of studies / initiatives to develop rail freight facilities in the SWestrans area. The majority involved rail linkage of sites with specific existing or planned manufacturing / processing activities on site, playing to rail strengths where a road collection is not required. None have been realised, demonstrating the difficulty of turning rail potential into reality, even when relatively large volumes of traffic are on offer on site or in the immediate catchment area. Those sites known to have been investigated are:

- **Maxwelltown (1):** handling wood chip from local saw mills for rail transport to the Shotton Paper mill in north east Wales. The project was abandoned when Shotton Paper moved to 100% recycled fibre rather than virgin material;

- **Maxwelltown (2):** In the late 1990s it was planned to reinstate the rail connection to the BP oil distribution depot on the short branch line from Dumfries to Maxwelltown, as part of a Freight Facilities Grant-assisted project encompassing rail handling facilities at the Grangemouth refinery and various railheads across Scotland and near Carlisle. This element of the rail project was not pursued and the track has been removed and the solum converted into a walkway and cycle path;

- **Steven's Croft (Lockerbie):** The forest industry development site here was designed specifically so that rail connection to the WCML could be provided. The key players on site established the Lockerbie Railfreight Company, and between 2000 and 2003 various consultancy studies were undertaken in preparation for the submission of a Freight Facilities Grant application to the Scottish Executive.

- In 2002, following difficulties in generating a positive response from the rail industry, initial feasibility work began on a wood and waste fired power station which would occupy part of the site of the proposed intermodal railhead and would have a major impact on the balance of transport demand on site. In early 2003, the rail project was put on hold, pending the outcome of a full feasibility study of the power station concept. The latter subsequently was given the go-ahead, the Lockerbie Railfreight Company was wound up, and the access embankment from the WCML was removed. A significant proportion of the proposed railhead site is now occupied by the power station, with most of the remaining land used for timber storage and related activities. Rail prospects almost certainly now depend on any future Phase 2 Steven's Croft development, with rail access built in;

- **Beattock:** rail connection to the East West Haulage freight depot adjacent to (and east of) the WCML, to handle timber and other commodities. The scheme did not proceed;
- **Chapelcross:** handling organic waste material from various cities for conversion to energy pellets to supply power stations. The site development did not proceed;
- **Quintinshill:** railhead / rail access from the WCML for proposed nearby Canonbie coking coal mine. The mine project is in abeyance following the drop in world coal prices; and
- **Eastriggs (Ministry of Defence sidings):** potential rail-served spoil destination for mined material from the proposed Canonbie coking coal mine near Quintinshill. The mine project is in abeyance following the drop in world coal prices.

G.10.10 The above illustrate the difficulty in establishing rail freight facilities in a rural area, both where speculative or pre-existing on-site, traffic-generating, developments are involved. A fundamental lesson which can be drawn is that on-site, traffic-generating sources are a necessary – but not sufficient – condition for the realisation of rail freight opportunities. Substantial volumes, and often lengthy hauls, are also key.

G.10.11 It is understood that there are no existing or planned major manufacturing or processing activities at or close to the potential passenger station at Eastriggs.

G.10.12 There is a substantial former Ministry of Defence site to the west of Eastriggs village, including a direct rail connection from the GSWL. This was the proposed location of a mined material processing plant associated with the proposed coking coal mine near Quintinshill. It is possible that another manufacturing / processing development might utilise this site and its rail connection in the future, but there is neither synergy nor conflict with the Eastriggs passenger station site.

G.10.13 The concept of a freight railhead at the passenger station site, serving a wider catchment, is also undermined by the scattered nature of demand and the relative proximity of Eastriggs to two operational railheads in Carlisle where six different rail freight routes converge, maximising cost-effective accessibility to train services.

Conclusion

In light of the specific locational issues discussed above, and the wider generic mismatch between passenger station and freight railheads on the modern railway, it is recommended that no further analysis be undertaken into a potential dual-use passenger-freight facility at Eastriggs.

However, the potential future freight use of the MoD connection – around one mile west of the passenger station site should be noted.

G.11 Overall Conclusion

G.11.1 The Scotland Route Study and RDG's "Investing in the Future Choices for Scotland's Railways 2019 and beyond" publications, in line with established policy, do not propose any new stations or routes. However, they do create an opportunity for dialogue on a more integrated approach to developing the GSWL and to providing benefits which will enable Eastriggs station to be delivered.

G.11.2 In terms of the role of the GSWL, it is clear from the documents that:

- The rail industry considers that the GSWL has a role as a diversionary route for freight;
- The passenger capability proposals are all in the Glasgow suburban area; and

- Outwith the Glasgow suburban area, the status of the rest of the GSWL is seen as part of the "Rural railway".

G.11.3 A key opportunity is potentially how this move to becoming the WCML freight (possibly passenger) diversionary route presents an opportunity to secure upgrades and improve services for the Dumfries and Galloway area**. The publications present an opportunity for Dumfries and Galloway Council and SWestrans to enter into dialogue with the railway industry as there is a need for both the local authorities and the railway industry to work together to achieve their individual outcomes.** This offers a more balanced dialogue than is often the case. In addition, while any future extension of an HS2 route into Scotland is unlikely to have any significant impact on services on the GSWL, it may offer an opportunity to upgrade the infrastructure on the route if it is required as a diversionary route during HS2 construction works.

G.11.4 In terms of the addition of a new station stop at Eastriggs, the retiming of trains at both the northern or southern end of the GSWL route to accommodate the additional stop has been considered. At the northern end, retiming issues are apparent and what appears to be a relatively simple retiming becomes complex when the wider network is considered. Any significant retiming at the north end of the route could require a comprehensive re-planning of all the services on this route, including the Barrhead and East Kilbride suburban services and the impact would be right into Glasgow Central station. Extending train journey times at the southern end of the route to provide the additional stop would cause interaction with trains running on the WCML due to the 'single lead' Gretna junction (where the twin tracks of the GSWL route come together into a short section of single line which then joins the northbound WCML). The retiming of trains at the southern end of the GSWL line to accommodate the additional stop at Eastriggs has the potential to destroy a number of currently published connections. As such, there is no generic solution to this issue and each train would need to be considered on its merits.

G.11.5 However, a potential reduction in unnecessary pathing time, increases in the generic line speed, the potential for new trains (as noted in the Scotland Route Study) or improvements made as part of the Abellio ScotRail franchise agreement do offer alternative opportunities for the introduction of a stop at Eastriggs Railway Station.

G.11.6 A similar study is being undertaken for the Thornhill area, for which a rail station re-opening option is also being considered. As both stations are on the same rail line, consideration has been made of the impact if both were to be reopened. It is clear that should both stations be promoted, then additional, more detailed, timetabling work will be required to assess the impact of opening both stations on the operation of the whole GSWL route. In terms of prioritising any one new station over another, it may not be the station with the best benefit/cost ratio that would be delivered, but could be the one that was least disruptive to the timetable. Other rural communities on the GSWL route in East Ayrshire may also benefit from the provision of a station and there is a need to consider the strategic role of the full GSWL route in this part of Scotland and the potential implications of all potential additional stations and train services.

G.11.7 The wider generic mismatch between passenger station and freight railheads on the modern railway, means there is limited potential for a dual-use freight-passenger facility at Eastriggs. However, the potential future freight use of the Ministry of Defence connection – around one mile west of the passenger station site should be noted.

Appendix H Part 1: Feasibility - Option 6 - North End Retiming Impacts

Table H.1: Effect of additional stop at Eastriggs on Carlisle trains

					From Carlisle							To Carlisle		
			Nthbd	Sthbd	Nthbd	Sthbd	Nthbd	Sthbd	Nthbd	Sthbd	Nthbd	Sthbd	Nthbd	Sthbd
	Existing Timetable	Kilmarnock	13 57	14 49	14 58	15 21	15 28	15 49	15 57	16 20	16 27	16 50	16 57	17 20
		Lochridge Jn	14 05	14 40.5	15 06	15 12	15 36	15 40.5	16 05	16 11.5	16 35	16 41.5	17 05	17 11.5
		Lugton	14 14	14 32	15 15	15 03	15 45	15 32	16 14	16 03	16 44	16 33	17 14	17 03
		Barrhead	13 21.5	14 24.5	15 23	14 54	15 52	15 24	16 21	15 54	16 52	16 24	17 21.5	16 54
Timetable with additional station call in Carlisle trains. Trains 2min later coming north, 2min earlier going south.	**Timetable** with additional call in Carlisle trains	Kilmarnock	13 57	14 49	15 00	15 21	15 28	15 49	15 57	16 20	16 27	16 48	16 57	17 20
		Lochridge Jn	14 05	14 40.5	15 08	15 12	15 36	15 40.5	16 05	16 11.5	16 35	16 39.5	17 05	17 11.5
		Lugton	14 14	14 32	15 17	15 03	15 45	15 32	16 14	16 03	16 44	16 31	17 14	17 03
		Barrhead	13 21.5	14 24.5	**15 25***	14 54	15 52	**15 24***	**16 21***	15 54	16 52	**16 22***	17 21.5	16 54
	Timetable re-timing for additional call in Carlisle trains***	Kilmarnock	13 57	14 49	15 00	15 21	15 28	15 51	15 55	16 20	16 27	16 48	16 57	17 20
		Lochridge Jn	14 05	14 40.5	15 08	15 12	15 36	15 42.5	16 03	16 11.5	16 35	16 39.5	17 05	17 11.5
		Lugton	14 14	14 32	15 17	15 03	15 45	15 34	16 12	16 03	16 44	16 31	17 14	17 03
		Barrhead	13 21.5	14 24.5	**15 25**	14 54	15 52	**15 26 ****	**16 19****	15 54	16 52	**16 22**	17 21.5	16 54

Yellow and green shaded cells show the pairs of trains crossing on the "Lugton" loop

**clashes at Barrhead*

***Re-timed trains to remove clashes at Barrhead*

****The consequence of retiming two Carlisle trains (one in each direction) is a need to retime two Glasgow - Kilmarnock trains due to a clash at Barrhead. Note that no attempt has been made to assess the consequences of these retimings at Barrhead, Busby Jn or on the approaches to Glasgow Central*

Appendix I Part 1: Feasibility - Option 6 - South End Retiming Impacts

Table I.1: Existing timetable and conflicts at Gretna Junction – Down (Northbound) trains

		WCML	GSW	WCML	GSW	WCML	GSW	WCML	GSW	WCML	GSW
DOWN (Northbound) Trains		1S26		6S99		1S32		1S49		1S51	
Carlisle	arr	**05 14**				**08 10**[1]		**11 09.5**		**13 06.5**	
	dep	**05 16**	**05 31**		**06 08**	**08 12**	**08 15**[2]	**11 11.5**	**11 15**	**13 08.5**	**13 12**
Gretna Jn		05 25	*05 41*	*06 07*	*06 17*	*08 19*	*08 24*	*11 18*	*11 24*	*13 15*	*13 21*
Gretna			**05 43**		**06 19**		**08 26**	**11 20.5**	**11 26**		**13 23**
UP (Southbound) conflicts at Gretna Jn GSW trains			***05 26***				***08 13***		***11 11***		***13 10.5***

		WCML	GSW	WCML	GSW	WCML	GSW	WCML	GSW	WCML	GSW
DOWN (Northbound) Trains		1S61		1S66		1S72		1S81		9S93	
Carlisle	arr	**15 07**[1]		**16 10.5**[4]		**17 49.5**[1]		**19.10.5**[5]		**21 00**	
	dep	**15 09**	**15 12**[3]	**16 12.5**	**16 17**	**17 52**	**17 57**	**19 12**	**19 17.5**	**21 02**	**21 12**
Gretna Jn		15 15.5	*15 21*	*16 19.5*	*16 26*	*17 59*	*18 06*	*19 19*	*19 26.5*	*21 09*	*21 21*
Gretna			**15 23**		**16 28**		**18 08**		**19 28.5**		**21 23**
UP (Southbound) conflicts at Gretna Jn GSW trains		**15 11**	***15 25***		***16 43***	***17 55***	***18 22***		***19 31***		***21 30.5***

		WCML	GSW
DOWN (Northbound) Trains		1S06	
Carlisle	arr	**22 50.5**	
	dep	**22 52.5**	**23 10**
Gretna Jn		*22 59*	*23 19*
Gretna			**23 21**
UP (Southbound) conflicts at Gretna Jn GSW trains		***23 13.5***	***23 28***

[1] *Not a published connection*
[2] *Public time 2 mins earlier*
[3] *Public time 6.5 mins earlier*
[4] *Public time 1 min earlier to create a connection*
[5] *Public arrival time 1 min earlier to create a connection*

Table I.2: Existing timetable and conflicts at Gretna Junction – Up (Southbound) trains

	GSW	WCML	WCML	GSW	WCML	WCML	GSW	WCML	WCML	GSW	WCML
UP (Southbound) Trains		1R20	1M06			9M50		1M92	1M93		1M09
Gretna	**05 22**			06 41			**08 07**			**09 25**	
Gretna Jn	05 26	05 35.5	06 41	06 45	06 54.5	07 58.5	08 11	08 23	09 24	09 32	09 41
Carlisle arrive (Depart 2mins later)	**05 35**	**05 42**	06 47	06 54	07 00.5	**08 04**	**08 20**	**08 31.5**	**09 31**	**09 41**	**09 47**
DOWN (Northbound) conflicts at Gretna Jn - GSW trains	05 32			07 04			08 24			09 19	
DOWN (Northbound) conflicts at Gretna Jn - WCML trains	05 25			06 59			08 19			09 17	09 29.5
			WCML	**GSW**	**WCML**	**WCML**	**GSW**	**WCML**	**WCML**	**GSW**	**WCML**
UP (Southbound) Trains			1M10		9M53	1M96		1M12	1M98		1M14
Gretna				**10 49**[1]			**12 22**			**14 21.5**	
Gretna Jn			**10 41**	10 51	**11 03**	12 21	12 26	12 41.5	**14 21.5**	14 25.5	**14 40**
Carlisle arrive (Depart 2mins later)			**10 47**	**11 02**	**11 09**	**12 28**	**12 35**	**12 47.5**	**14 28.5**	**14 34.5**	**14 46**
DOWN (Northbound) conflicts at Gretna Jn - GSW trains							12 30				
DOWN (Northbound) conflicts at Gretna Jn - WCML trains				1055			12 13	12 36		14 20.5	
			GSW	**WCML**	**WCML**	**WCML**	**GSW**	**WCML**	**WCML**	**GSW**	**WCML**
UP (Southbound) Trains				1M99	1M15	1M91		1M17	1M92		1M18
Gretna			**15 21**				**17 31**			**18 22**	
Gretna Jn			15 25	15 30	15 40	17 23	17 33	17 44	18 21	18 26	18 38
Carlisle arrive (Depart 2mins later)			**15 34**	**15 37**	**15 47**	**17 30**	**17 44**	**17 51**	**18 28**	**18 35**	**18 44**
DOWN (Northbound) conflicts at Gretna Jn - GSW trains			15 21				17 29			18 06	
DOWN (Northbound) conflicts at Gretna Jn - WCML trains			15 29			17 18	17 25	17 44		18 19.5	

[1] *Published 11 04. No published connection into 9M53*

Appendix J Part 1: Affordability - Option 6 – Station Costs and Patronage

J.1 Station Costs

Table J.1: Costs for recently constructed or soon to be built stations

Station	Status	No. of platforms and length	Electrified	Footbridge	Car Park	Estimated Cost	Outturn Cost	Comment
New Court	Opened June 2015	One 124m	No	No	No (4 disabled)	£1.44m	£2.2m	Cost increase due to extra signaling work
Lea Bridge	Opens May 2016	Two	Yes	Yes, lifts	No	£6.5m	£11.6m	Re-opening – existing platforms used
Ilkeston	To open autumn 2016	Two	No	Yes, ramps	Yes 90 spaces	£6.5m	C£9.6m	Much delayed by Great Crested Newts and flooding issues
Pye Corner	Opened Dec 2014	One 145m	No	No	Yes 62 spaces	£3.5m		Built (not by Network Rail) in 8 months so assume prices as budget. Provision for 2nd platform
Apperley Bridge	Opened Dec 2015	Two 100m	Yes	Existing new steps / ramps	Yes 297 spaces	£16m for the two	£16.9 max	Park & Ride
Kirkstall Forge	Opened June 2016	Two 100m	Yes	Yes, lifts	Yes 120 Spaces	£16m for the two	£16.9 max	Regeneration site
Low Moor	Planned for May 2017	Two 96m	No	Yes, lifts	Yes 128 spaces	£10.5m		Ground conditions, due to mining have created costs
Kenilworth	Planned in CP5	Two 100m	No			£11m	N/A	
Bermuda Park	Jan 2016	Two 75m	No	Underpass, ramps	Yes 30 Spaces	£13.6m package	£19.2m	Package included Bedworth platform lengthening (to 77m) & new platform at Coventry

Station	Status	No. of platforms and length	Electrified	Footbridge	Car Park	Estimated Cost	Outturn Cost	Comment
Coventry Arena	Jan 2016	Two: 1 x 76m, 1 x 149m	No		Yes 80 spaces	£13.6m package	£19.2m	Package included Bedworth platform lengthening (to 77m) & new platform at Coventry
East Linton and Reston	No date planned	Two, Probably 150m	Yes	Yes	Yes	£21.8m for the pair	N/A	GRIP3 Costs April 2016
Robroyston	No date given	Two At least 120m	Yes	Yes	Yes	Over £14m	N/A	Scottish Station Fund announcement - which will provide 50% of the costs (over £7m), suggesting a cost in excess of £14m.

Data Sources:

Newcourt, Devon: *https://www.gov.uk/government/news/new-144-million-railway-station-to-be-built-in-devon, http://www.bbc.co.uk/news/uk-england-devon-33007069, https://www.google.co.uk/search?q=new+court+station&ie=utf-8&oe=utf-8&gws_rd=cr&ei=EUwhV6T2E-uVgAbF_4awDg#q=new+court+station+planning+application*

Lea Bridge, London: *https://www.gov.uk/government/news/new-65-million-railway-station-to-be-built-in-waltham-forest*

https://branding.walthamforest.gov.uk/Documents/ke134-lea-bridge-station-reopening.pdf

Ilkeston: *http://www.derbyshire.gov.uk/transport_roads/public_transport/news_notices/ilkeston_rail_station/default.asp?VD=ilkestonstation*

Pye Corner: *http://www.bbc.co.uk/news/uk-wales-south-east-wales-25962533, https://en.wikipedia.org/wiki/Pye_Corner_railway_station http://www.southwalesargus.co.uk/news/11666021.Newport_s___3_5m_Pye_Corner_rail_station_opened_in_record_time/#comments-anchor https://www.gov.uk/government/news/new-35-million-railway-station-to-be-built-in-the-ebbw-valley*

Apperley Bridge: *http://www.wymetro.com/ApperleyBridge/, http://www.wymetro.com/news/projects/projectdetails/kirkstallforgerail/*

Kirkstall Forge: *http://www.wymetro.com/news/projects/projectdetails/kirkstallforgerail/, http://www.wymetro.com/uploadedFiles/WYMetro/Content/news/projects/projectdetails/Local%20Authority%20Major%20Schemes%20-%20Revised%20Full%20Approval%20Form%281%29.pdf*

Low Moor: *http://www.wymetro.com/news/projects/projectdetails/lowmoor/ http://www.thetelegraphandargus.co.uk/news/11434077.New_railway_station_at_Low_Moor_remains_on_track_as_land_deal_about_to_be_struck/#comments-anchor*

Kenilworth: *https://www.gov.uk/government/news/kenilworth-new-station*

Coventry Arena and Bermuda Park: *http://www.bbc.co.uk/news/uk-england-coventry-warwickshire-35341487, http://www.bbc.co.uk/news/mobile/uk-england-coventry-warwickshire-16180361, https://en.wikipedia.org/wiki/Bermuda_Park_railway_station*

Laurencekirk: *http://news.bbc.co.uk/1/hi/scotland/north_east/8055093.stm*

Conon Bridge: *http://www.railtechnologymagazine.com/Rail-News/conan-bridge-station-open-after-50-years?utm_medium=email&utm_source=Rail+Technology+Magazine&utm_campaign=2163488_thedailyrailnews+February+2013+Week+3&dm_i=IJS%2c1ADCW%2c4DF2LV%2c4D29L%2c1*

Reston and East Linton: *https://www.transportxtra.com/publications/local-transport-today/news/48842/cost-of-new-scots-rail-stations-trebles*

Robroyston: *http://www.spt.co.uk/documents/RTP090514_agenda14.pdf, http://news.scotland.gov.uk/News/Funding-boost-for-proposed-station-at-Robroyston-2b9d.aspx*

J.1.1 It can be seen that there are a range of costs for the recently built or soon to be built new stations.

J.1.2 There are a number of stations that are close in design/specification to Eastriggs:

- Two twin-platform stations on electrified lines in West Yorkshire: **Apperley Bridge** and **Kirkstall Forge**, each costing about £8.5m each. (The published information is £16.9m for both of them.). Both stations have large car parks, but they are also linked into wider development sites;
- The two platform station at **Low Moor**, which is not on an electrified line, is more expensive at £10.5m, and had ground issues due to mining;
- **Ilkeston**, with an outturn cost of approximately £9.6m and has had well-publicised difficulties with Great Crested Newts and flooding issues; and

J.1.3 **Robroyston** was announced at the end of September 2016 with no final cost, but a Scottish Stations Funds award of over £7m which was for 50% of the cost. This station includes considerable alteration to OLE, with the new OLE standards making their impact.

J.1.4 Table J.1 suggests outturn costs for these stations in the range **£8m - £14m**.

J.1.5 It should be noted that:

- The two single platform stations noted in the table at **Pye Bridge** (£3.5m) and **New Court** (£2.2m) are both under half the cost of the two platform stations, but that is reasonable, as not only do they have half the platforms, but they do not require a footbridge.
- **Pye Bridge** was not built by Network Rail;
- **New Court** looks good value compared with all the other stations listed, and is more in line with recent Scottish experience, such as:
  - **Laurencekirk** (two 150m platforms, footbridge with steps and ramps) re-opened in May 2009 at a cost of £3m; and
  - **Conon Bridge** (single 15m platform, no footbridge and minimal car parking) which re-opened in February 2013 at a cost of £600,000 (£0.6m).

Appendix K Part 1: Accessibility Analysis

K.1 Introduction

K.1.1 A lack of direct public transport travel routes was identified as a key problem during the Pre-Appraisal stage of the study. Options 1a, 1b and 1c all consider improved direct access from Eastriggs to the railway network, seeking to address the problem. Existing journey times from Eastriggs to key destinations on the railway network (Lockerbie, Carlisle, Edinburgh and Glasgow) have been considered alongside estimated journey times to these key destinations with the options in place. This appendix shows the analysis for the options for:

- An AM trip (made at approximately 08:00);
- A PM trip (made at approximately 17:00); and
- An evening trip (made at approximately 20:00).

K.1.2 For the existing travel time, the travel time has been considered by car, bus only, and by a combination of bus and train.

K.1.3 Analysis of the change in public transport to car travel time differential (i.e. the difference in journey time between a trip by public transport and the same trip by car, in both the existing and option situation) has also been undertaken which considers by how much the options reduce the public transport travel time compared to the car i.e. how much more 'competitive' does the option make public transport. This analysis is also presented in this appendix.

K.2 Options 1a, 1b and 1c – Existing vs. Option Estimated Journey Times

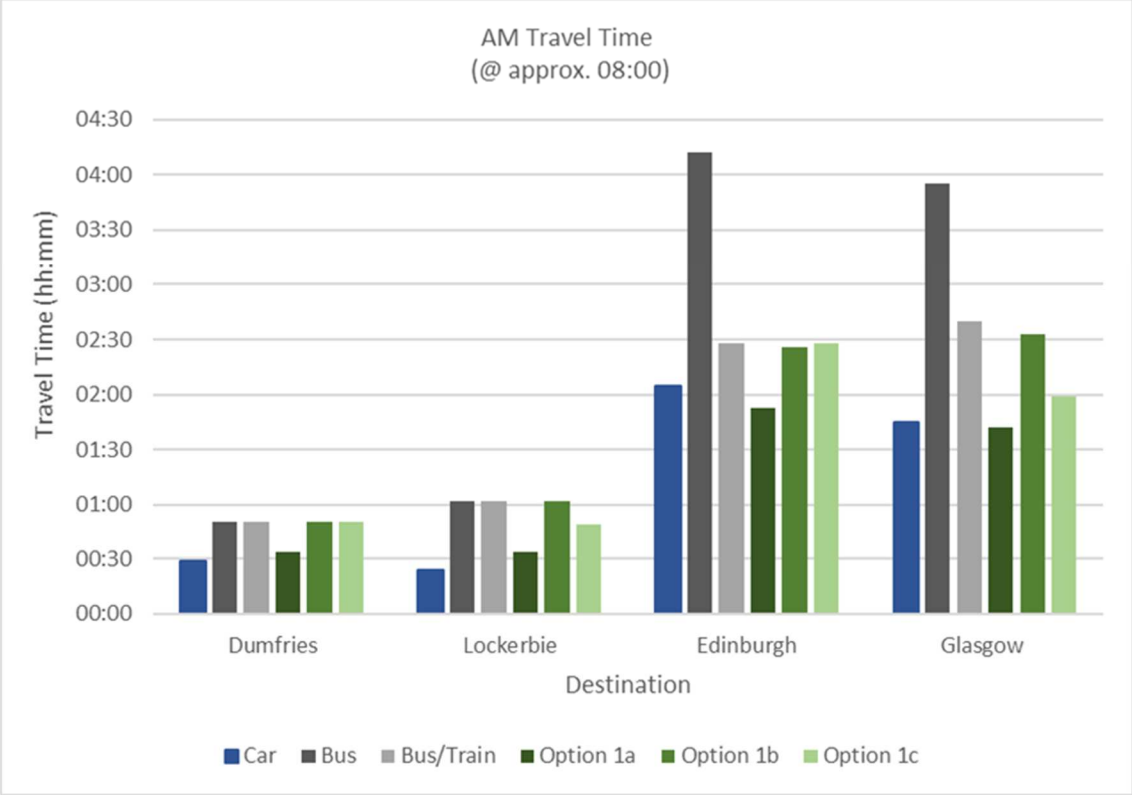

Figure K.1: Options 1a, 1b and 1c – Existing vs. option Journey Times - AM

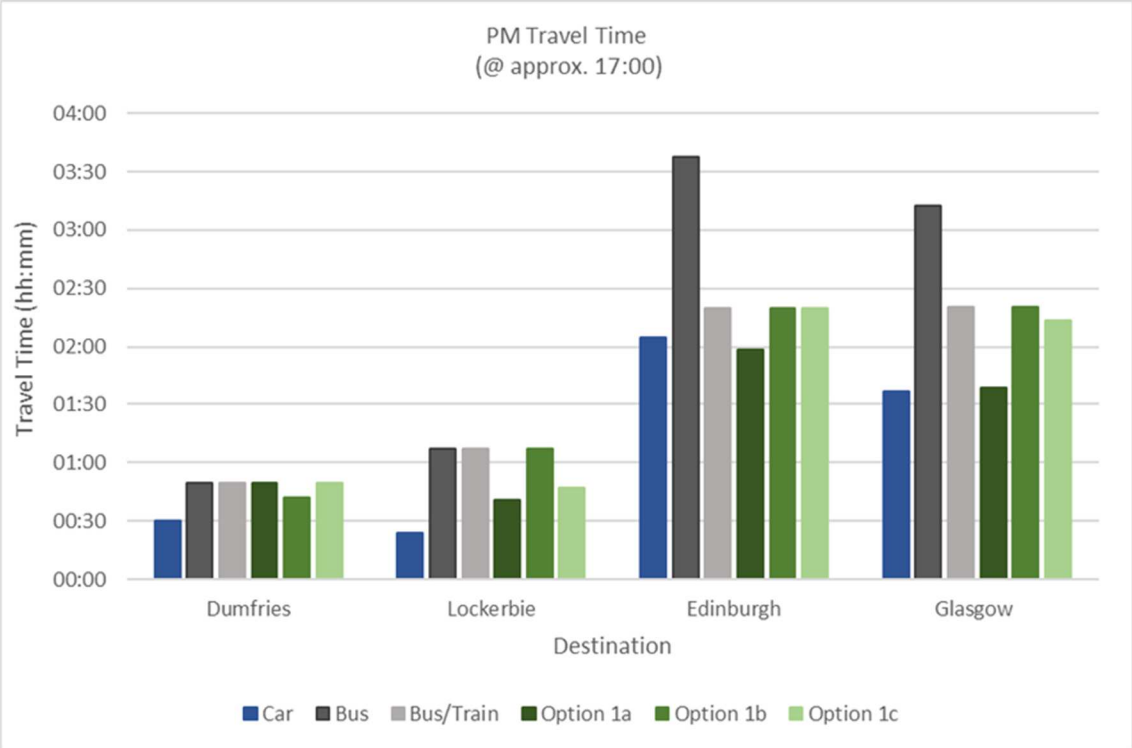

Figure K.2: Options 1a, 1b and 1c – Existing vs. option Journey Times - PM

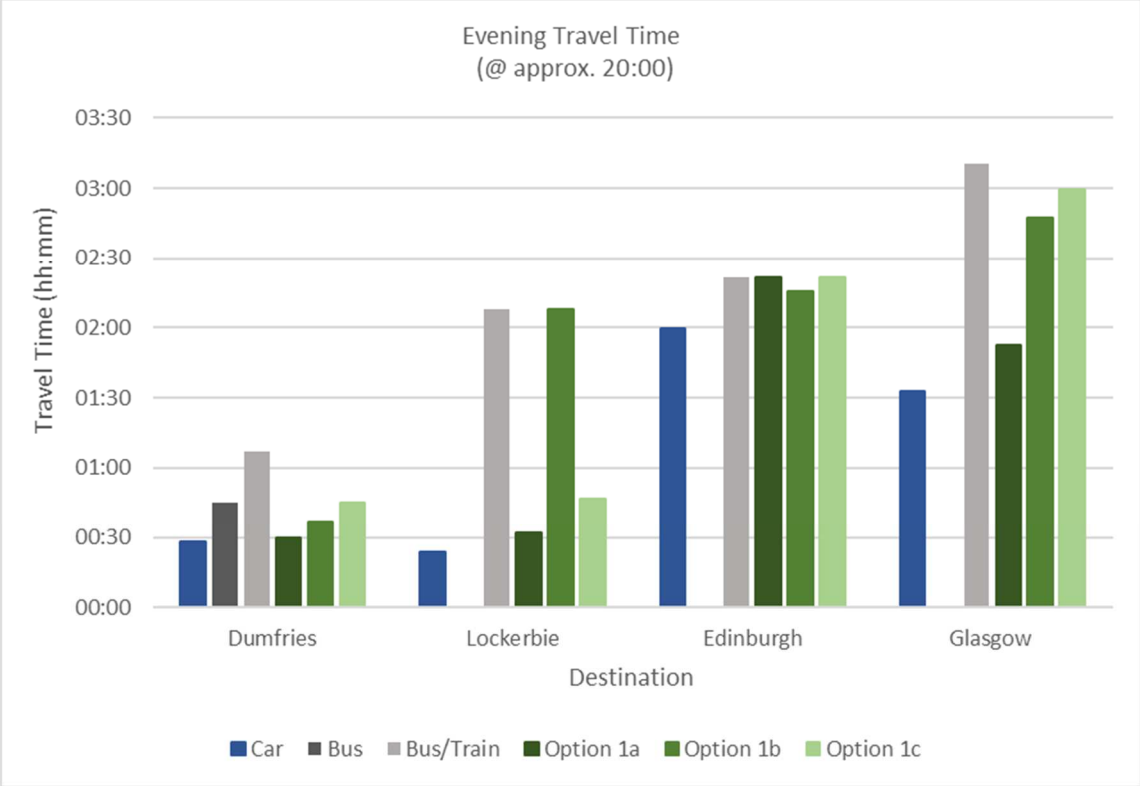

Figure K.3: Options 1a, 1b and 1c – Existing vs. option Journey Times - Evening

Table K.2: Options 1a, 1b and 1c – Public Transport vs. Car travel Time Differential

		Public Transport - Car Travel Time Differential				Public Transport - Car % Travel Time Differential Reduction			
	Scenario	Dumfries	Lockerbie	Edinburgh	Glasgow	Dumfries	Lockerbie	Edinburgh	Glasgow
AM	Existing	00:22	00:38	00:23	00:55		-		
	Option 1a	00:05	00:10	-00:12	-00:23	-77%	-74%	-152%	-142%
	Option 1b	00:22	00:38	00:21	00:48	0%	0%	-9%	-13%
	Option 1c	00:22	00:25	00:23	00:14	0%	-34%	0%	-75%
PM	Existing	00:20	00:43	00:15	00:44		-		
	Option 1a	00:20	00:17	-00:06	00:02	0%	-60%	-140%	-95%
	Option 1b	00:12	00:43	00:15	00:44	-40%	0%	0%	0%
	Option 1c	00:20	00:23	00:15	00:37	0%	-47%	0%	-16%
Evening	Existing	00:17	01:44	00:22	01:38		-		
	Option 1a	00:02	00:08	00:22	00:20	-88%	-92%	0%	-80%
	Option 1b	00:09	01:44	00:16	01:15	-47%	0%	-27%	-23%
	Option 1c	00:17	00:23	00:22	01:27	0%	-78%	0%	-11%

K.2.1 The analysis shows:

- Reductions in the public transport journey times, specifically for:
  - Option 1a for travel to Lockerbie, Carlisle, Edinburgh and Glasgow (with reductions in travel time of up to around an hour and a half), and especially for trips to Edinburgh (where the option provides a public transport travel time that is over 10 minutes quicker than the private car in the AM period, and 6 minutes quicker in the PM period) and Glasgow (where the option provides a public transport travel time that is around 25 minutes quicker than the private car in the AM period). In the evening period, trips to Glasgow have a reduced journey time by public transport of over an hour and a quarter, trips to Lockerbie by over an hour and a half, and trips to Dumfries reduce by 15 minutes;
  - Option 1b for travel to Dumfries in the PM and evening periods (when the public transport travel time is reduced by around 10 minutes), and Glasgow in the evening period (when the public transport travel time is reduced by around 25 minutes);
  - Option 1c for travel to Lockerbie in the AM, PM and evening periods (13 minute, 20 minutes and 1 hour 20 minutes' public transport travel time reductions respectively), and Glasgow in the AM, PM and evening periods (41 minutes, 7 minutes and 11 minutes' public transport travel time reductions respectively).

K.2.2 The Pre-Appraisal stage of the study identified the smaller proportion of Eastriggs residents who are employed in professional and technical roles compared to that of Annan and Dumfries with average incomes in Eastriggs lower than the local and national averages as well as the proportion of young people in the study area below the local authority average, and educational attainment levels lower than the local and national averages. Reduced travel times to employment centres such as Dumfries, Carlisle and potentially Lockerbie would widen the employment opportunities and may reduce the potential out-migration from the study area of young people. Dedicated direct connections to the railway network would provide specific benefit to those without access to a car or who cannot drive given their age or physical ability.

K.2.3 The increased accessibility of Edinburgh and Glasgow, particularly at those times identified when travel by public transport is quicker than the private car, has a clear benefit to public transport users and significantly improve the accessibility of retail and social opportunities further afield. Given the travel time involved, even with the travel time reductions, it is unlikely that the improved accessibility of Edinburgh and Glasgow would significantly widen the accessibility of employment opportunities due to the still considerable commute required.

K.3 Option 3

K.3.1 Option 3 considers an increased frequency of services such that they are hourly during weekday evenings and every 90 minutes throughout the day on a Sunday. Some services are assumed to be 'express' calling only at Dumfries, Annan, Eastriggs, Gretna and Carlisle – utilising the A75 between Dumfries, and the M6 between Gretna and Carlisle.

K.3.2 While additional evening services and increased Sunday frequency do not provide a reduction in public transport travel time between Eastriggs and Dumfries, Carlisle, Annan and Gretna, they do offer greater opportunities to travel with the altered timetable providing greater accessibility for:

- Those without access to a car;
- Older people for whom driving is no longer possible;
- Older school children whom would be able to travel independently to access recreational and social activities later in the evening and at weekends; and
- Those accessing/returning from employment in the evenings and on Sundays.

K.3.3 The inclusion of some 'express' services between Eastriggs, and Dumfries and Carlisle, does provide a reduction in journey time of around 5 – 15 minutes (for trips to Carlisle) and around 12 minutes (for trips to Dumfries) depending of time of travel. This equates to up to a 28% reduction in travel time for trips to Carlisle, and up to a 25% reduction in travel time for trips to Dumfries. Travel to work data indicates that a substantial amount of people in Eastriggs commute to Carlisle and a reduction in public transport journey time from a travel time of up to 50 minutes to around 35 minutes. This would provide particular accessibility to those making the commute by public transport, as well as widening the accessibility of employment opportunities in Dumfries and Carlisle.

K.3.4 The Pre-Appraisal stage of the study identified the smaller proportion of Eastriggs residents who are employed in professional and technical roles compared to that of Annan and Dumfries with average incomes in Eastriggs lower than the local and national averages as well as the proportion of young people in the study area below the local authority average, and educational attainment levels lower than the local and national averages. In addition, a key problem identified for the study area was the relatively limited bus connectivity from the area on Sundays. Additional evening services and increased Sunday bus frequency, as well as 'express' services, would provide specific benefit to those without access to a car or who cannot drive given their age or physical ability. Reduced travel times and a greater bus service offering to employment centres such as Dumfries and Carlisle would widen employment opportunities and may reduce the potential out-migration from the study area of young people. The improved access may also provide increased educational opportunities helping to raise current attainments level in the area.

K.4 Option 6 – Existing vs. Option Estimated Journey Times

K.4.1 Car travel times, existing public transport travel times and estimated public transport travel times if Eastriggs Railway Station were to be re-opened have been compared for trips from Eastriggs to:

- Dumfries;
- Carlisle;
- Edinburgh; and
- Glasgow.

K.4.2 For trips between Edinburgh and Glasgow the public transport travel time with the option in place has been considered for both a trip via the GSWL and the WCML (i.e. via Carlisle), with the quickest journey time used in the comparison with the existing situation.

K.4.3 The results of the analysis are shown in Figure K.4 to Figure K.7 travel across the day from 07:00 to 22:00.

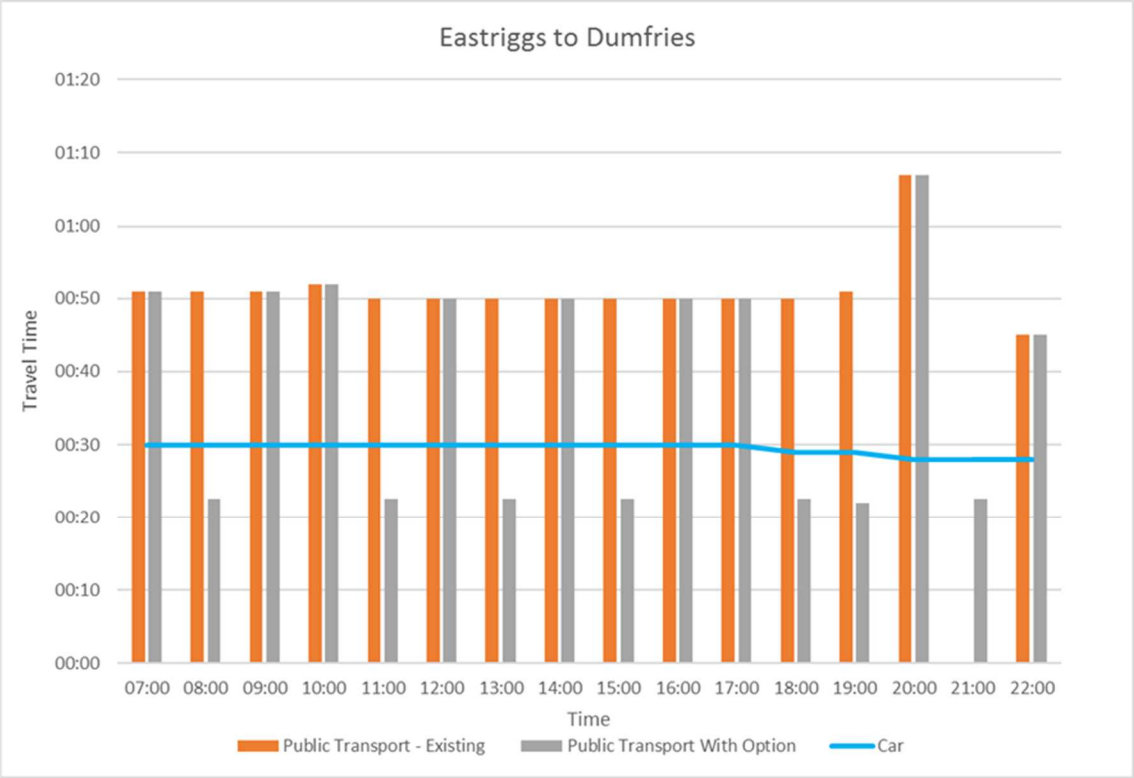

Figure K.4: Options 6 – Existing vs. Option 6 Journey Times – Eastriggs to Dumfries

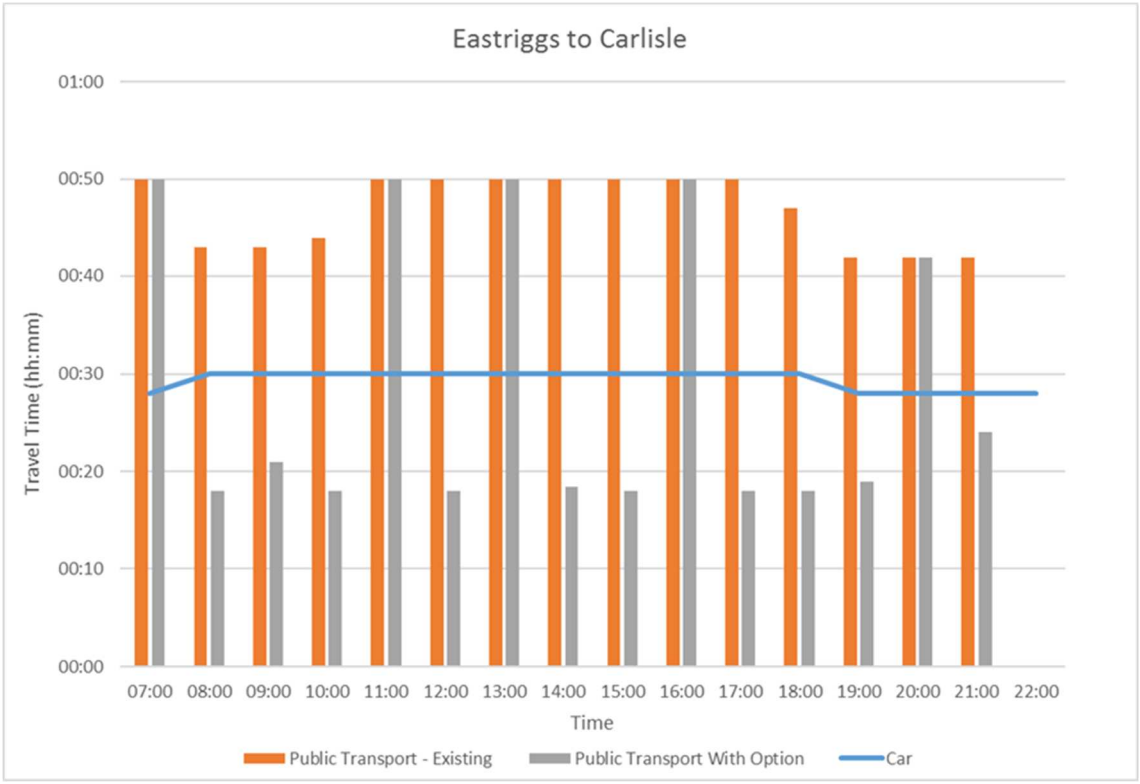

Figure K.5: Options 6 – Existing vs Option 6 Journey Times – Eastriggs to Carlisle

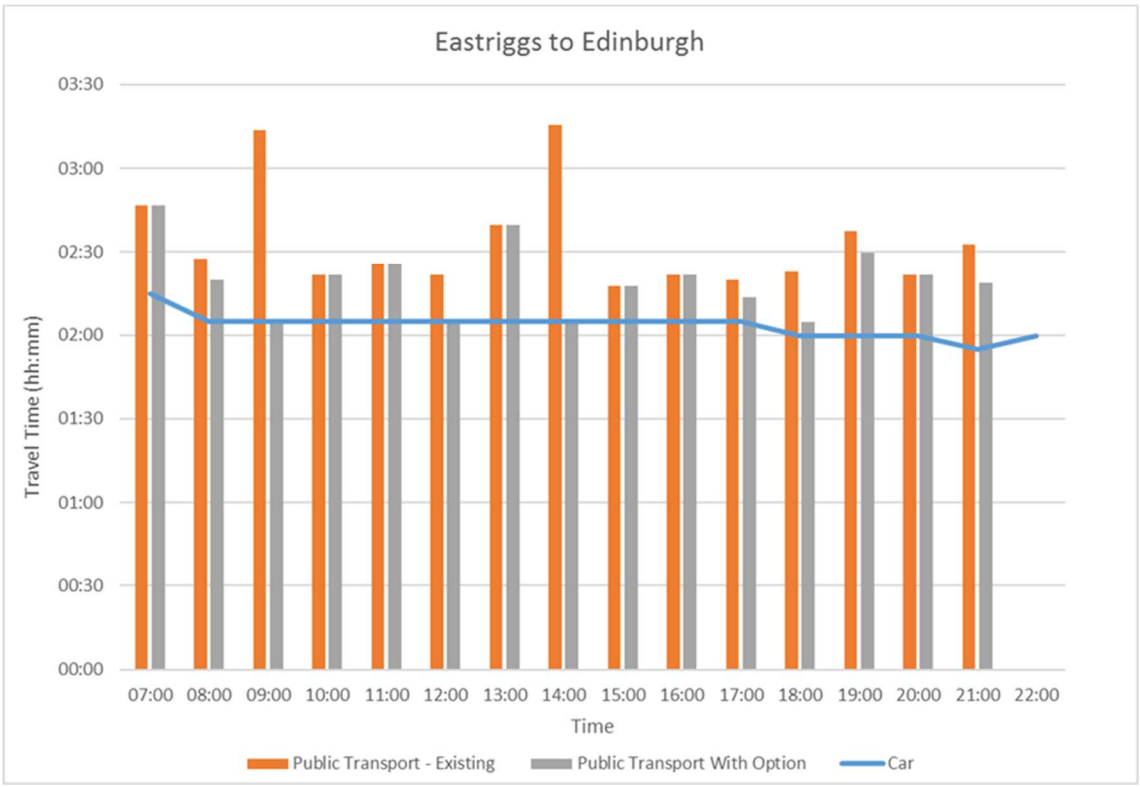

Figure K.6: Options 6 – Existing vs. Option 6 Journey Times – Eastriggs to Edinburgh

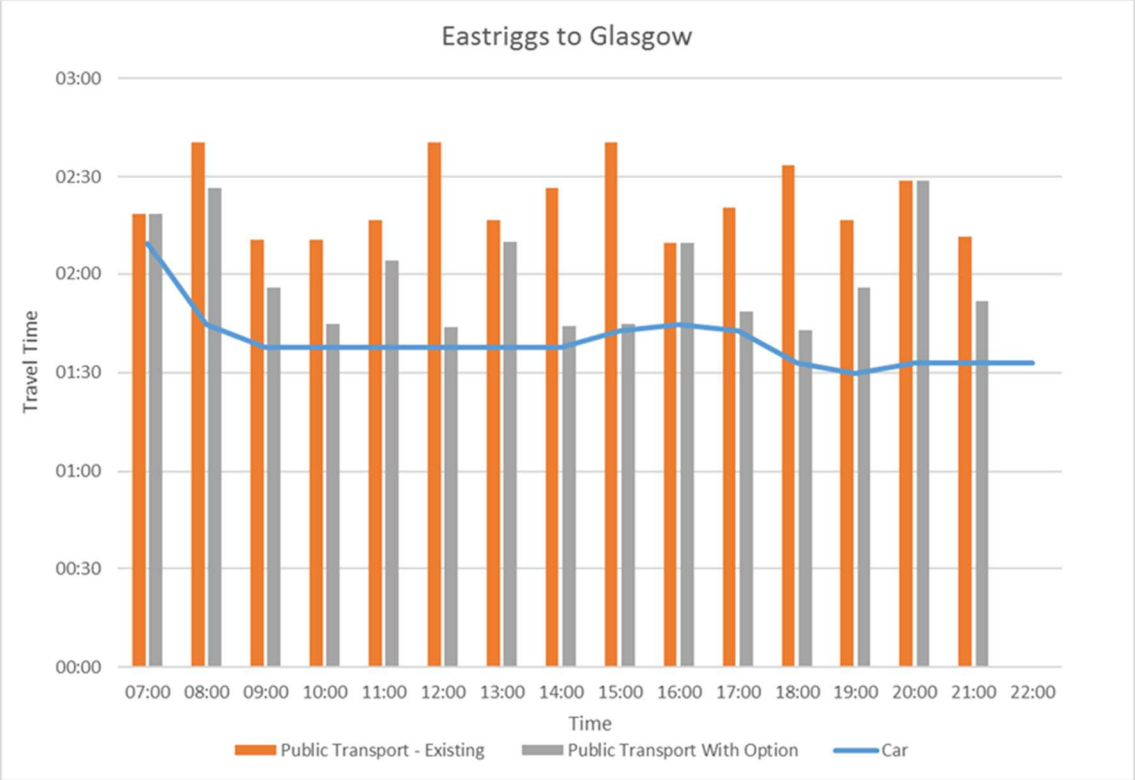

Figure K.7: Options 6 – Existing vs. Option 6 Journey Times – Eastriggs to Glasgow

K.4.4 The results show:

- For trips to Dumfries:
  - The option provides large reductions in public transport travel time for 7 of the 15 hours considered (up to a 130% reduction) where an existing trip by public transport can currently be made;
  - For the 7 hours where the public transport travel time is reduced by the option, the option provides a travel time by public transport which is quicker than the corresponding trip by private car (around 5-7 minutes quicker); and
  - The option provides a new opportunity to travel by public transport between 21:00 and 22:00.
- For trips to Carlisle:
  - The option provides large reductions in public transport travel time for 10 of the 15 hours considered (up to a 190% reduction) where an existing trip by public transport can currently be made; and
  - For the 10 hours where the public transport travel time is reduced by the option, the option provides a travel time by public transport which is quicker than the corresponding trip by private car (between 4-12 minutes quicker).
- For trips to Edinburgh:
  - The option provides large reductions in public transport travel time for 8 of the 15 hours considered (up to a 55% reduction) where an existing trip by public transport can currently be made; and

- The option never provides a travel time by public transport which is quicker than the corresponding trip by private car, however the quickest trip by public transport (of 2 hours 5 minutes, achievable between 12:00 – 13:00 and between 18:00 – 19:00) is approximately the same as the private car travel time.

- For trips to Glasgow:

  - The option provides reductions in public transport travel time for 12 of the 15 hours considered (up to a 55% reduction) where an existing trip by public transport can currently be made. The largest reduction equates to a reduction of nearing an hour in travel time; and

  - The option never provides a travel time by public transport which is quicker than the corresponding trip by private car. However, the quickest trip by public transport (of 1 hours 45 minutes, achievable between 10:00 – 11:00, 12:00 – 13:00, 15:00 – 16:00, 17:00 – 18:00 and between 18:00 – 19:00) is only around 5 minutes longer than the associated private car travel time.

K.4.5 The Pre-Appraisal stage of the study identified the smaller proportion of Eastriggs residents who are employed in professional and technical roles compared to that of Annan and Dumfries with average incomes in Eastriggs lower than the local and national averages as well as the proportion of young people in the study area below the local authority average, and educational attainment levels lower than the local and national averages. A further key problem identified was the lack of transport mode choice with a reliance on the bus network. The option would provide significant public transport accessibility benefits to residents in Eastriggs and specifically for trips to Dumfries and Carlisle where the option provides travel times faster than the private car at certain times of day. In addition, public transport accessibility to Glasgow is also improved significantly across the day. This would significantly improve the accessibility of regional employment opportunities and retail and social opportunities as well as further retail and social opportunities in Glasgow, specifically for those without access to a car. The improved access may also provide increased educational opportunities helping to raise current attainments level in the area.

Appendix L Part 1: Integration Analysis

L.1 Introduction

L.1.1 Analysis to inform the appraisal against the Integration criteria, has focused on transport integration (as opposed to land-use or policy integration) including:

- Potential transport integration benefits between bus and rail modes; and
- The impact of reduced interchange time on journey times by sustainable transport.

L.1.2 Only Options 1a, 1b and 1c seek to directly provide integration benefits between bus and rail modes. As such, the integration analysis has focussed on these three options.

L.2 Options 1a, 1b and 1c

L.2.1 Option 1 comprises three sub-options:

- **Option 1a:** Provision of a dedicated direct bus service operating between Eastriggs, Annan and Lockerbie railway stations, integrated to reduce interchange times between bus and rail;
- **Option 1b:** Extension of the existing 79/179 bus service to include stops at/close to Dumfries, Annan, Gretna Green and Carlisle railways stations and adjustment of service times to reduce interchange times, particularly at Carlisle; and
- **Option 1c:** Extension of the existing 383 bus service from Eastriggs to Lockerbie.

L.3 Existing Situation

L.3.1 Eastriggs is situated between Annan and Gretna Green, both of which are served by the GSWL, and similarly, it sits roughly equidistant from Carlisle and Lockerbie on the WCML. As such, the most convenient station on each line for Eastriggs residents varies with the timing of rail services and connecting bus services. Although it is generally quicker to access northbound services from Annan or Lockerbie and southbound services from Gretna Green or Carlisle, this is not always the case, and so it has been necessary to consider travel to all destinations via both stations on each line.

L.3.2 In order to understand the integration benefits that may be generated in terms of improved integration between bus and rail modes, current bus and rail timetables have been examined to establish current interchange times at the most appropriate stations for both departing and arriving passengers on the railway network. Interchange time has therefore been considered for:

- Glasgow South Western Line:
  - Passengers coming by bus from Eastriggs and interchanging to rail at Annan or Gretna Green railway stations for services to Glasgow and Carlisle;
  - Passengers alighting from GSWL services at Annan or Gretna Green railway stations and then travelling onwards by bus to Eastriggs;
- West Coast Main Line:
  - Passengers coming by bus from Eastriggs and interchanging to rail at Lockerbie or Carlisle Railway Stations onto rail services to Glasgow, Edinburgh and the south;

- Passengers alighting from services at Lockerbie or Carlisle railway stations and then travelling onwards by bus to Eastriggs.

L.3.3 The analysis considers 'access time' i.e. the total travel time from Eastriggs to a departing train (i.e. an outbound trip), or from an arriving train back to Eastriggs (an inbound trip) and considers bus travel time, any walk time required between bus stop and railway station and any wait time (either at the station for outbound trips) or at the appropriate bus stop (for inbound trips).

L.3.4 For each rail departure the figures indicate time spent on the bus, walk time between the bus stop and station, and additionally time spent waiting at the station. For example, for arrivals by rail (when the trip being considered is from the railway station back to Eastriggs), the figures include the walk time from the station to the required bus stop, wait time at the bus stop, and the journey time by bus back to Eastriggs.

L.3.5 Eastriggs residents can access GSWL services to Glasgow and Carlisle from either Annan or Gretna Green. The bus journey to both stations is approximately the same length (10 to 13 minutes); however, the walk from the bus stop Gretna Green Station is longer (12 minutes rather than 6 minutes).

L.3.6 Also, being one stop further along the route, trips via Gretna Green to Glasgow and those via Annan to Carlisle involve another ten minutes on the train. Therefore, it might be expected that travel via Annan would be more efficient for those travelling to Glasgow (and vice versa for trips to Carlisle), but this is not always the case as a result of the varying levels of integration between bus and rail services from these stations throughout the day.

L.3.7 Figure L.1 to Figure L.12 show how **existing** bus services to and from Eastriggs tie in with rail departure times from Annan, Gretna Green and Lockerbie and Carlisle railway stations. The figures include time spent on the bus, walking between station and bus stop and additionally time spent waiting at the station or bus stop.

Glasgow South Western Line

L.3.8 Eastriggs residents can access GSWL services to Glasgow and Carlisle from either Annan or Gretna Green. The bus journey to both stations is approximately the same length (10 to 13 minutes); however, the walk from the bus stop Gretna Green Station is longer (12 minutes rather than 6 minutes).

L.3.9 Also, being one stop further along the route, trips via Gretna Green to Glasgow and those via Annan to Carlisle involve another ten minutes on the train. Therefore, it might be expected that travel via Annan would be more efficient for those travelling to Glasgow (and vice versa for trips to Carlisle), but this is not always the case as a result of the varying levels of integration between bus and rail services from these stations throughout the day.

Eastriggs to/from Glasgow

L.3.10 Figure L.1 illustrates journey times for trips from Eastriggs to Annan Railway Station to connect with rail services to Glasgow. Key points from the analysis are:

- For two out of eight services it is quicker to board the train to Glasgow at Gretna Green, and for the remainder it is quicker to board at Annan; and
- Average 'access' journey times are 40 minutes including interchange times of 27 minutes.

L.3.11 Figure L.2 illustrates journey times for trips from Annan Railway Station to Eastriggs on the return from Glasgow. Key points from the analysis are:

- For four out of nine services it is quicker to alight the train from Glasgow at Gretna, and for the remainder quicker to alight at Annan; and

- Average 'access' journey times are 36 minutes, including average interchange time of 21 minutes.

Eastriggs to/from Carlisle

L.3.12 Figure L.3 illustrates journey times for trips from Eastriggs to Gretna Green Railway Station to connect with rail services to Carlisle. Key points from the analysis are:

- Currently possible to access all services to Carlisle except for one early morning service;
- For half of the accessible services, it is quicker to board at Annan, and spend a further ten minutes on the train due to the current integration of rail and bus services; and
- Average 'access' journey time from Eastriggs to Gretna Green Railway Station are 48 minutes, including 32 minutes' interchange time.

L.3.13 Figure L.4 illustrates 'access' journey times for trips from Gretna Green Railway Station to Eastriggs on the return from Carlisle. Key points from the analysis are:

- There is presently an onward bus connection to Eastriggs accessible from each of the rail services from Carlisle; however, it is considered that few would actually use the final connection of the day due to a circa 1.25 hour waiting time;
- For seven out of ten services from Carlisle, it is quicker to spend a further ten minutes on the train and alight at Annan, due to the poor integration of existing rail and bus services; and
- Average 'access' journey time from Gretna Green Railway Station to Eastriggs of 41 minutes, including 32 minutes' interchange time.

West Coast Main Line

L.3.14 Similarly, Eastriggs residents have the option of catching WCML services from either Lockerbie or Carlisle; however, only around a quarter of WCML services actually stop at Lockerbie, meaning that in most cases there is no option but to travel via Carlisle. For those services which stop at both stations, it might be expected that it would be quicker to travel to/from Glasgow and Edinburgh via Lockerbie and to the south via Carlisle; however, this is not always the case due to varying levels of public transport integration over the course of the day.

L.3.15 Bus journey times from Eastriggs to Lockerbie are typically circa 20 minutes longer than those to Carlisle as there is not a direct service at present, but conversely, the rail journey from Carlisle is circa 20 minutes longer than that from Lockerbie due to its more southerly position.

Eastriggs to/from Glasgow (WCML)

L.3.16 Figure L.5 illustrates journey times for trips from Eastriggs to Lockerbie Railway Station to connect with rail services to Glasgow. Key points from the analysis are:

- It is currently possible to access all services to Glasgow except for one early morning service;
- For those 10 rail services which stop at both stations, it is quicker to board at Lockerbie in three instances and at Carlisle for the remainder; and
- Average 'access' journey times from Eastriggs to Lockerbie Station of 1 hour 35 minutes, including 28 minutes' interchange time.

L.3.17 Figure L.6 illustrates journey times for trips from Lockerbie Railway Station to Eastriggs on the return from Glasgow. Key points from the analysis are:

- For those 10 rail services which stop at both stations, it is quicker to alight at Lockerbie in six instances and at Carlisle for the remainder; and
- Average 'access' journey times to Eastriggs from Lockerbie Station of 1 hour 35 minutes, including 26 minutes' interchange time.

Eastriggs to/from Edinburgh (WCML)

L.3.18 Figure L.7 illustrates journey times for trips from Eastriggs to Lockerbie Railway Station to connect with rail services to Edinburgh. Key points from the analysis are:

- It is currently possible to access all services to Edinburgh;
- Of the six services which stop at both stations, it is quicker to travel via Lockerbie in only two instances; and
- Average 'access' journey time of 1 hour 22 minutes, including interchange time of 18 minutes.

L.3.19 Figure L.8 illustrates journey times for trips from Lockerbie Railway Station to Eastriggs on the return from Edinburgh. Key points from the analysis are:

- Connecting bus services are available for those alighting from all rail services from Edinburgh
- Only quicker to travel via Lockerbie to connect with one Edinburgh rail service per day.
- Average journey and interchange times circa 10 minutes longer than outbound leg.

Eastriggs to/from the south (WCML)

L.3.20 Figure L.9 and Figure L.10 illustrate journey times for trips from Eastriggs to Carlisle Railway Station to connect with rail services to the south. Key points from the analysis are:

- It is currently possible to access all trains to the south, except the first four early morning services;
- For those 15 accessible rail services which stop at both stations, it is quicker to board at Lockerbie in only one instance and at Carlisle for the remainder; and
- Average 'access' journey times from Eastriggs to Carlisle Station of 1 hour 18 minutes, including 27 minutes' interchange time.

L.3.21 Figure L.11 and Figure L.12 illustrate journey times for trips from Carlisle Railway Station to Eastriggs on the return from the south. Key points from the analysis are:

- It is currently possible to access connecting bus services from all trains from the south, except the final four evening services;
- For those 13 accessible rail services which stop at both stations, it is quicker to alight at Carlisle on all occasions; and
- Average 'access' journey times from Eastriggs to Carlisle Station of 1 hour 17 minutes, including 27 minutes' interchange time.

Annan or Gretna Green to/from Glasgow (GSWL)

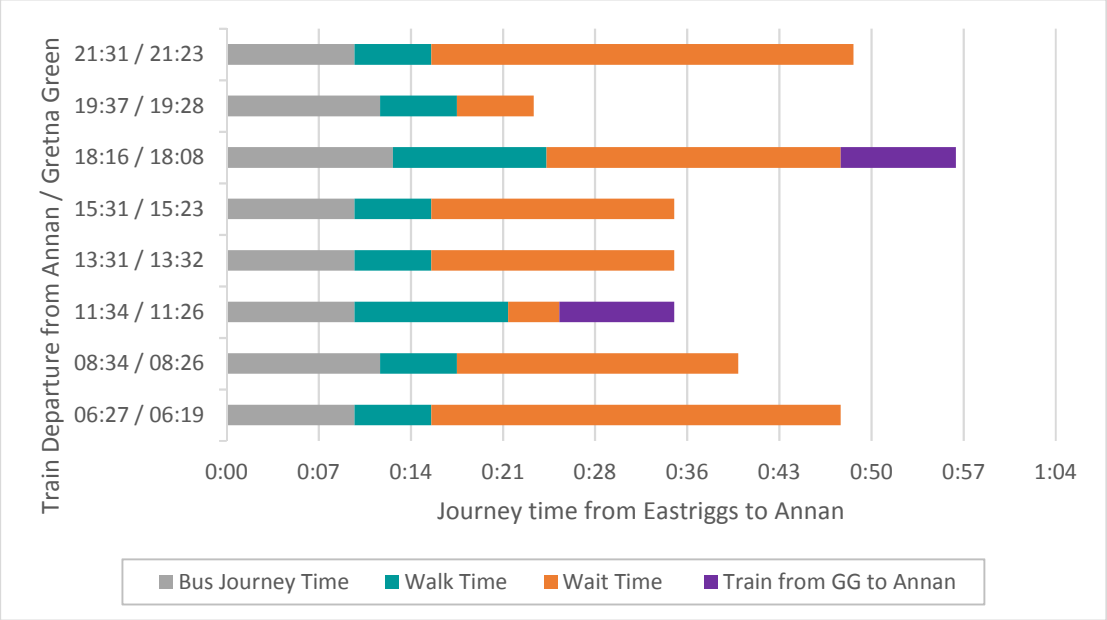

Figure L.1: Total journey time from Eastriggs to Annan Station for travel to Glasgow (Existing)

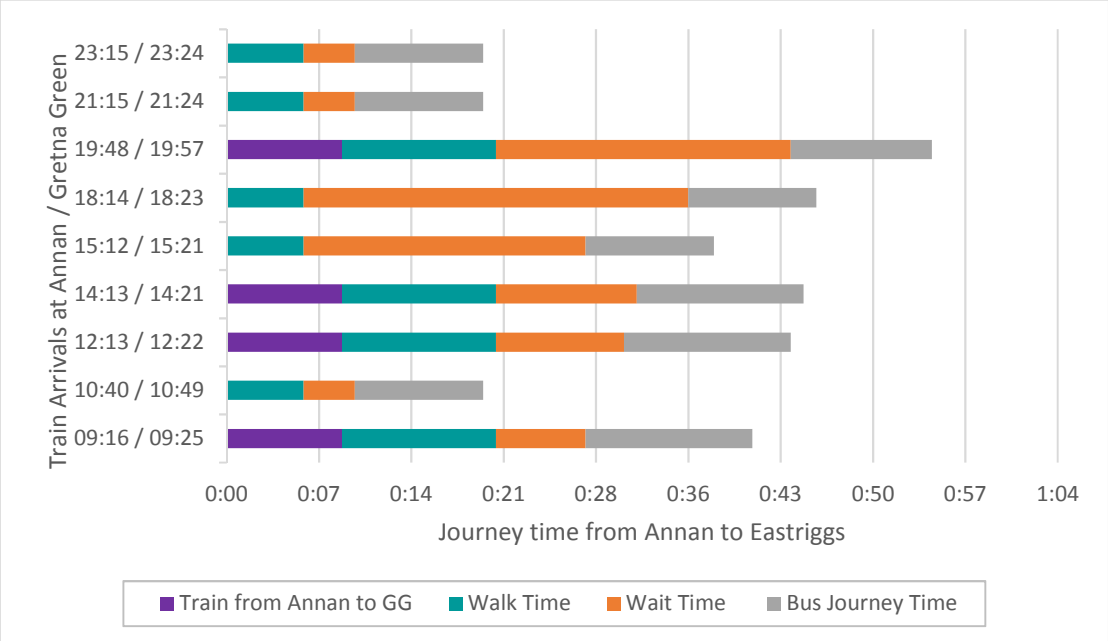

Figure L.2: Total journey time from Annan Station to Eastriggs for travel from Glasgow (Existing)

Annan or Gretna Green to/from Carlisle (GSWL)

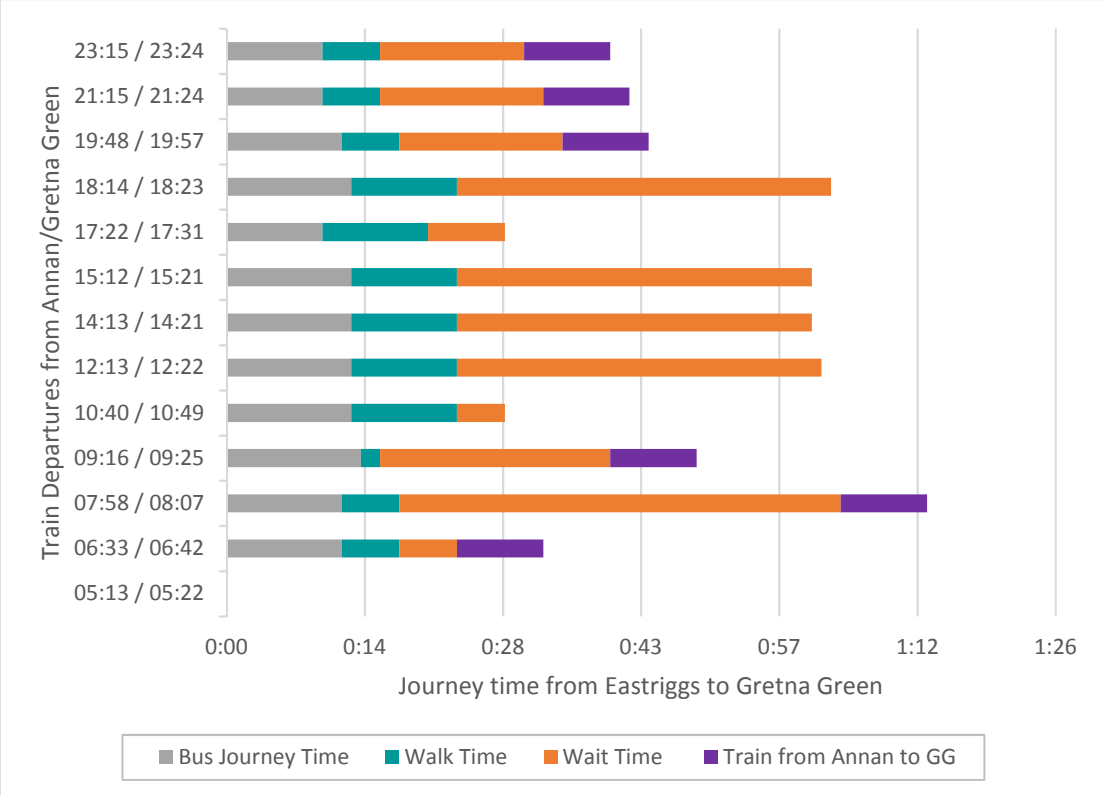

Figure L.3: Total journey time from Eastriggs to Gretna Green Station for travel to Carlisle (Existing)

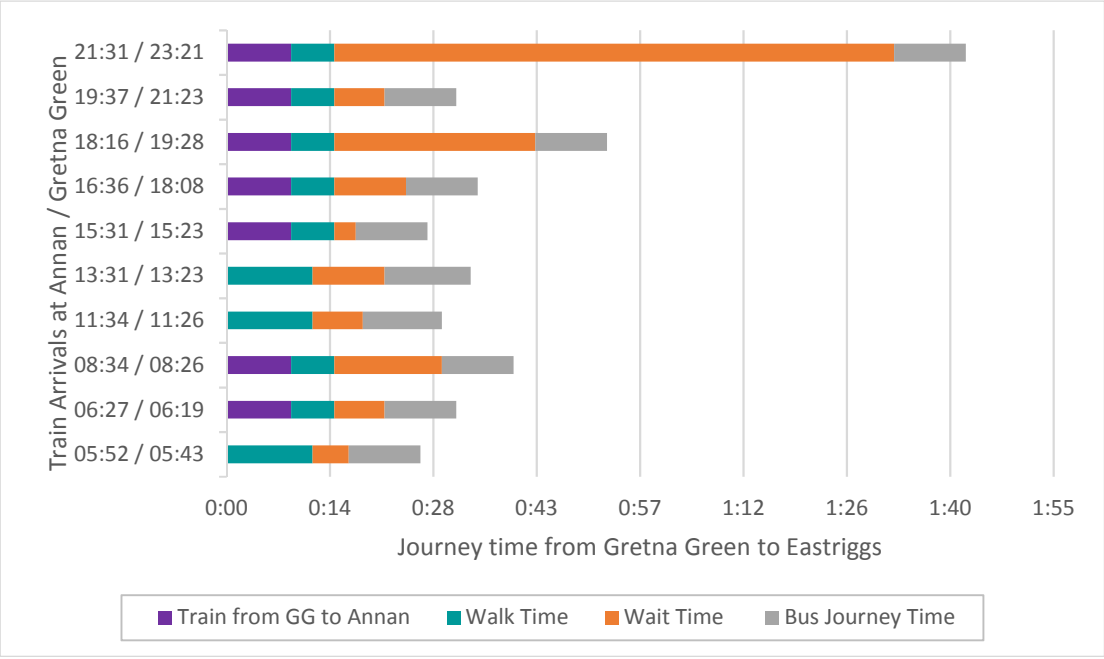

Figure L.4: Total journey time to Eastriggs from Gretna Green Station for travel from Carlisle (Existing)

Carlisle or Lockerbie to/from Glasgow (WCML)

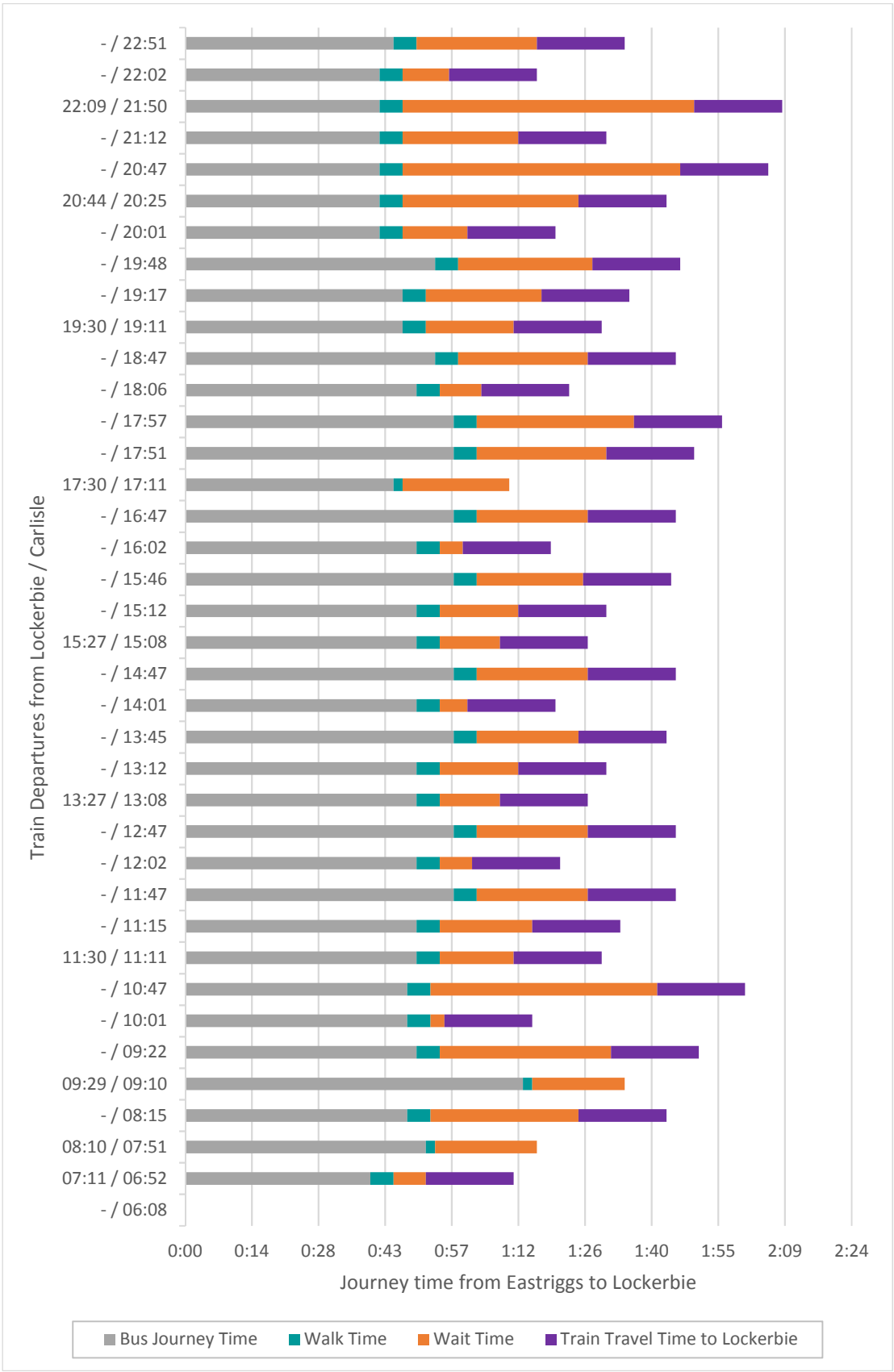

Figure L.5: Total journey time from Eastriggs to Lockerbie Station for travel to Glasgow (Existing)

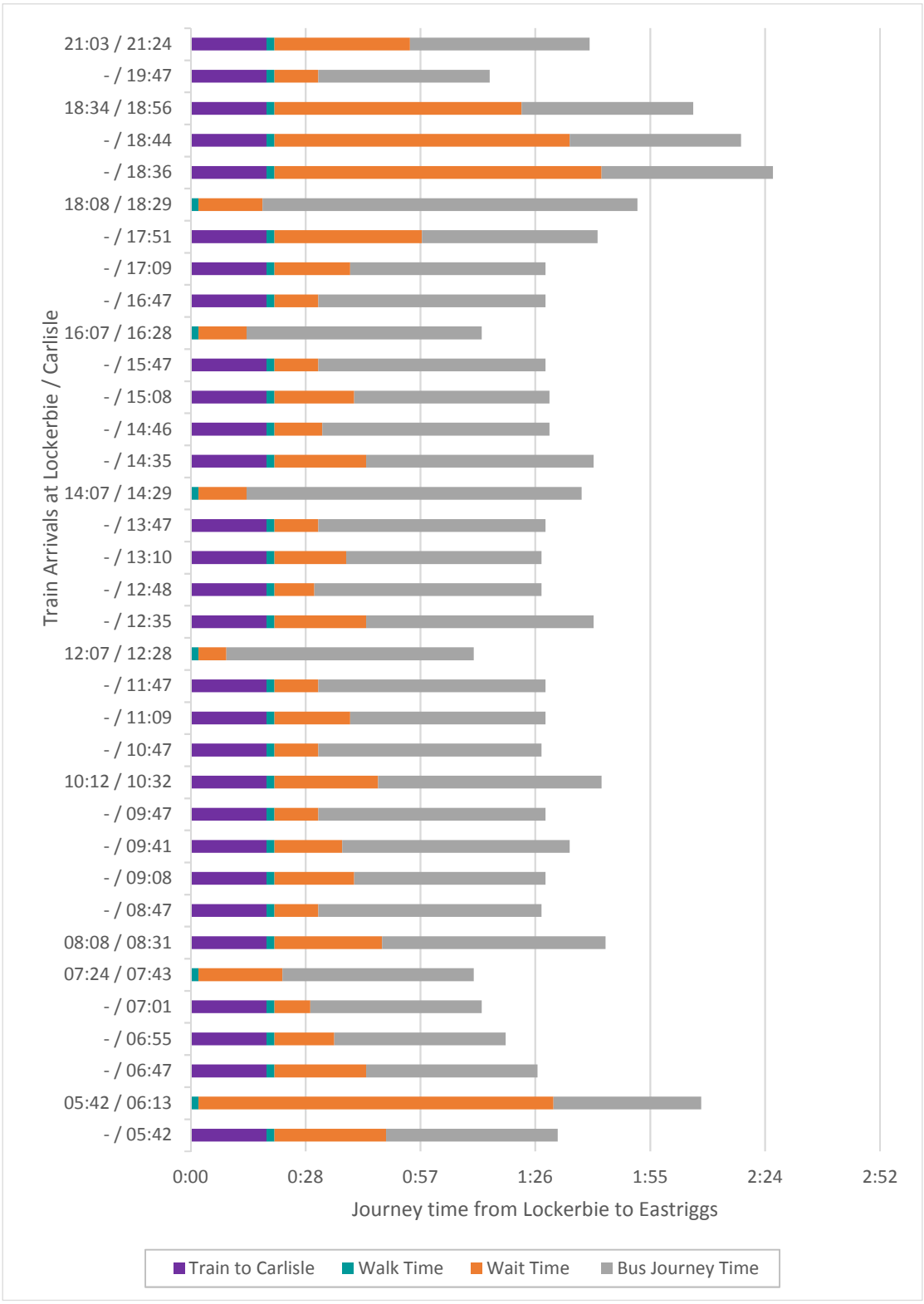

Figure L.6: Total journey time to Eastriggs from Lockerbie Station for travel from Glasgow (Existing)

Carlisle or Lockerbie to/from Edinburgh (WCML)

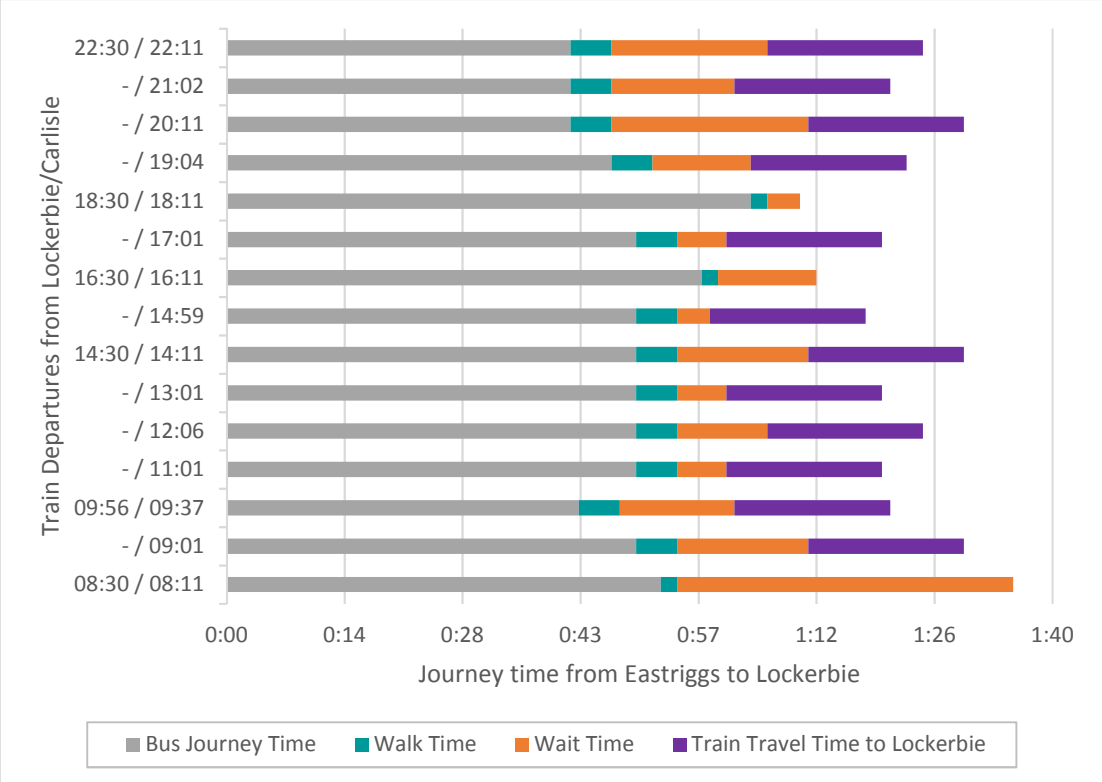

Figure L.7: Total journey time from Eastriggs to Lockerbie Station for travel to Edinburgh (Existing)

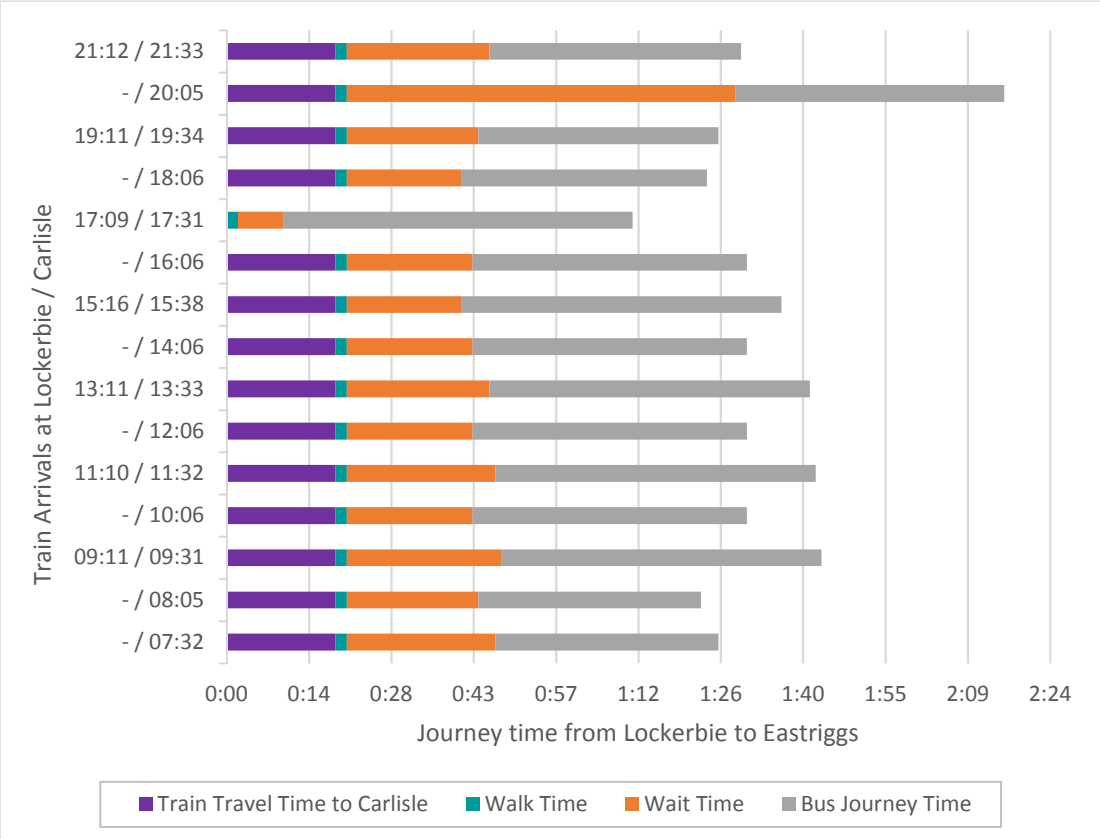

Figure L.8: Total journey time to Eastriggs from Lockerbie Station for travel from Edinburgh (Existing)

Carlisle or Lockerbie to/from the south (WCML)

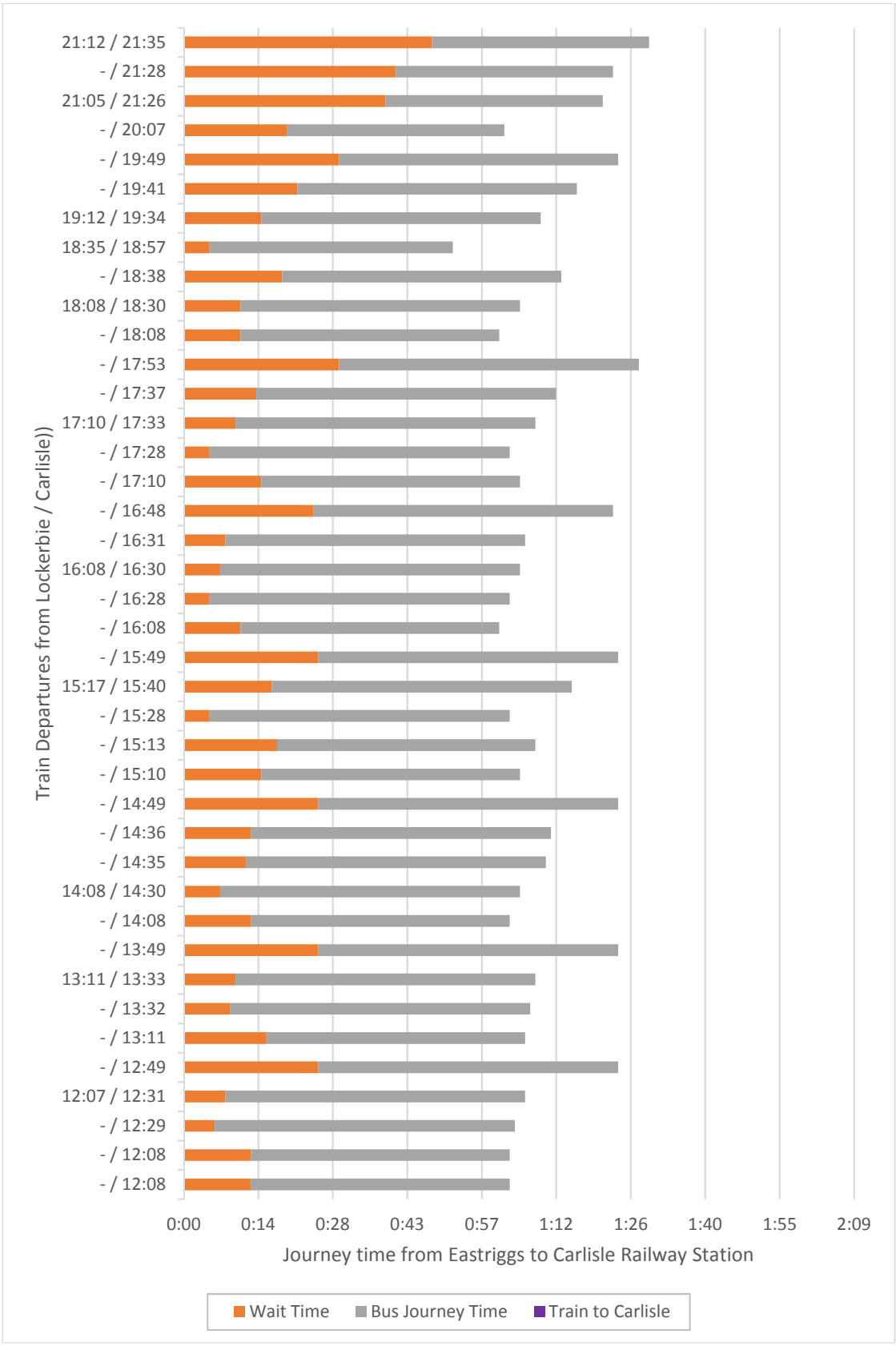

Figure L.9: Total journey time from Eastriggs to Carlisle Station for travel to the south(Existing PM Departures)

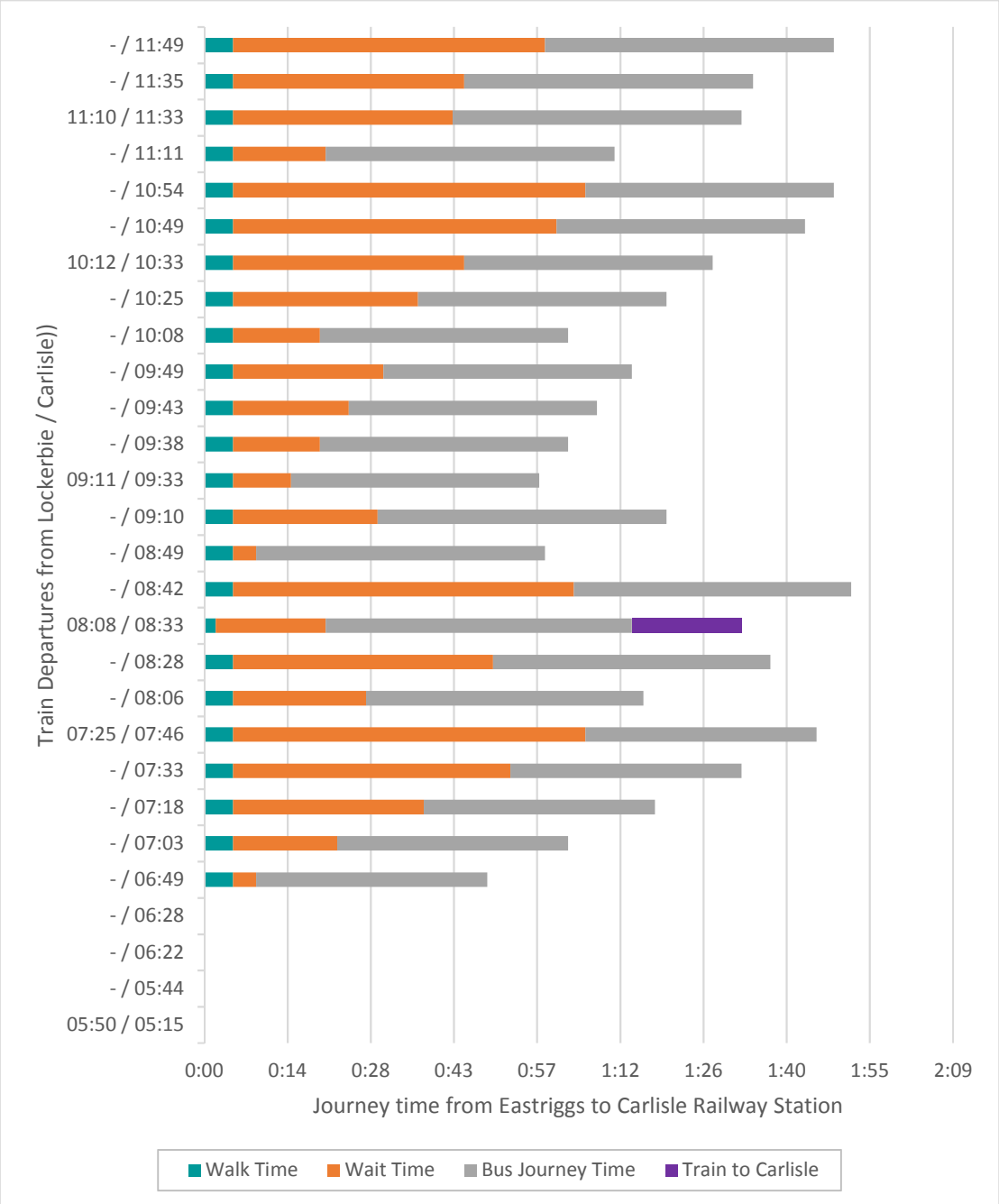

Figure L.10: Total journey time from Eastriggs to Carlisle Station for travel to the south (Existing AM Departures)

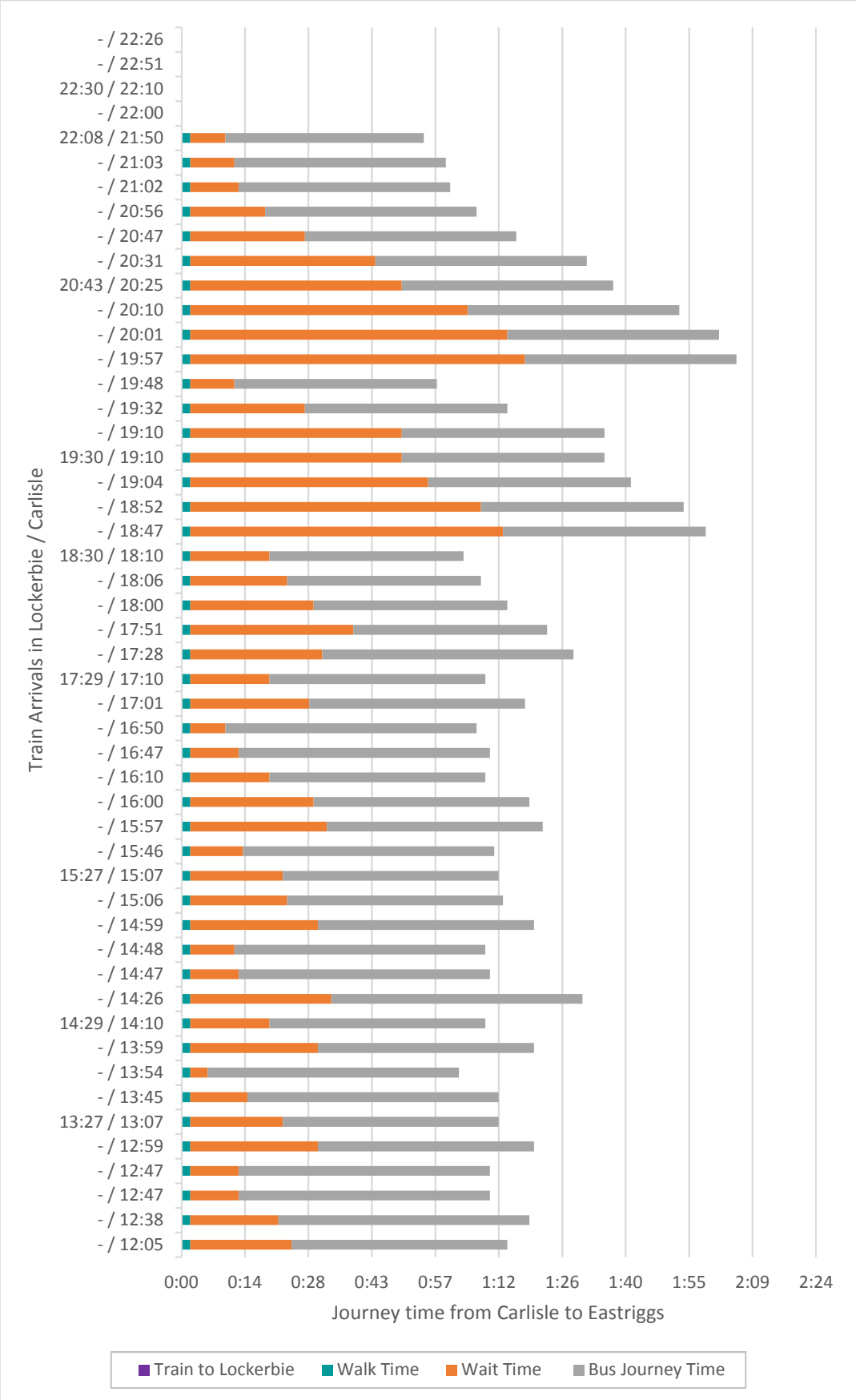

Figure L.11: Total journey time to Eastriggs from Carlisle Station for travel from the south (Existing PM Departures)

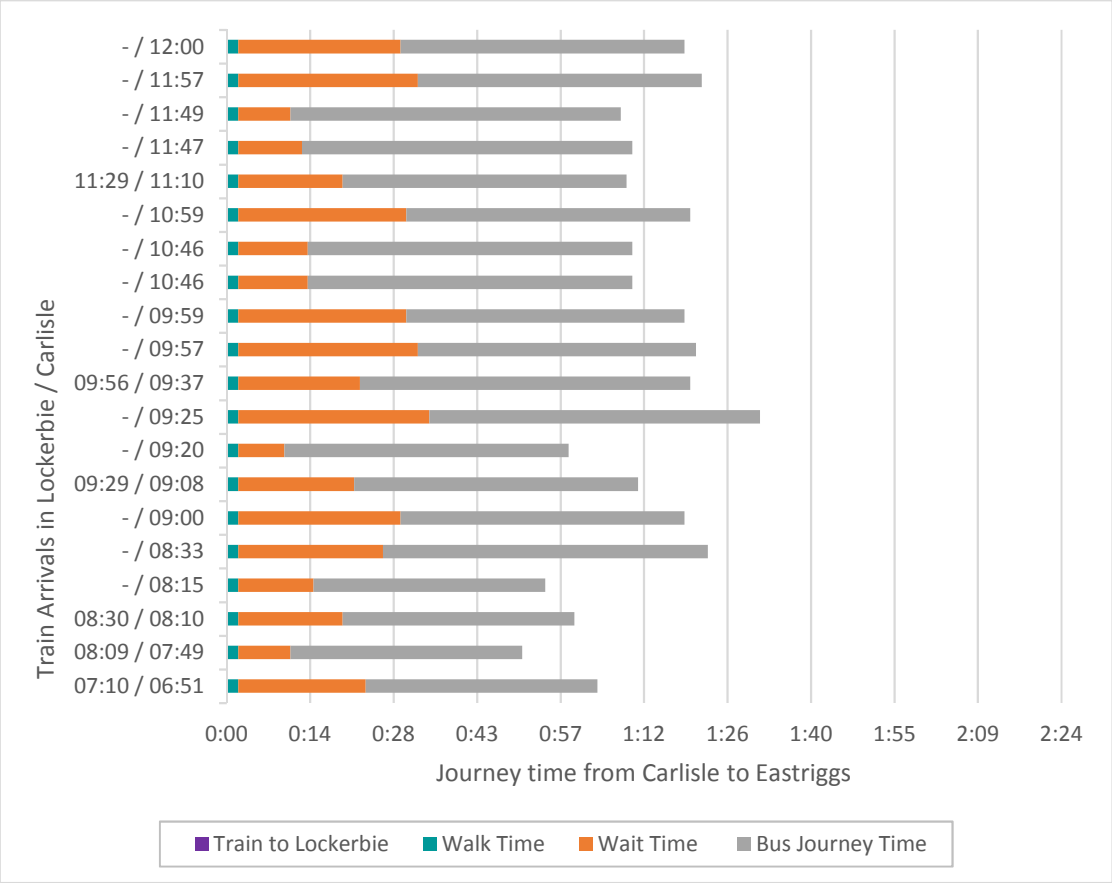

Figure L.12: Total journey time to Eastriggs from Carlisle Station for travel from the south (Existing AM Departures)

L.4 Impact of the Options – Methodology

L.4.1 New bus timetables were produced for each of Options 1a, 1b and 1c, aimed at better connecting Eastriggs residents with rail services at Annan and Lockerbie. In the production of these timetables for the proposed options it has been necessary to prioritise connections to specific stations at specific times of day. This means that implementation of an option may have a positive or negative impact on the integration of bus and rail services at a particular time of day.

7.4.2 The success of the various options in integration terms has also been assessed against three key metrics:

- Access to additional services to which there was previously no connecting bus service;
- Total 'access' journey time; and
- Interchange (wait and walk) time.

L.5 Impact of Option 1a

L.5.1 Option 1a involves the provision of a new bus service between Eastriggs, Annan and Lockerbie, and this option appears to deliver greatest integration benefits. The figures below illustrate the change in total journey times between Eastriggs and Annan / Lockerbie Railway station and show how the proposed options will affect wait, walk and bus components of this trip.

Annan or Gretna Green to/from Glasgow (GSWL)

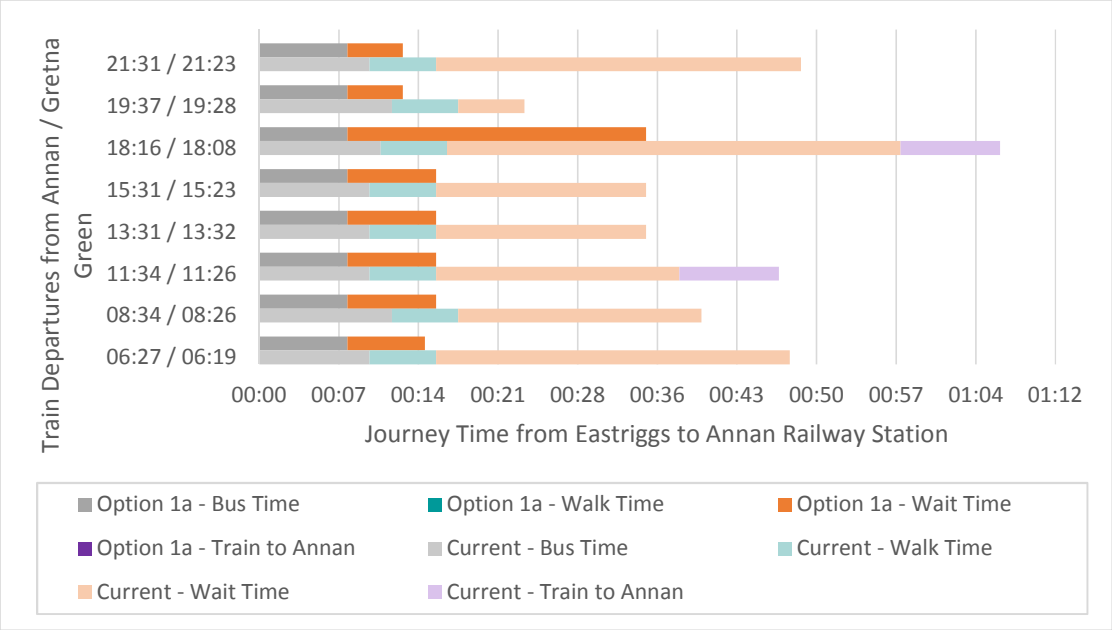

Figure L.13: Total journey time from Eastriggs from Annan Station for travel to Glasgow (Existing vs. Option 1a)

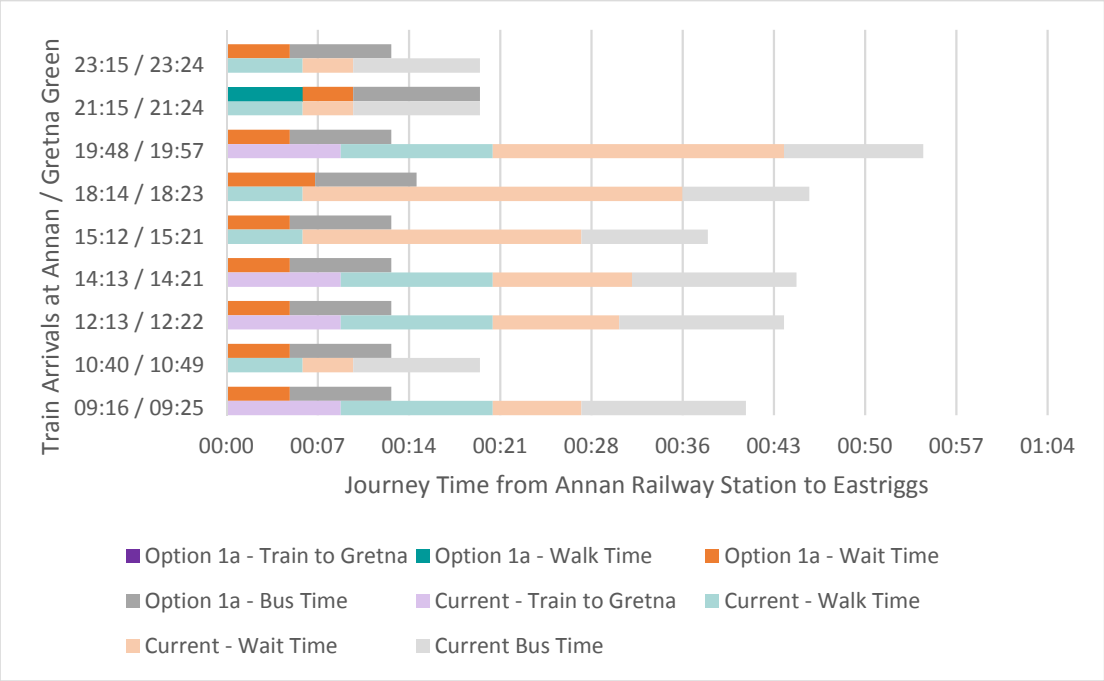

Figure L.14: Total journey time to Eastriggs from Annan Station for travel from Glasgow (Existing vs. Option 1a)

Annan or Gretna Green to/from Carlisle (GSWL)

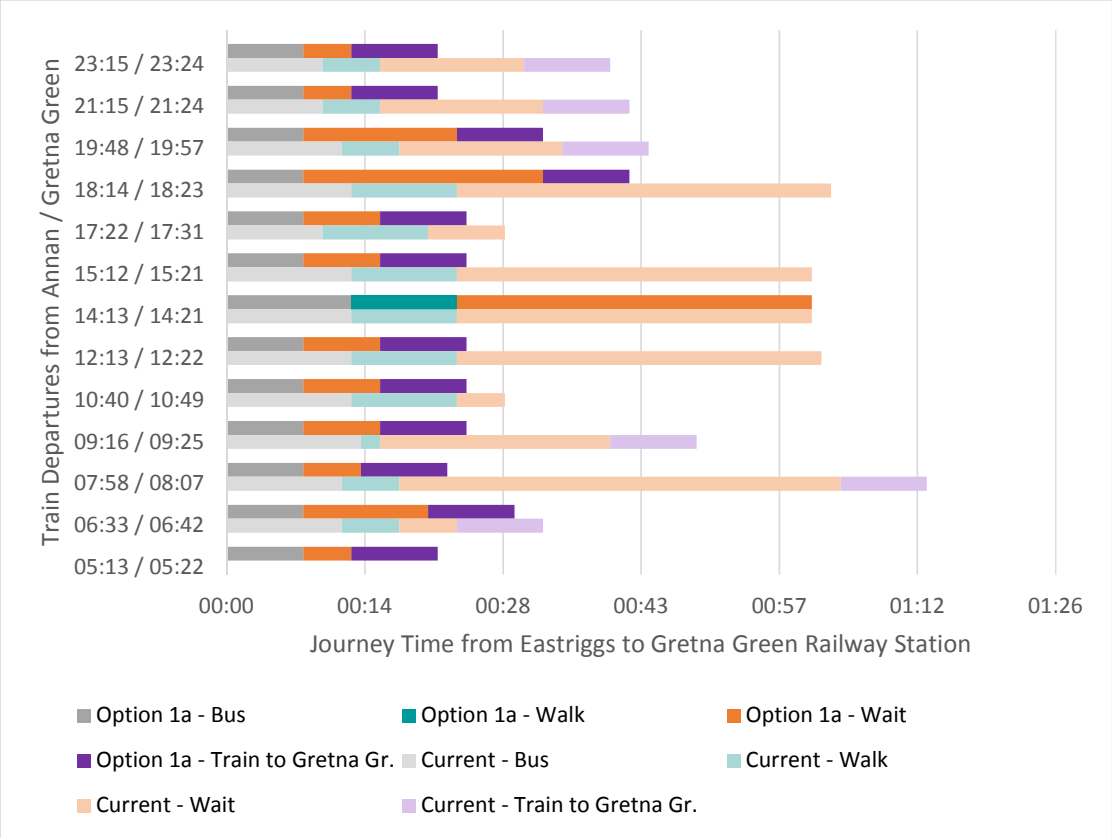

Figure L.15: Total journey time from Eastriggs to Gretna Green Railway Station for travel to Carlisle (Existing vs. Option 1a)

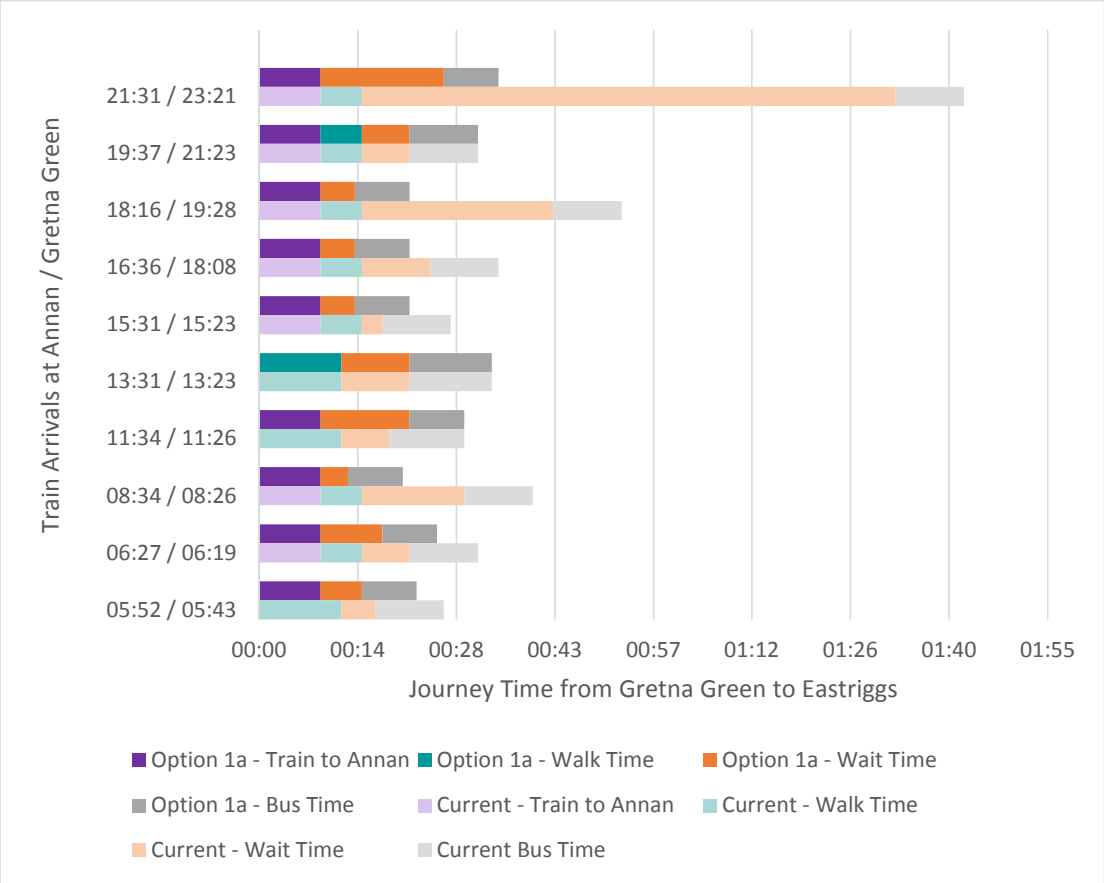

Figure L.16: Total journey time to Eastriggs from Gretna Green Railway Station for travel from Carlisle (Existing vs. Option 1a)

Carlisle or Lockerbie to/from Glasgow (WCML)

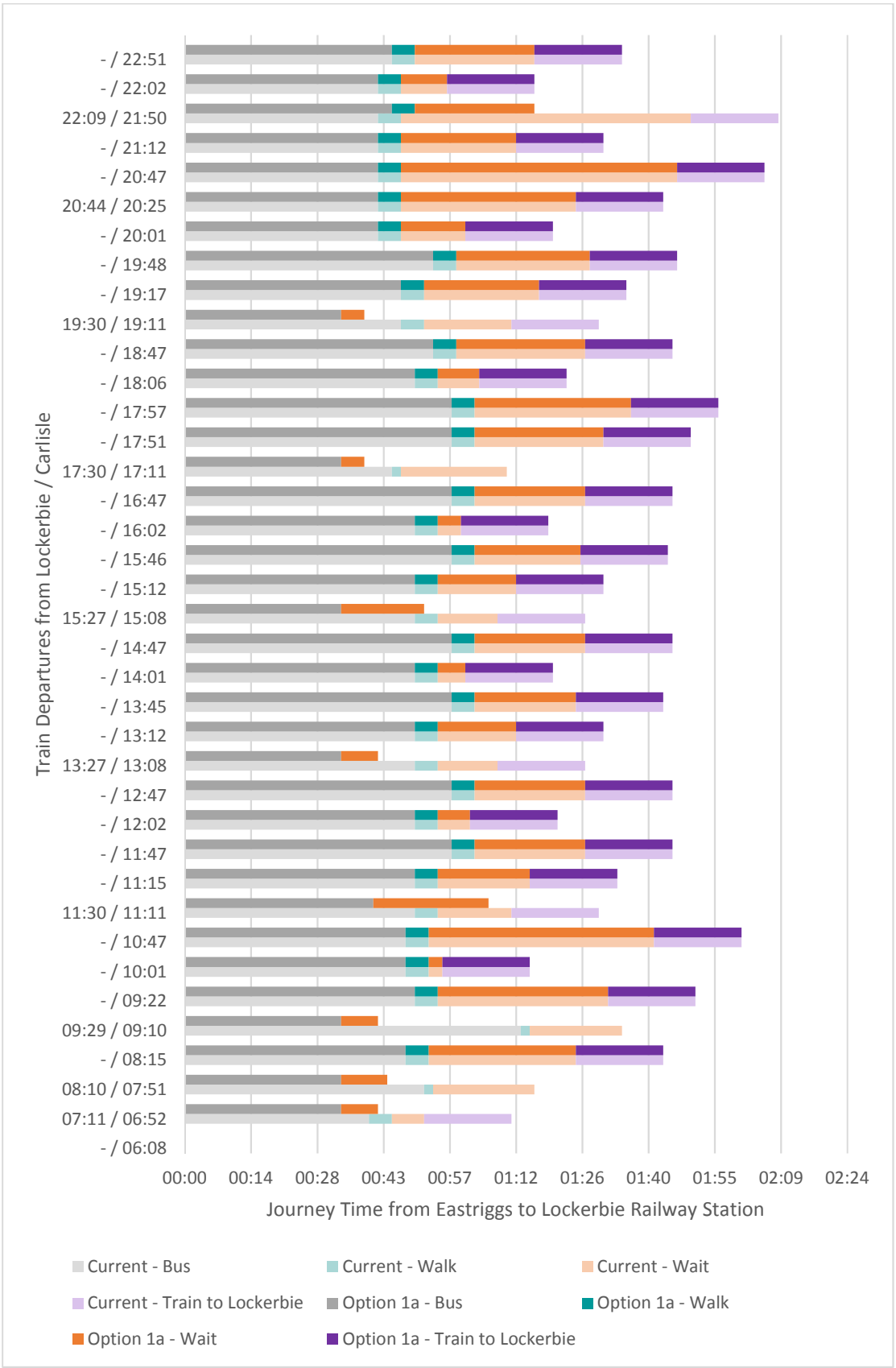

Figure L.17: Total journey time from Eastriggs to Lockerbie Railway Station for travel to Glasgow (Existing vs. Option 1a)

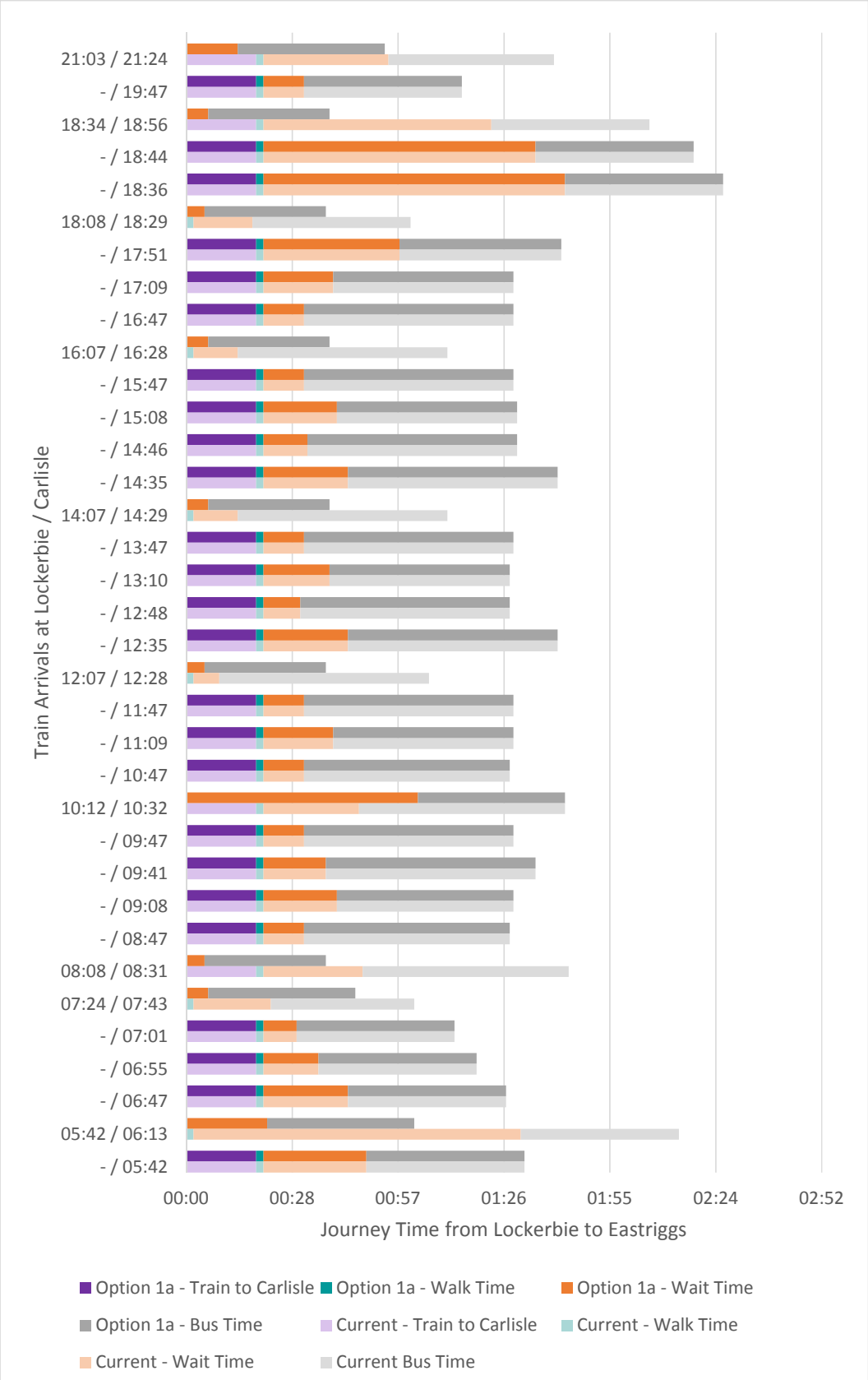

Figure L.18: Total journey time to Eastriggs from Lockerbie Railway Station for travel from Glasgow (Existing vs. Option 1a)

Carlisle or Lockerbie to/from Edinburgh (WCML)

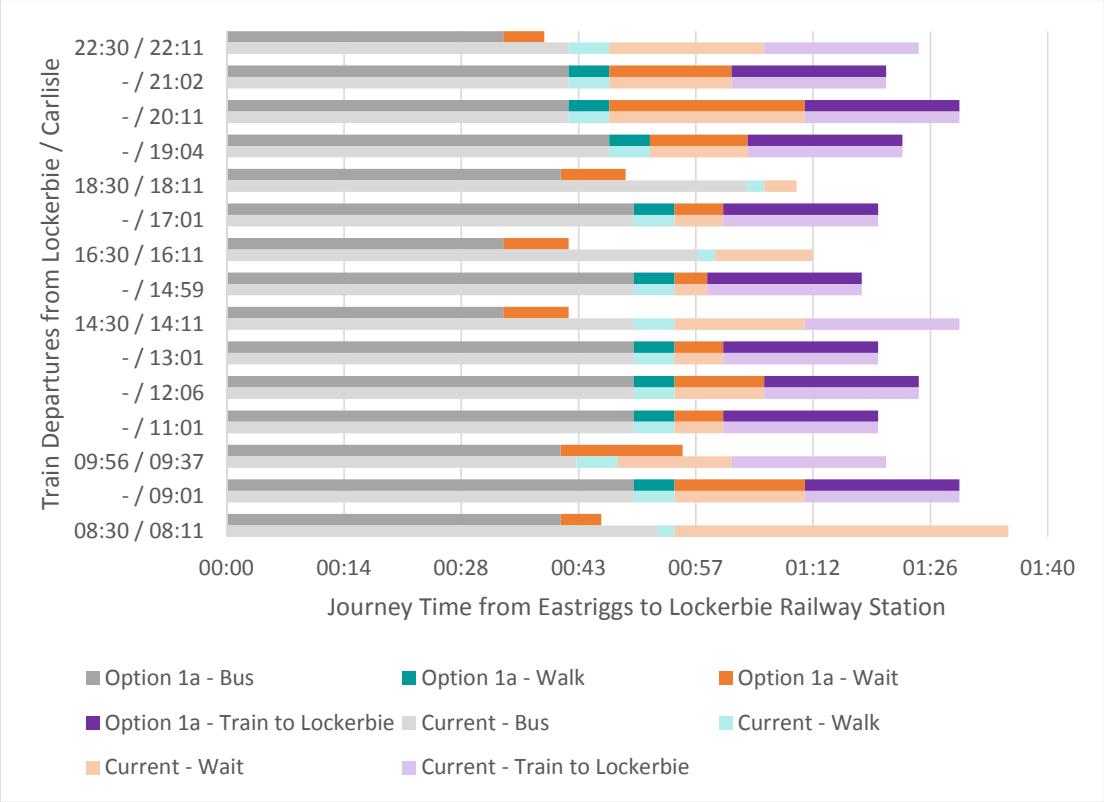

Figure L.19: Total journey time from Eastriggs to Lockerbie Railway Station for travel to Edinburgh (Existing vs. Option 1a)

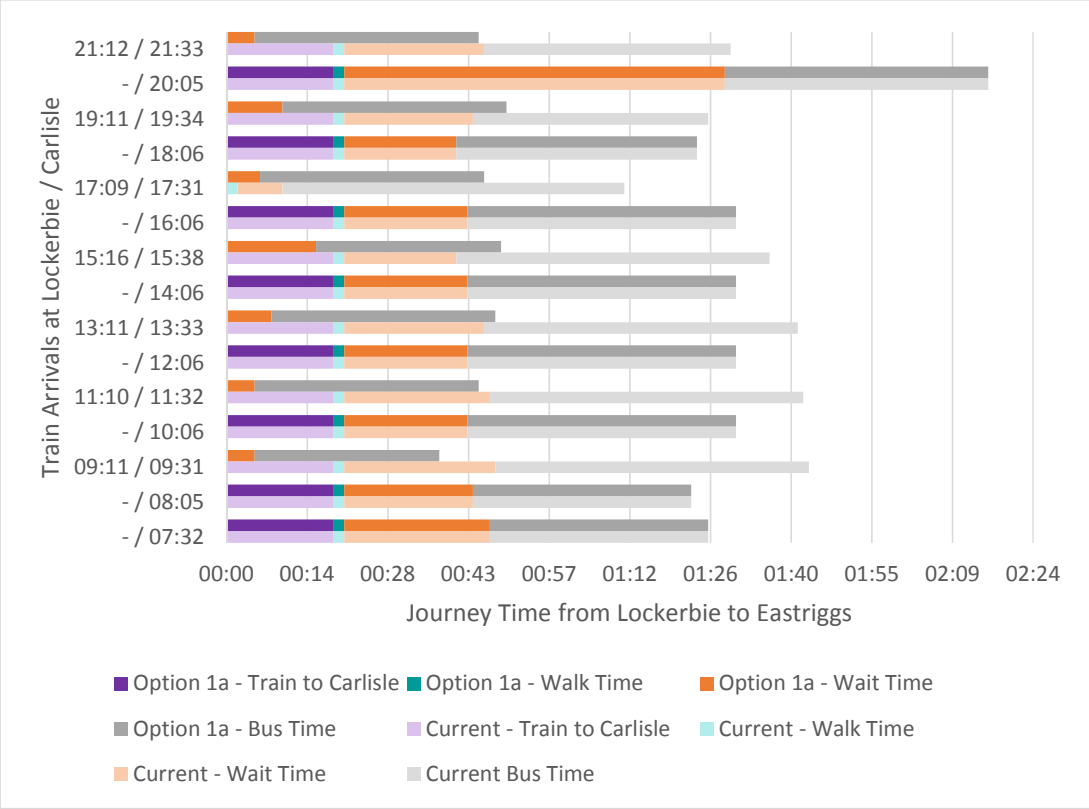

Figure L.20: Total journey time to Eastriggs from Lockerbie Railway Station for travel from Edinburgh (Existing vs. Option 1a)

Carlisle or Lockerbie to/from the south (WCML)

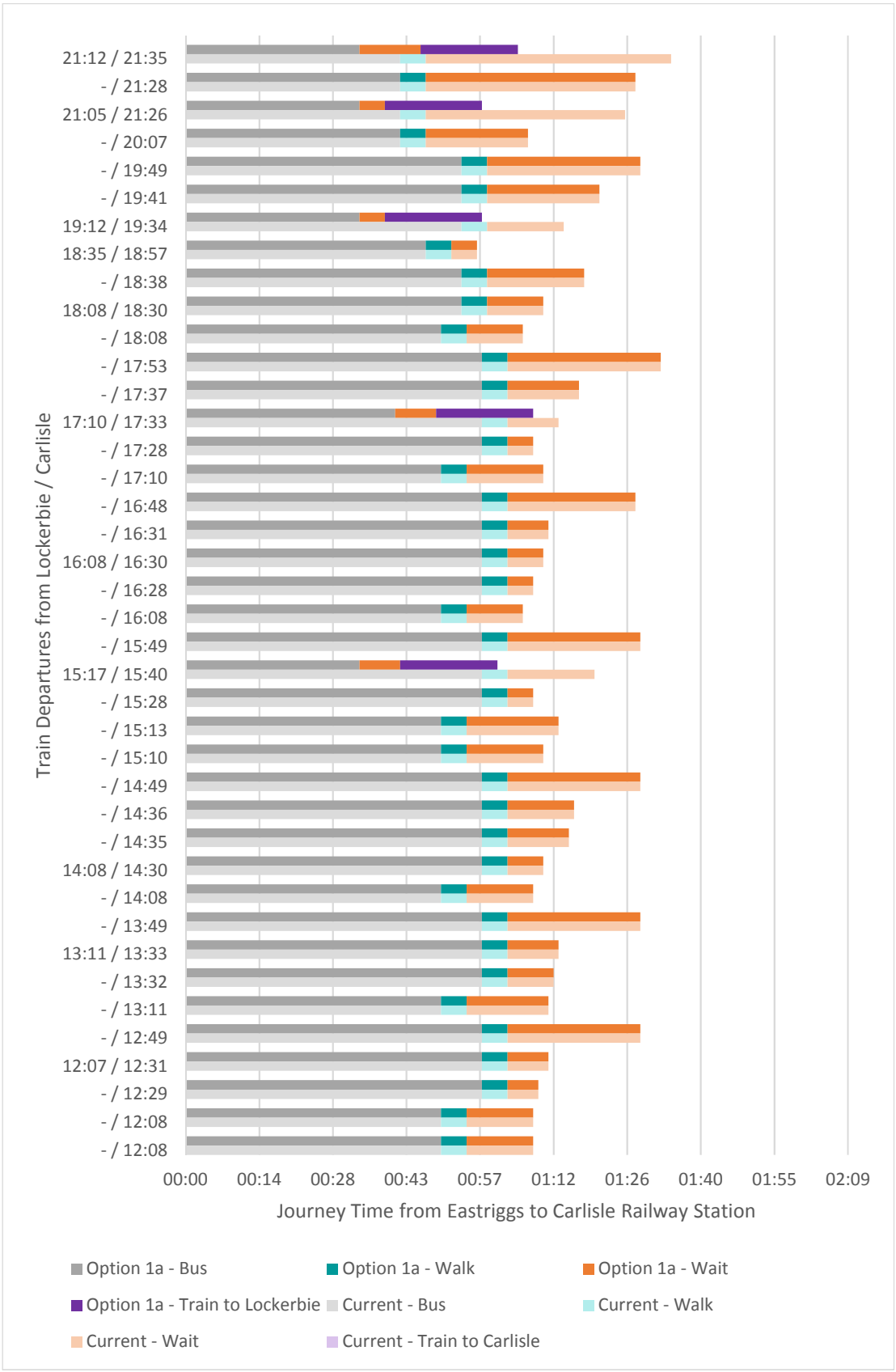

Figure L.21: Total journey time from Eastriggs to Carlisle Railway Station for travel to the south (Existing vs. Option 1a - PM)

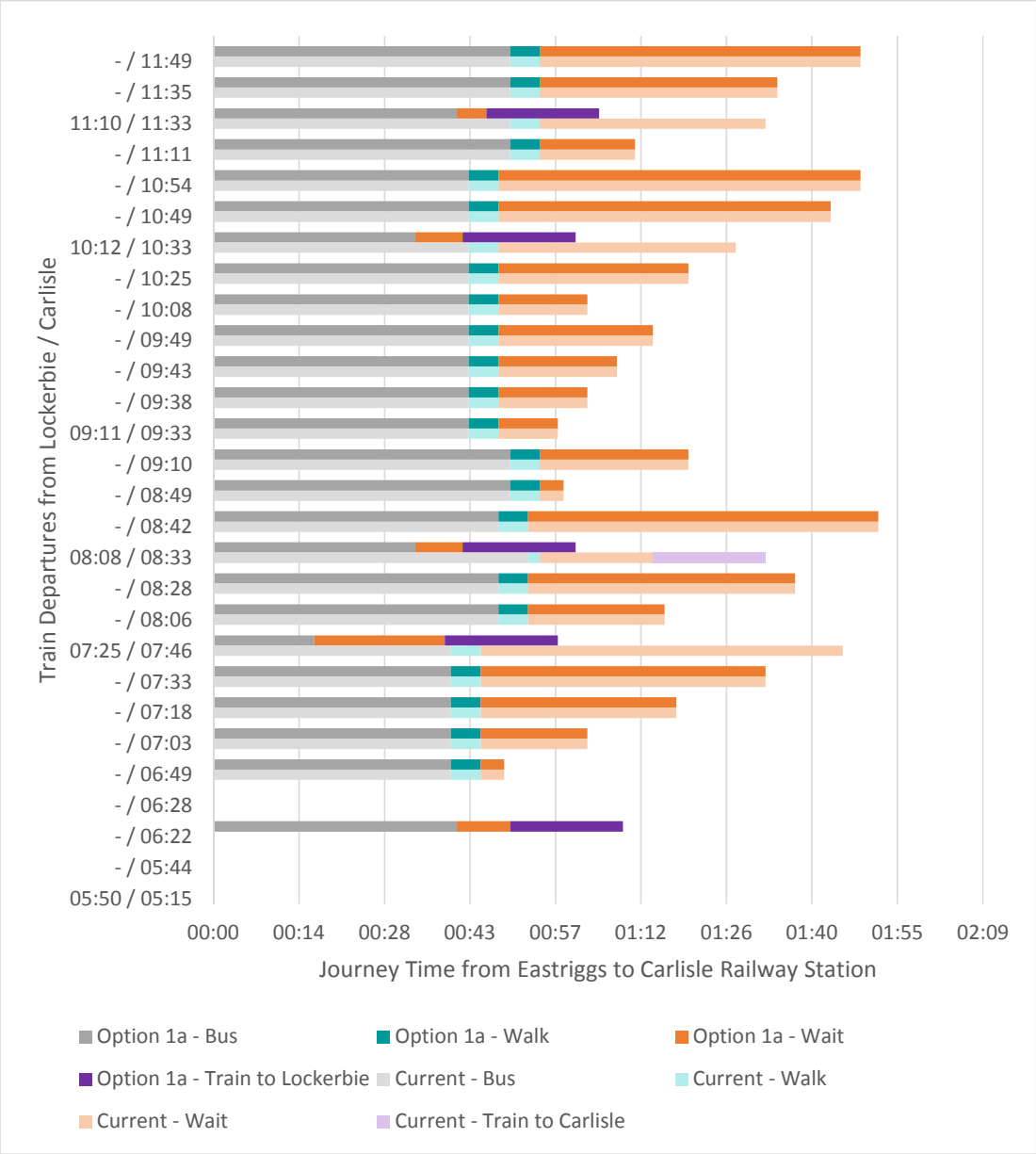

Figure L.22: Total journey time from Eastriggs to Carlisle Station for travel to the south (Existing vs. Option 1a - AM)

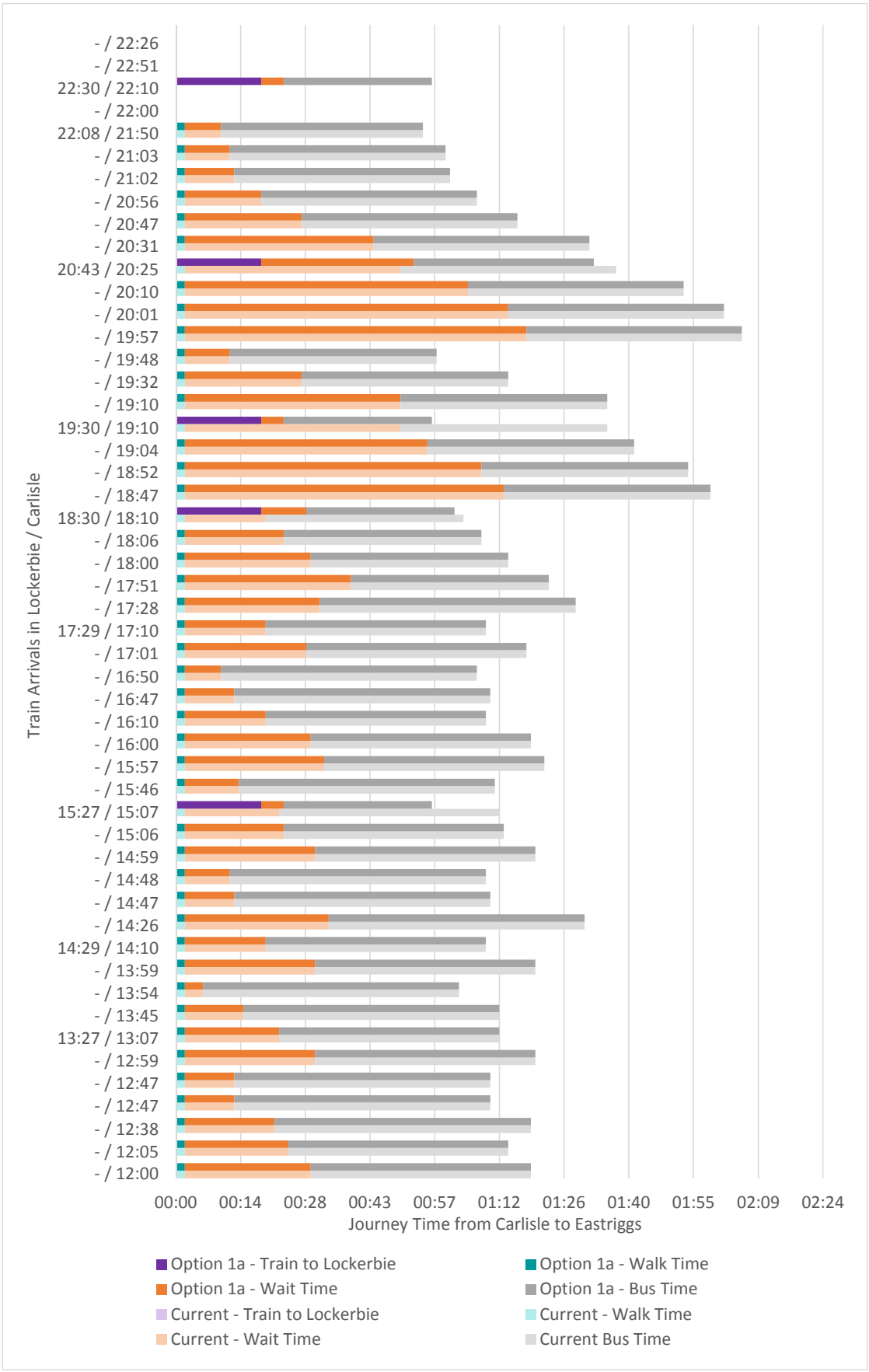

Figure L.23: Total journey time to Eastriggs from Carlisle Station for travel from the south (Existing vs. Option 1a - PM)

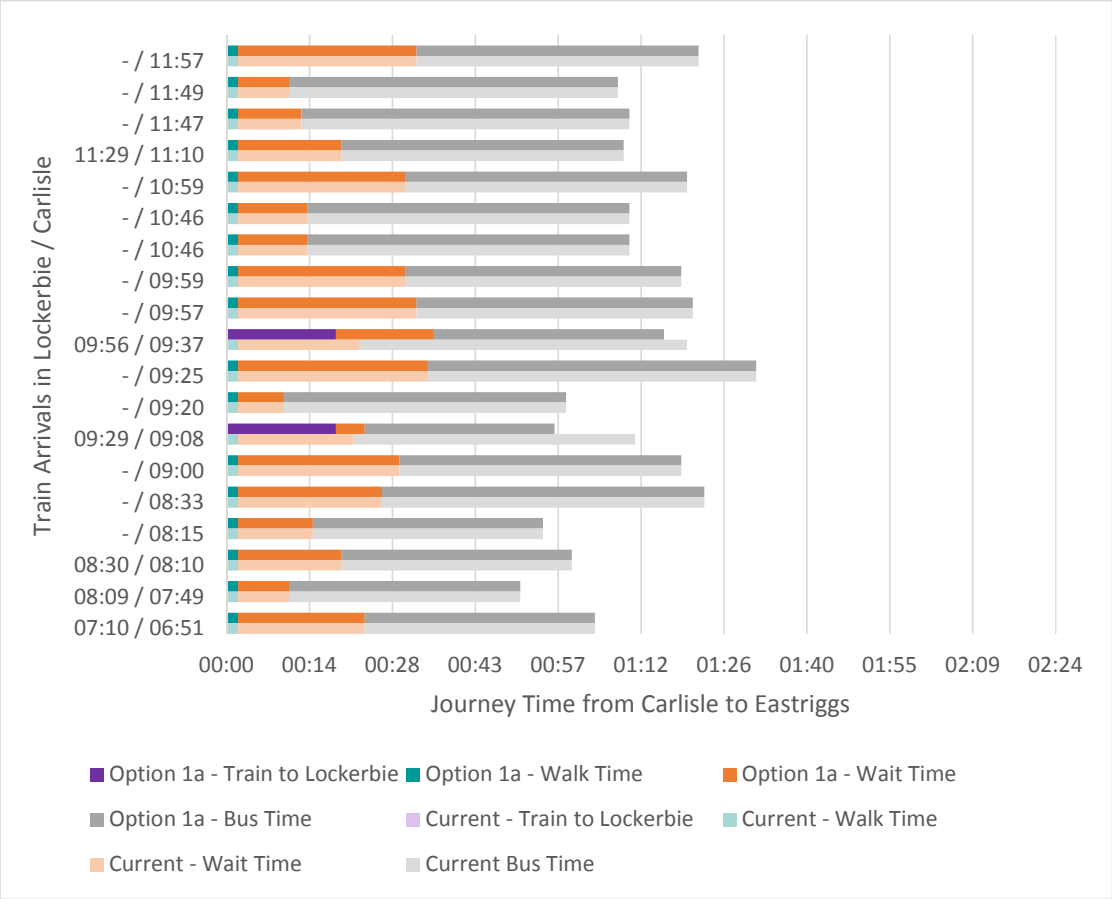

Figure L.24: Total journey time to Eastriggs from Carlisle Station for travel from the south (Existing vs. Option 1a - AM)

L.5.2 **Option 1a** is a dedicated RailBus service designed to integrate with arrivals and departures at Annan and Lockerbie Railway Stations, and as such, it is unsurprising that it is the option which performs most highly in terms of public transport integration:

- The proposed RailBus will be supplementary to existing bus provision, increasing the total number of connections to Annan, Lockerbie and Dumfries and providing Eastriggs residents greater flexibility in the timing of their travels. Option 1a will permit access to one additional rail service per day as indicated in Table L.1. However, consideration must be given to the viability of running the new Railbus services in addition to the 79 and 81 bus services which currently operate along this route;

- Option 1a will substantially reduce average journey times for inbound and outbound trips along the GSWL, and also to a lesser degree along the WCML. Average reductions in journey times on the WCML are lower primarily because the majority of rail services don't stop at Lockerbie, meaning that travellers must route through Carlisle which will be unaffected by Option 1a; and

- The improved alignment of service times with Annan and Lockerbie departures also substantially reduces the number of instances in which it is more convenient to board/alight at a station in the opposite direction to the destination (e.g. travelling south east to Gretna Green to catch train to Glasgow) when travelling northbound, but increases the number of instances when travelling south.

L.6 Impact of Option 1b

L.6.1 Option 1b involves the optimisation of 79 bus service to better integrate (physically and temporally) with rail services from Annan, Gretna Green, Dumfries and Carlisle Stations.

L.6.2 The figures below show the impact of Option 1b.

L.6.3 Option 1b will replace the existing 79 bus service, and the addition of new stops will lead to an overall increase in bus journey times. As a result, Eastriggs residents will no longer be able to access the 06:49 rail service from Carlisle to London via public transport. Again journey time decreases to destinations along the GSWL are expected, but Option 1b will lead to a negligible change or slight increase in journey times to stations along the WCML - specifically including inbound and outbound trips to Glasgow and outbound trips to Edinburgh.

Annan or Gretna to/from Glasgow (GSWL)

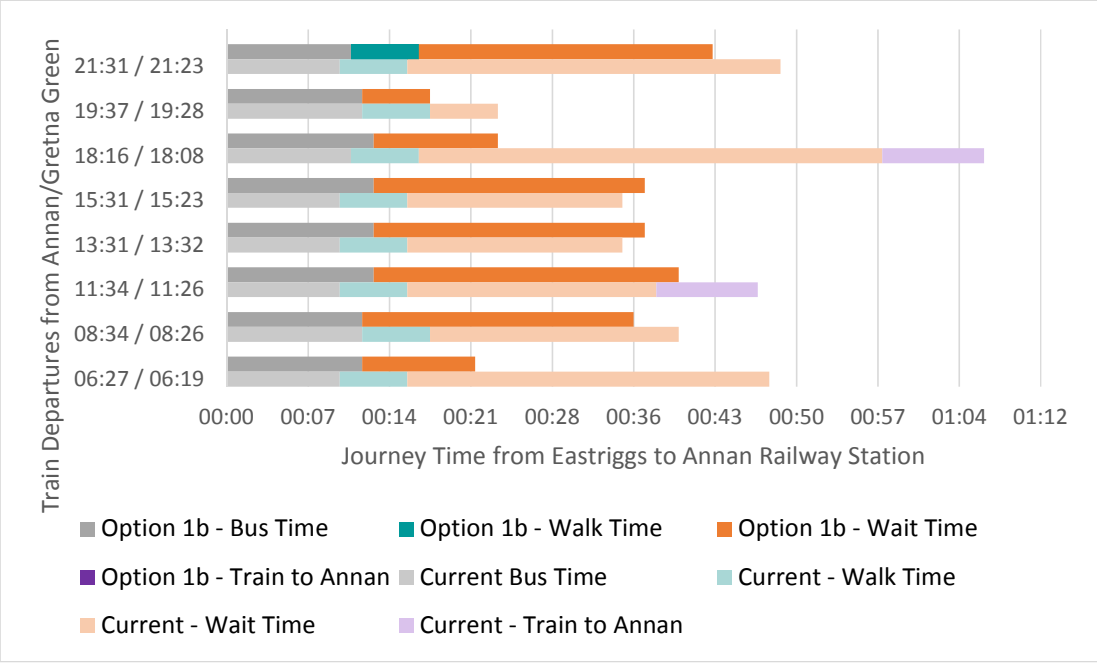

Figure L.25: Total journey time from Eastriggs to Annan Railway Station for travel to Glasgow (Existing vs. Option 1b)

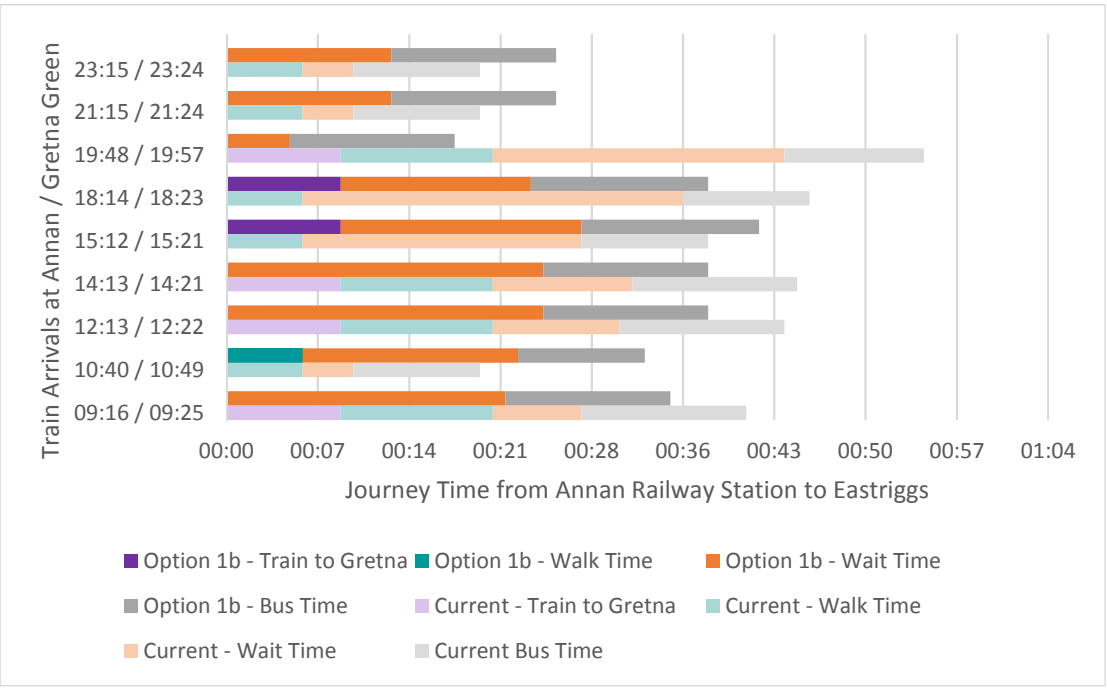

Figure L.26: Total journey time to Eastriggs from Annan Railway Station for travel from Glasgow (Existing vs. Option 1b)

Annan or Gretna to/from Carlisle (GSWL)

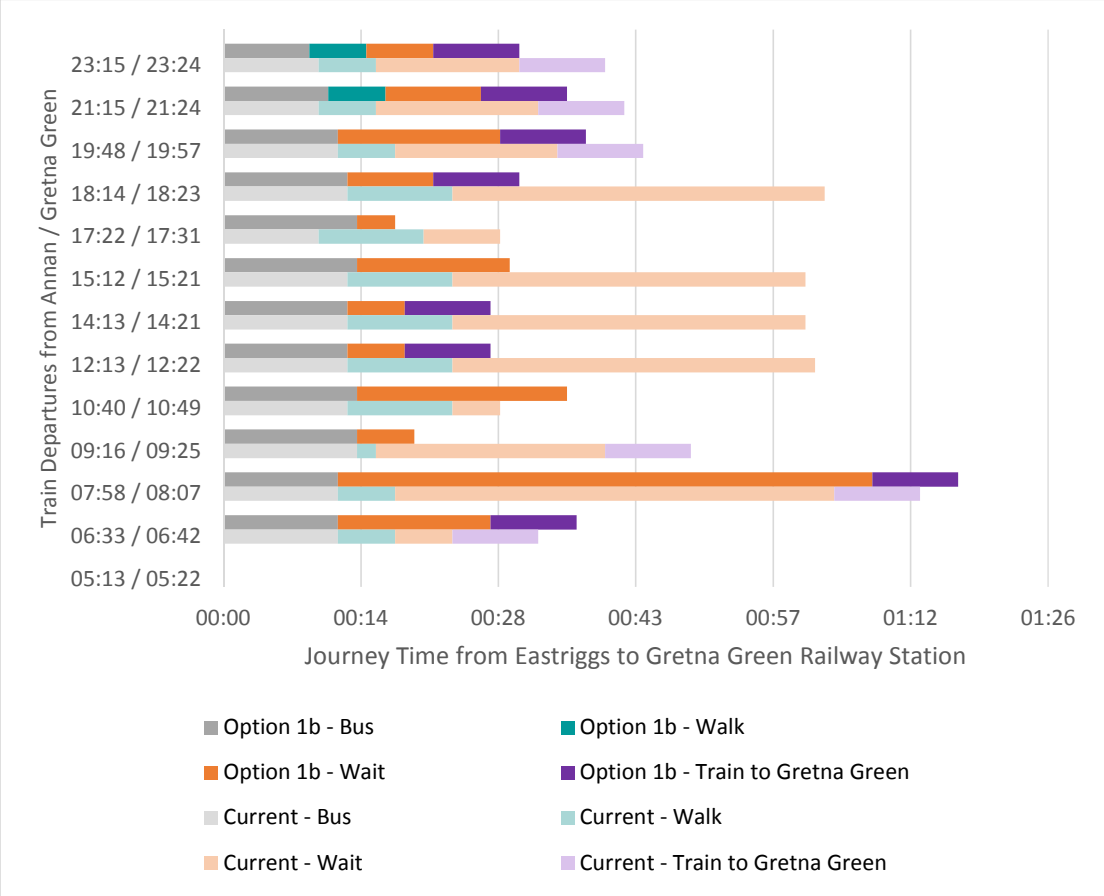

Figure L.27: Total journey time from Eastriggs to Gretna Green Railway Station for travel to Carlisle (Existing vs. Option 1b)

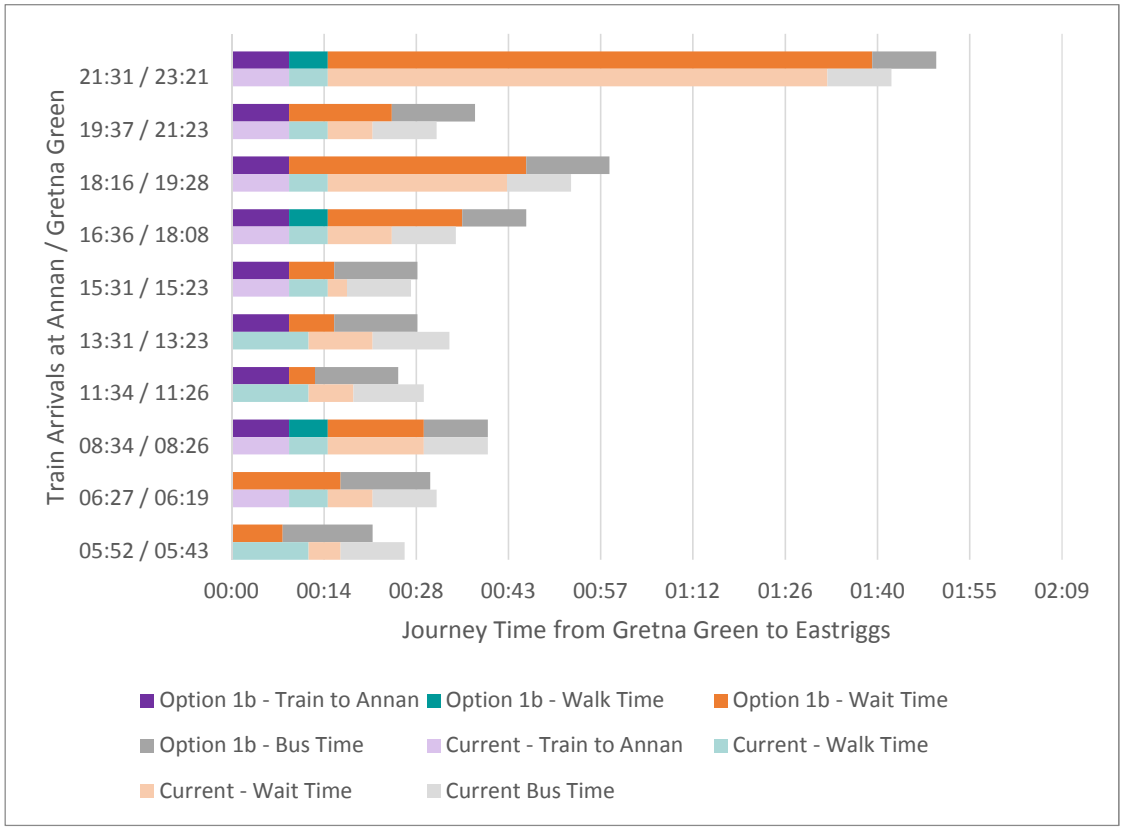

Figure L.28: Total journey time to Eastriggs from Gretna Green Railway Station for travel from Carlisle (Existing vs. Option 1b)

Lockerbie or Carlisle to/from Glasgow (WCML)

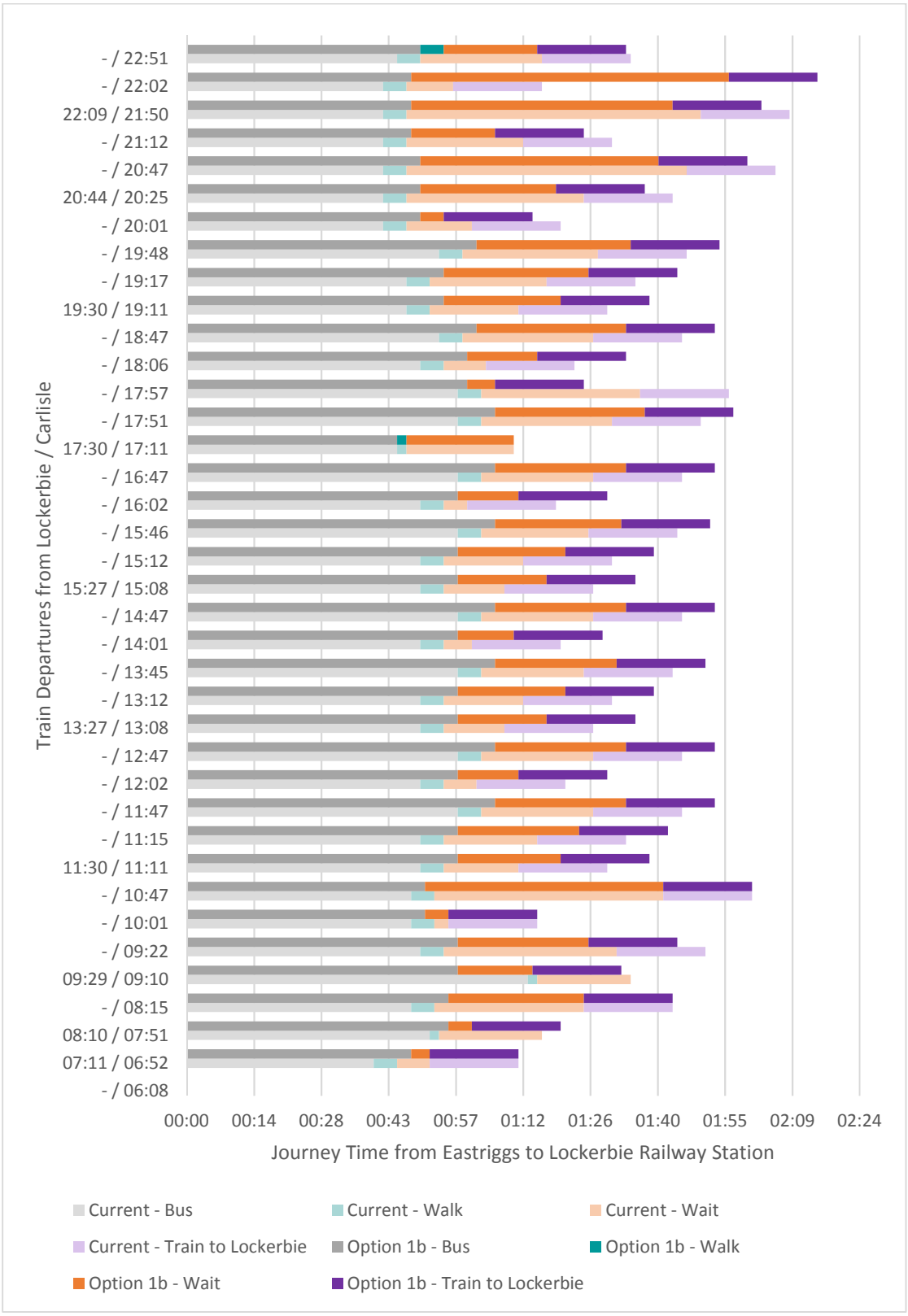

Figure L.29: Total journey time from Eastriggs to Lockerbie Railway Station for travel to Glasgow (Existing vs. Option 1b)

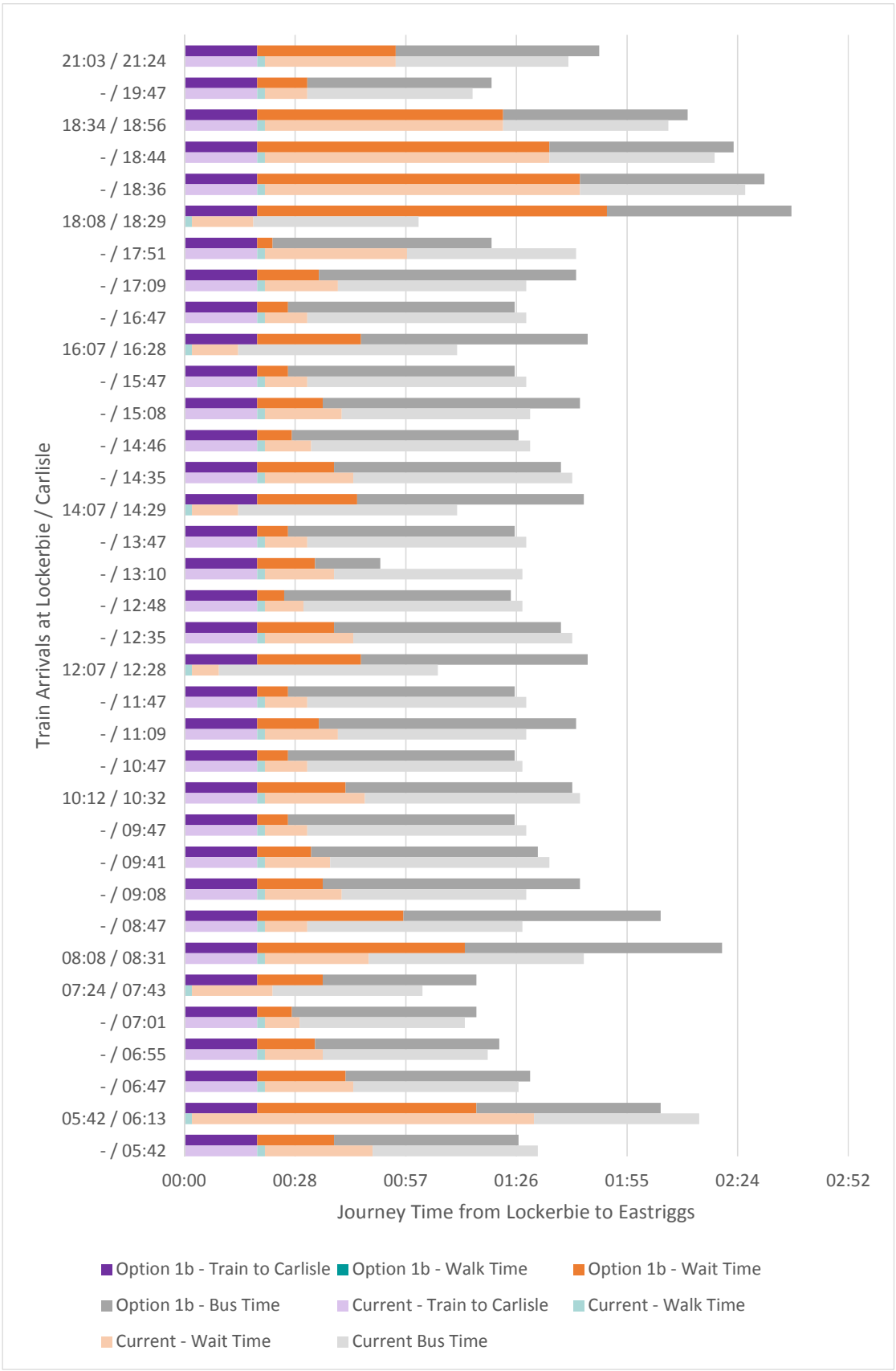

Figure L.30: Total journey time to Eastriggs from Lockerbie Railway Station for travel from Glasgow (Existing vs. Option 1b)

Lockerbie or Carlisle to/from Edinburgh (WCML)

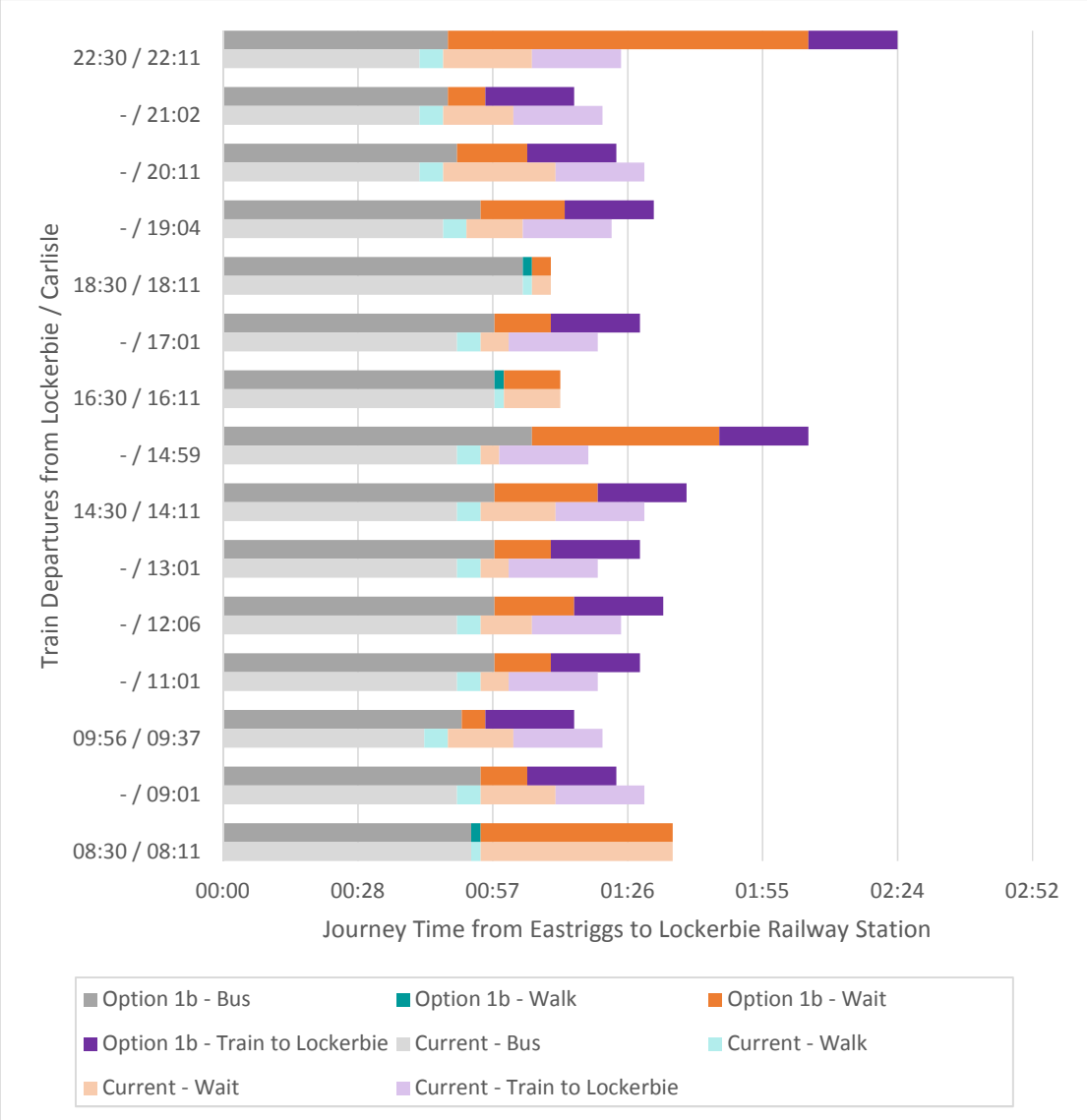

Figure L.31: Total journey time from Eastriggs to Lockerbie Railway Station for travel to Edinburgh (Existing vs. Option 1b)

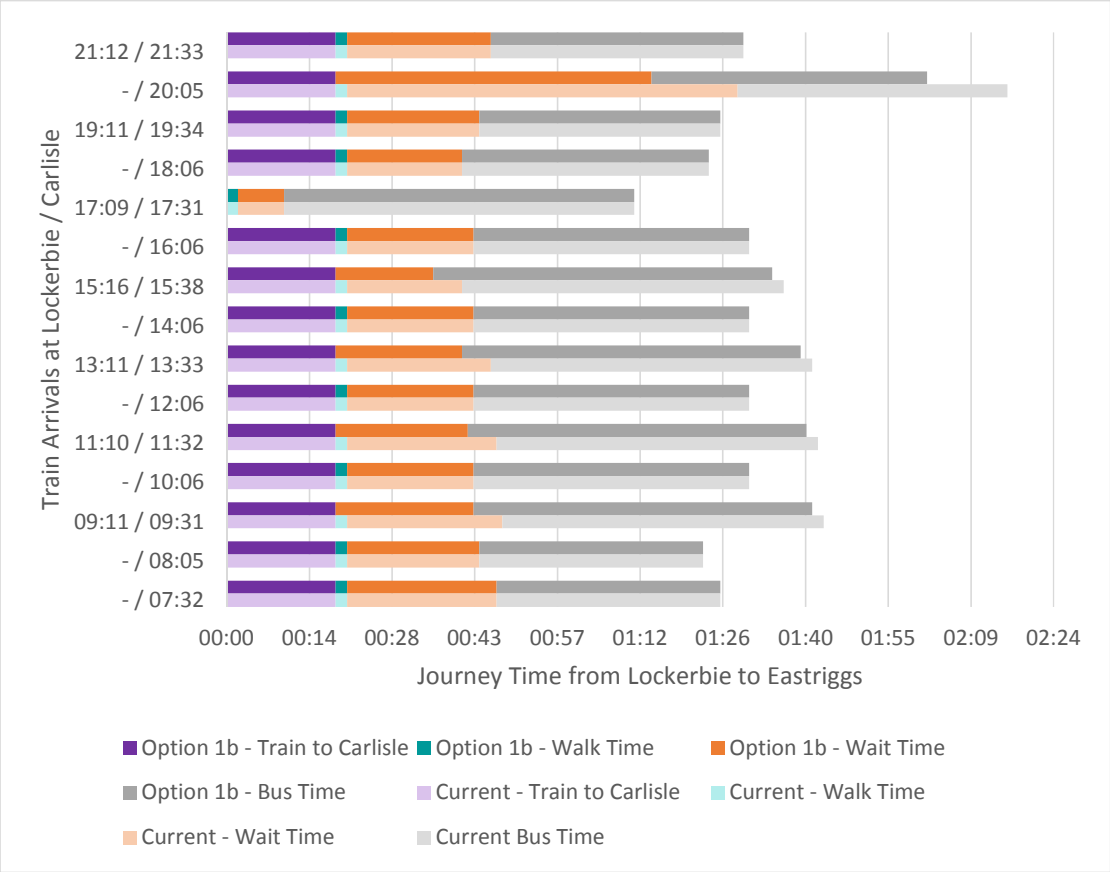

Figure L.32: Total journey time to Eastriggs from Lockerbie Railway Station for travel from Edinburgh (Existing vs. Option 1b)

Lockerbie or Carlisle to/from the south (WCML)

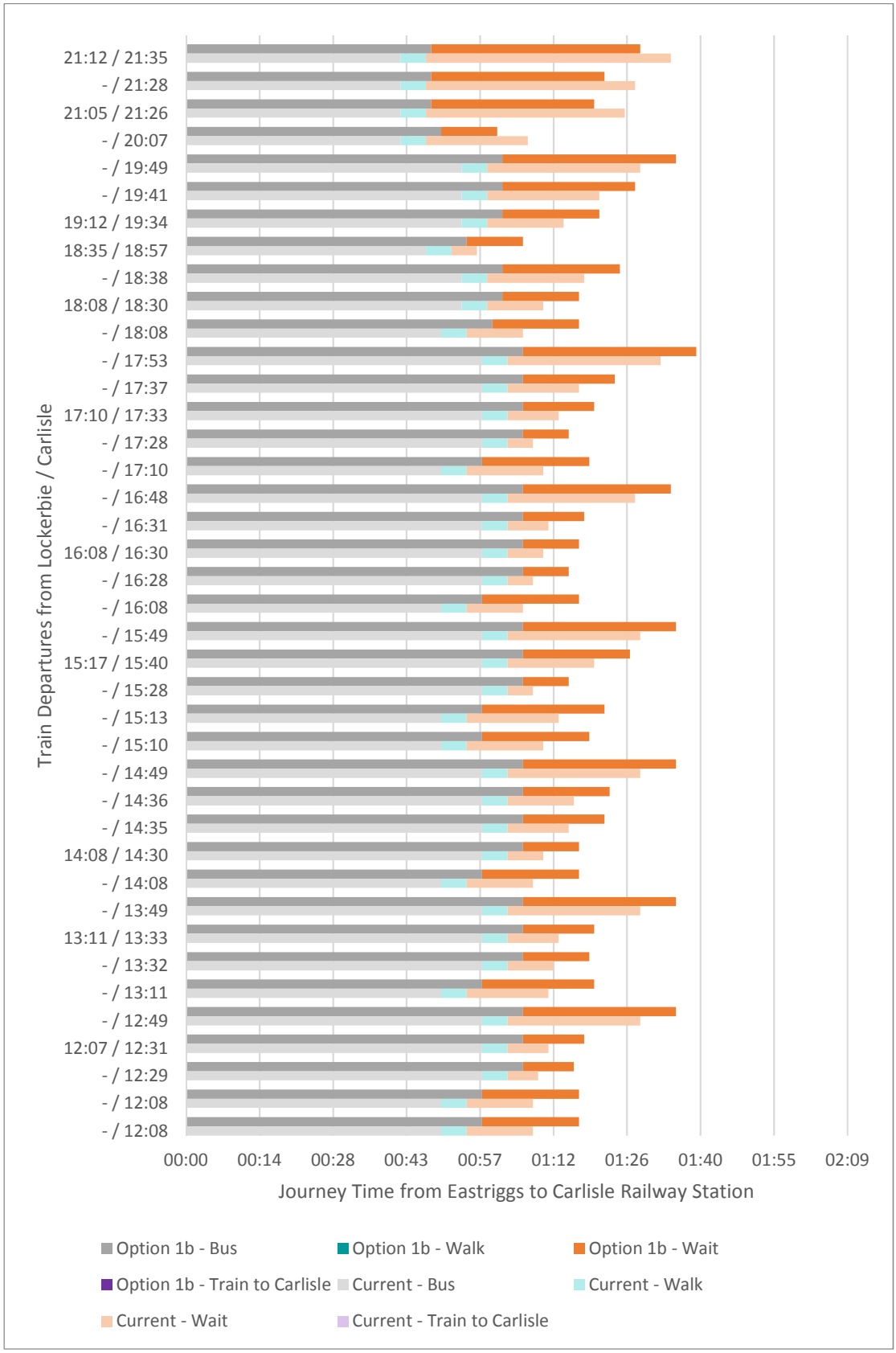

Figure L.33: Total journey time from Eastriggs to Carlisle Railway Station for travel to the south (Existing vs. Option 1b - PM)

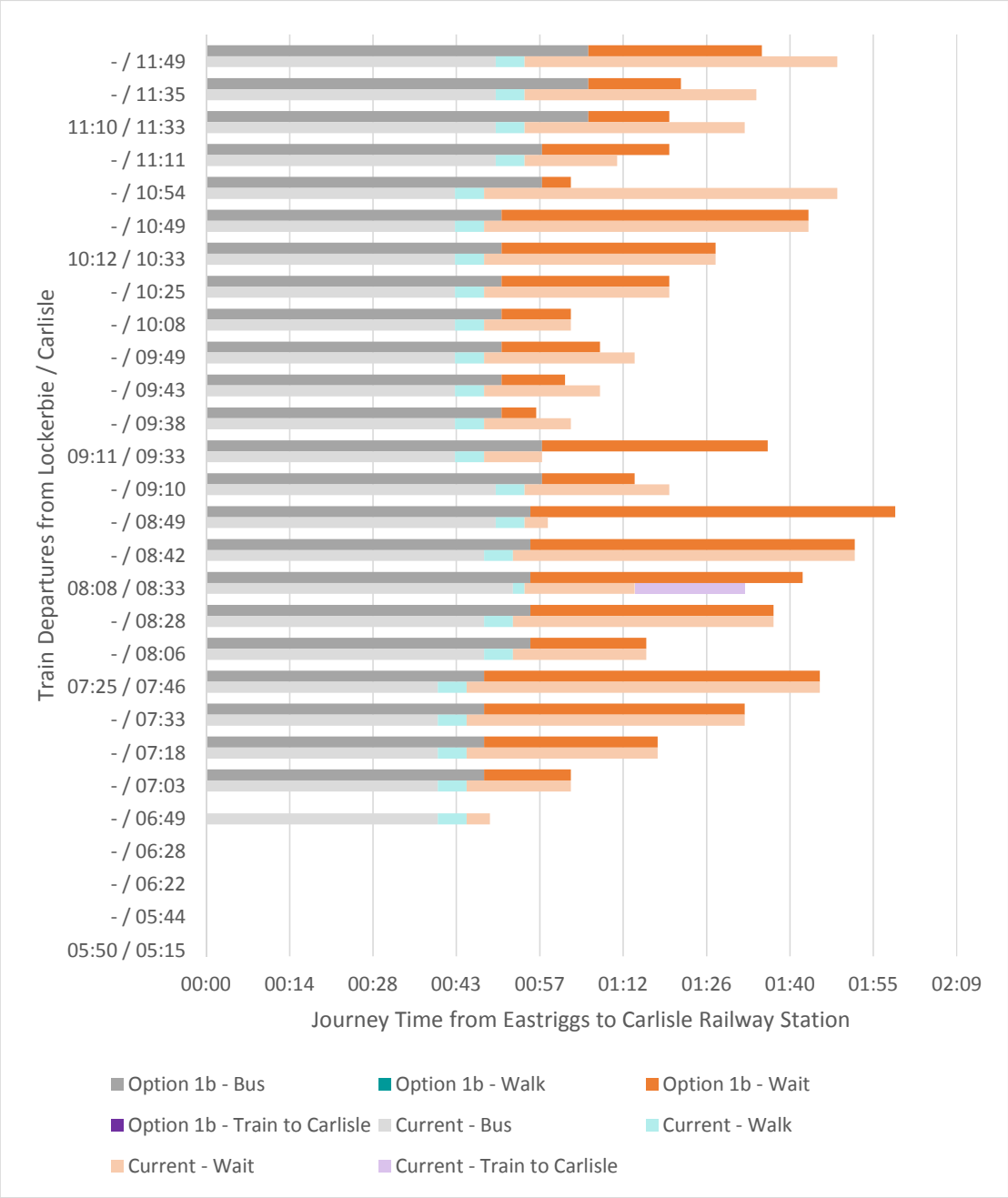

Figure L.34: Total journey time from Eastriggs to Carlisle Railway Station for travel to the south (Existing vs. Option 1b - AM)

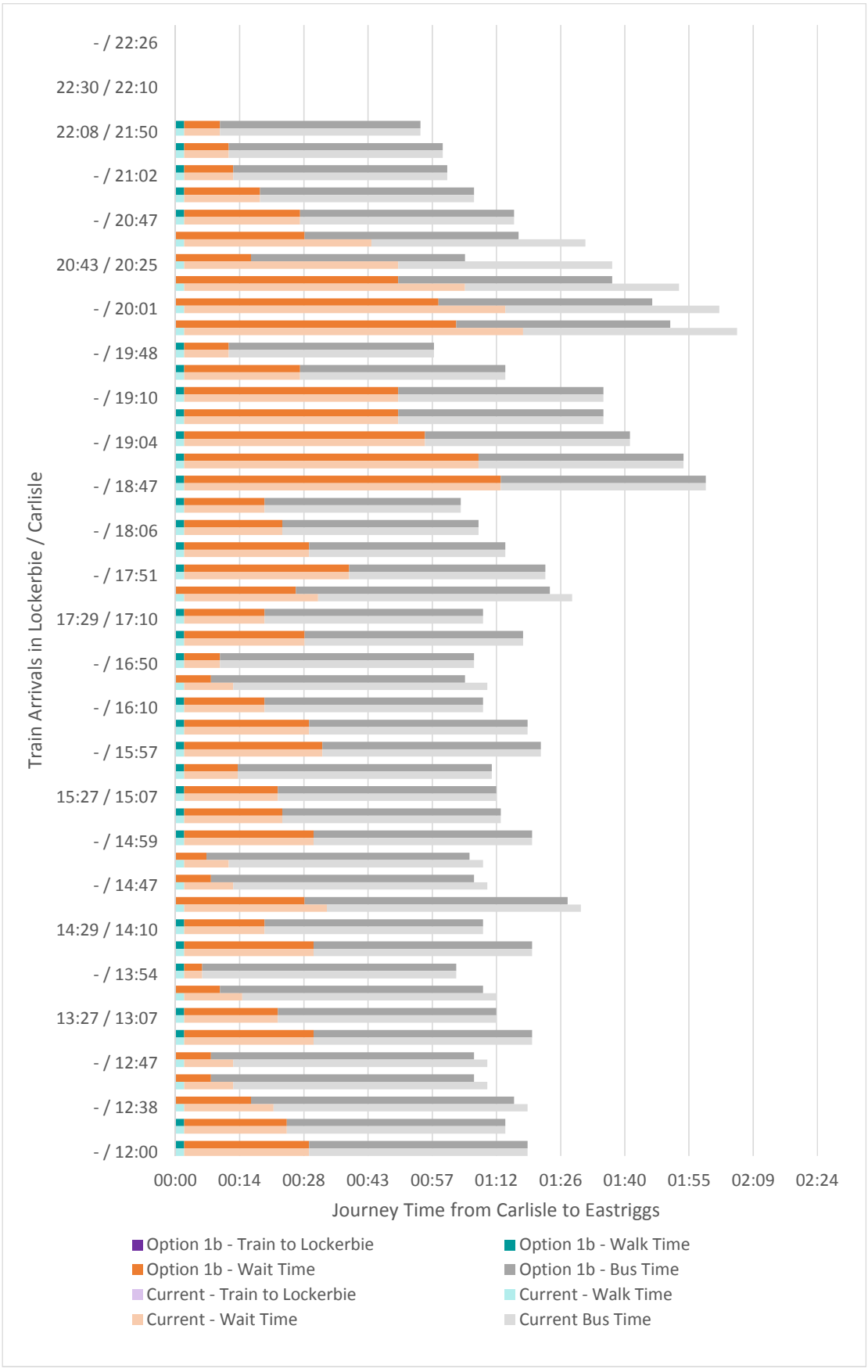

Figure L.35: Total journey time to Eastriggs from Carlisle Station for travel from the south (Existing vs. Option 1b - PM)

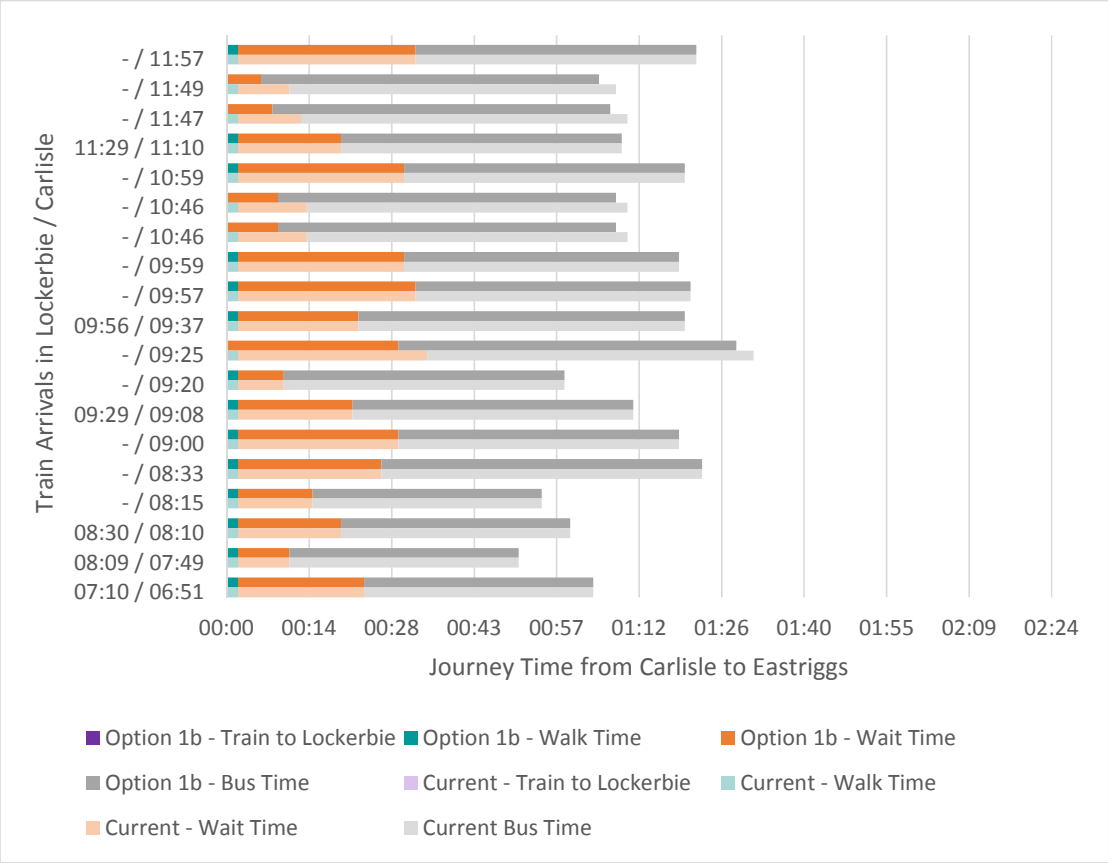

Figure L.36: Total journey time to Eastriggs from Carlisle Station for travel from the south (Existing vs. Option 1b - AM

L.7 Impact of Option 1c

L.7.1 The figures below show the impact of Option 1c.

L.7.2 **Option 1c** involves the extension of the 383 bus service from Lockerbie to Eastriggs, and it will introduce a direct bus connection to Lockerbie, which does not exist at present. This has the effect of reducing bus journey times to Lockerbie and permitting Eastriggs residents to access the 05:50 rail service from Lockerbie to London via public transport. Journey times from Eastriggs will reduce across the board, but the degree of improvement varies strongly with route and direction of travel. Although slight increases in interchange times are expected for connections with some WCML services, these are largely offset by reduced bus journey times.

Annan or Gretna Green to/from Glasgow (GSWL)

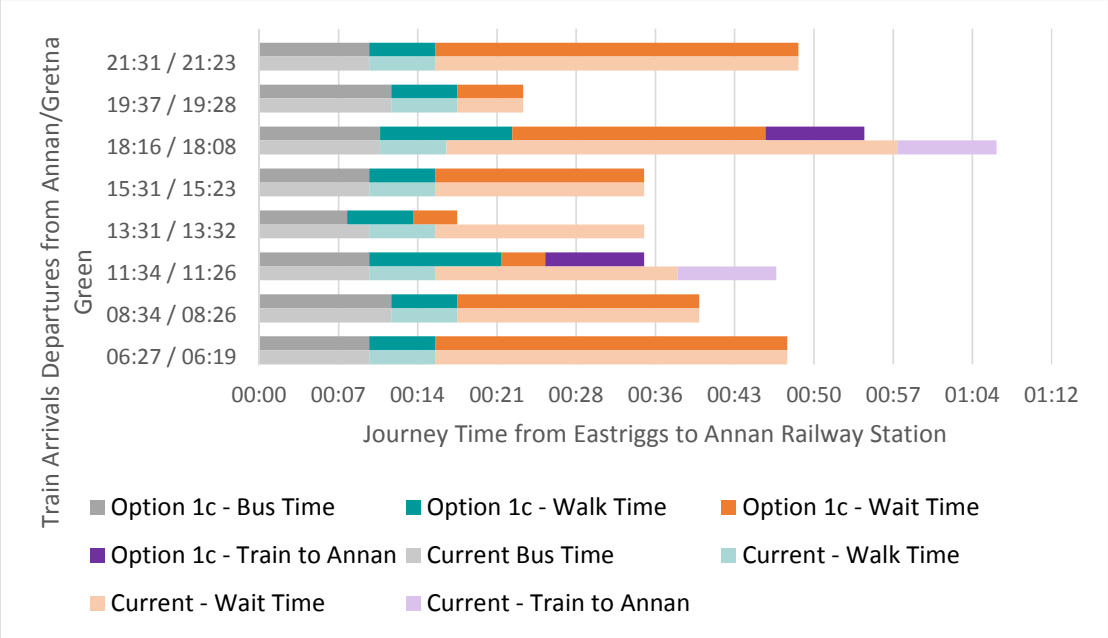

Figure L.37: Total journey time from Eastriggs to Annan Railway Station for travel to Glasgow (Existing vs. Option 1c)

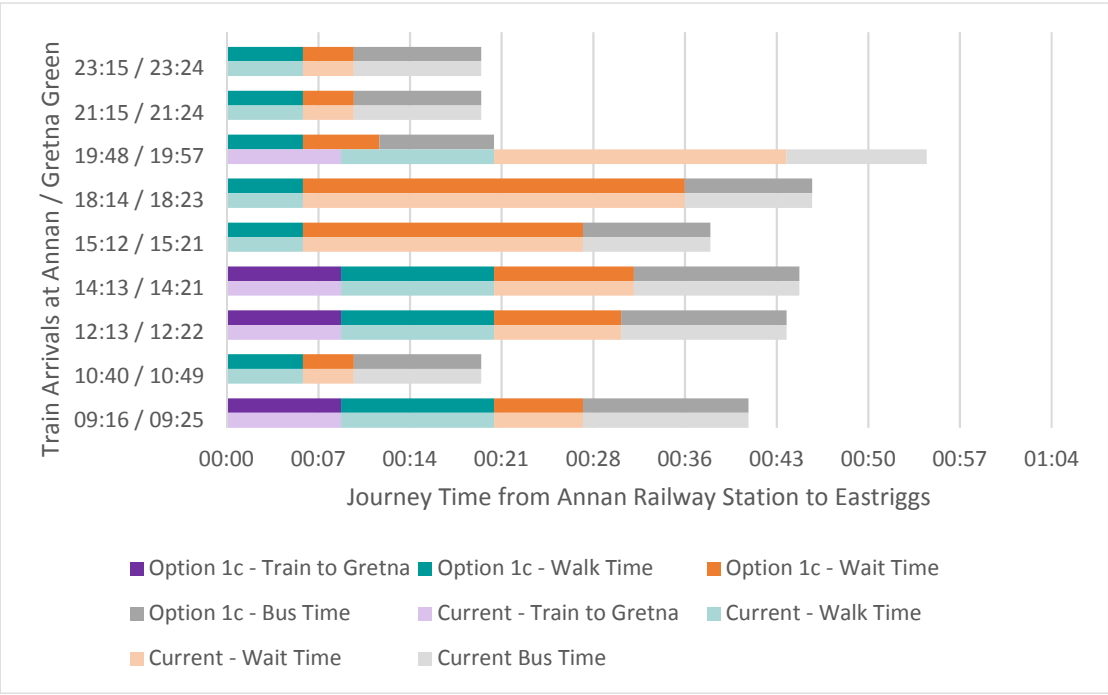

Figure L.38: Total journey time to Eastriggs from Annan Railway Station for travel from Glasgow (Existing vs. Option 1c)

Annan or Gretna Green to/from Carlisle (GSWL)

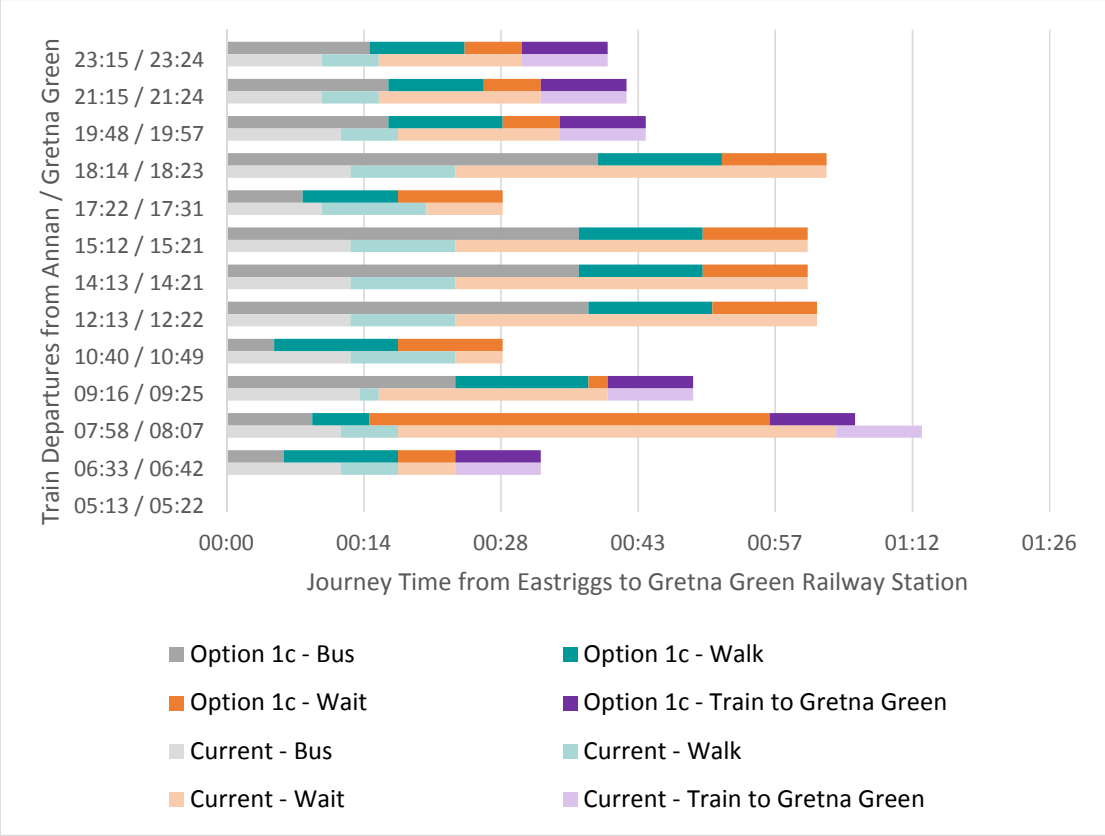

Figure L.39: Total journey time from Eastriggs to Gretna Green Railway Station for travel to Carlisle (Existing vs. Option 1c)

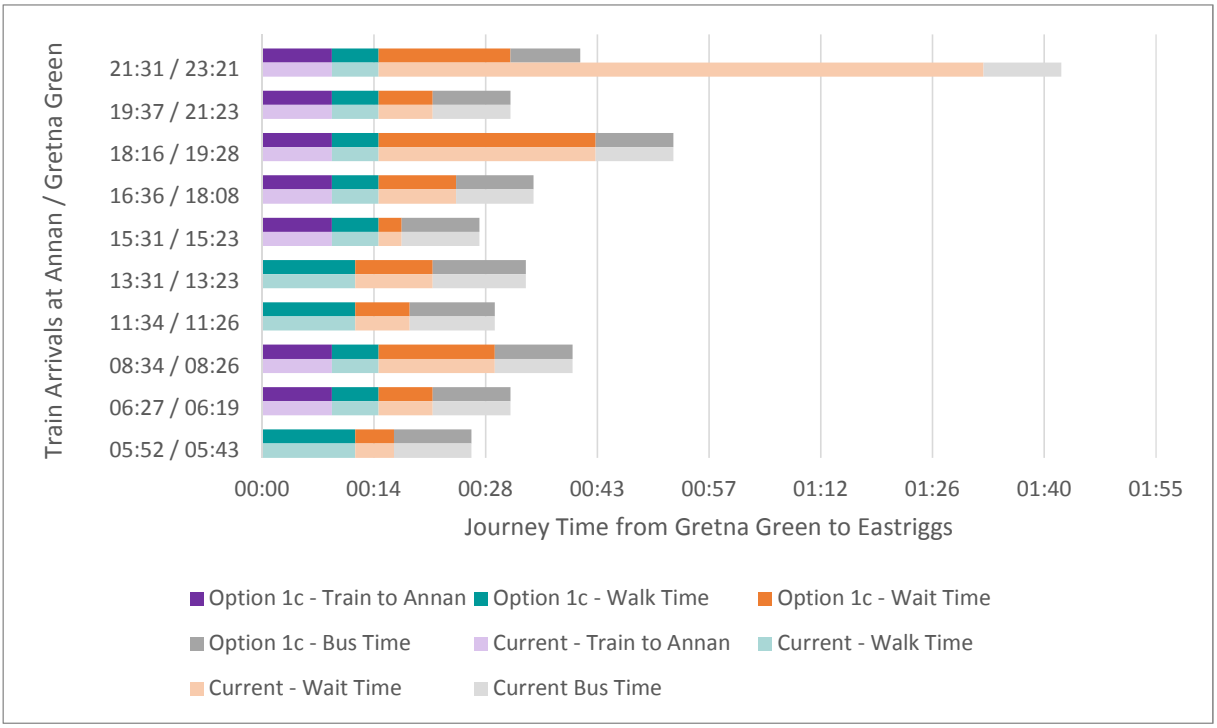

Figure L.40: Total journey time to Eastriggs from Gretna Green Railway Station for travel from Carlisle (Existing vs. Option 1c)

Lockerbie or Carlisle Green to/from Glasgow (WCML)

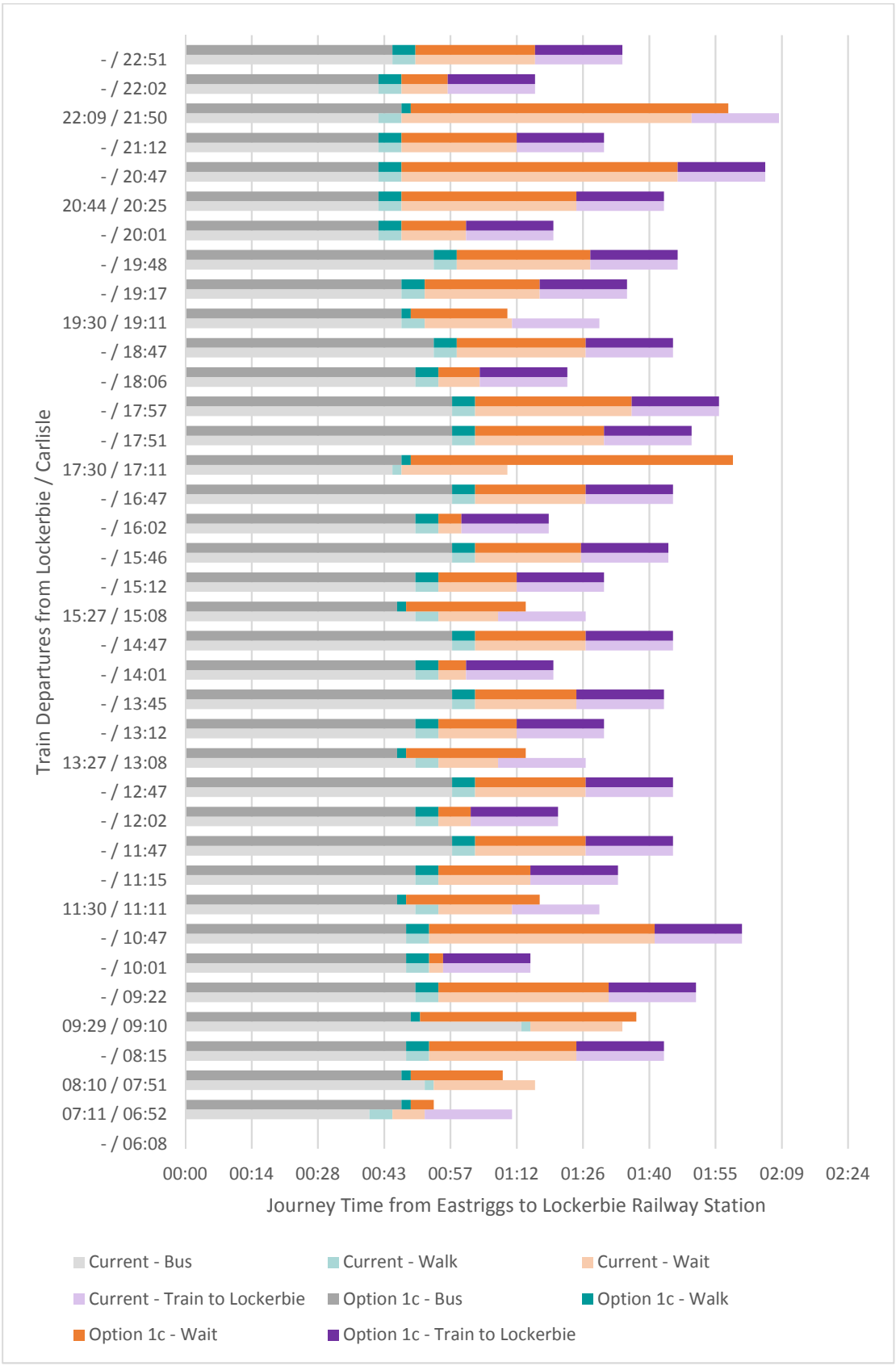

Figure L.41: Total journey time from Eastriggs to Lockerbie Railway Station for travel to Carlisle (Existing vs. Option 1c)

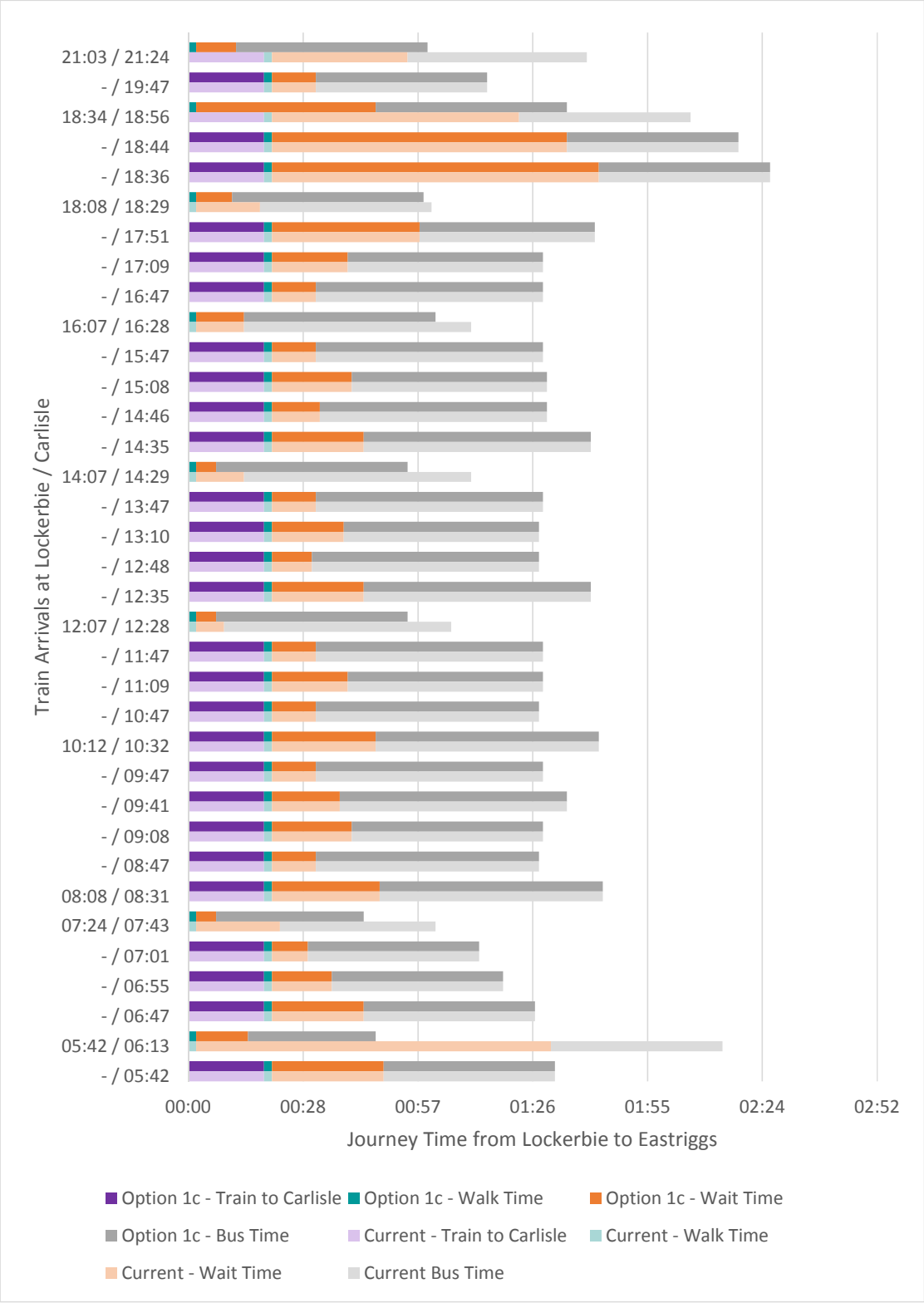

Figure L.42: Total journey time to Eastriggs from Lockerbie Railway Station for travel from Glasgow (Existing vs. Option 1c)

Lockerbie or Carlisle Green to/from Edinburgh (WCML)

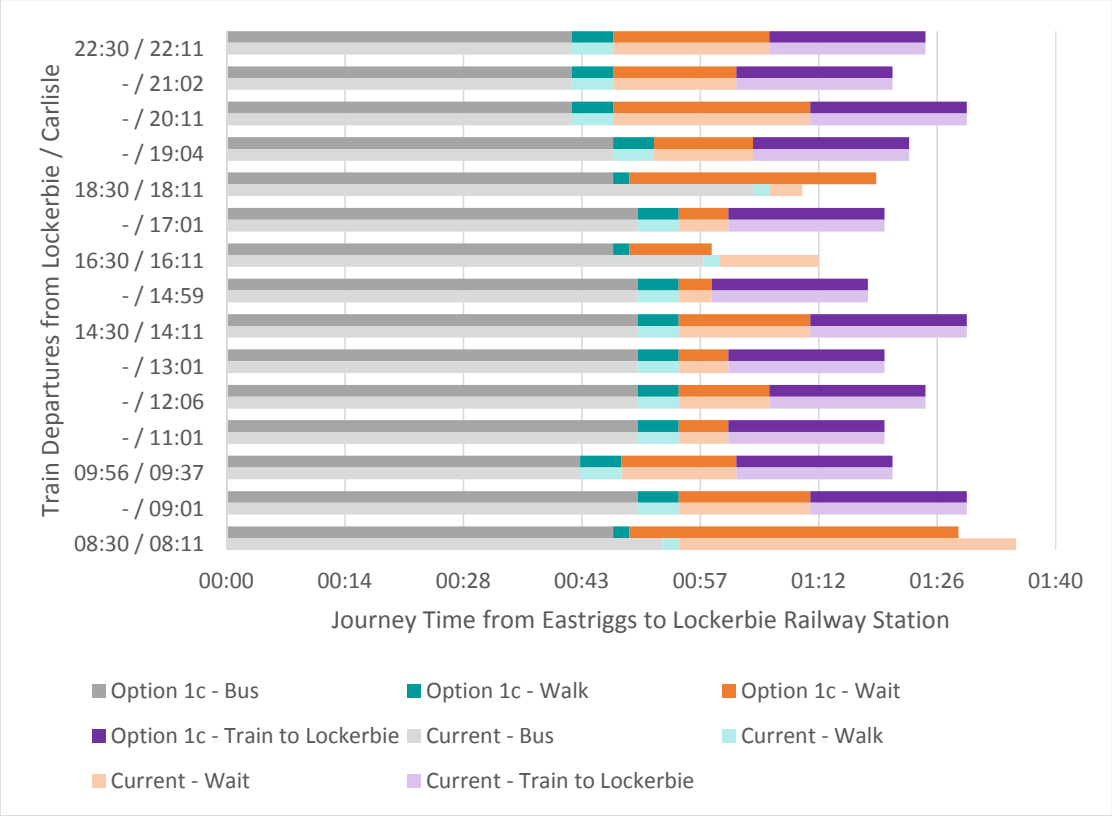

Figure L.43: Total journey time from Eastriggs to Lockerbie Railway Station for travel to Edinburgh (Existing vs. Option 1c)

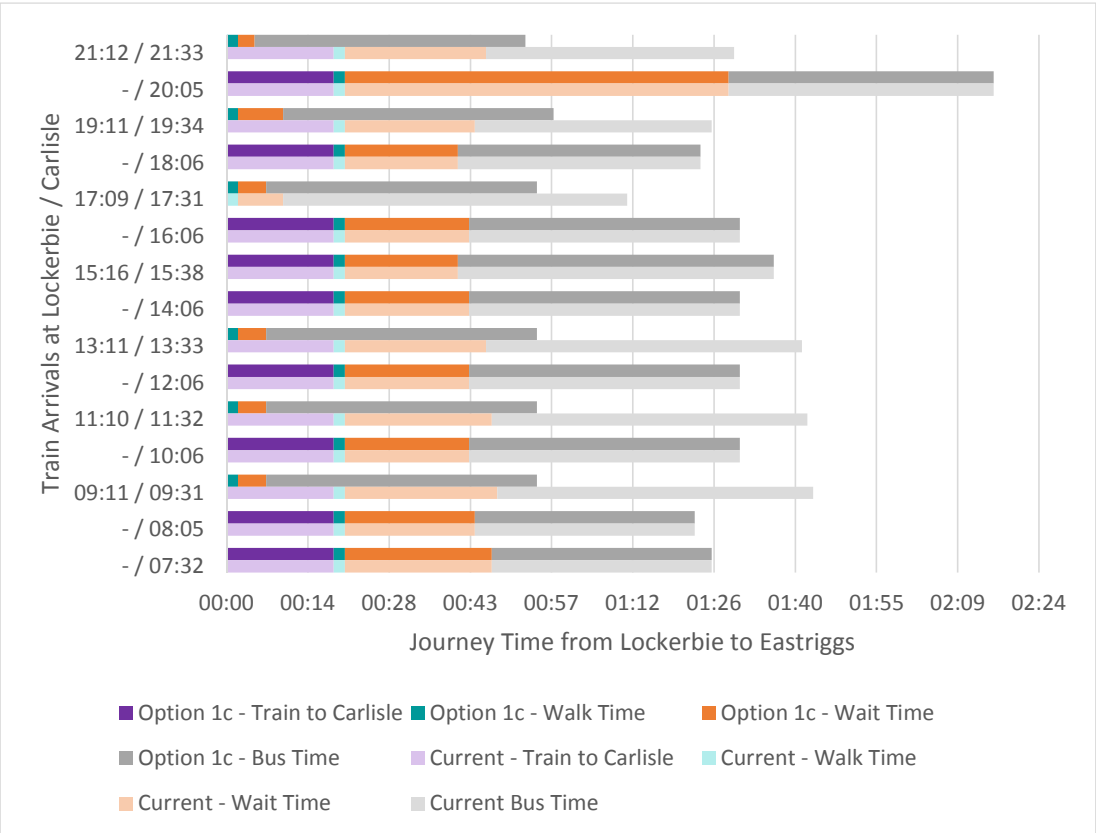

Figure L.44: Total journey time to Eastriggs from Lockerbie Railway Station for travel from Edinburgh (Existing vs. Option 1c)

Lockerbie or Carlisle Green to/from the south (WCML)

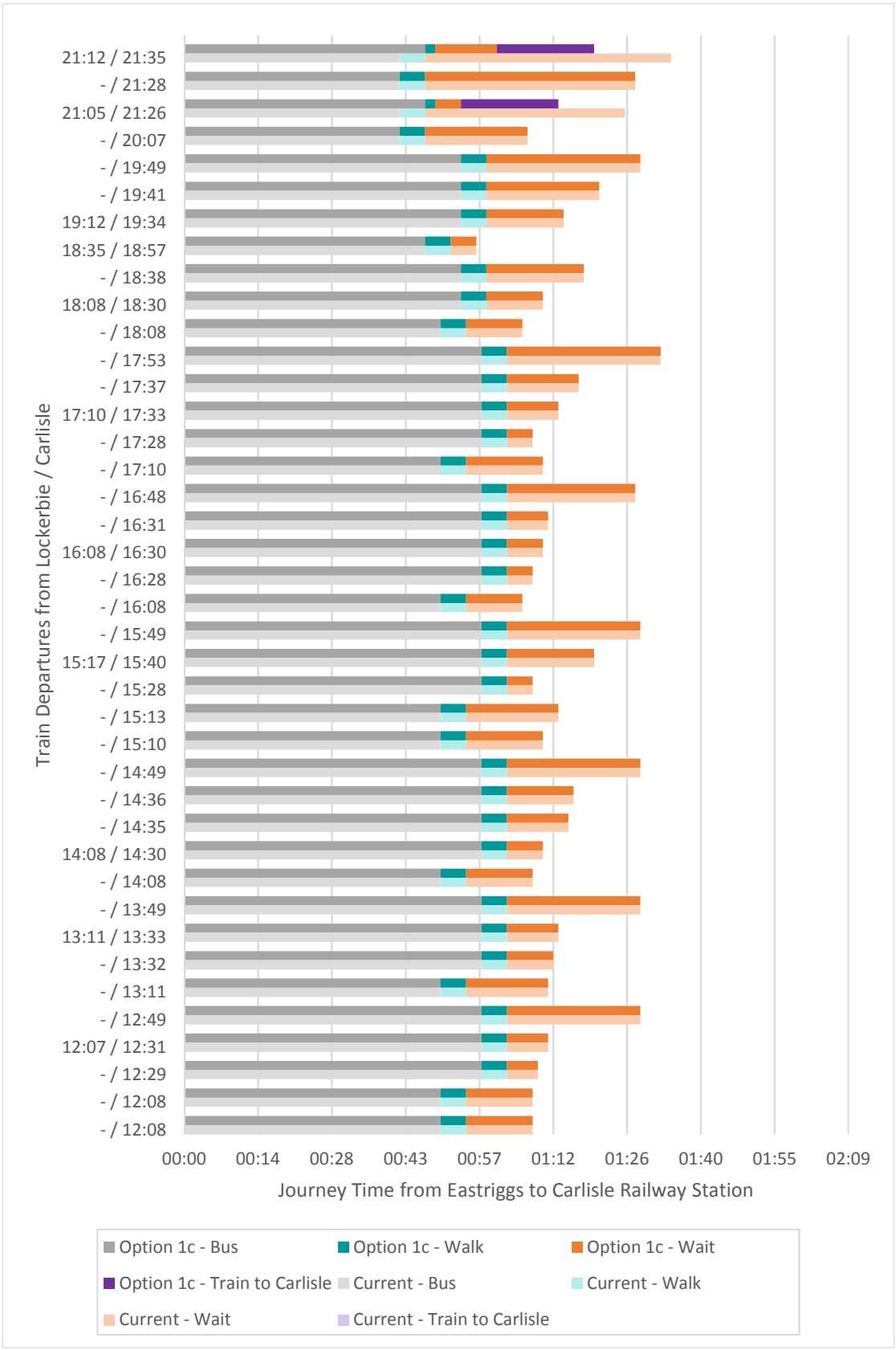

Figure L.45: Total journey time from Eastriggs to Carlisle Railway Station for travel to the south (Existing vs. Option 1c - PM)

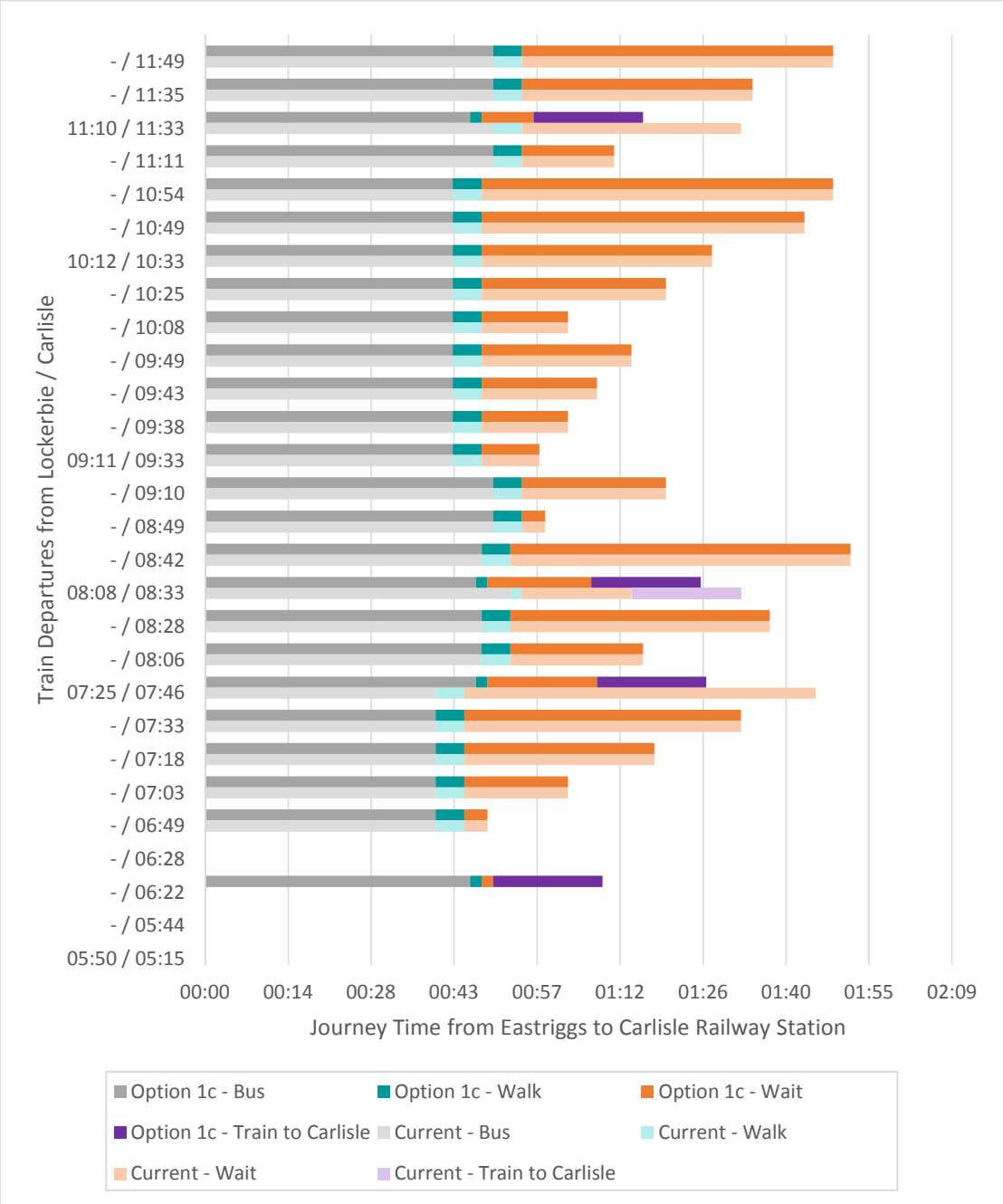

Figure L.46: Total journey time from Eastriggs to Carlisle Railway Station for travel to the south (Existing vs. Option 1c - AM)

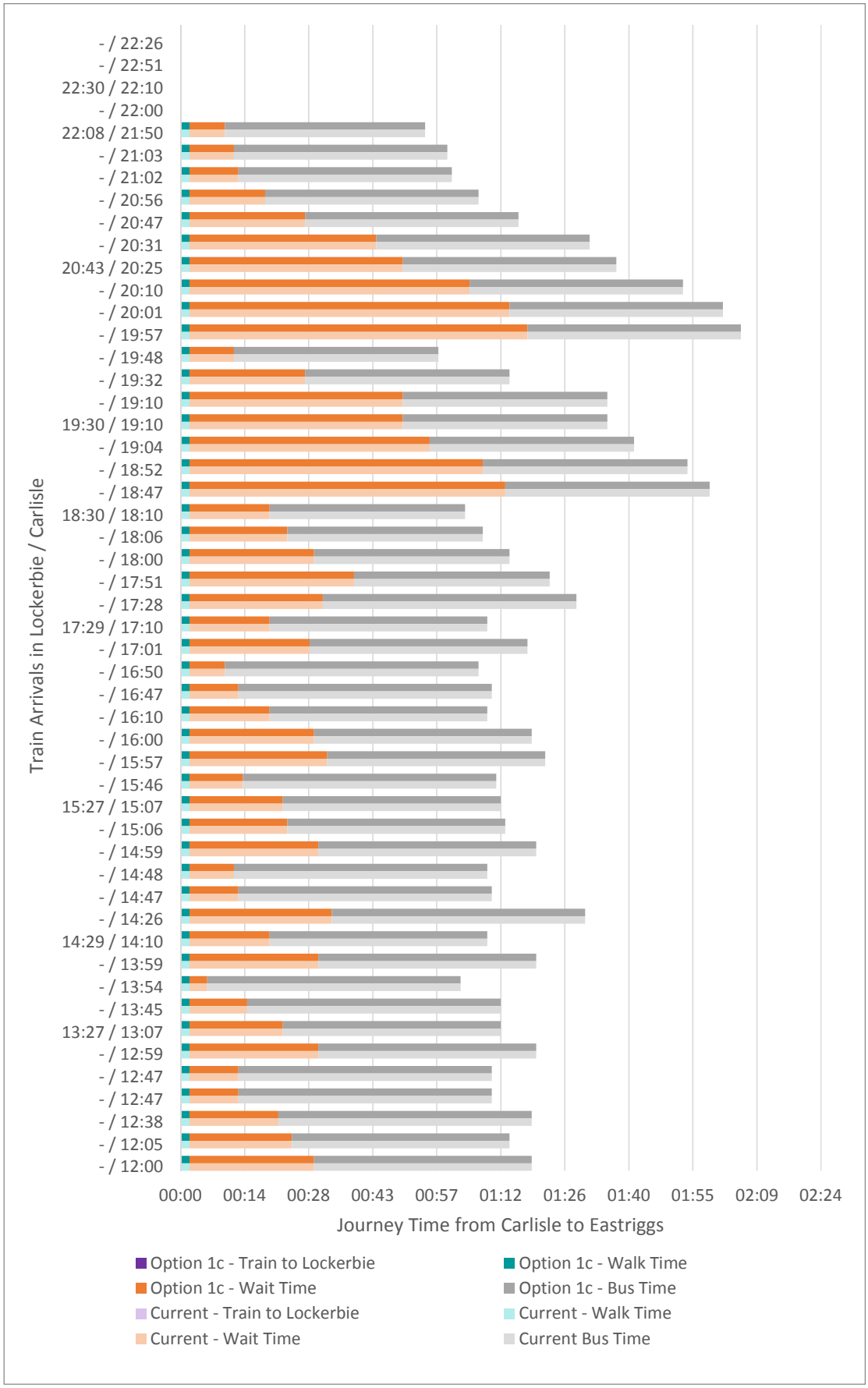

Figure L.47: Total journey time to Eastriggs from Carlisle Station for travel from the south (Existing vs. Option 1c - PM)

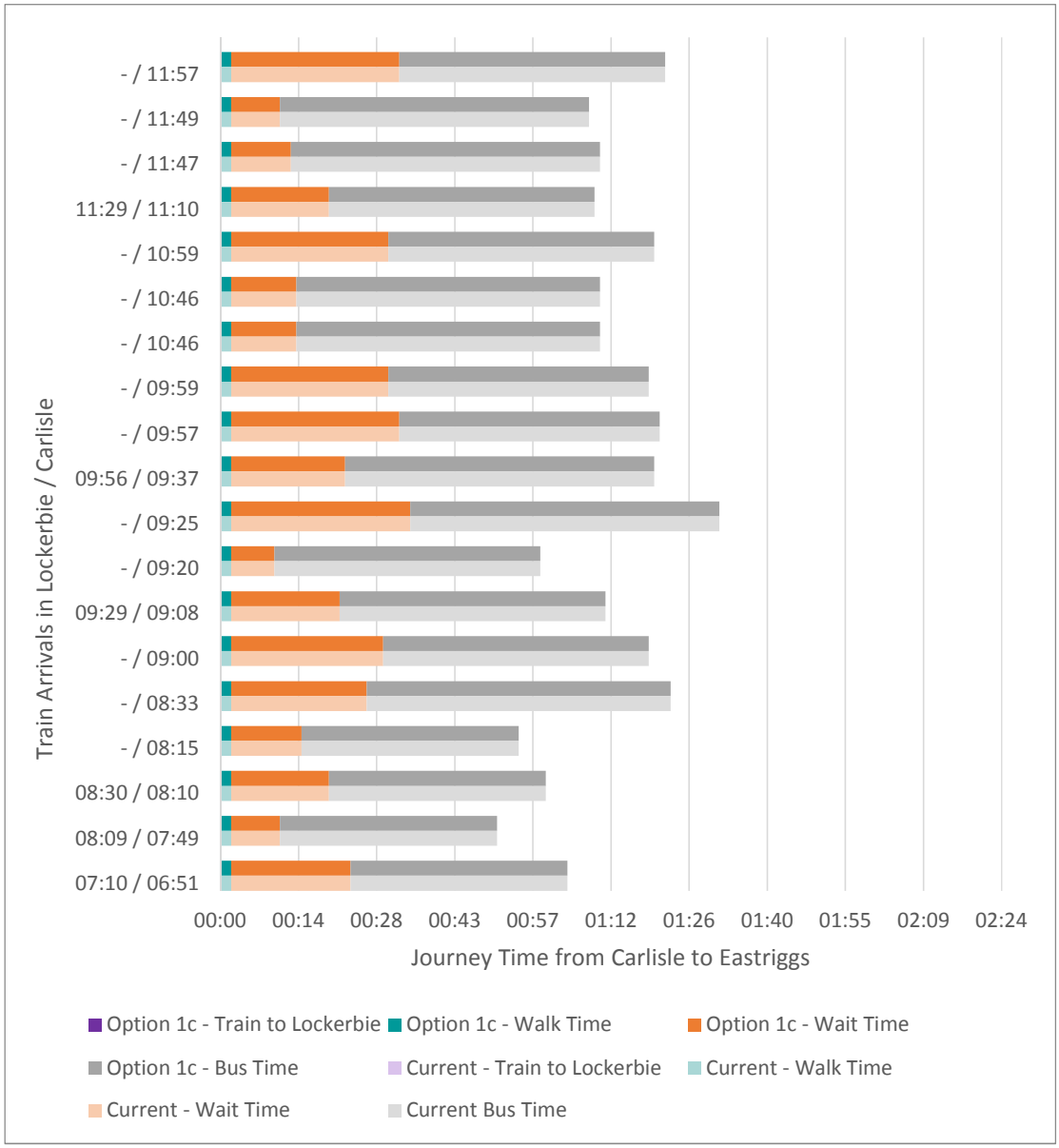

Figure L.48: Total journey time to Eastriggs from Carlisle Station for travel from the south (Existing vs. Option 1c - AM)

L.8 Summary

L.8.1 Table L.1 provides a summary of how each option performs against these metrics, considering the average impacts across a weekday. This analysis assumes that people use the connecting bus services which minimise total 'access' journey time. As such, if an option results in a longer journey time to meet a specific train than at present, it is assumed that individuals would continue to use the existing services where possible. In these instances, a 0% change in journey/interchange time is recorded.

Table L.1: Impact of Proposed Options on Integration against Existing Situation

Metric	Option	Via GSWL to/from Glasgow		Via GSWL to/from Carlisle		Via WCML to/from Glasgow		Via WCML to/from Edinburgh		Via WCML to/from South	
		Out	In	Out	In	Out	In	Out	In	Out	In
No. Additional Rail Services Accessible	1a	0	0	1	0	0	0	0	0	1	0
	1b	0	0	0	0	0	0	0	0	-1	0
	1c	0	0	0	0	0	0	0	0	1	0
Average Change in Journey Time (Eastriggs to / from Station)	1a	-57%	-62%	-39%	-35%	-9%	-15%	-18%	-24%	-5%	0%
	1b	-24%	-11%	-30%	-15%	***5%***	***6%***	***11%***	-2%	***4%***	-3%
	1c	-4%	-10%	-1%	-35%	-1%	-9%	-1%	-16%	-1%	0%
Average Change in Interchange Time	1a	-69%	-73%	-59%	-63%	-11%	-21%	-29%	-28%	-14%	-4%
	1b	-35%	-17%	-52%	-40%	-10%	-1%	***14%***	-9%	-14%	-7%
	1c	-6%	-12%	-29%	-36%	***10%***	-16%	***8%***	-25%	-9%	0%

L.8.2 In summary, all options have the potential to reduce journey times between Eastriggs and services along the GSWL with Option 1a yielding the greatest benefits followed by Option 1c, then Option 1b. Connections with WCML services are expected to be affected to a lesser degree – this results from the fact that each of the proposed options only improve connections to one of the two WCML stations at a time, and additionally only around one quarter of WCML services stop at Lockerbie. Nevertheless, it again appears that Option 1a will yield greatest benefits, followed by Option 1c, then Option 1b for the WCML services. However, as noted above consideration must be given to the viability of running the new Railbus services in addition to the 79/179 and 81/382/383 bus services which currently operate along this route.

Appendix M Part 1 Appraisal Summary Tables

Table M.1: Appraisal Summary Table – Option 1a – Transport Planning Objectives

Criteria		Score	Rationale
Transport Planning Objectives	TPO1: Reduce public transport journey times to improve access to key, commutable employment and educational centres from Eastriggs	2	The option provides reductions in the public transport to car journey time differentials, for travel to Lockerbie, Carlisle, Edinburgh and Glasgow (with reductions in travel time of up to around an hour and a half). These reductions are especially pronounced for trips to Edinburgh (where the option provides a public transport travel time that is over 10 minutes quicker than the private car in the AM period, and 6 minutes quicker in the PM period) and Glasgow (where the option provides a public transport travel time that is around 25 minutes quicker than the private car in the AM period). In the evening period, trips to Glasgow have a reduced journey time by public transport of over an hour and a quarter, trips to Lockerbie by over an hour and a half, and trips to Dumfries reduce by 15 minutes. The increased accessibility of Edinburgh and Glasgow, particularly at those times when travel by public transport is quicker than the private car have a clear benefit to public transport users and significantly improve the accessibility of retail and social opportunities further afield. Given the travel time involved, even with the travel time reductions, it is unlikely that the improved accessibility of Edinburgh and Glasgow would significantly widen the accessibility of employment opportunities due to the still considerable commute required. The reduced travel times to Dumfries and Lockerbie may however open up employment opportunities in these towns to those in Eastriggs.
	TPO2: Provide public transport connectivity which enables travel to and from the area across the day and across the week	2	The option will provide access to departing and arriving trains across the day at Annan and Lockerbie through a direct connection from Eastriggs. The connection to Lockerbie is a new connection and will enable travel further afield from Eastriggs across the day and across the week.

Table M.2: Appraisal Summary Table – Option 1a – STAG Criteria

Criteria		Score	Rationale
STAG Criteria	Environment	1	It was noted during the Pre-Appraisal stage of the study that private car ownership and use is high in the study area. The option is likely to encourage some minor modal shift from private car to bus and rail. As a result there will be some minor benefit to the environment through a reduction in vehicle emissions and noise. The bus service will use the current road network and as such there will be little adverse impact on the environment.
	Safety	1	Any modal shift to sustainable transport that may be achieved would reduce private vehicles on the road network which has the potential to reduce traffic accidents, although the reduction is anticipated to be minor. The option would offer increased personal security through removing the walk time from the existing bus stops to the stations and the often long wait time at the station (for departures) or at the bus stop (for rail arrivals). This may be particularly beneficial to more vulnerable members of society such as the elderly, those less able and older unaccompanied children.
	Economy	1	The option may provide some minor benefit to the economy by improving the accessibility of employment and retail in Dumfries, Carlisle, Edinburgh and Glasgow. However, increasing the accessibility of Edinburgh and Glasgow may have a negative impact on the economy of Dumfries if people are more readily able to travel further afield to retail opportunities.
	Accessibility & Social Inclusion	2	See narrative for TPOs which relates directly to accessibility. The Pre-Appraisal stage of the study identified the smaller proportion of Eastriggs residents who are employed in professional and technical roles compared to that of Annan and Dumfries with average incomes in Eastriggs lower than the local and national averages as well as the proportion of young people in the study area below the local authority average, and educational attainment levels lower than the local and national averages. A dedicated direct connection to the railway network would provide specific benefit to those without access to a car or who cannot drive given their age or physical ability. Reduced travel times to employment centres such as Dumfries and Carlisle (through improved access to the GSWL at Annan) would widen the employment opportunities and may reduce the potential out-migration from the study area of young people and encourage people into the area. The improved access may also provide increased educational opportunities helping to raise current attainment levels in the area. the additional connectivity may help reduce feelings of community isolation.
	Integration	2	At present Eastriggs residents can access rail services along the Glasgow South Western Line via Annan or Gretna Green and those along the West Coast Main Line via either Carlisle or Lockerbie. The option improves connection times between Eastriggs and Annan for rail services to/from Glasgow and Carlisle, by an average of circa 17 minutes in both cases. Proportional improvements to connections with WCML services may appear less pronounced; however this is primarily driven by the fact that only one quarter of services stop at Lockerbie and so are affected by this option. Considering those services which do stop at Lockerbie only, time savings of circa 40 minutes are expected for connections with Edinburgh and Glasgow trains, and circa 15 minutes for connections with those to/from the South. Time savings for GSWL services are primarily driven by reductions in interchange time, and those for WCML services more so by the reduced bus journey times resulting from provision of a direct service. As this option will involve provision of a supplementary bus service, it will broaden travel choice; however consideration needs to be given to whether bus services which currently operate along all or part of this route remain viable. In addition, improving the public transport network and transport integration supports the aims of the National Transport Strategy, SWestrans Regional Transport Strategy, the Bus Action Plan and the Local Transport Strategy. The option is therefore aligned with the broader policy goals included within key national, regional and local policy documents.

Table M.3: Appraisal Summary Table – Option 1a – Feasibility, Affordability and Public Acceptability

Criteria		Rationale
Other Criteria	Feasibility	From an engineering perspective, the option does not require the build of any infrastructure or any land purchase and as such is unlikely to present any feasibility challenges. Section 63 of the Transport Act 1985 says a council has a duty to secure services it thinks are required where they are not provided by the market, but it cannot secure a service already provided by the market. The key issue is the interpretation of "service": there are many examples of subsidised services that partially parallel commercial services. In this instance, in order to not run in parallel with existing services, the option would need to show a clearly different purpose to the existing services (Service 79 / 179 between Eastriggs and Annan and Service 383 operating between Annan and Lockerbie) – and this may be difficult in the option's current form. In addition, as intonated by bus stakeholders and SWestrans, the overall viability of services in the region is, in many cases, only achievable due to the resource intensive nature of overall bus operations. As such, the overall bus network and operation across the region is highly fragile and even minor changes to routes or services (or any new competition between services), which have the potential to tie up resources or affect patronage, can have major consequences. This is a very important factor when considering any changes to the network which may impact on existing services
	Affordability	Analysis of the operating costs for the service indicates an annual operating cost of £465k, requiring approximately 160,000 passengers annually to break even. Consideration of Office of Rail and Road station usage estimates and consideration of National Rail Travel Survey data shows that the service is unlikely to generate sufficient demand to cover operating costs and as such is not considered to be commercially viable unless the service is subsidised. SWestrans budget for the operation of subsidised bus services has recently reduced. It is therefore unlikely that funding is available to operate the service. It should be noted however, that the bus schedule for the option, has been developed to integrate the bus times with as many rail arrival/departure times as possible i.e. provide a fully comprehensive connection to the rail network. It may be possible to 'scale back' the number of connecting bus services to concentrate on peak time rail arrivals/departures only to minimise the cost of the service and hence make the service more commercially viable/require a lesser subsidy.
	Public Acceptability	Integration between bus and rail was highlighted in the public consultation exercise undertaken during Pre-Appraisal. As the option offers direct connections between bus and rail, and to both stations on the Glasgow South West Line and West Coast Mainline, it is likely carry a low public acceptability risk. Furthermore, the public consultation highlighted sentiment that the biggest transport problem faced by respondents was limited travel mode choice. Improving access to the rail network is likely to therefore be publicly acceptable, although there may be disappointment that a railway station in Eastriggs itself is not provided.

Table M.4: Appraisal Summary Table – Option 1b – Transport Planning Objectives

Criteria		Score	Rationale
Transport Planning Objectives	TPO1: Reduce public transport journey times to improve access to key, commutable employment and educational centres from Eastriggs	1	The option provides reductions in the public transport journey time for travel to for travel to Dumfries in the PM and evening periods (when the public transport travel time is reduced by around 10 minutes), and Glasgow in the evening period (when the public transport travel time is reduced by around 25 minutes). The increased accessibility of Dumfries, will improve the accessibility of employment, retail and social opportunities for those resident in Eastriggs. Given the travel time involved and time of day when the improvement is realised, even with the travel time reduction, it is unlikely that the improved accessibility of Glasgow in the evening would significantly widen the accessibility of employment or education opportunities.
	TPO2: Provide public transport connectivity which enables travel to and from the area across the day and across the week	1	The option would not increase overall operating hours for connecting bus services into and out of the area, but improved integration with rail in Carlsile may help support increased travel by public transport into and out of the study area.

Table M.5: Appraisal Summary Table – Option 1b - STAG Criteria

Criteria		Score	Rationale
STAG Criteria	Environment	1	It was noted during the Pre-Appraisal stage of the study that private car ownership and use is high in the study area. The option is likely to encourage some minor modal shift from private car to bus and rail. As a result there will be some minor benefit to the environment through a reduction in vehicle emissions. The bus services use the current road network and as such there will be little adverse impact on the environment.
	Safety	1	Any modal shift to sustainable transport that may be achieved would reduce private vehicles on the road network which has the potential to reduce traffic accidents, although the reduction is anticipated to be minor. The option would offer increased personal security through removing the walk time from the existing bus stops to the stations and the often long wait time at the station (for departures) or at the bus stop (for rail arrivals). This may be particularly beneficial to more vulnerable members of society such as the elderly, those less able and older unaccompanied children.
	Economy	2	The option may provide a moderate benefit to the economy by improving the accessibility of employment in Dumfries and Carlisle which is especially important given the recent job losses in the area.
	Accessibility & Social Inclusion	1	See narrative for TPOs which relates directly to accessibility. The Pre-Appraisal stage of the study identified the smaller proportion of Eastriggs residents who are employed in professional and technical roles compared to that of Annan and Dumfries with average incomes in Eastriggs lower than the local and national averages as well as the proportion of young people in the study area below the local authority average, and educational attainment levels lower than the local and national averages. A direct connection to the railway network would provide specific benefit to those without access to a car or who cannot drive given their age or physical ability. Reduced travel times to employment centres such as Dumfries and Carlisle would widen the employment opportunities and may reduce the potential out-migration from the study area of young people. The improved access may also provide increased educational opportunities helping to raise current attainment levels in the area.
	Integration	1	At present Eastriggs residents can access rail services along the Glasgow South Western Line via Annan or Gretna Green and those along the West Coast Main Line via either Carlisle or Lockerbie. This option optimises the existing 79 bus service timetable to align better with rail departures and arrivals at Annan, Gretna Green and Carlisle stations and adds stops nearer the stations themselves. This amended service reduces interchange to and from rail services via Annan/Gretna Green, and reduces overall connection times by an average of 5-10 minutes for trains to/from Glasgow and Carlisle. Impacts on WCML services are less favourable: average journey times to connect with rail services to Glasgow, Edinburgh and The South actually increase by an average of 5-10 minutes for all but inbound legs from Edinburgh and the South (these trips decrease by 2 minutes). Time penalties associated with connections to WCML services result from the longer bus journey times seen under Option 1b. The GSWL is likely to be more heavily used by Eastriggs residents on a day-to-day basis, but equally the WCML provides access to a significantly larger number of services, and so on balance Option 1b is considered to have a negligible impact on integration. In addition, improving the public transport network and transport integration supports the aims of the National Transport Strategy, SWestrans Regional Transport Strategy, the Bus Action Plan and the Local Transport Strategy. The option is therefore aligned with the broader policy goals included within key national, regional and local policy documents.

Table M.6: Appraisal Summary Table – Option 1b - Feasibility, Affordability and Public Acceptability

Criteria		Rationale
Other Criteria	Feasibility	From an engineering perspective, the option does not require the build of any infrastructure or any land purchase and as such is unlikely to present any feasibility challenges. The option requires alterations to an existing bus service. Discussion with the existing operator highlighted: • The operator does not wish to impact on the timing of the service and its existing connections; • The re-timing of the service could adversely impact on existing service users and negatively impact on patronage if journey times were extended or overall bus times were altered. • A lack of desire to improve connections to the rail network which may take away from bus market share; and • The region wide issue of the highly intensive nature of bus operations to ensure overall regional commercial viability. The operator made it clear that even making minor adjustment to the timing of the service, or altering the routeing to serve the station could have unintended consequences on other service/routes. Given the above, it seems highly unlikely that the changes to the service would be deliverable.
	Affordability	Analysis of the operating costs for the service indicates an annual operating cost of £175k, requiring approximately 56,000 passengers annually to break even. Consideration of Office of Rail and Road station usage estimates and consideration of National Rail Travel Survey data shows that the service is unlikely to generate sufficient demand to cover operating costs and as such is not considered to be commercially viable unless the service is subsidised. SWestrans budget for the operation of subsidised bus services has recently reduced. It is therefore unlikely that funding is available to operate the service. It should be noted however, that the bus schedule for the option, has been developed to integrate the bus times with as many rail arrival/departure times as possible i.e. provide a fully comprehensive connection to the rail network. It may be possible to 'scale back' the number of connecting bus services to concentrate on peak time rail arrivals/departures only to minimise the cost of the service and hence make the service more commercially viable/require a lesser subsidy.
	Public Acceptability	Integration between bus and rail was highlighted in the public consultation exercise undertaken during Pre-Appraisal. As the option offers direct connections between bus and rail, and to both stations on the Glasgow South West Line and West Coast Mainline, it is likely carry a low public acceptability risk. Furthermore, the public consultation highlighted sentiment that the biggest transport problem faced by respondents was limited travel mode choice. Improving access to the rail network is likely to therefore be publicly acceptable, although there may be disappointment that a railway station in Eastriggs itself is not provided. Current users of the existing services may not find timetable changes acceptable if the existing running times suit their needs.

Table M.7: Appraisal Summary Table – Option 1c - Transport Planning Objectives

Criteria		Score	Rationale
Transport Planning Objectives	TPO1: Reduce public transport journey times to improve access to key, commutable employment and educational centres from Eastriggs	1	The option provides reductions in the public transport journey times for travel to Lockerbie in the AM, PM and evening periods (13 minute, 20 minutes and 1 hour 20 minutes public transport travel time reductions respectively), and Glasgow in the AM, PM and evening periods (41 minutes, 7 minutes and 11 minutes public transport travel time reductions respectively).
	TPO2: Provide public transport connectivity which enables travel to and from the area across the day and across the week	0	The option would not increase overall operating hours for connecting bus services into and out of the area, but improved integration with rail at Lockerbie may help support increased travel by public transport into and out of the study area, although the analysis undertaken for the integration appraisal shows this will be minor.

Table M.8: Appraisal Summary Table – Option 1c - STAG Criteria

Criteria		Score	Rationale
STAG Criteria	Environment	1	It was noted during the Pre-Appraisal stage of the study that private car ownership and use is high in the study area. The option is likely to encourage some minor modal shift from private car to bus and rail. As a result there will some minor benefit to the environment through a reduction in vehicle emissions. The bus services use the current road network and as such there will be little adverse impact on the
	Safety	1	Any modal shift to sustainable transport that may be achieved would reduce private vehicles on the road network which has the potential to reduce traffic accidents, although the reduction is anticipated to be minor.
	Economy	1	The option may provide some minor benefit to the economy by improving the accessibility of employment and retail in Dumfries, Carlisle, Edinburgh and Glasgow. However, increasing the accessibility of Edinburgh and Glasgow may have a negative impact on the economy of Dumfries if people are more readily able to travel further afield to retail opportunities.
	Accessibility & Social Inclusion	1	See narrative for TPOs which relates directly to accessibility. The option provides reductions in the public transport journey times for travel to Lockerbie in the AM, PM and evening periods (13 minute, 20 minutes and 1 hour 20 minutes public transport travel time reductions respectively), and Glasgow in the AM, PM and evening periods (41 minutes, 7 minutes and 11 minutes public transport travel time reductions respectively). The Pre-Appraisal stage of the study identified the smaller proportion of Eastriggs residents who are employed in professional and technical roles compared to that of Annan and Dumfries with average incomes in Eastriggs lower than the local and national averages as well as the proportion of young people in the study area below the local authority average, and educational attainment levels lower than the local and national averages. A dedicated direct connection Lockerbie and the West Coast Mainline railway network would provide specific benefit to those without access to a car or who cannot drive given their age or physical ability. Reduced travel times to the employment centres at Lockerbie would widen the employment opportunities and may reduce the potential out-migration from the study area of young people. The improved access may also provide increased educational opportunities helping to raise current attainment levels in the area. Given the travel time involved, even with the travel time reductions, it is unlikely that the improved accessibility of Glasgow would significantly widen the accessibility of employment opportunities due to the still considerable commute required.
	Integration	1	At present Eastriggs residents can access rail services along the Glasgow South Western Line via Annan or Gretna Green and those along the West Coast Main Line via either Carlisle or Lockerbie. This option will have a very limited impact on connections with rail services from Glasgow and Carlisle, improving upon the existing 79 service for only one rail service to/from each destination each day. The option will only affect those rail services which stop at Lockerbie (circa 25% of services on WCML) and varying results have been identified. Considering those services which do stop at Lockerbie only, average time savings of circa 20-30 minutes are expected for connections with Edinburgh and Glasgow arrivals, and circa 20 minutes for outbound trains to The South. For all other connections Option 1c will generate negligible benefits, either through bringing about limited change in journey times or not providing an improvement on existing bus services. Option 1c will result in travel patterns associated with the GSWL continuing essentially as they do at present, but will provide notable benefits to certain connections with the WCML as above, yielding a small overall benefit relative to existing. In addition, improving the public transport network and transport integration supports the aims of the National Transport Strategy, Swestrans Regional Transport Strategy, the Bus Action Plan and the Local Transport Strategy. The option is therefore aligned with the broader policy goals included within key national, regional and local policy documents. In addition, improving the public transport network and transport integration supports the aims of the National Transport Strategy, SWestrans Regional Transport Strategy, the Bus Action Plan and the Local Transport Strategy. The option is therefore aligned with the broader policy goals included within key national, regional and local policy documents.

Table M.9: Appraisal Summary Table – Option 1c - Feasibility, Affordability and Public Acceptability

Criteria		Rationale
Other Criteria	Feasibility	From an engineering perspective, the option does not require the build of any infrastructure or any land purchase and as such is unlikely to present any feasibility challenges. Section 63 of the Transport Act 1985 says a council has a duty to secure services it thinks are required where they are not provided by the market, but it cannot secure a service already provided by the market. The key issue is the interpretation of "service": there are many examples of subsidised services that partially parallel commercial services. In this instance, in order to not run in parallel with existing services, the option would need to show a clearly different purpose to the existing services (Service 79 / 179 between Eastriggs and Annan) – and this may be difficult in the option's current form. In addition, if the legal issues could be overcome, the competition over the extended section of the route would raise the further issue of antagonising the existing Service 79 / 179 operator through impacting on the services patronage. As stated above, the fragile nature of the existing region wide bus operations means minor impacts can have major consequences and there may be the unintended consequence of reducing service provision elsewhere.
	Affordability	The extension of service 383 (Lockerbie - Annan) to Eastriggs would require an additional bus on a Saturday and two buses and two buses on a Sunday. Total annual costs of service provision for Option 1c would be £440,000. Consideration of Office of Rail and Road station usage estimates and consideration of National Rail Travel Survey data shows that the service is unlikely to generate sufficient demand to cover operating costs and as such is not considered to be commercially viable unless the service is subsidised. SWestrans budget for the operations of subsidised bus services has recently reduced. it is therefore unlikely that funding is available to operate the service. It should be noted that the bus schedule for the option has been extended such that the service covers the full existing operating day. it may be possible to 'scale back' the number of connecting bus services to concentrate on peak time rail arrivals/departures only to minimise the cost of the service and hence make the service commercially viable/require a lesser subsidy.
	Public Acceptability	Integration between bus and rail was highlighted in the public consultation exercise undertaken during Pre-Appraisal. As the option offers direct connections between bus and rail, and to both stations on the Glasgow South West Line and West Coast Mainline, it is likely to carry a low public acceptability risk. Furthermore, the public consultation highlighted sentiment that the biggest transport problem faced by respondents was limited travel mode choice. Improving access to the rail network is likely to therefore be publicly acceptable, although there may be disappointment that a railway station in Eastriggs itself is not provided. Current users of the existing services may not find timetable changes acceptable if the existing running times suit their needs.

Table M.10: Appraisal Summary Table – Option 3 - Transport Planning Objectives

Criteria		Score	Rationale
Transport Planning Objectives	TPO1: Reduce public transport journey times to improve access to key, commutable employment and educational centres from Eastriggs	2	The inclusion of some 'express' services between Eastriggs, and Dumfries and Carlisle, does provide a reduction in journey time of around 5 – 15 minutes (for trips to Carlisle) and around 12 minutes (for trips to Dumfries) depending of time of travel. This equates to up to a 28% reduction in travel time for trips to Carlisle, and up to a 25% reduction in travel time for trips to Dumfries. Travel to work data indicates that a substantial amount of people in Eastriggs commute to Carlisle (25%) and there would be reduction in public transport journey time from a travel time of up to 50 minutes to around 35 minutes on the express service. This would provide particular accessibility to those making the commute by public transport, as well as widening the accessibility of employment opportunities in Dumfries and Carlisle.
	TPO2: Provide public transport connectivity which enables travel to and from the area across the day and across the week	2	Additional evening services and increased Sunday frequency offers greater opportunities and flexibility to travel with the altered timetables and express services providing greater accessibility for: those without access to a car; older people for whom driving is no longer possible; and older school children whom would be able to travel independently to access recreational and social activities later in the evening and at weekends.

Table M.11: Appraisal Summary Table – Option 3 - STAG Criteria

Criteria		Score	Rationale
STAG Criteria	Environment	1	It was noted during the Pre-Appraisal stage of the study that private car ownership and use is high in the study area. The option is likely to encourage some minor modal shift from private car to bus. As a result there will some minor benefit to the environment through a reduction in vehicle emissions and noise. The bus service will use the current road network and as such there will be little adverse impact on the environment.
	Safety	1	Any modal shift to sustainable transport that may be achieved would reduce private vehicles on the road network which has the potential to reduce traffic accidents, although the reduction is anticipated to be minor.
	Economy	1	The option may provide some minor benefit to the economy by improving the accessibility of employment and retail in Dumfries and Carlisle with the express instances of the services reducing the journey time.
	Accessibility & Social Inclusion	2	See narrative for TPOs which relates directly to accessibility. The Pre-Appraisal stage of the study identified the smaller proportion of Eastriggs residents who are employed in professional and technical roles compared to that of Annan and Dumfries with average incomes in Eastriggs lower than the local and national averages as well as the proportion of young people in the study area below the local authority average, and educational attainment levels lower than the local and national averages. In addition, a key problem identified for the study area was the relatively limited bus connectivity from the area on Sundays. Additional evening services and increased Sunday bus frequency as well as 'express' services would provide specific benefit to those without access to a car or who cannot drive given their age or physical ability. Reduced travel times and a greater bus service offering to employment centres such as Dumfries and Carlisle would widen employment opportunities and may reduce the potential out-migration from the study area of young people. The improved access may also provide increased educational opportunities helping to raise current attainments level in the area.
	Integration	1	The option is unlikely to provide any specific transport integration benefits. However, improving the public transport network supports the aims of the National Transport Strategy, SWestrans Regional Transport Strategy, the Bus Action Plan and the Local Transport Strategy. The option is therefore aligned with the broader policy goals included within key national, regional and local policy documents.

Table M.12: Appraisal Summary Table – Option 3 - Feasibility, Affordability and Public Acceptability

Criteria		Rationale
Other Criteria	Feasibility	From an engineering perspective, the option does not require the build of any infrastructure or any land purchase and as such is unlikely to present any physical feasibility challenges.
	Affordability	Analysis of the operating costs for the service indicates an annual operating cost for the additional service operation of £261k and an estimated existing service operations of £855k. Demand for the service has been estimated at 230,000. A time profile developed to distribute trips utilised to estimate additional revenue associated with the service estimates additional revenue of £92k. The additional annual operating cost of £261k is far in excess of the estimated revenue and as such the service is not considered commercial viable. SWestrans budget for the operation of subsidised bus services has recently reduced. It is therefore unlikely that subsidy funding is available to operate the service.
	Public Acceptability	During public consultation, long journey times was the most significant problem citied when traveling by bus, and was also a key reason citied for why people preferred to travel by car as opposed to by bus. The improved availability of buses would increase accessibility for Eastriggs residents which is likely to be readily accepted, particularly by existing service users. Introducing 'express' instances of the bus between Eastriggs and Dumfries/Carlisle is likely to address this problem to some extent. However, introducing express instances of the service for Eastriggs residents could potentially irritate users of the service from other locales for whom no express service is available.

Table M.13: Appraisal Summary Table – Option 6 - Transport Planning Objectives

Criteria		Score	Rationale
Transport Planning Objectives	TPO1: Reduce public transport journey times to improve access to key, commutable employment and educational centres from Eastriggs	3	Comparison of car travel times, existing and 'with option' public transport travel times for trips from Eastriggs to Dumfries, Carlisle, Edinburgh and Glasgow shows that the option provides large reductions in public transport travel time over around half of the day considered (up to a 130% reduction) where an existing trip by public transport can currently be made. Where the public transport travel time is reduced by the option, the option provides a travel time which is quicker than the corresponding trip by private car (around 5-7 minutes quicker). The option also provides an additional opportunity to travel to Dumfries after 22:00. For trips to Carlisle, the option provides large reductions in public transport travel time over around 3/4 of the day considered (up to a 190% reduction) where an existing trip by public transport can currently be made and at these times provides a travel time by public transport which is quicker than the corresponding trip by private car (around 4-12 minutes quicker). For trips to Edinburgh, the option provides large reductions in public transport travel time over half of the day considered (up to a 55% reduction) where an existing trip by public transport can currently be made. However, the quickest trip by public transport is approximately the same as the private car travel time. For trips to Glasgow, the option provides up to around a 50% reduction in public transport travel time, with the largest reduction in time equating over 90 minutes. Trips by public transport are never quicker than the private car with the quickest travel time by public transport still 15 minutes slower than the private car. The option also provides a new opportunity to travel to Glasgow after 22:00.
	TPO2: Provide public transport connectivity which enables travel to and from the area across the day and across the week	2	The re-opening of the railway station in Eastriggs is likely to increase access to and from the area across the week through the introduction of new connections (those by rail) enabling greater flexibility in travel.

Table M.14: Appraisal Summary Table – Option 6 - STAG Criteria

Criteria		Score	Rationale
STAG Criteria	Environment	1	The option would involve the construction of the railway station at Eastriggs. This may have adverse effects on the environment during construction and there may also be long-term noise impacts in the area close to the station due to train deceleration and acceleration. The option does not involve the running of additional trains (just an additional stop for existing trains) and therefore there will be little adverse impact on the environment in terms of emissions. It was noted during the Pre-Appraisal stage of the study that private car ownership and use is high in the study area. Any modal shift to rail that could be achieved would reduce car use and associated noise and emissions.
	Safety	1	Any modal shift to rail that may be achieved would reduce private vehicles on the road network which has the potential to reduce traffic accidents, although the reduction is anticipated to be minor.
	Economy	3	The option is likely to provide moderate benefit to the economy by improving the accessibility of employment and retail in Dumfries and especially Carlisle. This is especially important given the recent job losses in the Eastriggs area and the need to travel further afield for work.
	Accessibility & Social Inclusion	3	See narrative for TPOs which relates directly to accessibility. The Pre-Appraisal stage of the study identified the smaller proportion of Eastriggs residents who are employed in professional and technical roles compared to that of Annan and Dumfries with average incomes in Eastriggs lower than the local and national averages as well as the proportion of young people in the study area below the local authority average, and educational attainment levels lower than the local and national averages. A further key problem identified was the lack of transport mode choice with a reliance on the bus network. The option would provide significant public transport accessibility benefits to residents in Eastriggs and specifically for trips to Dumfries and Carlisle where the option provides travel times faster than the private car at certain times of day. In addition, public transport accessibility to Glasgow is also improved significantly across the day. This would significantly improve the accessibility of regional employment opportunities and retail and social opportunities as well as further retail and social opportunities in Glasgow, specifically for those without access to a car. The improved access may also provide increased educational opportunities helping to raise current attainments level in the area.
	Integration	2	Provision of the rail station itself does not offer any direct mode integration benefits. However, the development of a station with suitable facilities for cycle parking, and with safe and secure walking access routes has the potential to integrate rail and active travel modes. It is also assumed that existing bus services may redirect to serve the station, and offer bus to rail integration benefits. In addition, improving the public transport network and transport integration supports the aims of the National Transport Strategy, SWestrans Regional Transport Strategy, the Bus Action Plan and the Local Transport Strategy. The option is therefore aligned with the broader policy goals included within key national, regional and local policy documents.

Table M.15: Appraisal Summary Table – Option 6 - Feasibility

Criteria		Rationale
Other Criteria	Feasibility	In terms of the feasibility to implement a stop at the railway station in light of current established policy, the Scotland Route Study and RDG's "Investing in the Future Choices for Scotland's Railways 2019 and beyond" publications, do not propose any new stations or routes. However, they do create an opportunity for dialogue on a more integrated approach to developing the GSWL and to providing benefits which will enable Eastriggs station to be delivered. A move towards the GSWL becoming the WCML freight (possibly passenger) diversionary route presents an opportunity to secure upgrades and improve services for the Dumfries & Galloway area with an opportunity for Dumfries and Galloway Council and SWestrans to enter into dialogue with the railway industry. While any future extension of an HS2 route into Scotland is unlikely to have any significant impact on services on the GSWL, it may offer an opportunity to upgrade the infrastructure on the route if it is required as a diversionary route during HS2 construction works. In terms of the feasibility to accommodate a new stop at Eastriggs, re-timing trains at the northern end of the GSWL route is incredibly complex when the wider network is considered with a comprehensive re-planning of all the services on this route, including the Barrhead and East Kilbride suburban services required. The impact would be right into Glasgow Central Station. Extending train journey times at the southern end of the route would cause interaction with trains running on the WCML due to the 'single lead' Gretna junction and has the potential to destroy a number of currently published connections. However, a potential reduction in unnecessary pathing time, increases in the generic line speed, the potential for new trains or improvements made as part of the Abellio ScotRail franchise agreement do offer alternative opportunities for the introduction of a stop at Eastriggs Railway Station. From an engineering perspective, the option requires the build of the railway station. The station itself will require: two platforms; a Cross-track, DDA compliant footbridge; and passenger facilities (including waiting shelters, Customer Information System (CIS), Public Address (PA) & CCTV systems with one ticket machine). Assuming the old station site is renovated, its location close to local roads means there is limited requirement for works to provide any major access to the station. Given its location between Annan and Gretna Green, only limited car parking is required. Overall, no major engineering feasibility issues are therefore envisaged.

Table M.16: Appraisal Summary Table – Option 6 - Affordability and Public Acceptability

Criteria		Rationale
	Affordability	The option requires the build of the railway station requiring two platforms whose length must be at least sufficient for a four car 23m unit (100m length is required which is about the same, or shorter than, most recent new stations or those under construction); a Cross-track, DDA compliant footbridge; and passenger facilities (including waiting shelters, Customer Information System (CIS), Public Address (PA) & CCTV systems with one ticket machine). Comparisons with other stations currently being constructed, or recently reopened stations has allowed for an estimated station construction cost of **£8million - £11million.** While no analysis of potential revenue generation has been made, a very high level estimate of potential patronage has been made and shows: • A potential Eastriggs Railway Station catchment population of 2,725 (with no limit on drive time to the station; • A potential Eastriggs Railway Station catchment population of 2,725 (if a 30-minute and 15-minutes drive time 'cap' to the station is assumed), indicating that all potential patronage is located close to the station. This is expected given the existing stations at Gretna Green and Annan around 5 miles to the east and west of Eastriggs respectively.
	Public Acceptability	The option is likely to be widely accepted by the public given the Pre-Appraisal survey responses which showed the most common transport problem faced was considered to be limited modal choice. The public consultation also highlighted a preference for rail improvement over road, bus and active travel. Eastriggs Railway Station Action Group has recently been formed and there have been a number of recent meetings of the group, further highlighting the public desire to see the station re-opened. If the station were to be re-opened, there would be some minor impact to existing rail users due to the additional rail stop at Eastriggs. However this is anticipated to be of the order of two minutes and is therefore relatively minor. Existing users may also oppose any required timetable changes that may occur. The reopening of the station may impact on bus services running between Eastriggs and Dumfries/Carlisle, with potential for these services to reduce in frequency if patronage is lost to rail. If so, smaller communities served by these buses (who would not benefit from Eastriggs station) would see their overall accessibility reduce. This is unlikely to be publically acceptable to these communities. It may also not be welcomed by those who hold Concessionary Fares passes for the bus and who whom improved rail access, with a loss of bus service provision, would impact financially.

Table M.17: Appraisal Summary Table – Option 7 - Transport Planning Objectives

Criteria		Score	Rationale
Transport Planning Objectives	TPO1: Reduce public transport journey times to improve access to key, commutable employment and educational centres from Eastriggs	0	The option will support a reduction in overall journey time through improved access to the strategic transport network at Annan and Gretna Green railway stations. Overall however, this benefit is felt to be minor.
	TPO2: Provide public transport connectivity which enables travel to and from the area across the day and across the week	1	Improved lighting on the NCN7 route would enable travel between Eastriggs and Annan and Gretna Green over a large part of the day, supporting travel to and from the area across the day.

Table M.18: Appraisal Summary Table – Option 7 - STAG Criteria

Criteria		Score	Rationale
STAG Criteria	Environment	0	The option may encourage some very minor modal shift from private car to cycle. As a result there may be some minor benefit to the environment through a reduction in vehicle emissions and noise. The option does not require any infrastructure works and as such has no adverse impact on the environment.
	Safety	1	The option would provide safety benefits to those undertaking trips by active travel through improved lighting and signing allowing for increased safety and security on journeys
	Economy	0	The option is unlikely to provide any benefit to the economy.
	Accessibility & Social Inclusion	0	The option would provide some minor benefit , especially for those without access to a car, when making trips between Eastriggs, Annan and Gretna.
	Integration	0	Improvements to the route such that it is better signed may encourage cycling to access the stations in Annan and Gretna, and therefore provide greater integration between rail and cycling modes. However, the number of users of the route for this purpose is likely to be small. Improving the active travel network supports the aims of the National Transport Strategy, SWestrans Regional Transport Strategy and the Local Transport Strategy. The option is therefore aligned with the broader policy goals included within key national, regional and local policy documents.

Table M.19: Appraisal Summary Table – Option 7 – – Feasibility, Affordability and Public Acceptability

Criteria		Rationale
Other Criteria	Feasibility	From an engineering perspective, the option does not require the build of any infrastructure or any land purchase and as such is unlikely to present any feasibility challenges.
	Affordability	The total cost for the improvements has been estimated to be approximately £16,500 for new signage.
	Public Acceptability	The option is likely to be accepted by the public but given its very minor benefits - which will only be felt by those with a desire to cycle - while not likely to be met with any negativity - is also unlikely to be met with any significant positivity by the public.

Appendix N Part 2: Further Engagement

N.1 Engagement Overview

N.1.1 During the later stages of the study, further consultation was undertaken, including:

- Public Event in Eastriggs with an associated online survey;
- SWestrans and Dumfries and Galloway Council Officers: face-to-face meeting
- Stagecoach West Scotland – also speaking on behalf of Stagecoach Cumbria: face-to-face meeting
- Houstons Coaches: face-to-face meeting
- Network Rail: email correspondence
- ScotRail: email correspondence
- East Ayrshire Council: email correspondence
- Strathclyde Partnership for Transport: email correspondence
- Cumbria and Carlisle Councils: email correspondence

N.2 Public Event

N.2.1 A Public Event was held on 23rd January 2019 in Eastriggs from 17:30 – 20:30 at Eastriggs Community Centre. The purpose of the event was to present information about the study, covering all stages of the study including the problems identified, the options generated and the option appraisal process and key appraisal findings. The events were publicised via social media by the Council and also communicated to local people through Eastriggs Railway Station Action Group.

N.2.2 A feedback form was available for completion at the event asking participants about the severity of the problems identified, the impacts of the problems on them and their community, and their thoughts on the options and how they would benefit them. Pre-paid envelopes were also made available if people wished to complete the feedback form at home and post back. Furthermore, the feedback survey (identical to that handed out at the event) was made available online for completion for a further 3 weeks after the event.

N.2.3 The Public Event material was also made available online after the event, with the link to the online version of the feedback survey alongside it. The Council further publicised that the material was available.

N.2.4 In total 100 people attended the event on the night, with a total of 405 feedback surveys completed (combined paper, posted and online surveys completed).

N.2.5 A summary of the feedback provided is presented here.

N.2.6 Figure N.1 maps the postcodes that respondents gave indicating where they live. Some respondents noted that they live outside of the area shown in the map in Figure N.1. There were respondents from towns further afield than shown in the map including one respondent from Dumfries, three from Carlisle, and one each from Glasgow and Blackburn.

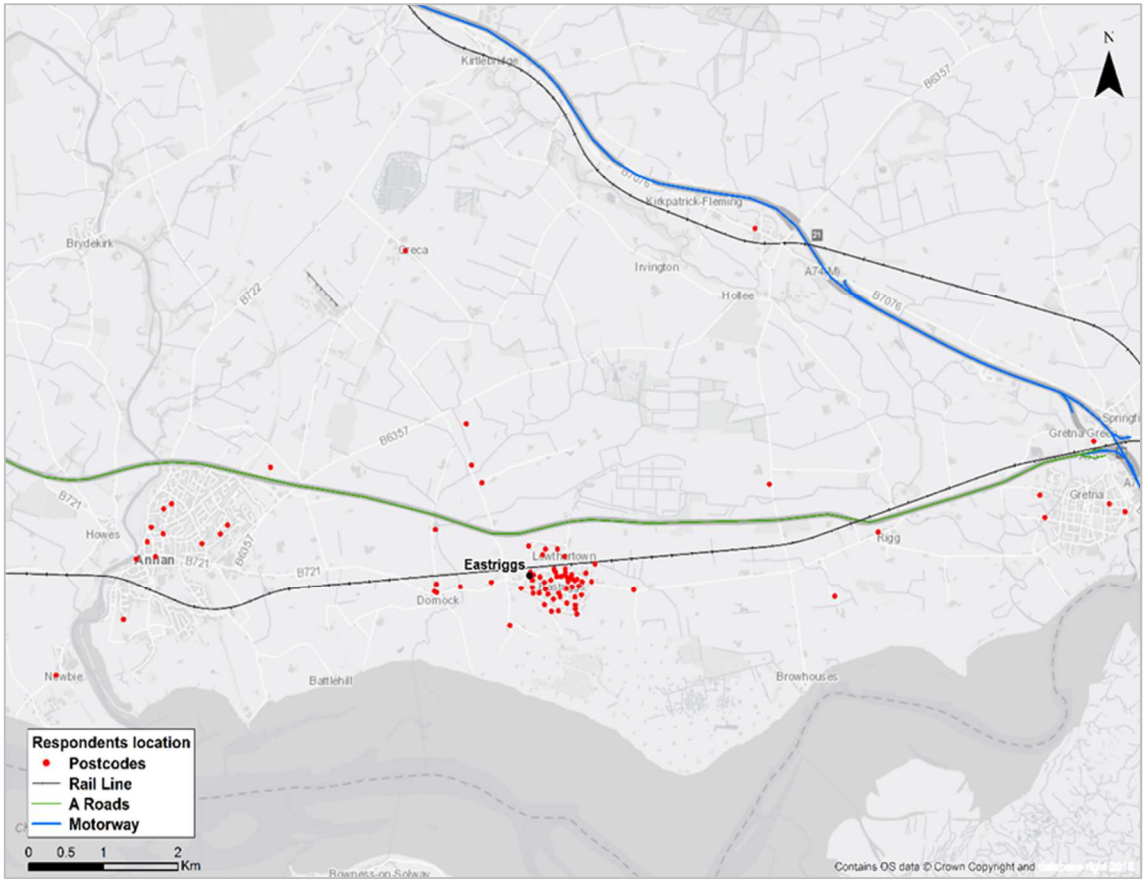

Figure N.1 Respondents Location

Q1 – Which area best describes where you live?

N.2.7 Respondents were asked to state which area they lived in. All respondents answered this question. Eastriggs was the most common answer representing 88% (n=358) of the respondents (see Figure N.2). 4% (n=16) of respondents lived in Dornock while 8% (n=31) selected 'other'. Of these 31 respondents, 12 lived in Annan, 5 in Gretna and 4 in Rigg. There were 3 respondents from both Carlisle and Lowthertown respectively.

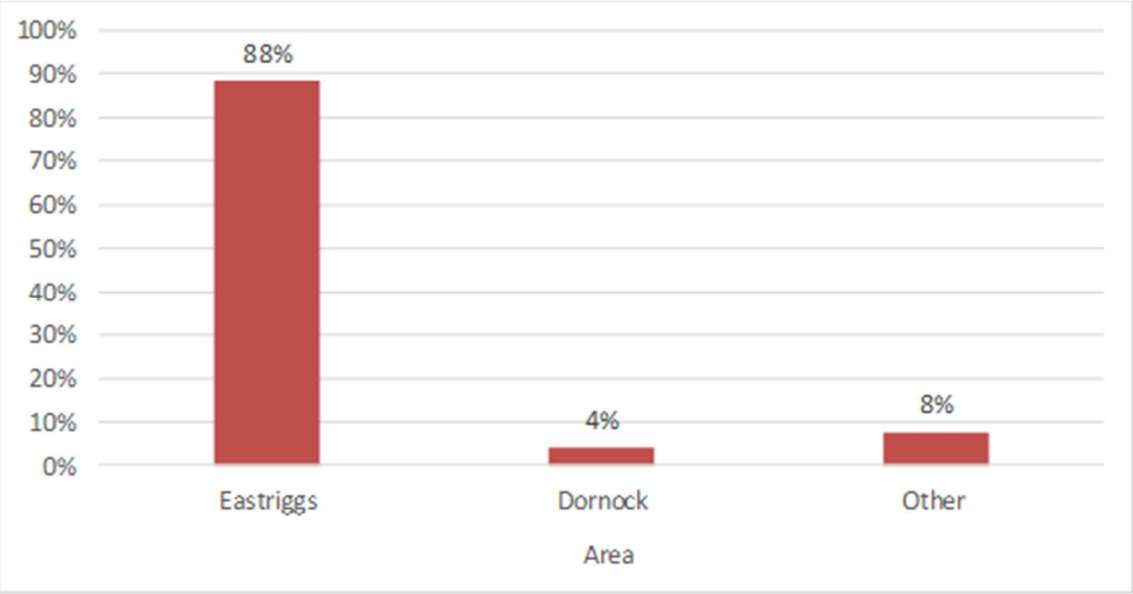

Figure N.2 Location where respondents live

Q3 – Which mode of transport do you most regularly use when you go about your day to day business?

N.2.8 Respondents were asked to select which mode of transport they most regularly used. All respondents answered this question. As shown in Figure N.3, car-based travel is the most common mode of transport. 68.6% (n=278) of respondents said they most commonly drove as their main mode of transport while 10.6% (n=43) said that they travel in the car as a passenger. The bus service was the main mode of transport for 15.1% (n=61) respondents while only 3% (n=12) used the rail network as their main mode.

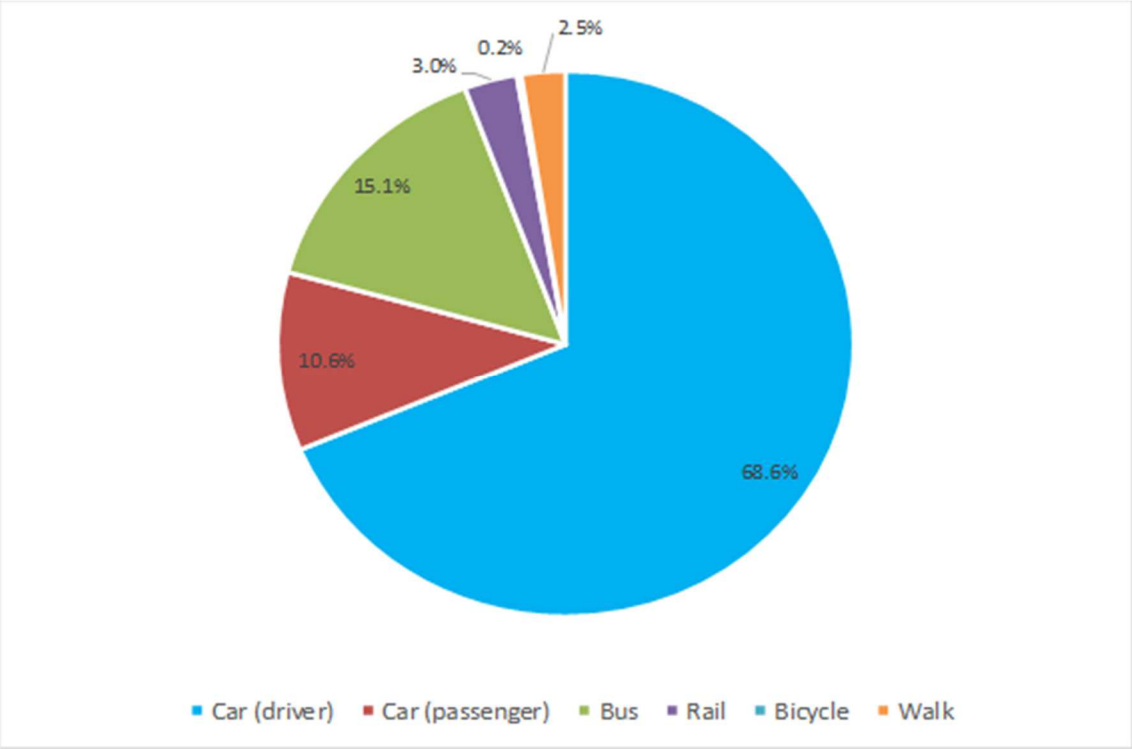

Figure N.3 Main mode of transport

Transport Problems

Q4 – We have identified a series of transport problems which affect the area. For each of these problems, indicate whether you feel this is a major problem, slight problem or not a problem for you.

N.2.9 There were several transport problems identified in the area. All respondents answered this question.

N.2.10 77% (n=300) said that rail access was a major problem. This was followed by 64% (n=258) respondents stating that the poor integration between the bus and rail services was a major problem. Figure N.4 illustrates the results.

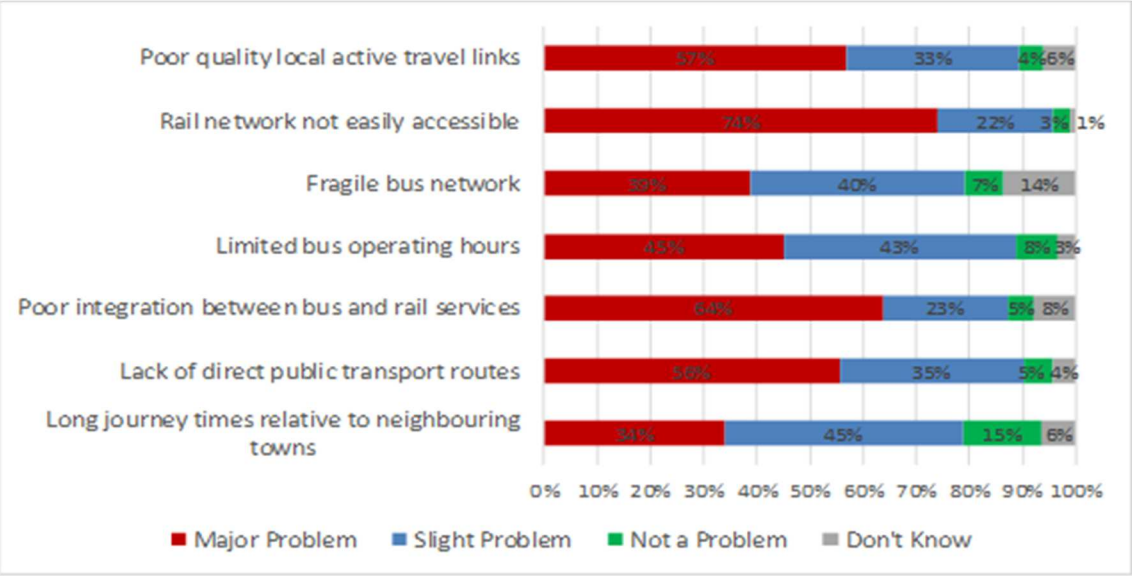

Figure N.4 Opinions of transport problems in the area

Transport Options

N.2.11 There were three options selected at the end of the Part 1 Appraisal. These were:

- Option 1a: Dedicated bus service operation between Eastriggs and Lockerbie Railway Station, integrated with train times.
- Option 3: Later running, increases Sunday services and express services between Eastriggs, Carlisle and Dumfries.
- Option 6: Re-open Eastriggs Railway Station.

Q5 – Considering the options identified in the appraisal, what level of positive benefit or negative impact do you think each option will provide for travel to and from the Eastriggs area?

N.2.12 Respondents were asked to state the level of benefit they believed the option would make to the area. 383 respondents answered this question. 89% (n=339) of respondents felt that Option 6 would have a major positive impact on Eastriggs. In comparison, 27% (n=103) of respondents felt that Option 3 would have a major positive impact on the area and 23% (n=88) felt Option 1a would have a major positive impact. Figure N.5 shows the results.

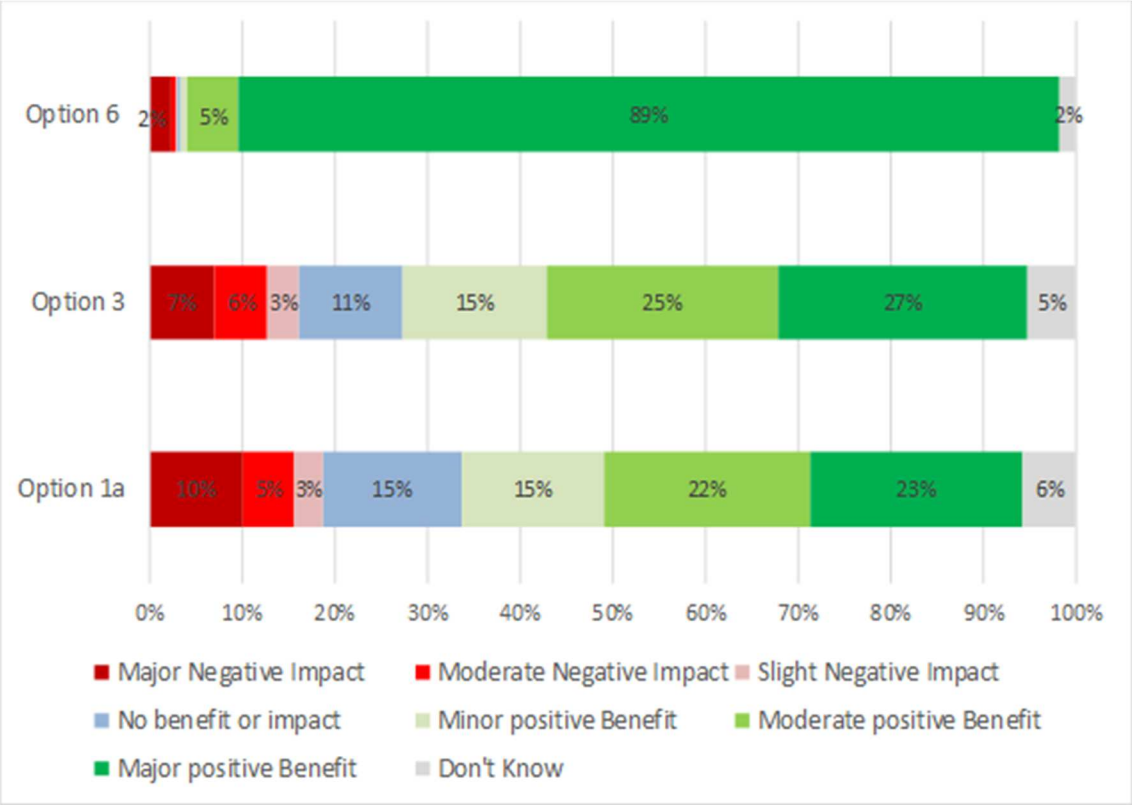

Figure N.5 Impact of transport options

Q6 - Which would be your preferred option for the future?

N.2.13 Respondents were asked to state which was there preferred option for the future. 591 respondents answered this question. 96% (n=366) stated that their preferred option was Option 6, to re-open Eastriggs Railway Station (see Figure N.6). Only 2% (n=9) and (n=8) stated that Option 1a and Option 3 were their preferred options respectively.

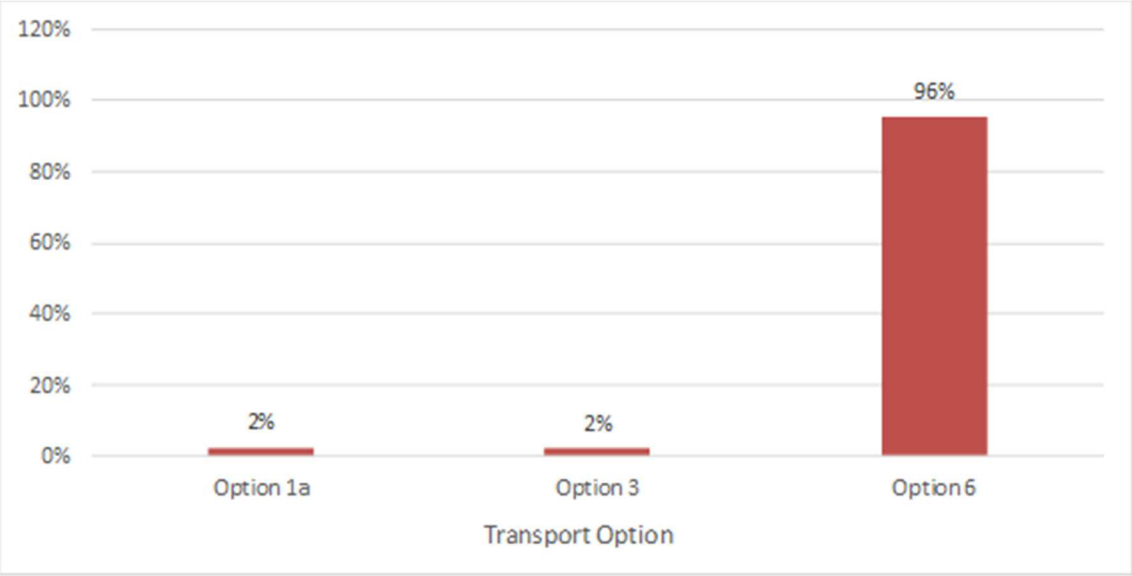

Figure N.6 Preferred Option

Open Responses

N.2.14 The survey provided respondents the chance to make open ended comments. There were two questions, one regarding their preferred option and the other collecting further comments on the study. The responses are summarised below.

Q6 - Please explain the main way(s) you think you and / or your community would benefit from your preferred choice option- 335 respondents answered this question

Re-open Eastriggs Railway Station

N.2.15 In total there were 270 comments made regarding re-opening the railway station in Eastriggs. Respondents felt that the benefits of re-opening the station far outweighed the other two options. Various reasons why a railway station would improve the lives of those living in Eastriggs were noted and are recorded below. In general, it was felt that re-opening the station would improve opportunities for those living in Eastriggs, provide more convenient transport links and boost the local area.

Quicker and easier travel

N.2.16 Many respondents noted that re-opening the railway station would significantly reduce journey times. Long journey times on public transport results in many people in the area fully depending on their private car. If they were to use the rail service they would have to drive, get a bus or get a taxi to either Gretna or Annan railway stations, adding both time and money. For these reasons, people often opt to drive the whole way of their journey instead. It was also noted that buses in the area are slow and often have convoluted routes aimed to serve the entire community. It was noted that the benefit of the railway station would be quick, direct access to local towns and cities further afield.

N.2.17 In addition to this, respondents noted that re-opening the railway station would be a much easier option for them. In was noted that having a local train station would allow people living in the area to access the rail network with much less hassle. Eight respondents commented on the fact that they would be able to walk from their house to the train station and three noted that they could cycle, which would allow onward travel without taking their car.

N.2.18 In total, there were 58 comments from respondents stating that they would benefit from not having to go to Annan and Gretna Green to connect with the railway network. This included driving personal cars, relying on getting a lift from family members, getting the bus or paying for taxis. Many respondents noted that this adds on extra time to their journey and can be expensive. It was felt that removing this extra travel by re-opening the railway station in Eastriggs would be a huge benefit to the community.

Employment Opportunities

N.2.19 In total, there were 88 comments regarding increased employment opportunities as a result of re-opening the train station. Many respondents noted that there are few local employment opportunities, so the majority of people have to commute out of the immediate area. Further to this, a few respondents noted the impact of the recent closure of Pinneys, which was a major local employer. This has resulted in even more people needing to travel to work. Respondents felt that easy access to the rail network would open up job opportunities for people in the area and make it easier to find jobs. It was also noted that it would make the commute to Dumfries and Carlisle significantly quicker and the majority of people would switch from driving their car to using the train.

Educational Opportunities

N.2.20 There were 19 comments from respondents noting that re-opening the railway station would provide better educational opportunities for those living in the area. It would give young people

the opportunity to access facilities further afield with the convenience of having an accessible train station in their town. One respondent noted that many students benefit from being able to get discounted rail tickets which makes travelling by train much more attractive than travelling by bus. Another respondent noted that they were from Eastriggs but attended university in the central belt. They felt that re-opening the train station would allow them to easily visit home without relying on being picked up by a family member.

N.2.21 In addition to this, a few respondents noted that there could be a possibility that children could use the train to both get to school and go on school trips.

Social

N.2.22 There were 44 comments from respondents noting how the re-opening of the train station would improve their ability to attend activities/events and socialise. Many respondents felt that access to the rail network would allow them to attend events in the evening without having to worry about either making the last bus, relying on family members to collect them or paying for a taxi from Gretna or Annan. It was noted that this would benefit young people in the area a lot and respondents hoped that with better access to bigger cities young people would be more likely to stay in Eastriggs in the future.

Encourage people to live in Eastriggs

In general, it was noted that improving the transport links in Eastriggs could encourage people to move into the area. Some respondents commented on the fact that many young people move away from the area and don't come back. Better links to employment and social opportunities could encourage these people to come back and encourage new families to move in. This would be a huge benefit to the area.

Tourism

N.2.23 Respondents felt that improved transport links would increase the footfall in town and boost the local economy. This included increased spending in local shops and cafes. It was also noted that having a train station in the area may attract more visitors to the 5-star Devil Porridge attraction. One respondent noted that if more people visited the attraction they may also be more likely to spend money in the town.

Cost Effective

N.2.24 Many respondents felt that travelling by train would be more cost effective. Respondents felt that the buses in the area were too expensive and that they would be cheaper getting the train. In addition to this, they noted that they would not have to pay to get to Annan or Gretna stations to catch the train. This would reduce their fuel cost or remove the need to pay for a bus or taxi.

N.2.25 17 respondents noted that they would switch from using their car to the train as they would save money not paying for parking at their destination. A few respondents noted that in bigger cities this can accumulate to a large sum of money.

Accessibility

N.2.26 Respondents noted that in general trains are much more accessible than buses, especially for people with mobility issues. Two respondents stated that they struggle to use the bus service as it can be busy and there are limited wheelchair spaces. They noted that the train would be a much better option for them.

Independent Travel

N.2.27 Further to better accessibility, respondents felt that re-opening the railway station would encourage independent travel for both young and old people in the area. It was noted that older people would be able to travel much more easily and those with mobility may be able to travel alone. Some respondents also noted that their children would be able to visit friends and family or attend social events on their own if the train station was to be re-opened.

Environment

N.2.28 Respondents made 45 comments noting that re-opening the railway station would be better for the environment. It was felt that many people in the area would switch from using their car to using the train which would reduce the congestion on the roads and improve air quality in the area.

Reliable travel option

N.2.29 In general, respondents felt that the train service was much more reliable service than the bus service. In total there were 25 comments noting that buses in the area are not reliable. It was noted that buses are often either late or cancelled which causes issues for respondent's onward travel plans. Some respondents noted that they would not rely on the bus and often choose to drive instead.

Poor public transport integration

N.2.30 It was noted that in addition to buses being unreliable, they often do not link with the trains at the railway stations in Gretna and Annan. This deters people from using the service because they don't want to be waiting for a long time at the station.

Alternative public transport

N.2.31 It was noted that re-opening the railway station would be a huge benefit for people in the community who don't drive and are therefore reliant on public transport. Re-opening the railway station would provide a quick transport alternative for these people.

Sunday bus services

N.2.32 Six respondents noted that Sunday bus services would be beneficial for the community. They felt that it would allow people who worked at the weekend to commute by bus and provide more options for people to have days out on Sundays and socialise further afield. There would also be no need to forward plan out to get back from Gretna or Annan stations.

Q7- Do you have any further comments to make on the study, and the interim conclusions presented at this stage? – 120 responses

Re-open Eastriggs Railway Station

N.2.33 There were a further 89 comments from respondents stating that they would like the railway station in Eastriggs to be re-opened. There were also 8 comments noting that the major benefit would be that it would be a quicker and easier transport option for the community to connect with towns and cities further afield.

Employment Opportunities

N.2.34 In total there were a further 12 comments about the employment opportunities that re-opening the railway station would bring to the area. It would shorten the commute time and give people the opportunity to access jobs further afield.

Environment

N.2.35 Some respondents noted that if the railway station were to re-open they would no longer need to own multiple cars. In general, it was felt that people would use their car less which would be more environmentally friendly. It was also noted that people would be able to take their bike on the train, which is not always possible on the bus, and would therefore not need to use the car as all.

Cost of station

N.2.36 There were 3 comments from respondents regarding the estimated cost of re-opening the station. All three respondents felt that the cost seemed very high.

Issues with bus service

N.2.37 There were some comments regarding the bus service in the area. There were 5 comments noting that some buses are not accessible to everyone and the journeys are not comfortable. This was thought to deter people from using the service.

N.2.38 Again, some respondents noted that the buses in the area were unreliable, with services often being either late or cancelled.

N.2.39 Respondents felt that bus fares in the area were expensive and that the train would be a far cheaper option.

Later bus services

N.2.40 Some respondents noted that they would also benefit from later bus services. It was noted that this would allow for better flexibility when travelling, allowing people to travel home from work late and attend evening events in Dumfries and Carlisle.

Safer active travel routes

N.2.41 One respondent noted that they felt the area would benefit from safer active travel routes to encourage people to walk and cycle when making short journeys.

Other comments

N.2.42 Five respondents noted that they were impressed with the detail of the study and felt that it had accurately captured the areas transport issues. Two respondents slightly disagreed and felt that

the argument made for the train station was not strong enough and that the benefits it would bring to the area had not been fully captured.

N.3 Eastriggs Station Action Group

N.3.1 A meeting with Eastriggs Station Action Group was held on 23rd January 2019, prior to the public event. A phone call was also undertaken with the group on 27th November 2018 as part of Transport Scotland's South West Scotland Transport Study. The phone call was undertaken by members of the team working on this study, and for completeness is included here as the same key messages were discussed.

One-to-one phone call (27th November 2018)

Economic and Social

N.3.2 Eastriggs is the 14th largest settlement in Dumfries and Galloway and the local community want to have better access to employment, education and health services, in line with other settlements of a similar size across the region.

N.3.3 It was emphasised that the major drive for re-opening the railway station is the current economic challenge that the area faces. After the closure of both Chapelcross nuclear power station and Pinneys of Annan there has been a big loss of employment in the area and the village now faces an economic challenge. There are very few employment opportunities in Eastriggs itself, so people now need to travel further afield for work.

N.3.4 It was felt that the current transport network does not provide sufficient connectivity to enable local people to travel further to access employment opportunities. The strong commuter belt between Dumfries and Carlisle was noted. People in Eastriggs want to take up employment opportunities in Dumfries and Carlisle but are put off by long commuting times, especially by public transport. A bus from Eastriggs to both Dumfries and Carlisle takes approximately an hour. A train service would dramatically reduce the travel time (to Carlisle to around just 20 minutes) which would be a massive benefit in terms of improving access to the jobs market.

N.3.5 Access to health care was also discussed as being a priority, especially with an ageing population. There was an attempt to get a health clinic in Eastriggs, but it was unsuccessful. Therefore, locals have to travel to Annan and Gretna for health care. There are bus services available but sometimes it is limited and services only run for certain hours of the day, leading to feelings of remoteness. It was also noted that some people are referred to Cumbria for health care and rail access from Eastriggs to the WCML would improve this journey.

N.3.6 A significant issue for the Eastriggs area is that the population is ageing, and young people are migrating out of the area. It was felt that this was largely to do with limited job opportunities due to the limited connectivity. If the transport network was improved, it was felt that more young people may stay in the area.

Problems

Rail

N.3.7 The closest existing stations to Eastriggs are those at Gretna Green (5 miles east) or Annan (4 miles west). Although these stations are not that far in distance, very few people would consider driving to either Gretna Green or Annan to then board a train. Instead, the majority of people would choose to just drive to their destination. People in Eastriggs don't see either of these stations as an opportunity and therefore do not consider using them.

N.3.8 The closest existing rail station for access to Glasgow is at Annan on the GSWL, but the journey takes over 2 hours by rail. As an alternative, the train from Lockerbie to Glasgow on the WCML only takes about 1 hour. Therefore, when travelling north from Eastriggs, some people will travel

to Lockerbie to access the much faster WCML services. Bus access from Eastriggs to Lockerbie is poor with a number of interchanges required, so the only viable option is to drive to Lockerbie.

N.3.9 Re-opening the station at Eastriggs would allow people to access Carlisle by train (from where there are many more services both north and south on the GSWL than offered at Lockerbie) making the journey north (and into England) simpler and faster and would take cars off the road.

N.3.10 Connectivity issues also noted in terms of accessing the existing station at Gretna Green from Eastriggs. There is no bus service connecting directly to the station from Eastriggs. Therefore, to get to the railway station by public transport, passengers have to get a bus to Gretna and then walk to Gretna Green station. This is not ideal for the elderly or those less able bodied. In addition, bus tines to both Gretna Green and Annan are not integrated with rail times and there is a very limited Sunday service.

N.3.11 It was felt that a station at Eastriggs would be popular and well used and the possibility of a station is a popular topic among local constituents. Reference was made to the stations at Sanquhar, Kirkconnel and many smaller villages north off Kilmarnock. It was noted that the group do not see rail stations at Thornhill and Beattock as being in competition with Eastriggs. The service from Carlisle to Glasgow via Dumfries is a commuter train to serve small towns and therefore re-opening Eastriggs is not in conflict with the other stations. If people want an express route to Glasgow they will choose to travel on the WCML which would not be impacted by re-opening Eastriggs station.

N.3.12 It was noted that a station in Eastriggs could be located in the heart of the village, enabling easy access to all potential users.

Bus

N.3.13 Buses in Eastriggs are generally thought to be well used but it was noted that very few services travel on the A75 and the long journey times by bus are due to the circuitous routeing through a number of small villages on route to Dumfries and Carlisle. The X74 from Dumfries to Glasgow was highlighted to be a highly popular bus in the study area due to poor alternative rail services.

N.3.14 Bus travel from Eastriggs to Carlisle was noted to take around 90 minutes or with interchange to rail in Dumfries required (via Whitesands), making it highly unattractive and difficult for those less mobile, without car access or unable to drive.

Economic and Social Problems (due to existing transport network)

N.3.15 It was felt that the existing poor transport connectivity is causing major social problems in the local communities, particularly in terms of young people feeling isolated and unable to integrate effectively with schools and associated activities in Dumfries, the result being a reduction in social opportunities. The poor connectivity of the area was felt to be a key driver in the area's inability to retain young people and the associated ageing population demographic as young people need to move elsewhere to access higher education opportunities and employment.

N.3.16 Access to healthcare was noted as a key concern, both in term of accessing important healthcare facilities and in particular, the ability of the community to attract skilled healthcare professionals to the local area.

Opportunities

Rail

N.3.17 There is a hope that by opening Eastriggs Railway Station, patronage would be such as to justify an increased rail service on the GSWL (especially between Dumfries and Carlisle) at some point in the future. Providing a link to Carlisle would enable greater access to the WCML, increasing opportunities to access further afield. Looking into the future, there is also a desire for the electrification of the GSWL. **The greatest benefit of a rail station would be the increased**

access to employment opportunities in Dumfries, Annan and Carlisle, especially important given the recent job losses in the area.

N.3.18 Another opportunity highlighted was providing better access to education. Many young people in the area attend college and university in both Dumfries and Carlisle. Re-opening Eastriggs station would allow quick and easy access to these locations, opening it up as an opportunity to more people and helping sustain the villages population and rebalance the current population demographic.

N.3.19 Children in Eastriggs are in the catchment area to attend Annan Academy. Currently they are transported to school by bus but there is a good opportunity to switch to train as the train station in Annan is adjacent to the Academy. This would help alleviate the traffic on the roads during busy periods.

Active Travel

N.3.20 The NCN7 is a very popular route with cyclists. There are discussions regarding a new coastal pathway across Scotland linking with the English pathway. In addition to this, there were hopes of an active travel route between Gretna and Annan. Sustrans were looking into the decommissioned Ministry of Defence land around Eastriggs as a possibility for a new cycle path. It was noted that this is regularly discussed at council meetings.

Face-to-face Meeting (23rd January 2019)

Economy

N.3.21 A potential train station in Eastriggs would primarily be to increase access to employment for those living in the area. The local employment opportunities are restricted and reduced even more recently with the closure of Pinney's. This included about 50/100 locals from Eastriggs. Many of the people who lost jobs due to the closure were offered jobs at Two Sisters in Carlisle but some moved away to find employment elsewhere. It was noted that at this time the number of houses for sale in the area increased as people could no longer afford their mortgage. Economically active members moved out of the area and were largely replaced by retirees who, in general, rely on public transport much more. For the majority of people living in Eastriggs they have to travel to work due to limited local employment. It was noted that the number of people working from home is increasing as this takes away the difficulty of travelling.

N.3.22 There are multiple affordable housing schemes in the area aimed at families with lower incomes. One issue with this is that with limited local employment opportunities people have to travel for work and therefore, due to poor transport links, are often forced into owning a car which may not be affordable for the families attracted to live there due to low house prices.

N.3.23 There is an overall feeling in the community of isolation. In the last year broadband and connectivity in the area has been upgraded, which is part of the transforming economy. However, it was felt that the current transport links hold the area back from developing further.

N.3.24 It was noted the Devils Porridge Museum in Eastriggs is a 5- star attraction with the potential to attract visitors. Better transport links would make it more accessible and hopefully increase the popularity of the museum. The MOD site was also mentioned as a potential area of development that a new rail station could support. There were comments about technology firms and other companies using the area as a development hub. The site is twice as big as the Chapelcross site and could provide an area that could store surplus trains. The ecology in the area was also mentioned as a potential attraction for the area.

Social

N.3.25 An economic link is vital, but the social link is also very important in the area. Introducing a station in Eastriggs would allow families to make days trips easily with shorter journey times and more time to enjoy the day.

N.3.26 Many members felt that the introduction of a train would provide easier access to visiting friends and family. This was especially the case for those members of the community with children studying/ living elsewhere. Currently people are reliant on having a car to get to and from the stations. This can often mean travelling to Lockerbie or Carlisle to drop-off off pick up family members.

N.3.27 With an ageing community many people in the area have to give up driving and therefore are reliant on public transport. The group weren't sure whether these people would continue to use the bus with their concessionary card or would pay to use the train but did note that the train would give much better access.

Bus

N.3.28 The fragility of the bus service in the area was noted. This is primarily due to the buses being provided by commercial operators and the viability of them being questioned due to low patronage. A train would give certainty and a fixed link that the community can reply on that a bus doesn't.

N.3.29 The bus to Carlisle takes a convoluted route with a long journey time. When travelling to Carlisle people would stay on the bus at Gretna and not switch to the train. The main reasons for this were the additional cost and the difficulty of getting from the bus stop in Gretna to the rail station.

N.3.30 To get to Edinburgh by bus, members of the community have to get the bus from Eastriggs to Dumfries and then the bus from Dumfries to Edinburgh. In was noted that, in general, Stagecoach are a reliable bus operator and there are not normally issues catching the connecting bus to Edinburgh in Dumfries but there is always a worry. It is felt that a train link would be more reliable.

N.3.31 Stagecoach introduced an express bus service from Carlisle to Dumfries to compete with the train, but it wasn't successful and was therefore withdrawn.

Train

N.3.32 Currently, members of the community use trains from both Annan and Gretna. It was noted that there is not a lot of available parking at the station in Annan with people almost always parking in the town and walking to the station. When people choose to take the train from Annan they will plan extra time in their journey to allow for finding somewhere to park.

N.3.33 The location of a potential new station was discussed. It was explained that the old station site was dismissed on the terms that it is on the edge of the town and is someone's home/ business. Following the dismissal of this they looked at parts of the line where there are existing bridges. However, many of these bridges were very steep and have houses in surrounding areas which could be an impediment. There are also a lot of level crossings in the area which also have to be considered. It would be recommended that the station would have to be two, full length platforms. It was highlighted that there are many hidden costs to building a new station including break times associated with shorter turnaround times in Carlisle.

N.3.34 There was also an explanation of the estimated cost of the railway station. It was based on the prices of stations that have been built recently in the UK. The volume of people on the Dumfries to Carlisle section of the line is high (compared to the Dumfries to Kilmarnock section of the line) and therefore an additional stop in Eastriggs would add time to existing passengers' journeys and therefore, opening the station would be a disbenefit to them. This benefit has to be included and compared with the benefit of people from Eastriggs having shorted journey times. It should be noted that the timetabling exercise is a snap shot in time and timetables are always changing. Therefore, although an additional stop was thought to be viable in that snapshot in time, it may not be in the future. A timetabling issue that did occur with making further connections in Carlisle. Some connections were missed due to the additional journey time. One of the main issues is the turn-around time in Dumfries being very tight and getting

through the Gretna junction. It was also noted that a request stop in the timetable wouldn't help as the train would always have to have room in the timetable to stop if need be.

N.3.35 It was felt that the train would be significantly more accessible than the bus is for those with mobility constraints.

N.4 SWestrans and Stagecoach (South-West – on behalf of Stagecoach Cumbria)

N.4.1 Key points from the discussion were:

- Stagecoach's resources work hard in the Dumfries and Galloway region, with buses and drivers often providing the resource to operate a number of differing services over day, with little 'down time' at a depot. Operations need to be heavily resource intensive in order to enable the commercial viability of services.
- Stagecoach described the commercial viability of their services in the region as 'shaved to the bone'
- Given the resource intensive nature of operations and the inherent logistics of operating a range of services across the day, minor changes to a single service could have major consequences across a range of services.
- Given this fragile nature of existing operations, Stagecoach would not be willing to take on any services which were required to be operated without subsidy. Consideration would be given to operating services if subsidy were available but they would not want to take on any commercial risk
- In general, as a bus operator, Stagecoach seek to provide connections between their bus services. Creating better integration with rail services was seen as a measure that could actually reduce their patronage overall. While they may gain additional passengers using the bus to access the rail network, overall they may lose out in passenger volumes as passengers utilise rail for onward travel as opposed to connecting bus services. Therefore, providing improved bus connections to the rail network was not seen as a positive for their operations.
- In terms of altering the existing Service 79 / 179 (Options 1b), through retiming of the service and stopping at Dumfries, Annan, Gretna Green and Carlisle railway stations, Stagecoach noted that:
    - The additional 25 minutes required to extend the service would 'wreck the service'. The service already includes a route to serve a number of villages on the route between Carlisle and Dumfries. Adding in additional journey time would was seen as highly detrimental to the services attractiveness to passengers and hence overall viability.
    - A new 'fastlink' service is about to begin operation between Dumfries and Carlisle to compete with rail journeys between the two towns – essentially the opposite of the Option 1b proposals. (It should be noted that since this consultation was undertaken, this service has been withdrawn).
    - Overall, Stagecoach had no appetite to alter the service.
- In terms of Lockerbie Railway Station, the issues of parking at the station were noted – with limited parking capacity available, therefore improving access by other modes had potential.
- SWestrans noted that the existing Service 383 (an extension of which forms Option 1c) was operated commercially by Houston's Coaches on Monday to Friday and but with subsidy on a Saturday, but with very tight margins.

- In relation to improving access to the rail network from Eastriggs, SWestrans noted that a far greater number of rail services stop at Carlisle compared to Lockerbie and therefore improving access to Carlisle Railway Station rather than Lockerbie Railway Station would provide greater accessibility benefits.

    - SWestrans noted the potential benefits of operating a 'dial-a-bus' type service providing connectivity to rail service may have good potential. The Community Planning Partnership have endorsed a strategic, coordinated and integrated approach to social/community transport service delivery across the partnership through the development of a Public Social Partnership and the potential for this could be raised in this context. It was noted though that no bus operator grant would be available to support the operation of such a service.

N.5 SWestrans and Houstons

N.5.1 A face to face meeting was held with SWestrans and Houstons.

N.5.2 Houston's operate Service 383 between Annan and Lockerbie. The service operates commercially from Monday to Friday with Saturday services running with subsidy from SWestrans.

N.5.3 Option 1c considers extending Service 383 to Eastriggs to provide a direct link to Lockerbie railway station.

N.5.4 Key points from the discussion were:

- Houston's were not aware of any unmet passenger demand to use the service, and specifically were not aware of any demand by passengers to travel between Eastriggs and Lockerbie railway station.

- Houston's noted that the service is only commercially viable because it routes through the communities of Ecclefechan and Eaglesfield. This is not very direct and is not be able to provide a journey time between Lockerbie and Annan that can come close to competing with the private car (around 50minutes by bus vs. 25 minutes by car). It was felt that a more direct service between Eastriggs and Lockerbie would be needed to entice passengers to use such a service, but the more direct route would need to 'miss out' the smaller communities and as such would fall very short of being able to achieve commercial viability.

- Houston's noted the issues with regards rail departure and arrival delays and the impact this would cause on bus users specifically using public transport to access the station. A bus timetable aligned to rail times can only provide a good level of integration if both operate to schedule. A late running rail arrival could mean a passenger missing the onward bus connection and vice versa. Due to this, it was felt that people would always be more inclined to access the station by private car.

- Parking issues at Lockerbie railway station were discussed. It was acknowledged, again, that Lockerbie station has very constrained parking provision. However, it was noted that there is plenty of available free on-street parking within a 5-minute walk of the station. The constrained parking at the station was therefore not seen as a significant deterrent to accessing the station by private car.

- Houston's felt if the service were to be extended between Annan and Eastriggs (offering a direct route between Eastriggs and Lockerbie) it would likely be utilised by passengers travelling only between Eastriggs and Annan and not further to Lockerbie. The section of the service between Eastriggs and Annan would be in direct competition with the existing commercially operated service 79/179, operated by Stagecoach. This would raise two clear issues:

- Operating directly against Stagecoach would require careful consideration to provide a suitable fare that would encourage use of the service to ensure it could be operated commercially. This would impact on Stagecoach's services patronage and could likely antagonise. The fragile nature of the existing region wide bus operations means minor impacts can have major consequences and there may be the unintended consequence of reducing service provision to smaller communities on the route or impacting on an unrelated service elsewhere.

- If the service were to be operated with some subsidy from SWestrans, this would need very careful consideration to ensure the legality of such a service given the direct competition with the commercial service between Eastriggs and Annan.

- Houston's noted that their biggest issue was the limited driver capacity over the region, and indeed the UK as a whole. They noted the difficulty in finding bus drivers. This was further emphasised by SWestrans who noted their difficulties in finding drives to operate their services and the overall ageing population amongst its drivers (with an average age of over 60 amongst their currently employed 42 drivers). This was seen as the key issue in the long term planning of bus services in the region.

N.6 SWestrans, Dumfries and Galloway Council Officers (Transportation, Planning, Environment and Economic Development officers)

N.6.1 A workshop was undertaken with key officers (transport, economic, environmental etc.) from the Council and SWestrans on 8th February 2018. Key points from the workshop were:

- The recently published Proposed Local Development Plan (to 2029), *Dumfries and Galloway Council Local Development Plan 2*, had been approved at the Full Council meeting in January 2018 and was now being published for 8 weeks (until late March 2018) to allow the public to make representations. Two sites have been identified within the Eastriggs settlement boundary, equating to approximately 230 dwellings in total.

- It was noted that the opportunities coming forward in and around Carlisle (particularly with respect to the emerging Borderlands Growth Deal) could be accessed more easily by Eastriggs residents if the village were directly served by rail (the trip by bus is around 50 minutes but would be around 16 minutes by rail).

- House prices in Eastriggs are significantly lower compared to Carlisle and Cumbria. Improving connectivity between Eastriggs and Carlisle, particularly by rail, may encourage people to capitalise on this and support the planned growth and future prosperity of the village.

- The former nuclear station at Chapelcross, located approximately 5 miles north of the village, is currently being decommissioned. It's long term redevelopment as a Business Park could trigger residential redevelopment in Eastriggs, although this is very long term and it was suggested that given the sites closer proximity to Annan, this would be the station considered to provide the most appropriate access to the site (and not through a station at Eastriggs).

- The redevelopment of the former Ministry of Defence site to the south of Eastriggs was also discussed. The site is mentioned in the Council's Economic Strategy, where it is stated that *"The former MOD site at Eastriggs is likely to be available during the plan period and may provide scope for business/industry use and/or tourism sector development.*

N.7 Rail Stakeholders

N.7.1 Two key option development tasks were undertaken in relation to the rail option (Option 6 – the re-opening of Eastriggs station) before engagement was undertaken with the rail industry:

- **Engineering Feasibility Work** – which involved a site visit to Eastriggs to establish the potential viability for a railway station within/close to the village with key considerations being station access from the road network. A paper was produced which was provided to the stakeholders for comment and is provided in Appendix O ; and

- **Development of a potential timetable for the GSWL** which included a stop at Eastriggs (and given the parallel study for Eastriggs, a potential timetable for the GSWL which included stops at both Eastriggs and Thornhill). The timetable was shared with the stakeholders for comment, and is included in O.6.4.

N.7.2 Both documents were supplied to all rail stakeholders for their comment.

N.7.3 **ScotRail** noted that:

- They were content that the analysis undertaken considering the potential station locations was appropriate;

- They were content that the timetable analysis undertaken was appropriate and at a level of detail suitable for this stage in the project lifecycle;

- The use of the GSWL for freight and strategic diversionary paths as well as long signalling block sections which both constrain capacity on the rail corridor;

- The performance and rostering impacts (due to journey and turnaround times changing) of incorporating one or both (Thornhill and Eastriggs) stops would not be neutral compared to today;

- Introducing a railway service at Eastriggs was felt to be a much more viable option (than introducing a station at Thornhill) as it could offer good commuting and leisure journey opportunities to both Dumfries and Carlisle.

Network Rail noted that:

- They had the Technical Note provided on the potential station location for Eastriggs and were content that the level of analysis is appropriate for the current stage of development and has captured the issues for consideration going forward.

N.8 East Ayrshire Council

N.8.1 East Ayrshire Council noted the request to engage with them but were not in a position to respond.

N.9 Strathclyde Partnership for Transport

N.9.1 Email correspondence was had with Strathclyde Partnership for Transport. Key points from the consultation were:

- The operational implications for services in the SPT area are relatively minor;

- The potential electrification of the line to Kilmarnock/East Kilbride/Barassie could have some impact on train timings and/or rolling-stock compatibility;

- The single-line issue between Barrhead and Kilmarnock – whilst acknowledging the dynamic loop at Lugton – still constrains additional services being operated and this situation could be exacerbated if differing (and incompatible) rolling stock is required for local as opposed to longer distance services.

- Any impact on freight services on the line is presumably considered minimal. The interworking of these services from Muirhouse Junction into Glasgow Central will still be an issue to be dealt with as per present arrangements.

N.10 Cumbria and Carlisle Councils

N.10.1 Email correspondence was had with representatives from Cumbria and Carlisle Councils. A response was received a representative from the Economic Development Department at Carlisle City Council. Key points noted were:

- The Glasgow South West Main Line (GSWL) enables commuters from current stations at Gretna, Annan and Dumfries to access Carlisle easily and efficiently for education, employment, retail, cultural and leisure opportunities. This helps to reinforce Carlisle's regional role as the economic capital of Cumbria and south west Scotland;

- Carlisle City Council is a member of The Borderlands Partnership, with the four other local authority areas that abut the Border, who are currently engaging in discussions with both the UK and Scottish Governments on the Borderlands Inclusive Growth Deal. The Borderlands partners recognise that connectivity through our area is good, however within the area there are opportunities for significant improvements. In terms of inclusive growth, the addition of a station at Eastriggs would provide an alternative transport mode to the village adding resilience and improving connectivity; and

- Understandably increased journey times on any route is not considered to be favourable, however, where this can be demonstrated to be fairly minimal, additional stops can open up wider economic development opportunities for communities and businesses.

Appendix O Option 6 - Potential Station Sites – Site Visit Findings

O.1 General Points

O.1.1 It was important prior to the site visits to take cognisance of the underlying rail regulations and standards, in respect of new or relocating stations, in order to ensure these are fully considered.

O.2 Railway regulations and standards concerning the location of stations

O.2.1 The location of stations is dictated by a range of factors including local markets and physical access to the railway, which are clearly site specific.

O.2.2 The railway industry has standards that govern the location of new stations in relation to **gradients** and **curvature**. These are published in a number of documents.

O.2.3 The first document in the process is *"Investment in Stations: A guide for promoters and developers"* published by Network Rail in December 2014 as part of the Network Route Utilisation Strategy (RUS) programme. As it is a RUS publication it has been developed with the wider rail industry, including funders, and is approved by the Office of Rail and Road (ORR).

O.2.4 The document is comprehensive and sets out the issues that need to be considered when proposing the relocation of a station or the building of a new one. It includes a specific reference to the *Railway Group Standard GIGN7616* in respect to acceptable gradients and curvature for new station sites.

O.2.5 Section G4 refers to track gradients through proposed station sites:

- Section G 4.2.2 states that: "it is considered good practise to locate platforms on gradients not steeper than 1:500."
- Section G 4.2.8 sets out the points to consider if a new platform is to be built on a gradient steeper than 1:500.

O.2.6 There is no prohibition on placing a new platform on a gradient steeper than 1:500, but some thought needs to be given to the consequences. These points need to be considered with regard to the potential station sites, initially if they are relevant to the choice of site and, if necessary, at the detailed design stage.

O.2.7 The issues that arise with platforms on curved track are generally around the platform/train stepping distances, which can be widened or raised / enlarged as a result of the interaction between straight carriages and curved platforms. These issues are not insurmountable, but it is preferable to avoid them if possible.

O.2.8 The relevant standard is GI/RT7016 which is quoted in GIGN7616 Section G 4.1:

- Extract 2.1 Station platforms shall not be located on horizontal curves with radius less than 1000m.
- Extract 2.1.5 GC/RT50221 requires that the normal limiting design value of cant adjacent to a station platform is 110mm, with an exceptional limiting design value of 130mm.

O.2.9 In summary, new stations should be ideally located on straight track but can be located on track with a horizontal curve of more than 1000m (but not less) and ideally on track that is level (less steep than 1:500) but can be located on track where the gradient is steeper than 1:500.

O.3 Railway operational issues

O.3.1 There are detailed implications in the location of any new station on the network particularly its impact on the operation of trains. Two important issues are:

- The special location of a station in respect of the signalling sections and how that impacts on headways, especially, but also junction working;
- The interface with signalling equipment and point work and the detailed sighting of signals.

O.3.2 These will be considered in the context of the station sites.

O.4 Access

O.4.1 Station sites need to be accessible to the public road network, which also includes public footpaths and footways. Sites that are impractical to access from the public road network will be discounted. The other important consideration is the location of the station in relation to the community it is intended to serve.

O.5 Platform Lengths

O.5.1 Platforms are required to be of sufficient length so that all the coaches, and thus doors of the trains that are expected to regularly call, are on the platform.

O.5.2 On the Glasgow South West Main Line (GSWL) the current stations platform lengths for the smaller stations south of Kilmarnock are (based on information from the 2019 Train Planning Rules):

- Auchinleck: 141m both
- New Cumnock: 111m both
- Kirkconnel: 99 up & 106 down
- Sanquhar: 111m both
- Annan: 130 up & 152 down
- Gretna Green: 112m both

O.5.3 The current train service is operated by two-car class 156 Diesel Multiple Units (DMUs), each vehicle of which is 23m long. A single unit is therefore 46m and 2 units (4 coaches) are 92m long. The longest DMUs in Scotland are the class 170 which are 23.62m per vehicle.

O.5.4 There are no regional DMUs operating on the British network longer than 24m, so this will be used to determine the required platform length. A four car train will be 96m long, to which needs to be added a 5m “stopping tolerance” so the minimum permissible platform length will be 101m for a 4-car train.

O.5.5 As a 5-car train would be 120m and a 6 car train would be 144m it can be seen that the smaller stations along the GSWL limit the useable train to 4-cars (longer trains could be run, but any vehicles above 4 cars would need to be locked out of use or selective door operation introduced.)

O.5.6 Consequently, it is proposed that Thornhill and Eastriggs Railway Stations would be built with 101m long platforms, but with passive provision to extend these to 150m to cater for 6-car trains, should that be required in the future.

O.6 Site Visit Findings

O.6.1 The potential station sites were visited on 6th November 2017. This section details the findings and draws on published railway information in its commentary, including railway gradient charts. Mileages that are quoted are from the published information including their Sectional Appendices and Quail Maps.

Gradient

O.6.2 The line is effectively level around Eastriggs with a gradient of 1 in 750. This therefore plays no part in considering the potential station locations.

Curvature

O.6.3 The line is straight here so there are no curvature issues impacting on potential station locations.

Access

O.6.4 The former Eastriggs Railway Station Site is to the west of Eastriggs Village as shown in Figure O.1. Access to the former station does not meet current design standards and would require a major upgrade of the junction with the B721 (as shown in Figure O.1). The former station building is now a residential property and the site is remote from the main residential areas of the village. For these reasons, the **former station site has been deemed unsuitable as a location for a new station.**

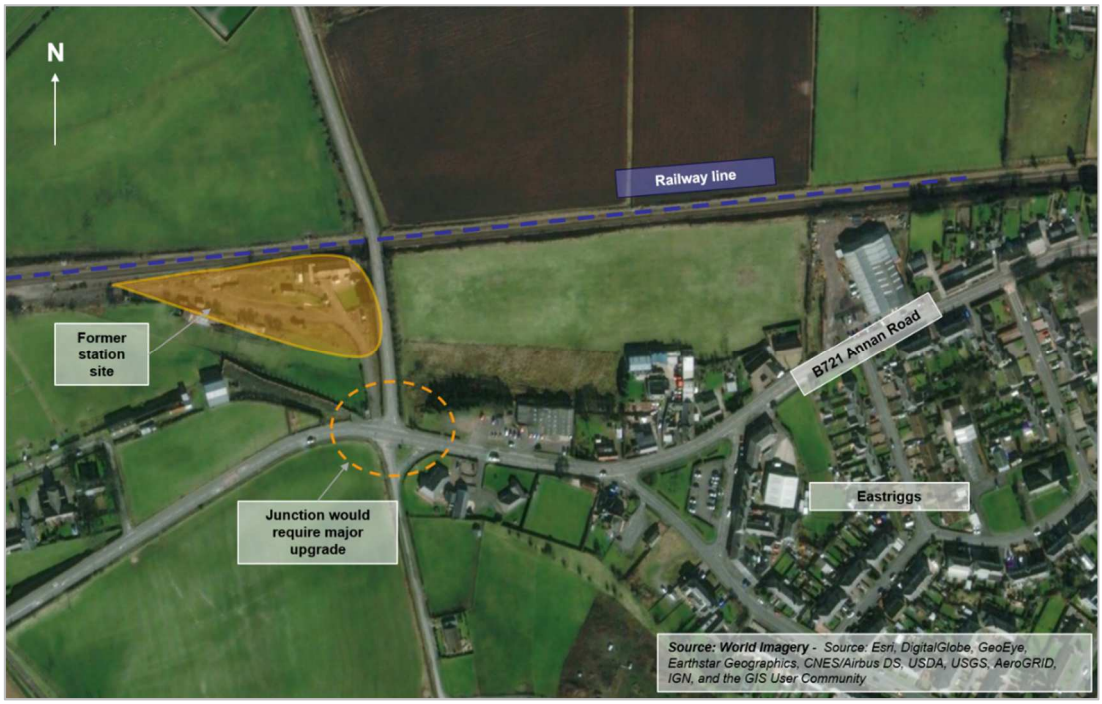

Figure O.1: Eastriggs Railway Station – Former Railway Station Site

O.6.5 There are two additional overbridges to the north of the village, as shown in Figure O.2, which could offer access to the railway at two further potential sites:

- A: Central Road; and
- B: East Road.

Figure O.2: Eastriggs Railway Station - Potential Rail Access Points via exisitng bridges

O.6.6 In terms of access, for both Sites A and B:

- The existing overbridges (on both Central Road and East Road) are narrow with substandard vertical alignments;
- New bridge structures would be required; and
- Widening of the carriageways and verges along the access roads (Central Road or East Road) would be required and would have a significant impact on existing residential properties and gardens.

O.6.7 Given the impracticalities and high cost associated with upgrading the bridge structures and widening the approach roads, neither site A or B is deemed to be suitable as a location for a new station.

O.6.8 A further site was investigated, as shown in Figure O.3. The site is located to the north of the village and would be accessed via an existing field access immediately to the west of the H&I Engineering works on the B721 Annan Road (access shown in Figure O.4). This would require some minor modifications to the adjacent access to the H&I Engineering works but the access is located on a curve and has good sightlines in both directions. The site has the advantage of being close to the centre of the village and existing bus stops. Platforms would likely extend behind the H&I site.

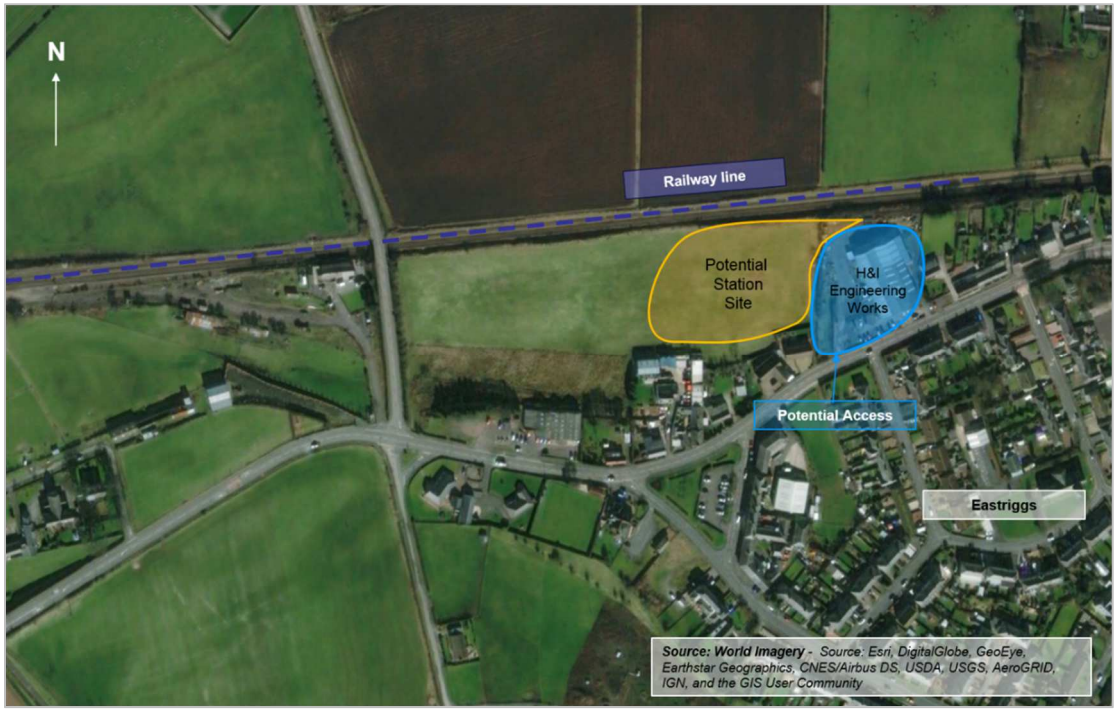

Figure O.3: Eastriggs Railway Station - Potential Site

Figure O.4: Eastriggs Railway Station - Potential Access from Annan Road

Operational issues

O.6.9 A rail overbridge will be required. There is no possibility of a level crossing controlled from the signal box by intercom, lights and loud speakers as the Office for Road and Rail (ORR) will not accept any new level crossings of any sort and Network Rail would not suggest them. It is Transport Scotland policy to close level crossings for public safety reasons.

O.6.10 There are signals in the vicinity of the potential station site, but their location would only impact on the extremities of the possible options and the platforms could probably be located to avoid interaction with any signalling equipment including the down line Limit of Shunt signal DE4104.

O.6.11 If the station were to be located in the field adjacent to the H&I Engineering site, then there should not be any significant signalling alterations. Risk Assessments will be required to ensure that stopping on the approaches to signals, but not close to them (prior to the AWS magnets), does not increase the risk of Signal Past At Danger (SPADS) incidents. They will need to be sighted through overbridges as now, but additionally from the platform to ensure safe train dispatch.

O.6.12 There are three user worked level crossings, to the east of the potential station sites, as shown in Figure O.5:

- Muirhouse Farm (110.73): Risk Score C10
- Stanfield Farm (111.08): Risk Score C9
- Elmside (111.34): Risk Score C9

7.4.3 All three level crossings have a telephone but no associated whistle board. Stanfield Farm level crossing is in the area where the village is planned to expand to the east (as per the Dumfries and Galloway Local Development Plan, 2014), also shown in Figure O.5. The allocation is for mixed use including 200 houses The existence of residual level crossings in new housing areas increases the risk of trespass. There may be scope to close these level crossings, as their function may have ceased or could cease in the future.

7.4.4 The fields to the south of the railway served by the Muirhouse Farm crossing have not been allocated for development in the current Local Development Plan.

7.4.5 Should the level crossings remain there will need to be a review of the risk assessment and risk score as a consequence of eastbound trains stopping on the approach and being visible from these level crossings.

Figure O.5: Eastriggs Level Crossing Locations and Planned Development SIte

O.7 Summary

O.7.1 There is only one site that is deemed to offer suitable access to the railway. The accessible site is to the north of the village in a field accessed immediately west of the H&I Engineering works, where access can be obtained off Annan Road through an existing field access. In relation to this site:

- The location is within 1500m of almost the entire village;
- There is sufficient space for a substantial car park;
- This location is between the signals, so unlikely to have a major effect on signalling;
- The down platform location will need to be informed by the location of the Limit of Shunt signal DE4104;
- The signals and level crossings will need to be reassessed for risk;
- The platform design will need to accommodate the substantial cess drains which exist in this area, which appears to be wet with lying water in adjacent fields;
- It may be desirable to provide pedestrian access to Central Road and Lowthertown on the north side of the railway; and
- A rail overbridge will be required.

Appendix P Option 6 - Potential Timetable

P.1 Background

P.1.1 The timetable analysis for the STAG Part 2 has been undertaken for both the inclusion of Eastriggs Railway Station and, given the concurrently running study, the inclusion of both Eastriggs and Thornhill railway stations on the GSW Main Line.

P.1.2 The ScotRail GSWL timetable changed quite significantly in December 2017 with the introduction of predominantly additional services between Dumfries and Carlisle, but with one additional service each way between Dumfries and Glasgow. This revised timetable has been used as the base from which to work and the RWA Rail Report: Operational Assessment of the proposed Thornhill and Eastriggs Stations (RWA Report), which was a part of the 2009 STAG produced by Colin Buchanan and Partners, was used to as the source document for the detailed changes in times resulting from additional calls at these two stations

P.2 Additional time required for station calls

P.2.1 The additional time required for station calls is extensively documented in the RWA Report, where detailed times have been generated using RailSys – an industry standard train planning tool and one that is recognised by Network Rail.

P.2.2 The key times (in seconds) are noted in Table P.1. These are based on the RWA Report and made consistent with the timetable supplied by ScotRail. Data has been derived from the Network Rail Working Timetable and also the derived from the Realtimetrains website (which used open source Network Rail data: *http://www.realtimetrains.co.uk/*

Table P.1: Additional Time Required for Station Calls

From - To		Time (seconds)	SRTs for additional station calls including dwell Diesel Multiple Units 075
Gretna Green - Eastriggs	Start Stop	326	6 mins (start - start) 360 sec
Eastriggs - Annan	Start Stop	240	4 mins (start - start) 240 sec
Gretna Green - Annan	Start Stop Non-Stop	473 (Current T/t 540 = 9 minutes)	8 mins (start - start) 480 sec
Gretna Green - Annan	Start Stop calling at Eastriggs	566 (No station dwell time)	10 minutes (start to start) 600 sec
Annan - Eastriggs	Start Stop	235	5 mins (start - start) 300 sec
Eastriggs - Gretna Green	Start Stop	340	6 mins (start - start) 360 sec

From - To		Time (seconds)	SRTs for additional station calls including dwell Diesel Multiple Units 075
Annan - Gretna Green	Start Stop Non-Stop	481 (Current T/t 510)	9 min (start - start) 540 sec
Annan - Gretna Green	Start Stop calling at Eastriggs	575 (No station dwell time)	11 minutes (start - start) 660 sec
Dumfries - Thornhill	Start Stop	825 = 13 min dep to dep	13 mins (start - start) 780 sec
Dumfries - Thornhill	Start Pass	804 (Current T/t 810) as now	
Thornhill - Sanquhar	Start Stop	897 = 15 mins	15 mins (start - start) 900 sec
Thornhill - Sanquhar	Pass Stop	830 (Current T/t 750)	
Dumfries - Sanquhar	Start Stop Non-Stop	1,634 (Current T/t 1560 = 26 mins dep - dep)	26 min (start - start) 1,560 sec
Dumfries - Sanquhar	Start Stop calling at Thornhill	1,722 (No station dwell time) = 29 mins	28 min (start - start) 1,680 sec
Sanquhar - Thornhill	Start Stop	855 = 15 mins dep to dep	15 mins (start - start)
Sanquhar - Thornhill	Start Pass	835 (Current T/t 12 min = 720 sec)	
Thornhill - Dumfries	Start Stop	795 = 13 mins	14 mins (start - start)
Thornhill - Dumfries	Pass Stop	755 (Current T/t 810) No 870!!	

From - To		Time (seconds)	SRTs for additional station calls including dwell Diesel Multiple Units 075
Sanquhar - Dumfries	Start Stop Non-Stop	1,590 = 26 ½ mins (Current T/t 26½ mins)	26½ mins (start - stop) inc [2]
Sanquhar - Dumfries	Start Stop calling at Thornhill	1,650 (No station dwell time) =27 ½ mins	29 min (start - stop) 1,740 sec

P.2.3 The use of different data sources and particularly the different rounding rules used – the timetable supplied by ScotRail is based on whole minutes - creates some data constituency discrepancies. Consequently, a conservative view has been taken of the time required to call at the new station, with each being allowed **a full two minutes per call** as shown in Table P.2. This will potentially adversely impact on the journey time extensions for existing passengers, but it will give more confidence that the timetable can be delivered as there is potentially some "flex" in the timetable to work round the conflicts points, especially Gretna Junction to Carlisle.

Table P.2: Time Penalty for calls (in each direction)

From - To	Time Penalty (in seconds) for call
Eastriggs – Up – Eastbound	84 + 30 dwell = 114 - rounded to 2 minutes for timetabling
Eastriggs – Down – Westbound	93 + 30 dwell = 123 - rounded to 2 minutes for timetabling
Thornhill – Up – Southbound	60 + 30 dwell = 90 – rounded to 1½ minutes for timetabling
Thornhill – Down – Northbound	88 +30 dwell = 118 – rounded to 2 minutes for timetabling
This time will be added into the timetable for each call made	

P.3 Timetable Testing

P.3.1 The central section of the GSWL between Kilmarnock and Gretna Junction is a double track railway and quite self-contained for passenger working. There are still a lot of freight paths, but these are largely for coal traffic which will dwindle to nil by 2025 due to UK Government policy to phase out coal fired power generation. A substantial number of paths remain but utilisation is low, but volatile, reflecting customers' demands.

P.3.2 There are also capacity restrictions caused by the long signalling block sections, which may be resolved if the route receives capacity enhancements in Control Period 6 (CP6) which would provide a diversionary route for HS2 enabling works on the WCML. This would permit the development of a more balanced timetable using the same resource.

P.3.3 Because the likely dates for the introduction of the new stations are some way into the future and the carriage of coal to power stations is diminishing, it was decided not to try to take account of all the freight path constraints as this was likely to be different when any timetable is specified.

P.3.4 As two concurrently running studies are being undertaken (one for Eastriggs, and the other for Thornhill – for which a similar proposal in terms of re-opening the station is being considered), two timetable tests have been considered: the impact of adding one extra call; and the impact of adding two additional calls into the timetable.

P.3.5 The impact of adding one extra call into the timetable will be broadly the same whichever station is added. Consequently, the first test undertaken was to understand the impact of adding one station based on two minutes a call.

P.4 Network Constraints

P.4.1 The timetable at the north end (Kilmarnock – Glasgow Central) is heavily constrained with single line sections between Barrhead and Kilmarnock and the need to integrate with local services from Glasgow to East Kilbride and Barrhead. To add an additional call at Eastriggs or Thornhill would result in down (northbound) trains arriving at Kilmarnock two minutes later and up (southbound) trains departing two minutes earlier.

P.4.2 There appears to be enough flex in the timetable for this to work at Kilmarnock, Lochridge Junction (Stewarton) and Lugton, but it fails completely at Barrhead where the current timetable is extremely tight with the down train coming off the single line from Lugton to be immediately replaced by the up train going onto the single line. Whilst this may be able to be changed it will require a wholescale re-planning of all the trains on this corridor into Glasgow and is beyond the scope of this project. Consequently, this study has started with the premise that no train times will be altered north of Kilmarnock. This has been varied, but the individual circumstances have been tested to demonstrate that the retiming was possible north of Kilmarnock.

P.4.3 As a general rule all the additional time required for station calls will be provided by retiming trains at the south end of the route generally, but not exclusively with up trains arriving later at Gretna Junction and running into Carlisle, and down trains departing from Carlisle earlier. The maintenance of the 8-minute connectional allowance for passengers at Carlisle has been an important consideration. The junction margin at Gretna Junction is 4 minutes for all conflicting movements.

P.4.4 Each train has been individually assessed for the consequences of the changes.

P.5 Data Presentation

P.5.1 The results are presented in two styles:

- Tabular listing of the trains and the changes made, with two lists, one for one call and one for both calls, listed by direction – in Table P.3 to Table P.6; and

- Simplified timetables with two versions, ones with a call at Eastriggs added (both Carlisle – Glasgow, and Glasgow – Carlisle / Newcastle) and ones with both calls at Eastriggs and Thornhill added (both Carlisle – Glasgow, and Glasgow – Carlisle / Newcastle). The timetables, presented in Table P.7 to Table P.19) show the December 2017 ScotRail timetable and the amended times side by side, permitting direct comparison. The new stations and times have been added in red, with the times that have been altered highlighted in green. Only relevant trains are shown in each timetable.

Table P.3: Train and Changes – One additional call – Up (Southbound) direction

Train	Impacts
2L01 0458 Dumfries to Carlisle	Depart Dumfries 2 minutes earlier, call Eastriggs as booked from Gretna Green. Maintains connection into **1R20 0428 Glasgow Central to London Euston** and 9 07 arrival time into Euston.
2N08 0618 Dumfries to Newcastle	Depart Dumfries 2 minutes earlier, call Eastriggs as booked from Gretna Green. Maintains connection into **1M91 0615 Edinburgh to Manchester Airport**
2N08 0618 Dumfries to Newcastle	Depart Dumfries 2 minutes earlier, call Eastriggs, as booked into Carlisle.
2L03 0713 Dumfries to Carlisle	Depart Dumfries 1 minute earlier, call at Eastriggs, remove 1 minute (of 1½ minute) pathing time at Gretna Jn as booked into Carlisle.
2N12 0743 Dumfries to Newcastle	Runs as booked, call at Eastriggs, runs 2 minutes later into Carlisle, going forward to Newcastle as booked. Maintains existing connections.
1E95 0709 Glasgow Central to Newcastle	Runs as booked to Thornhill/Eastriggs, then 2 minutes later to Gretna Green, as booked from Gretna Jn (3 minutes pathing time at Gretna Jn)
1L51 0837 Glasgow Central to Carlisle	No simple solution available – 2 minutes later at Gretna Jn conflicts with 1S42 0730 London Euston to Glasgow Central, requiring 6 minutes pathing time with 8 minutes later arrival in Carlisle (11 10), conflicting with and missing the connection into the following **9M53 1000 Glasgow Central to London Euston, via Birmingham** (booked arrival 11 10). It will arrive too late to form the return service: **1L54 1115 Carlisle to Glasgow Central** at its current timing or if booked 2 minutes earlier to provide for the extra station call. So 1L51 given priority over **1S42 0730 London Euston to Glasgow Central** requiring 2 minutes pathing time in 1S42 approaching Gretna Jn which would be partly recovered by the removal of 1 minute pathing time at Carstairs. Thus 1L51 arrives in Carlisle at 11 04, which would just make the connection into **9M53 1000 Glasgow Central to London Euston, via Birmingham** which leaves at 11 12 This also permits 11 13 departure in the current **1L54 1115 Carlisle to Glasgow Central** permitting one additional station call.
2L05 1102 Dumfries to Carlisle	Depart Dumfries 2 early, call Eastriggs, as booked from Gretna Green.
1L53 1013 Glasgow Central to Carlisle	Runs as booked to Eastriggs forward 2 later. Conflicts at Gretna Jn (12 28) with **2L06 1220 Carlisle to Dumfries**. However 2 minutes later into Carlisle (arrive 12 39) will still provide forward connections**.**
2L07 1304 Dumfries to Carlisle	Departs 2 minutes earlier, calls at Eastriggs as booked from Gretna Green into Carlisle

Train	Impacts
1E76 1213 Glasgow Central to Newcastle	Runs as booked to Eastriggs, then runs 2 minutes later.
1L55 1313 Glasgow Central to Carlisle	Runs as booked to Eastriggs, then 2 minutes later to Gretna Jn (15 27) and Carlisle (15 36). Arrives just in front of **1M99 1418 Edinburgh to Manchester Airport**. There is no connection, but there is none now.
2L09 1602 Dumfries to Carlisle	Departs Dumfries 2 early, calls at Eastriggs, then as booked.
2L11 1707 Dumfries to Carlisle	Departs Dumfries 4 early, calls at Eastriggs, runs 2 early to Carlisle.
1E97 1613 Glasgow Central to Newcastle	Runs as booked to Eastriggs, then runs 2 minutes later which breaks the connection into **1M18 1730 Glasgow Central to London Euston**. Arrival in Newcastle as booked due to 3 minutes pathing time on the approach.
2L13 1841 Dumfries to Carlisle	Departs Dumfries 2 early, calls at Eastriggs, then as booked.
1L57 1742 Glasgow Central to Carlisle	Runs as booked to Dumfries reduce station dwell to 1 minute, runs 1 early to Annan, calls Eastriggs, runs 1 later to Gretna Green, then as booked at Gretna Jn (due to 1 minute pathing time.)
1L57 1742 Glasgow Central to Carlisle	Runs as booked to Thornhill, 2 later to Dumfries, reduce station dwell to 1 minute, runs 1 later to Gretna Green, then as booked at Gretna Jn (due to 1 minute pathing time.)
1L63 1913 Glasgow Central to Carlisle	Runs as booked to Thornhill/Eastriggs, then runs 2 minutes later to Gretna Jn, then as booked due to 2 1/2 minutes pathing time here.
1A10 2013 Glasgow Central to Dumfries	As booked to Eastriggs, run 1½ minutes later to Holywood, arriving Dumfries 1 minute later due to ½ minute pathing time on the approach to Dumfries.
1L61 2113 Glasgow Central to Carlisle	As booked to Eastriggs, runs 2 minutes later to Gretna Jn (23 30) and Carlisle . Headway conflict with **1M95 2215 Edinburgh to Manchester Piccadilly** with which there is a designed connection. Pathing time will need to be added to the 1M95 north of Gretna Jn, which will be recovered by reducing pathing time south of Carlisle.
2A22 2313 Glasgow Central to Dumfries	As booked to Eastriggs, then runs 2 minutes later to Carlisle

Table P.4: Train and Changes – One additional call – Down (Northbound) direction

Train	Impacts
2L02 0531 Carlisle to Dumfries	Departs 4 minutes earlier, call at Eastriggs, then 2 minutes earlier to Dumfries. 2 minutes earlier arrival to permit 8 minute turn round to form retimed 2N08 0618 Dumfries to Newcastle
2A21 0513 Dumfries to Glasgow Central	Starts 2 minutes early, call at Thornhill, then as booked.
1A03 0545 Dumfries to Glasgow Central	Starts 1 minutes early, removing 1 minute pathing time at Holywood to be 2 early call at Thornhill, then as booked.
1L52 0608 Carlisle to Glasgow Central	Starts 2 minutes early, call at Eastriggs or Thornhill, forward from Annan/Sanquhar as booked
1S50 0646 Newcastle to Glasgow Central	Starts 2 minutes early, call at Eastriggs or Thornhill, forward from Annan/Sanquhar as booked
2L04 0958 Carlisle to Dumfries	Runs as booked to Eastriggs, then 2 later to Dumfries.
1L54 1115 Carlisle to Glasgow Central	Runs 2 minutes earlier to either Eastriggs then as booked from Annan/Sanquhar.
2L06 1220 Carlisle to Dumfries,	Departs 6 minutes earlier to avoid clash at Gretna Jn with **1L53 1013 Glasgow Central to Carlisle,** calls Eastriggs, runs 4 minutes earlier Dumfries, arr 1254. This retains the connection out of 1S46 1000 Manchester Airport to Edinburgh.
1L56 1313 Carlisle to Glasgow Central	Start 2 minutes early, call at Eastriggs, forward from Annan/Sanquhar as booked. Connections maintained.
2L08 1430 Carlisle to Dumfries	Runs as booked, call at Eastriggs, then 2 minutes later to Dumfries.
1S74 1323 Newcastle to Glasgow Central	As booked Newcastle to Carlisle, depart Carlisle 2 minutes earlier calling at Eastriggs, as booked from Annan. Connections maintained.

Train	Impacts
2L10 1617 Carlisle to Dumfries	Runs as 2 minutes earlier to Eastriggs, then as booked to Dumfries.
2L12 1727 Carlisle to Dumfries	Runs as booked to call at Eastriggs then 2 minutes later to Dumfries.
1L58 17 57 Carlisle to Glasgow Central	Runs as booked to call at Eastriggs, forward 2 minutes later from Annan to Kilmarnock, forward as booked.
1S73 1716 Newcastle to Glasgow Central	Runs as booked Newcastle to Carlisle, depart Carlisle 2 minutes earlier calling at Eastriggs/Thornhill, as booked from Annan. Connections maintained.
2L14 Carlisle to Dumfries	Runs as booked to Eastriggs, then 2 later to Dumfries.

Table P.5: Train and Changes – Two additional calls – Up (Southbound) direction

Train	Impacts
1E95 0709 Glasgow Central to Newcastle	As booked to Thornhill, runs 2 minutes later to Annan, calls Eastriggs, runs 4 minutes later to Gretna Jn where there is 3 minutes pathing time, runs 1 minute to Carlisle later and on towards Newcastle where it is on time at King Edward Bridge Jn using 1 minute of the 2 minutes pathing time.
1L51 0837 Glasgow Central to Carlisle	No simple solution available – call at Thornhill and Eastriggs make 4 minutes later at Gretna Jn results in a conflict with **1S42 0730 London Euston to Glasgow Central,** so would require an additional 4 minutes pathing time making an arrival time in Carlisle 8 minutes later at 11 10, conflicting with and missing the connection into the following **9M53 1000 Glasgow Central to London Euston, via Birmingham** which arrives at 11 10. It will also fail to connect with the return service: **1L54 1115 Carlisle to Glasgow Central** at its current timing and certainly not if it was 4 minutes earlier to provide for the extra two station calls. Solution offered is to omit call at Eastriggs and time as for single station call.
1L53 1013 Glasgow Central to Carlisle,	As booked to Thornhill, runs 2 minutes later to Annan, calling at Eastriggs, runs 4 minutes later at Gretna Jn which conflicts at 12 30 with 2L06 1220 Carlisle to Dumfries (which is retimed). 4 minutes later into Carlisle (arrive 12 39) will still provide forward connections.
1E76 1213 Glasgow Central to Newcastle	As booked to Thornhill, runs 2 minutes Annan, calls Eastriggs, runs 4 minutes later at Gretna Jn and on to Carlisle and Newcastle
1L55 1313 Glasgow Central to Carlisle	Runs as booked to Thornhill, runs 2 minutes later to Eastriggs, runs 4 minutes later from Eastriggs creating a conflict at Gretna Jn (15 29) with 1M99 1418 Edinburgh to Manchester Airport (pass 15 31), which it will need to follow into Carlisle requiring 4 minutes pathing time, so arrival time will be 8 minutes later at 15 42. This is likely to break the connection into 1M15 1440 Glasgow Central to London Euston.
1E97 1613 Glasgow Central to Newcastle	Runs as booked to Thornhill, runs 2 minutes later to Eastriggs, runs 4 minutes later. There is no conflict at Gretna Jn, but the 4 minutes later arrival breaks the connection into 1M18 1730 Glasgow Central to London Euston. There is 3 minutes pathing time on the approach to Newcastle so arrival would only be I minute later
1L57 1742 Glasgow Central to Carlisle	Runs as booked to Thornhill, 2 minutes later to Eastriggs, 4 minutes later to Gretna Green, but only 3 minutes later at Gretna Jn (20 05) due to 1 minute pathing time there. This will require 9S85 1543 London Euston to Glasgow Central to incur 1 minute pathing time here, but that will be recovered by removing pathing time further north. All connections are maintained
1L63 1913 Glasgow Central to Carlisle	With calls at Thornhill and Eastriggs, will be only 1½ minutes later at Gretna Jn (21 30½) due to 2½ minutes pathing time there. An additional 3½ minutes pathing time results in arrival as booked.

Train	Impacts
1L61 2113 Glasgow Central to Carlisle	Runs as booked to Thornhill, 2 minutes later to Eastriggs, runs 4 minutes later to Carlisle. Gretna Jn (23 32) conflicts directly with 1M95 2215 Edinburgh to Manchester Piccadilly with which there is a designed connection. To resolve this conflict and the potentially broken connection pathing time will need to be added to the 1M95 north of Gretna Jn, but this will then have recovered by reducing pathing time south of Carlisle.

Table P.6: Train and Changes – Two additional calls – Down (Northbound) direction

Train	Impacts
1L52 0608 Carlisle to Glasgow Central	Departs 4 minutes earlier, calls Eastriggs, runs 2 minutes earlier to Thornhill, then as booked
1S50 0646 Newcastle to Glasgow Central	Departs 4 minutes earlier, calls Eastriggs, runs 2 minutes earlier to Thornhill, then as booked
1L54 1115 Carlisle to Glasgow Central.	Departs 4 minutes earlier, calls Eastriggs, runs 2 minutes earlier to Thornhill, then as booked
2L06 1220 Carlisle to Dumfries,	Depart 4 minutes earlier to avoid clash at Gretna Jn with 1L53 1013 Glasgow Central to Carlisle, calls Eastriggs, runs 2 minutes earlier into Dumfries at 1256.
1L56 1313 Carlisle to Glasgow Central	Departs 4 minutes earlier, calls Eastriggs, runs 2 minutes earlier to Thornhill, then as booked. Connections maintained (Just)
1S74 1323 Newcastle to Glasgow Central	As booked Newcastle to Carlisle, depart Carlisle 2 minutes earlier (substandard headway after **1S61 1300 Manchester Airport to Glasgow Central),** calling at Eastriggs, runs as booked to Thornhill, 2 minutes late to Mauchline, 1 minute late to Lugton/Barrhead, then as booked. Connections maintained (just).
1L58 1757 Carlisle to Glasgow Central	Runs as booked to Eastriggs, 2 minutes later to Thornhill, 4 minutes later to Kilmarnock, depart Kilmarnock as booked.
1S73 1716 Newcastle to Glasgow Central	As booked Newcastle to Carlisle, depart Carlisle 4 minutes earlier, call at Eastriggs, runs 2 minutes earlier to Thornhill, then as booked.
1L60 2113 Carlisle to Glasgow Central	Runs 2 minutes earlier to Eastriggs, as booked to Thornhill, runs forward 2 minutes later. Carlisle connections maintained (just).

Table P.7: New Timetable: Carlisle – Glasgow with Eastriggs: SX Dec 2017 (Table 1)

Business ID		2L02LG	2L02LG	1L52LG	1L52LG	1S50LA	1S50LA	2L04LG	2L04LG	1L54LG	1L54LG	2L06LG	2L06LG
Orig. Dep. Time													
Orig. Loc. Code													
Dest. Loc. Code													
Dest. Arr. Time													
Timing Load		150	150	150	150	150	150	150	150	150	150	150	150
		SX	SX	SX	SX	SX	SX	SX	SX	SX	SX	SX	SX
		12336	12336	12336	12336	12336	12336	12336	12336	12336	12336	12336	12336
Train Service Code		23579003	23579003	23579003	23579003	21793000	21793000	23579003	23579003	23579003	23579003	23579003	23579003
Newcastle	dep					06:46	06:44						
Carlisle	arr					08:15	08:13						
	dep	05:31	05:27	06:08	06:06	08:15	08:13	09:58	09:58	11:15	11:13	12:20	12:14
Gretna Jn	*pass*	*05 40*	*05 36*	*06 17*	*06 15*	*08 24*	*08 22*	*10 07*	*10 07*	*11 24*	*11 22*	*12:30*	*12:24*
Gretna Green		05:42	05:38	06:19	06:17	08:26	08:24	10:09	10:09	11:26	11:24	12:32	12:26
Eastriggs			05:44		06:23		08:30		10:15		11:30		12:32
Annan		05:53	05:51	06:27	06:27	08:34	08:34	10:17	10:19	11:34	11:34	12:40	12:36
Dumfries	arr	06:10	06:08	06:45	06:45	08:52	08:52	10:35	10:37	11:52	11:52	12:58	12:54
	dep			06:46	06:46	08:53	08:53			11:53	11:53		
Sanquhar				07:12	07:12	09:19	09:19			12:19	12:19		
Kirkconnel				07:17	07:17	09:24	09:24			12:24	12:24		
New Cumnock				07:26	07:26	09:33	09:33			12:33	12:33		
Auchinleck				07:34	07:34	09:41	09:41			12:41	12:41		
Kilmarnock	arr			07:52	07:52	09:58	09:58			12:58	12:58		
	dep			07:55	07:55	09:59	09:59			12:59	12:59		
Glasgow Central	arr			08:38	08:38	10:37	10:37			13:35	13:35		

Table P.8: New Timetable: Carlisle – Glasgow with Eastriggs: SX Dec 2017 (Table 2)

Business ID		1L56LG	1L56LG	2L08LG	2L08LG	1S74LB	1S74LB	2L10LG	2L10LG	2L12LG	2L12LG	1L58LG	1L58LG
Orig. Dep. Time													
Orig. Loc. Code													
Dest. Loc. Code													
Dest. Arr. Time													
Timing Load		150	150	150	150	150	150	150	150	150	150	150	150
		SX	SX	SX	SX	SX	SX	SX	SX	SX	SX	SX	SX
		12336	12336	12336	12336	12336	12336	12336	12336	12336	12336	12336	12336
Train Service Code		23579003	23579003	23579003	23579003	21793000	21793000	23579003	23579003	23579003	23579003	23579003	23579003
Newcastle	dep					13:23	13:23						
Carlisle	arr					14:48	14:48						
	dep	13:13	13:11	14:30	14:30	15:12	15:10	16:17	16:15	17:27	17:27	17:57	17:57
Gretna Jn	*pass*	*13:22*	*13:20*	*14:39*	*14:39*	*15:21*	*15:19*	*16:26*	*16:24*	*17:37*	*17:37*	*18:06*	*18:06*
Gretna Green		13:24	13:22	14:41	14:41	15:23	15:21	16:28	16:26	17:39	17:39	18:08	18:08
Eastriggs			13:28		14:47		15:27		16:32		17:45		18:14
Annan		13:32	13:32	14:49	14:51	15:31	15:31	16:36	16:36	17:49	17:51	18:17	18:19
Dumfries	arr	13:50	13:50	15:07	15:09	15:49	15:49	16:54	16:54	18:06	18:08	18:34	18:36
	dep	13:51	13:51			15:50	15:50					18:35	18:37
Sanquhar		14:17	14:17			16:16	16:16					19:01	19:03
Kirkconnel		14:22	14:22			16:21	16:21					19:06	19:08
New Cumnock		14:31	14:31			16:30	16:30					19:15	19:17
Auchinleck		14:39	14:39			16:38	16:38					19:24	19:26
Kilmarnock		14:57	14:57			16:56	16:56					19:41	19:43
		14:59	14:59			16:57	16:57					19:57	19:57
Glasgow Central	arr	15:38	15:38			17:37	17:37					20:37	20:37

Table P.9: New Timetable: Carlisle - Glasgow with Eastriggs: SX Dec 2017 (Table 3)

Business ID		1S73LA	1S73LA	2L14LG	2L14LG	1L60LG	1L60LG	2L16LG	2L16LG				
Orig. Dep. Time													
Orig. Loc. Code													
Dest. Loc. Code													
Dest. Arr. Time													
Timing Load		150	150	150	150	150	150	150	150				
		SX	SX	SX	SX	SX	SX	SX	SX				
		12336	12336	12336	12336	12336	12336	12336	12336				
Train Service Code		21793000	21793000	23579003	23579003	23579003	23579003	23579003	23579003				
Newcastle	dep	17:16	17:16										
Carlisle	arr	18:52	18:52										
	dep	19:17	19:15	20:17	20:17	21:13	21:11	23:10	23:10				
Gretna Jn	pass	*19:26*	*19:24*	*20:26*	*20:26*	*21:22*	*21:20*	*23:19*	*23:19*				
Gretna Green		19:28	19:26	20:28	20:28	21:24	21:22	23:21	23:21				
Eastriggs			19:32		20:34		21:28		23:27				
Annan		19:37	19:37	20:36	20:38	21:32	21:32	23:29	23:31				
Dumfries	arr	19:54	19:54	20:54	20:56	21:50	21:50	23:47	23:49				
	dep	19:55	19:55			21:51	21:51						
Sanquhar		20:21	20:21			22:17	22:17						
Kirkconnel		20:26	20:26			22:22	22:22						
New Cumnock		20:35	20:35			22:31	22:31						
Auchinleck		20:44	20:44			22:39	22:39						
Kilmarnock	arr	21:01	21:01			22:56	22:56						
	dep	21:01	21:01			22:57	22:57						
Glasgow Central	arr	21:39	21:39			23:36	23:36						

Table P.10: New Timetable: Glasgow - Carlisle with Eastriggs: SX Dec 2017 (Table 1)

Business ID		2L01FG	2L01FG	2N08GN	2N08GN	2L03FG	2L03FG	2N12GN	2N12GN	1E95GN	1E95GN	1L51FG	1L51FG
Orig. Dep. Time													
Orig. Loc. Code													
Dest. Loc. Code													
Dest. Arr. Time													
Timing Load		150	150	150	150	150	150	150	150	150	150	150	150
		SX	SX	SX	SX	SX	SX	SX	SX	SX	SX	SX	SX
		12336	12336	12336	12336	12336	12336	12336	12336	12336	12336	12336	12336
Train Service Code		23579003	23579003	23579003	23579003	23579003	23579003	23579003	23579003	23579003	23579003	23579003	23579003
Glasgow Central	dep									07:09	07:09	08:37	08:37
Kilmarnock	arr									07:49	07:49	09:18	09:18
	dep									07:54	07:54	09:18	09:18
Auchinleck										08:11	08:11	09:35	09:35
New Cumnock										08:19	08:19	09:43	09:43
Kirkconnel										08:28	08:28	09:52	09:52
Sanquhar										08:33	08:33	09:57	09:57
Dumfries	arr									09:00	09:00	10:24	10:24
	dep	04:58	04:56	06:18	06:16	07:13	07:12	07:43	07:43	09:01	09:01	10:25	10:25
Annan		05:13	05:11	06:33	06:31	07:28	07:27	07:58	07:58	09:16	09:16	10:40	10:40
Eastriggs			05:16		06:36		07:32		08:03		09:21		10:45
Gretna Green		05:22	05:22	06:42	06:42	07:37	07:38	08:07	08:09	09:25	09:27	10:49	10:51
Gretna Jn	*pass*	*05:26*	*05:26*	*06:46*	*06:46*	*07:41*	*07:41*	*08:11*	*08:13*	*09:32*	*09:32*	*10:51*	*10:53*
Carlisle	arr	05:35	05:35	06:55	06:55	07:53	07:53	08:20	08:24	09:41	09:41	11:02	11:04
	dep			07:18	07:18			08:28	08:28	09:43	09:43		
Newcastle	arr			08:58	08:58			09:58	09:58	11:06	11:06		

Table P.11: New Timetable: Glasgow - Carlisle with Eastriggs: SX Dec 2017 (Table 2)

Business ID		2L05FG	2L05FG	1L53FG	1L53FG	2L07FG	2L07FG	1E76GN	1E76GN	1L55FG	1L55FG	2L09FG	2L09FG
Orig. Dep. Time													
Orig. Loc. Code													
Dest. Loc. Code													
Dest. Arr. Time													
Timing Load		150	150	150	150	150	150	150	150	150	150	150	150
		SX	SX	SX	SX	SX	SX	SX	SX	SX	SX	SX	SX
		12336	12336	12336	12336	12336	12336	12336	12336	12336	12336	12336	12336
Train Service Code		23579003	23579003	23579003	23579003	23579003	23579003	23579003	23579003	23579003	23579003	23579003	23579003
Glasgow Central	dep			10:13	10:13			12:13	12:13	13:13	13:13		
Kilmarnock	arr			10:51	10:51			12:50	12:50	13:50	13:50		
	dep			10:51	10:51			12:50	12:50	13:50	13:50		
Auchinleck				11:08	11:08			13:07	13:07	14:07	14:07		
New Cumnock				11:16	11:16			13:15	13:15	14:15	14:15		
Kirkconnel				11:25	11:25			13:24	13:24	14:24	14:24		
Sanquhar				11:30	11:30			13:29	13:29	14:29	14:29		
Dumfries	arr			11:57	11:57			13:56	13:56	14:56	14:56		
	dep	11:02	11:00	11:58	11:58	13:04	13:02	13:57	13:57	14:57	14:57	16:02	16:00
Annan		11:17	11:15	12:13	12:13	13:19	13:17	14:13	14:13	15:12	15:12	16:17	16:15
Eastriggs			11:20		12:18		13:22		14:18		15:14		16:20
Gretna Green		11:26	11:26	12:22	12:24	13:28	13:28	14:21	14:23	15:21	15:23	16:26	16:26
Gretna Jn	*pass*	*11:30*	*11:30*	*12:26*	*12:30*	*13:32*	*13:32*	*14:25*	*14:27*	*15:25*	*15:27*	*16:30*	*16:30*
Carlisle	arr	11:39	11:39	12:35	12:39	13:41	13:41	14:35	14:37	15:34	15:36	16:39	16:39
	dep							14:36	14:38				
Newcastle	arr							15:58	16:00				

Table P.12: New Timetable: Glasgow - Carlisle with Eastriggs: SX Dec 2017 (Table 3)

Business ID		2L11FG	2L11FG	1E97GN	1E97GN	2L13FG	2L13FG	1L57FG	1L57FG	1L63LG	1L63LG	1L61FG	1L61FG
Orig. Dep. Time													
Orig. Loc. Code													
Dest. Loc. Code													
Dest. Arr. Time													
Timing Load		150	150	150	150	150	150	150	150	150	150	150	150
		SX	SX	SX	SX	SX	SX	SX	SX	SX	SX	SX	SX
		12336	12336	12336	12336	12336	12336	12336	12336	12336	12336	12336	12336
Train Service Code		23579003	23579003	23579003	23579003	23579003	23579003	23579003	23579003	23579003	23579003	23579003	23579003
Glasgow Central	dep			16:13	16:13			17:42	17:42	19:13	19:13	21:13	21:13
Kilmarnock	arr			16:52	16:52			18:22	18:22	19:52	19:52	21:53	21:53
	dep			16:52	16:52			18:25	18:25	19:52	19:52	21:53	21:53
Auchinleck				17:09	17:09			18:42	18:42	20:09	20:09	22:10	22:10
New Cumnock				17:17	17:17			18:51	18:51	20:17	20:17	22:18	22:18
Kirkconnel				17:26	17:26			18:59	18:59	20:26	20:26	22:27	22:27
Sanquhar				17:31	17:31			19:04	19:04	20:31	20:31	22:32	22:32
Dumfries	arr			17:58	17:58			19:31	19:31	20:58	20:58	22:59	22:59
	dep	17:07	17:03	17:59	17:59	18:41	18:39	19:33	19:32	21:00	21:00	23:00	23:00
Annan		*17:22*	*17:18*	18:14	18:14	18:56	18:54	19:48	19:47	21:15	21:15	*23:15*	*23:15*
Eastriggs			17:23		18:19		18:59		19:52		21:20		23:20
Gretna Green		17:31	17:29	18:23	18:25	19:05	19:05	19:57	19:58	21:24	21:26	23:24	23:26
Gretna Jn	*pass*	*17:35*	*17:33*	*18:27*	*18:29*	*19:09*	*19:09*	*20:02*	*20:02*	*21:30*	*21:30*	*23:28*	*23:30*
Carlisle	arr	17:44	17:42	18:36	18:38	19:18	19:18	20:11	20:11	21:43	21:43	23:37	23:39
	dep			18:38	18:40								
Newcastle	arr			20:17	20:17								

Table P.13: New Timetable: Carlisle – Glasgow with both Eastriggs and Thornhill: SX Dec 2017 (Table 1)

Business ID		2A21LA	2A21LA	1A03LA	1A03LA	2L02LG	2L02LG	1L52LG	1L52LG	1S50LA	1S50LA	2L04LG	2L04LG	1L54LG	1L54LG
Orig. Dep. Time															
Orig. Loc. Code															
Dest. Loc. Code															
Dest. Arr. Time															
Timing Load		150	150	150	150	150	150	150	150	150	150	150	150	150	150
		SX	SX	SX	SX	SX	SX	SX	SX	SX	SX	SX	SX	SX	SX
		12336	12336	12336	12336	12336	12336	12336	12336	12336	12336	12336	12336	12336	12336
Train Service Code		23579003	23579003	23579003	23579003	23579003	23579003	23579003	23579003	21793000	21793000	23579003	23579003	23579003	23579003
Newcastle	dep									06:46	06:42				
Carlisle	arr									08:15	08:11				
	dep					05:31	05:27	06:08	06:04	08:15	08:11	09:58	09:58	11:15	11:11
Gretna Jn	*pass*					*05 40*	*05 36*	*06 17*	*06 13*	*08 24*	*08 20*	*10 07*	*10 07*	*11 24*	*11 20*
Gretna Green						05:42	05:38	06:19	06:15	08:26	08:22	10:09	10:09	11:26	11:22
Eastriggs							05:44		06:21		08:30		10:15		11:28
Annan						05:53	05:51	06:27	06:25	08:34	08:32	10:17	10:19	11:34	11:32
Dumfries	arr					06:10	06:08	06:45	06:43	08:52	08:50	10:35	10:37	11:52	11:50
	dep	05:13	05:11	05:45	05:43			06:46	06:44	08:53	08:51			11:53	11:51
Thornhill			05 24		05 58				06:57		09:04				12:04
Sanquhar		05:39	05:39	06:12	06:12			07:12	07:12	09:19	09:19			12:19	12:19
Kirkconnel		05:44	05:44	06:17	06:17			07:17	07:17	09:24	09:24			12:24	12:24
New Cumnock		05:53	05:53	06:26	06:26			07:26	07:26	09:33	09:33			12:33	12:33
Auchinleck		06:01	06:01	06:34	06:34			07:34	07:34	09:41	09:41			12:41	12:41
Kilmarnock	arr	06:18	06:18	06:51	06:51			07:52	07:52	09:58	09:58			12:58	12:58
	dep	06:20	06:20	06:52	06:52			07:55	07:55	09:59	09:59			12:59	12:59
Glasgow Central	arr	07:07	07:07	07:31	07:31			08:38	08:38	10:37	10:37			13:35	13:35

Table P.14: New Timetable: Carlisle – Glasgow with both Eastriggs and Thornhill: SX Dec 2017 (Table 2)

Business ID		2L06LG	2L06LG	1L56LG	1L56LG	2L08LG	2L08LG	1S74LB	1S74LB	2L10LG	2L10LG	2L12LG	2L12LG	1L58LG	1L58LG
Orig. Dep. Time															
Orig. Loc. Code															
Dest. Loc. Code															
Dest. Arr. Time															
Timing Load		150	150	150	150	150	150	150	150	150	150	150	150	150	150
		SX	SX	SX	SX	SX	SX	SX	SX	SX	SX	SX	SX	SX	SX
		12336	12336	12336	12336	12336	12336	12336	12336	12336	12336	12336	12336	12336	12336
Train Service Code		23579003	23579003	23579003	23579003	23579003	23579003	21793000	21793000	23579003	23579003	23579003	23579003	23579003	23579003
Newcastle	dep							13:23	13:23						
Carlisle	arr							14:48	14:48						
	dep	12:20	12:14	13:13	13:09	14:30	14:30	15:12	15:10	16:17	16:15	17:27	17:27	17:57	17:57
Gretna Jn	*pass*	*12:30*	*12:24*	*13:22*	*13:18*	*14:39*	*14:39*	*15:21*	*15:19*	*16:26*	*16:24*	*17:37*	*17:37*	*18:06*	*18:06*
Gretna Green		12:32	12:26	13:24	13:20	14:41	14:41	15:23	15:21	16:28	16:26	17:39	17:39	18:08	18:08
Eastriggs			12:32		13:26		14:47		15:27		16:32		17:45		18:14
Annan		12:40	12:36	13:32	13:30	14:49	14:51	15:31	15:31	16:36	16:36	17:49	17:49	18:17	18:19
Dumfries	arr	12:58	12:54	13:50	13:48	15:07	15:09	15:49	15:49	16:54	16:58	18:06	18:06	18:34	18:36
	dep			13:51	13:49			15:50	15:50					18:35	18:37
Thornhill					14:02				16:03						18:50
Sanquhar				14:17	14:17			16:16	16:18					19:01	19:05
Kirkconnel				14:22	14:22			16:21	16:23					19:06	19:10
New Cumnock				14:31	14:31			16:30	16:32					19:15	19:19
Auchinleck				14:39	14:39			16:38	16:40					19:24	19:28
Kilmarnock	arr			14:57	14:57			16:56	16:57					19:41	19:45
	dep			14:59	14:59			16:57	16:58					19:57	19:57
Glasgow Central	arr			15:38	15:38			17:37	17:37					20:37	20:37

Table P.15: New Timetable: Carlisle – Glasgow with both Eastriggs and Thornhill: SX Dec 2017 (Table 3)

Business ID		1S73LA	1S73LA	2L14LG	2L14LG	1L60LG	1L60LG	2L16LG	2L16LG						
Orig. Dep. Time															
Orig. Loc. Code															
Dest. Loc. Code															
Dest. Arr. Time															
Timing Load		150	150	150	150	150	150	150	150						
		SX	SX	SX	SX	SX	SX	SX	SX						
		12336	12336	12336	12336	12336	12336	12336	12336						
Train Service Code		21793000	21793000	23579003	23579003	23579003	23579003	23579003	23579003						
Newcastle	dep	17:16	17:16												
Carlisle	arr	18:52	18:52												
	dep	19:17	19:13	20:17	20:17	21:13	21:11	23:10	23:10						
Gretna Jn	*pass*	*19:26*	*19:22*	*20:26*	*20:26*	*21:22*	*21:20*	*23:19*	*23:19*						
Gretna Green		19:28	19:24	20:28	20:28	21:24	21:22	23:21	23:21						
Eastriggs			19:30		20:34		21:28		23:27						
Annan		19:37	19:35	20:36	20:38	21:32	21:32	23:29	23:31						
Dumfries	arr	19:54	19:52	20:54	20:56	21:50	21:50	23:47	23:39						
	dep	19:55	19:53			21:51	21:51								
Thornhill			20:06				21:04								
Sanquhar		20:21	20:21			22:17	22:19								
Kirkconnel		20:26	20:26			22:22	22:24								
New Cumnock		20:35	20:35			22:31	22:33								
Auchinleck		20:44	20:44			22:39	22:41								
Kilmarnock	arr	21:01	21:01			22:56	22:58								
	dep	21:01	21:01			22:57	22:59								
Glasgow Central	arr	21:39	21:39			23:36	23:38								

Table P.16: New Timetable: Glasgow - Carlisle with both Eastriggs and Thornhill: SX Dec 2017 (Table 1)

Business ID		2L01FG	2L01FG	2N08GN	2N08GN	2L03FG	2L03FG	2N12GN	2N12GN	1E95GN	1E95GN	1L51FG	1L51FG
Orig. Dep. Time													
Orig. Loc. Code													
Dest. Loc. Code													
Dest. Arr. Time													
Timing Load		150	150	150	150	150	150	150	150	150	150	150	150
		SX	SX	SX	SX	SX	SX	SX	SX	SX	SX	SX	SX
		12336	12336	12336	12336	12336	12336	12336	12336	12336	12336	12336	12336
Train Service Code		23579003	23579003	23579003	23579003	23579003	23579003	23579003	23579003	23579003	23579003	23579003	23579003
Glasgow Central	dep									07:09	07:09	08:37	08:37
Kilmarnock	arr									07:49	07:49	09:18	09:18
	dep									07:54	07:54	09:18	09:18
Auchinleck										08:11	08:11	09:35	09:35
New Cumnock										08:19	08:19	09:43	09:43
Kirkconnel										08:28	08:28	09:52	09:52
Sanquhar										08:33	08:33	09:57	09:57
Thornhill											08:48		10:11
Dumfries	arr									09:00	09:02	10:24	10:26
	dep	04:58	04:56	06:18	06:16	07:13	07:12	07:43	07:43	09:01	09:03	10:25	10:27
Annan		05:13	05:11	06:33	06:31	07:28	07:27	07:58	07:58	09:16	09:18	10:40	10:42
Eastriggs			05:16		06:36		07:32		08:03		09:23		no call
Gretna Green		05:22	05:22	06:42	06:42	07:37	07:38	08:07	08:09	09:25	09:29	10:49	10:51
Gretna Jn	*pass*	*05:26*	*05:26*	*06:46*	*06:46*	*07:41*	*07:41*	*08:11*	*08:13*	*09:32*	*09:33*	*10:51*	*10:53*
Carlisle	arr	05:35	05:35	06:55	06:55	07:53	07:53	08:20	08:22	09:41	09:42	11:02	11:04
	dep			07:18	07:18			08:28	08:28	09:43	09:44		
Newcastle	arr			08:58	08:58			*09:58*	*09:58*	11:06	11:06		

Table P.17: New Timetable: Glasgow - Carlisle with both Eastriggs and Thornhill: SX Dec 2017 (Table 2)

Business ID		2L05FG	2L05FG	1L53FG	1L53FG	2L07FG	2L07FG	1E76GN	1E76GN	1L55FG	1L55FG	2L09FG	2L09FG
Orig. Dep. Time													
Orig. Loc. Code													
Dest. Loc. Code													
Dest. Arr. Time													
Timing Load		150	150	150	150	150	150	150	150	150	150	150	150
		SX	SX	SX	SX	SX	SX	SX	SX	SX	SX	SX	SX
		12336	12336	12336	12336	12336	12336	12336	12336	12336	12336	12336	12336
Train Service Code		23579003	23579003	23579003	23579003	23579003	23579003	23579003	23579003	23579003	23579003	23579003	23579003
Glasgow Central	dep			10:13	10:13			12:13	12:13	13:13	13:13		
Kilmarnock	arr			10:51	10:51			12:50	12:50	13:50	13:50		
	dep			10:51	10:51			12:50	12:50	13:50	13:50		
Auchinleck				11:08	11:08			13:07	13:07	14:07	14:07		
New Cumnock				11:16	11:16			13:15	13:15	14:15	14:15		
Kirkconnel				11:25	11:25			13:24	13:24	14:24	14:24		
Sanquhar				11:30	11:30			13:29	13:29	14:29	14:29		
Thornhill					11:45				13:44		14:44		
Dumfries	arr			11:57	11:59			13:56	13:58	14:56	14:58		
	dep	11:02	11:00	11:58	12:00	13:04	13:02	13:57	13:59	14:57	14:59	16:02	16:00
Annan		11:17	11:15	12:13	12:15	13:19	13:17	14:13	14:15	15:12	15:14	16:17	16:15
Eastriggs			11:20		12:20		13:22		14:20		15:16		16:20
Gretna Green		11:26	11:26	12:22	12:26	13:28	13:28	14:21	14:25	15:21	15:25	16:26	16:26
Gretna Jn	*pass*	*11:30*	*11:30*	*12:26*	*12:30*	*13:32*	*13:32*	*14:25*	*14:29*	*15:25*	*15:33*	*16:30*	*16:30*
Carlisle	arr	11:39	11:39	12:35	12:39	13:41	13:41	14:35	14:39	15:34	15:42	16:39	16:39
	dep							14:36	14:40				
Newcastle	arr							15:58	16:02				

Table P.18: New Timetable: Glasgow - Carlisle with both Eastriggs and Thornhill: SX Dec 2017 (Table 3)

Business ID		2L11FG	2L11FG	1E97GN	1E97GN	2L13FG	2L13FG	1L57FG	1L57FG	1L63LG	1L63LG	1A10LG	1A10LG
Orig. Dep. Time													
Orig. Loc. Code													
Dest. Loc. Code													
Dest. Arr. Time													
Timing Load		150	150	150	150	150	150	150	150	150	150	150	150
		EWD	EWD	SX	SX	SX	SX	SX	SX	SX	SX	SX	SX
		12336	12336	12336	12336	12336	12336	12336	12336	12336	12336	12336	12336
Train Service Code		23579003	23579003	23579003	23579003	23579003	23579003	23579003	23579003	23579003	23579003	23579003	23579003
Glasgow Central	dep			16:13	16:13			17:42	17:42	19:13	19:13	20:13	20:13
Kilmarnock	arr			16:52	16:52			18:22	18:22	19:52	19:52	20:52	20:52
	dep			16:52	16:52			18:25	18:25	19:52	19:52	20:58	20:58
Auchinleck				17:09	17:09			18:42	18:42	20:09	20:09	21:25	21:25
New Cumnock				17:17	17:17			18:51	18:51	20:17	20:17	21:41	21:41
Kirkconnel				17:26	17:26			18:59	18:59	20:26	20:26	21:50	21:50
Sanquhar				17:31	17:31			19:04	19:04	20:31	20:31	21:55	21:55
Thornhill					17:46				19:19		20:46		22:10
Dumfries	arr			17:58	18:00			19:31	19:33	20:58	21:00	22:22	22:23
	dep	17:07	17:03	17:59	18:01	18:41	18:39	19:33	19:35	21:00	21:02		
Annan		*17:22*	*17:18*	18:14	18:16	18:56	18:54	19:48	19:50	21:15	21:17		
Eastriggs			17:23		18:21	--	18:59		19:55		21:22		
Gretna Green		17:31	17:29	18:23	18:27	19:05	19:05	19:57	20:01	21:24	21:28		
Gretna Jn	*pass*	*17:35*	*17:33*	*18:27*	*18:31*	*19:09*	*19:09*	*20:02*	*20:05*	*21:30*	*21:32*		
Carlisle	arr	17:44	17:42	18:36	18:40	19:18	19:18	20:11	20:14	21:43	21:43		
	dep			18:38	18:42								
Newcastle	arr			20:17	20:18								

Table P.19: New Timetable: Glasgow - Carlisle with both Eastriggs and Thornhill: SX Dec 2017 (Table 4)

Business ID		1L61FG	1L61FG	2A22LC	2A22LC								
Orig. Dep. Time													
Orig. Loc. Code													
Dest. Loc. Code													
Dest. Arr. Time													
Timing Load		150	150	150	150								
		SX	SX	SX	SX								
		12336	12336	12336	12336								
Train Service Code		23579003	23579003	23579003	23579003								
Glasgow Central	dep	21:13	21:13	23:13	23:13								
Kilmarnock	arr	21:53	21:53	00:01	00:01								
	dep	21:53	21:53	00:02	00:02								
Auchinleck		22:10	22:10	00:20	00:20								
New Cumnock		22:18	22:18	00:30	00:30								
Kirkconnel		22:27	22:27	00:44	00:44								
Sanquhar		22:32	22:32	00:49	00:49								
Thornhill			22:47		*01:04*								
Dumfries	arr	22:59	23:01	01:15	01:17								
	dep	23:00	23:02										
Annan		*23:15*	*23:17*										
Eastriggs			23:22										
Gretna Green		23:24	23:28										
Gretna Jn	*pass*	*23:28*	*23:32*										
Carlisle	arr	23:37	23:41										
	dep												
Newcastle	arr												

P.6 Testing Outcomes Summary

7.4.6 This work has demonstrated that either of the additional stations and both together can be introduced into the December 2017 timetable without structural alterations.

7.4.7 There is only one call that cannot be made: Eastriggs at about 10:46 in 1L51 08 37 Glasgow Central to Carlisle. This call was omitted because there are trains at 09:23 and 11:20, whereas the gap in the service at Thornhill would have been greater.

Appendix Q Option 6 - Station Usage Surveys

Q.1 Introduction

Q.1.1 PBA commissioned ProTel Fieldwork to undertake a variety of surveys concerning existing usage of Gretna Green and Annan railway stations in early 2018. The data collected will be used to inform demand forecasting for the proposed railway station at Eastriggs.

Q.1.2 This note describes the surveys undertaken and summarises findings.

Q.2 Surveys Undertaken

Q.2.1 Three types of surveys were undertaken. These were as follows:

- Passenger Counts – Annan and Gretna Green
  - Survey teams undertook passenger counts from 0600-1300 on Thursday 1st, from 0700-1400 on Friday 2nd and from 0830-1530 on Saturday 3rd February 2018 at Annan Station.
  - Survey teams undertook passenger counts from 0700-1400 on Tuesday 23rd, from 0600-1300 on Thursday 25th and from 0830-1530 on Saturday 27th January 2018 at Gretna Green Station.
  - Surveyors counted how many passengers boarded and alighted all trains which visited the stations during the survey period.
  - These counts allowed a sample rate to be estimated for the platform surveys.
- Platform Surveys – Annan and Gretna Green
  - Survey dates and times were as per platform surveys
  - Surveyors asked departing passengers about their current journey and wider usage of the respective stations. Where it was not possible to surveys all passengers during the time available, then passengers were provided with a paper copy of the survey and a postage paid return envelope.
- Online Surveys – Gretna only
  - Leaflets were also posted through the doors of all residential properties in Gretna, requesting that residents complete an online survey relating to their use of Gretna Green station. The questions in the online survey aligned closely with those in the platform survey, although they could not refer to a specific journey.

Q.3 Passenger Counts – Annan Station

Q.3.1 A total of 363 passengers boarded trains and 143 passengers alighted from trains at Annan station over the 21-hour survey period.

Q.3.2 Table Q.1 summarises passenger counts at Annan Station.

Table Q.1: Railway Passenger Count Summary – Annan Station

Day	Time Period	No. Departing Passengers	No. Arriving Passengers	Origin/Destination to North
Thurs 1st Feb	0600-1300	77	28	39%
Friday 2nd Feb	0700-1400	98	41	42%
Sat 3rd Feb	0830-1530	188	74	39%

Q.3.3 Figure Q.1to Figure Q.3 illustrate the number of passengers arriving and departing on each service.

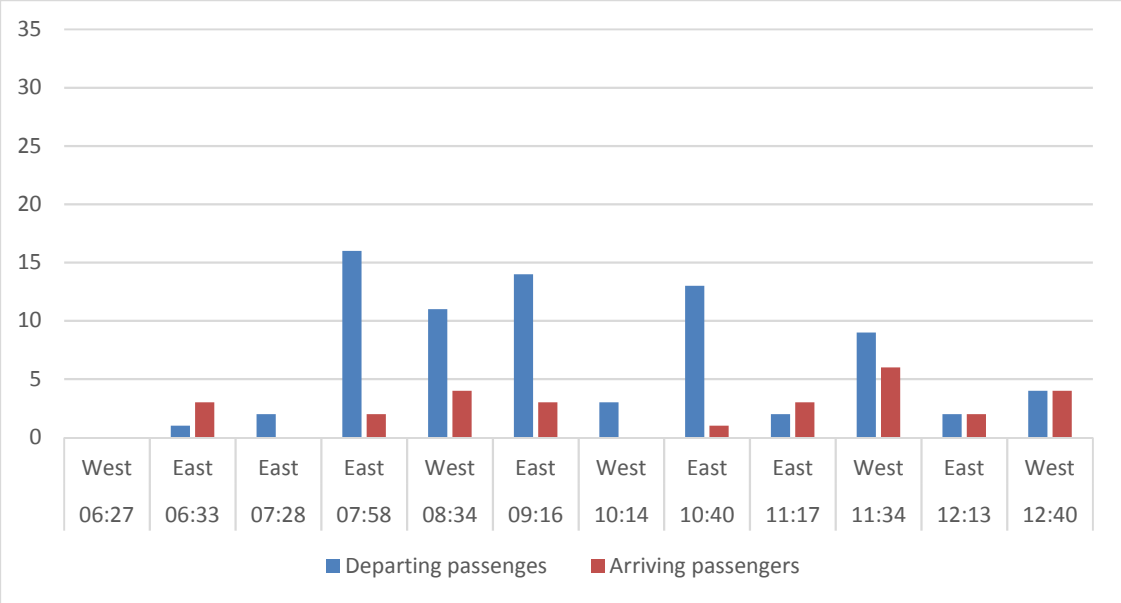

Figure Q.1: Annan Station Passenger Counts - 01/02/18

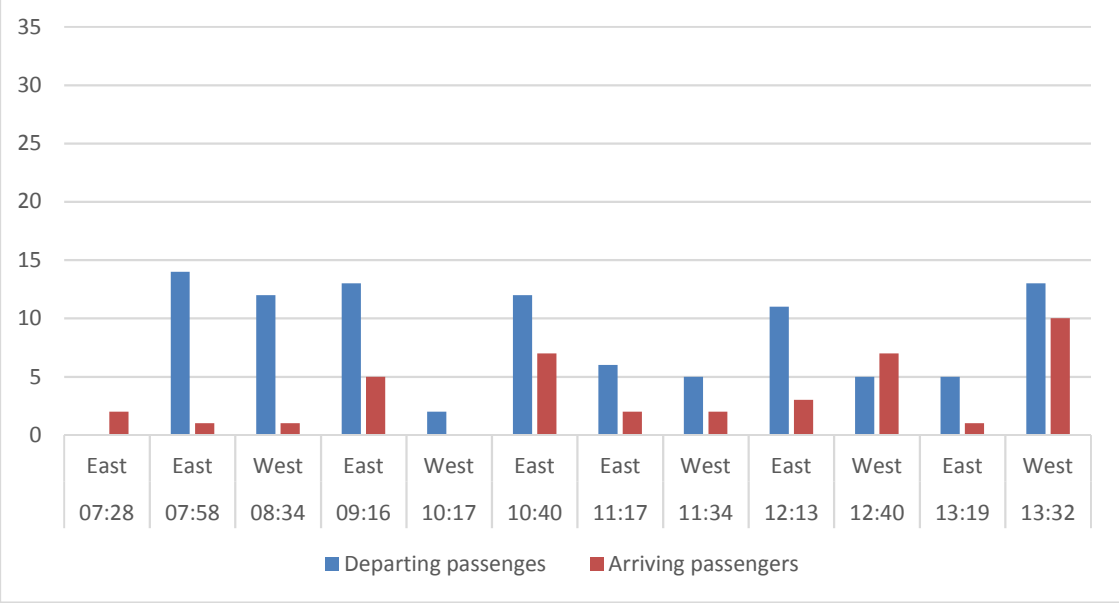

Figure Q.2: Annan Station Passenger Counts - 02/02/18

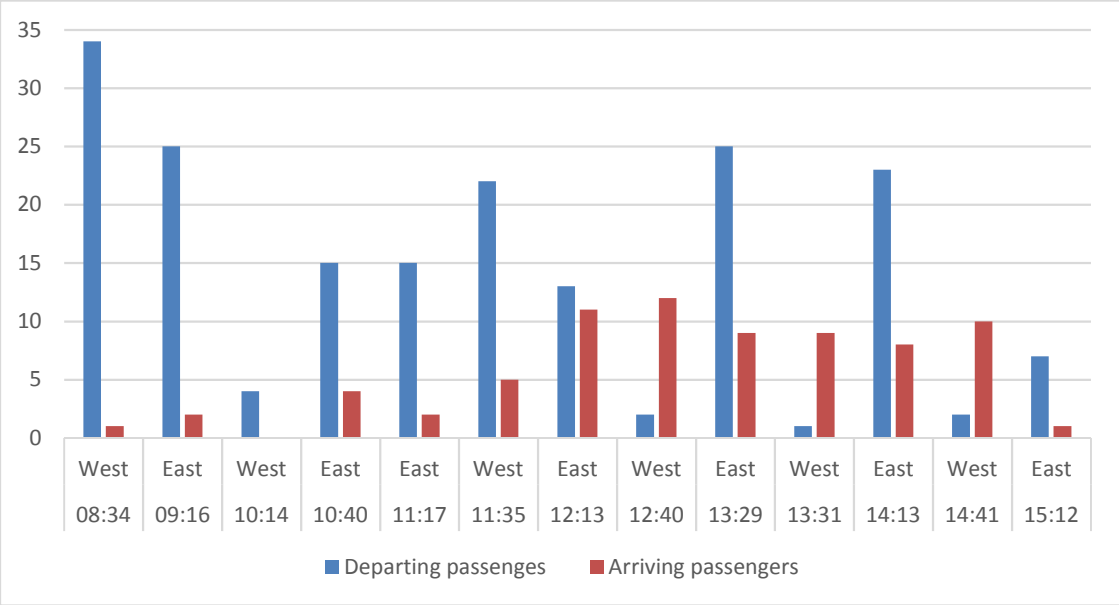

Figure Q.3: Annan Station Passenger Counts - 03/02/18

Q.3.4 Weekend demand is approximately twice as high as weekday demand at Annan. Also, throughout the week, the majority of trips to and from Annan have origins/destinations to the east (e.g. Gretna Green or Carlisle).

Q.4 Passenger Counts – Gretna Green Station

Q.4.1 A total of 146 passengers boarded trains and 69 passengers alighted trains at Gretna Green station over the 21-hour survey period.

Q.4.2 Table Q.2 summarises passenger counts at Gretna Green Station.

Table Q.2: Railway Passenger Count Summary – Gretna Green

Day	Time Period	No. Departing Passengers	No. Arriving Passengers	Origin/Destination to North
Thurs 1st Feb	0600-1300	77	28	39%
Friday 2nd Feb	0700-1400	98	41	42%
Sat 3rd Feb	0830-1530	188	74	39%

Q.4.3 Figure Q.4 to Figure Q.6 illustrate the number of passengers arriving and departing on each service.

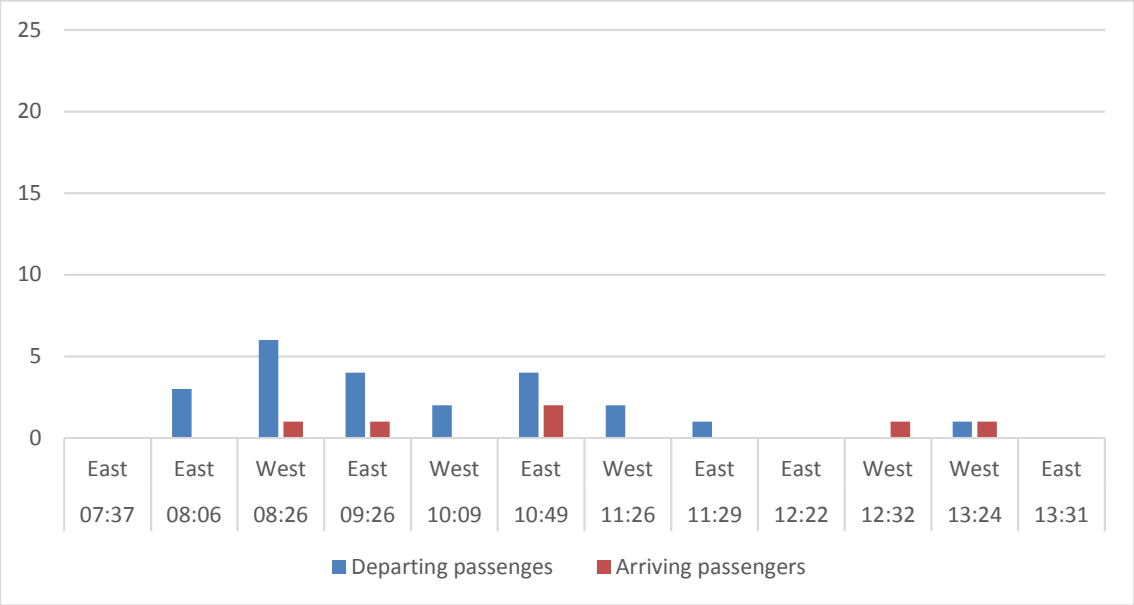

Figure Q.4: Gretna Green Passenger Count - 23/01/18

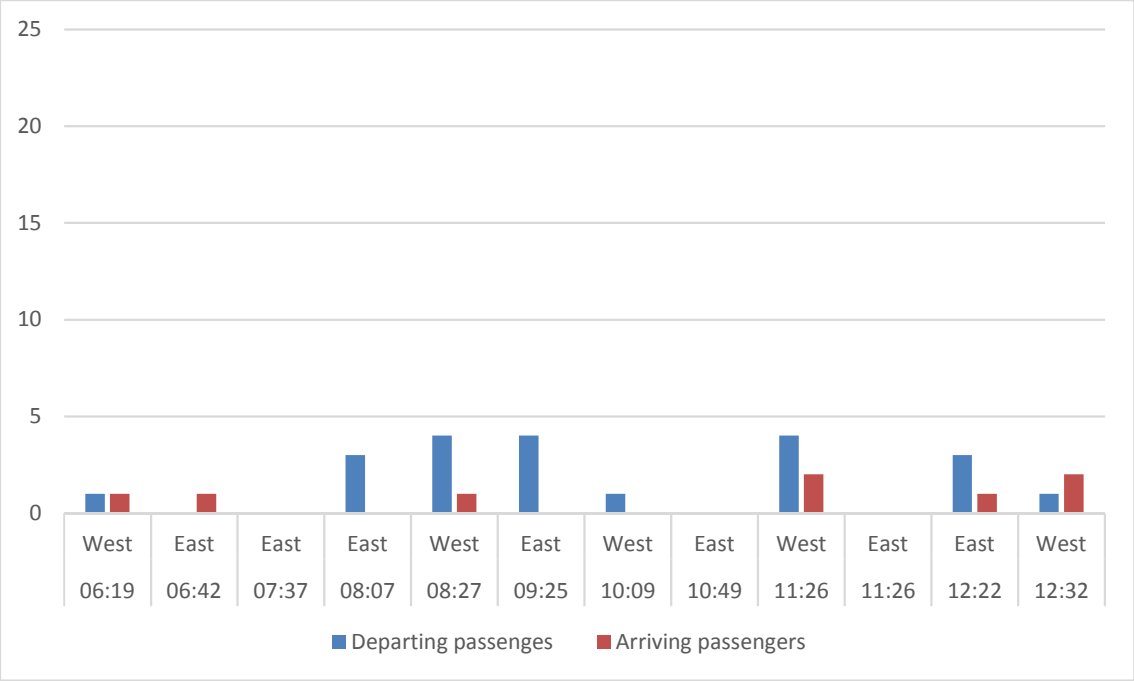

Figure Q.5: Gretna Green Passenger Count - 25/01/18

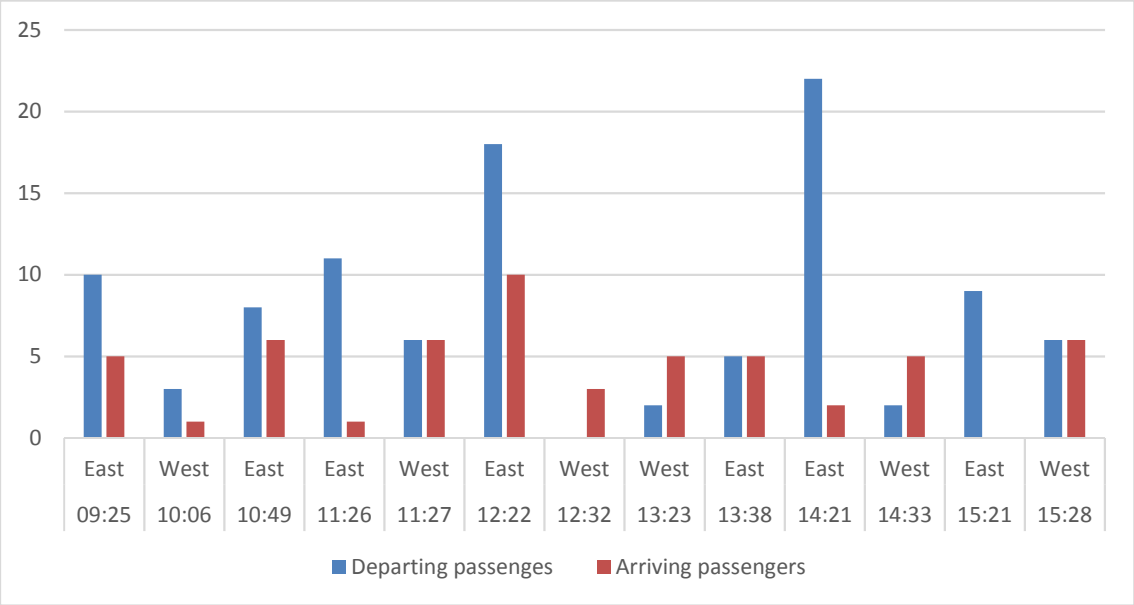

Figure Q.6: Gretna Green Passenger Count - 27/01/18

Q.4.4 Points of Note:

- Weekend (Saturday) demand was found to be approximately nine times as high as weekday demand at Gretna Green station. This is likely to at least partially reflect the draw of Gretna Green as a shopping destination.
- Passenger count surveys indicate that there is a circa 50:50 balance between travel to/from destinations to the east/west during the week, but the majority of trips are to/from destinations to the East during the weekend. However, it should be noted that these values differ from those calculated from the platform interview sample, and also those calculated from the Annan counts.
- The difference in the directional balance of trips between Annan and Gretna Green is very interesting. At a surface level, it might have been assumed that Annan would be more heavily used for trips to/from the west and Gretna Green more heavily used for trips to/from the east given their relative locations, but this is only true at the weekend.

Q.5 Platform Survey Findings – Annan

Q.5.1 Platform surveys were completed with 133 departing railway passengers at Annan railway station. However, four of the surveys had been completed with multiple errors, requiring them to be discarded, so the true sample size is 129. This represents a sample rate of 36%.

Where are you coming from and how did you access the station?

Q.5.2 Passengers were asked about how they made the journey to Annan station that day, and where they had come from. The vast majority of passengers had origins in or nearby Annan as would be expected.

Q.5.3 It was also found that 63% of passengers walk to Annan station, 26% use the car, 8% travel by taxi, 2% travel by bus and 2% cycle. Figure Q.7 shows how mode varies with origin location.

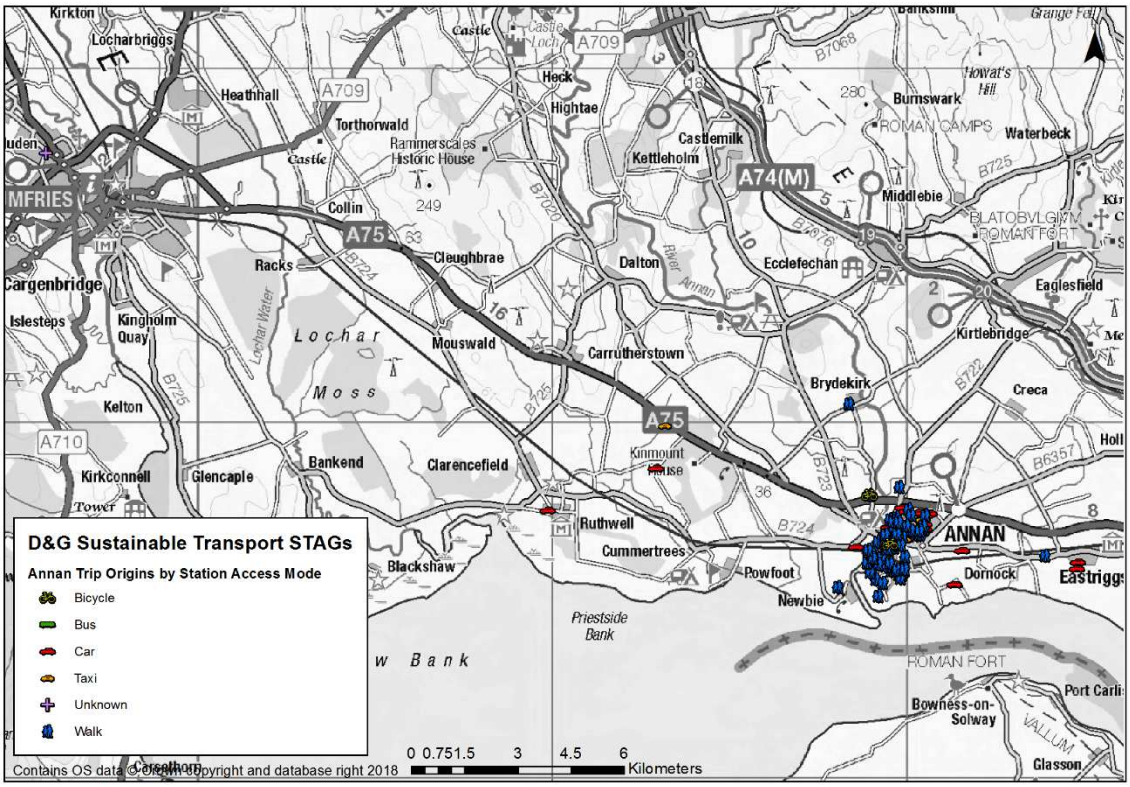

Figure Q.7: Annan Trip Origins by Station Access Mode

Q.5.4 89% of respondents noted origins within 2km of the station, suggesting a largely local catchment. Three respondents were found to be from Eastriggs.

Where are you going today?

Q.5.5 The platform surveys suggest that 40% of passengers were bound for destinations to the west of Annan and 60% to the east. This balance was consistent across all survey days and agrees with passenger counts. Carlisle was the most commonly cited destination, followed by Dumfries. Figure Q.8 compares the number of respondents noted as travelling to each location by day of the week.

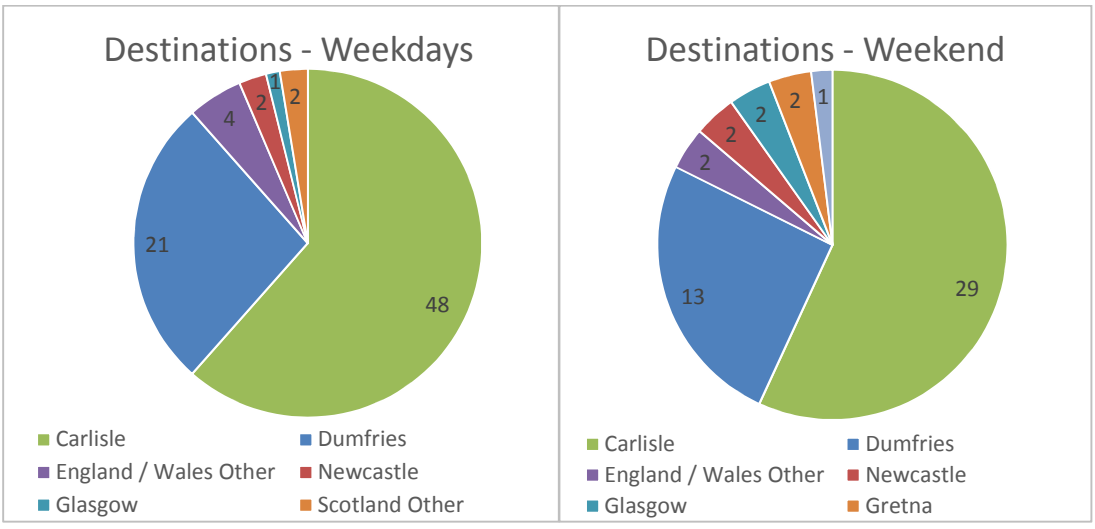

Figure Q.8: Annan Weekday Destination Split (left) and Weekend Destination Split (right)

Why are you travelling?

Q.5.6 Overall, 78% of those surveyed noted that they were travelling by rail for leisure or personal business purposes (e.g. medical appointment or grocery shopping), and 22% were travelling for work or education. As might be expected, travel purpose was found to vary by day of the week, with the proportion of trips for work/education dropping from 31% during the week to 10% at the weekend. Figure Q.9 provides a detailed breakdown of travel purposes, by weekday and weekend.

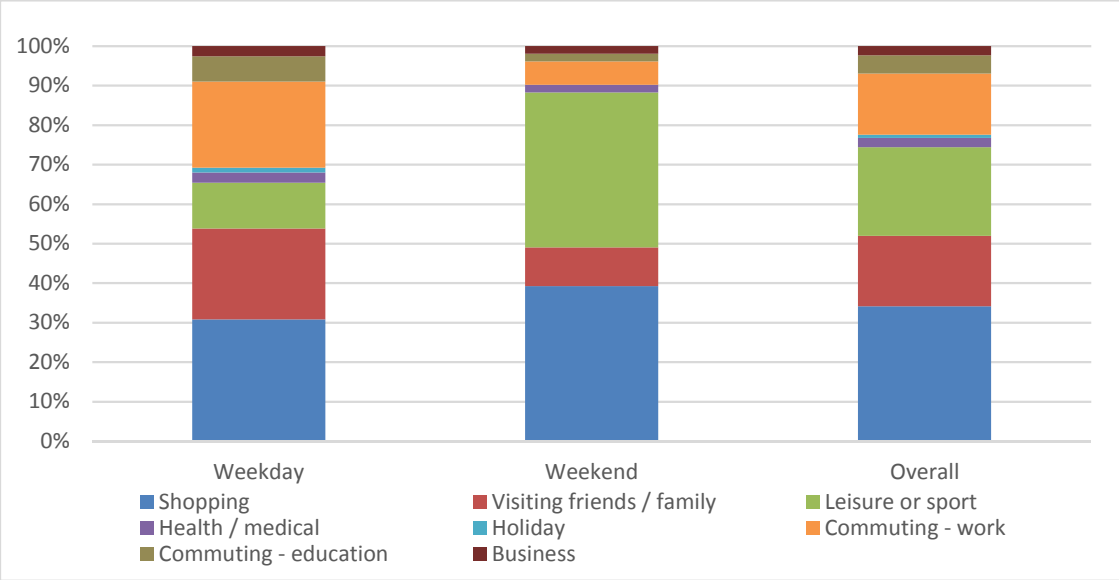

Figure Q.9: Travel Purpose across the Week

Q.5.7 Overall, shopping was the most common travel purpose during the week (31%) and it ranked equally with visiting friends / family at the weekend (both 39%).

How frequently do you make this journey?

Q.5.8 Travellers were also asked how frequently they made the journey they were embarking upon at the time of the survey. Figure Q.10 shows the number of respondents falling into each frequency bracket. It is important to note that this question only gauges how frequently respondents make the same trip that they were making at the time of survey and does not account for rail travel to other destinations.

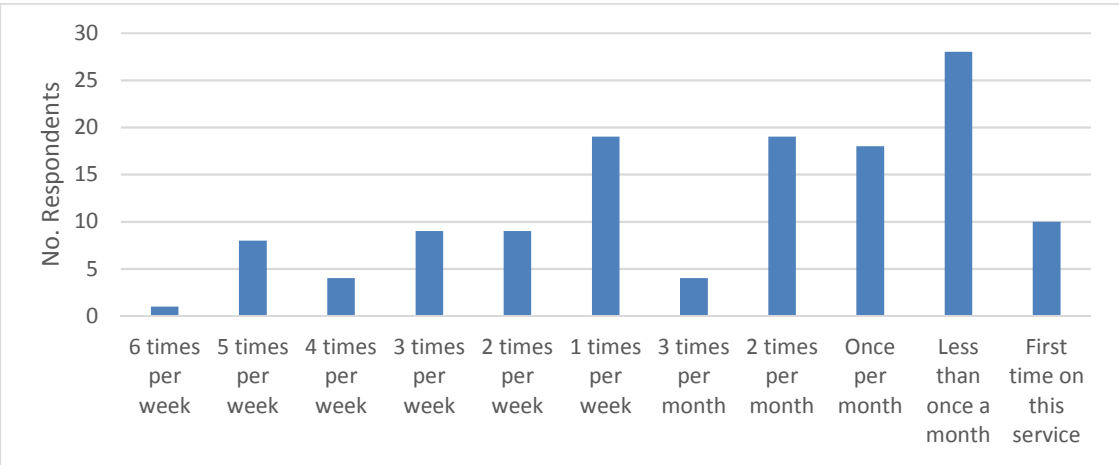

Figure Q.10: Trip Frequency at Annan Station

Q.5.9 Multiplying the number of respondents by the indicated frequency, it is estimated that the 129 respondents generate circa 6,700 outbound trips (and 6,700 inbound trips) per year. This relates to circa 102 trips (outbound + inbound) per person per year on average.

Q.5.10 Data from the Office for Rail Regulation (ORR) indicates that there were 124,398 entries and exits through Annan railway station over the period 2016-17. If the survey captured 129 passengers making circa 13,400 trips per year, that represents circa 11% of the total annual trips to/from Annan.

Q.5.11 Trip frequency is heavily influenced by trip purpose, as can be seen from Figure Q.11.

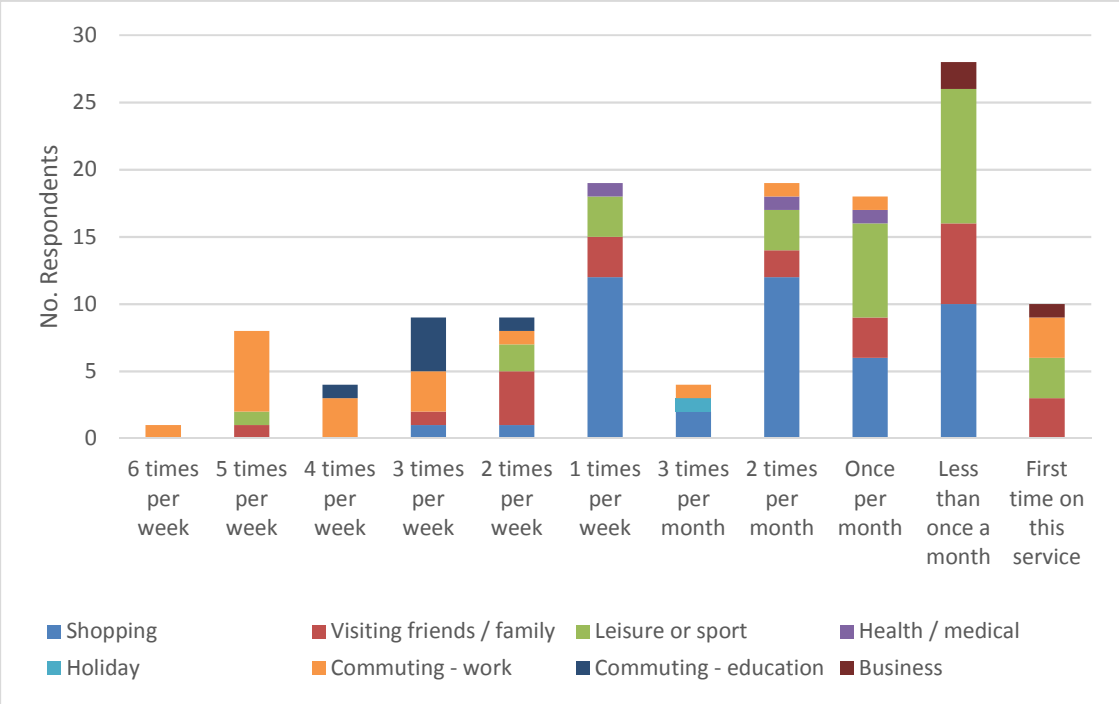

Figure Q.11: Trip Frequency by Purpose

Where else do you travel by train?

Q.5.12 The statistics above relate to how frequently passengers make that particular rail journey, but passengers were also asked about other locations they travel to by train.

Q.5.13 Figure Q.12 indicates the proportion of respondents who use the train to travel to each of the listed destinations. This takes account of the rail journey that travellers were making at the time of the survey in addition to wider rail travel. More than half of respondents noted that they travel by rail to Carlisle (84%) and Dumfries (57%). Glasgow Central was also a commonly cited rail destination at 48%.

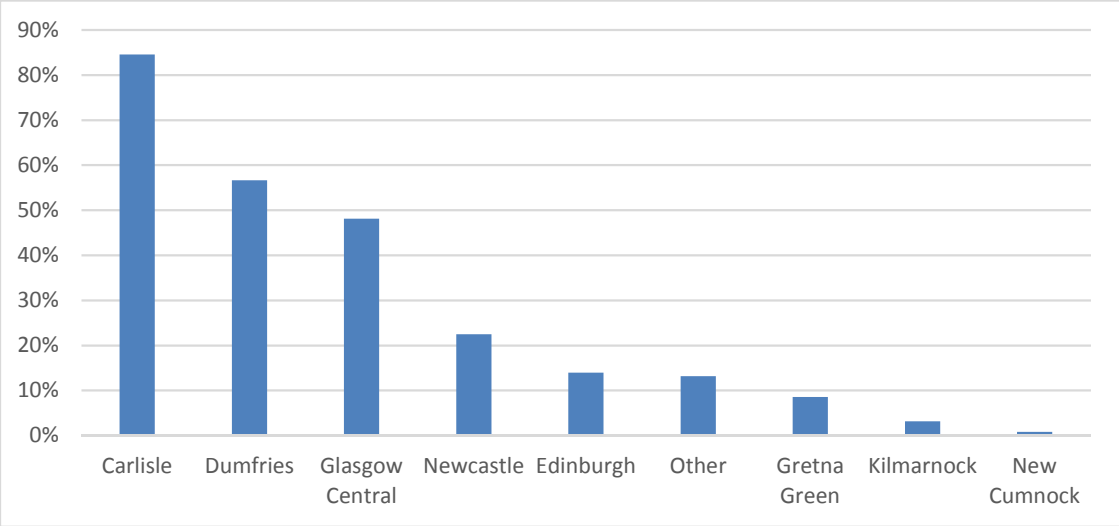

Figure Q.12: Proportion of Respondents Who Use the Train to access each Destination

Why did you choose to travel by train?

Q.5.14 Travellers were also asked about their reasons for using the train. The most common responses included:

- Quicker (48%);
- Cheaper (33%);
- Convenience (33%); and
- Other (16%) – of which the most common answers were 'Drinking Alcohol' (6%) and 'No Parking Needed' (3%).

How would you have made this journey, if the train was not running?

Q.5.15 Approximately 40% of respondents explained that they would have taken the bus if the train was not running, while 29% would have driven and 26% would not have travelled. The remainder would have used another station (e.g. Lockerbie), travelled by taxi or cycled.

What is your employment status?

Q.5.16 Respondents were also asked about their employment status. Figure Q.13 provides a detailed breakdown of employment statuses. Overall, 64% were in employment, 5% in higher/further education and the remainder were not working.

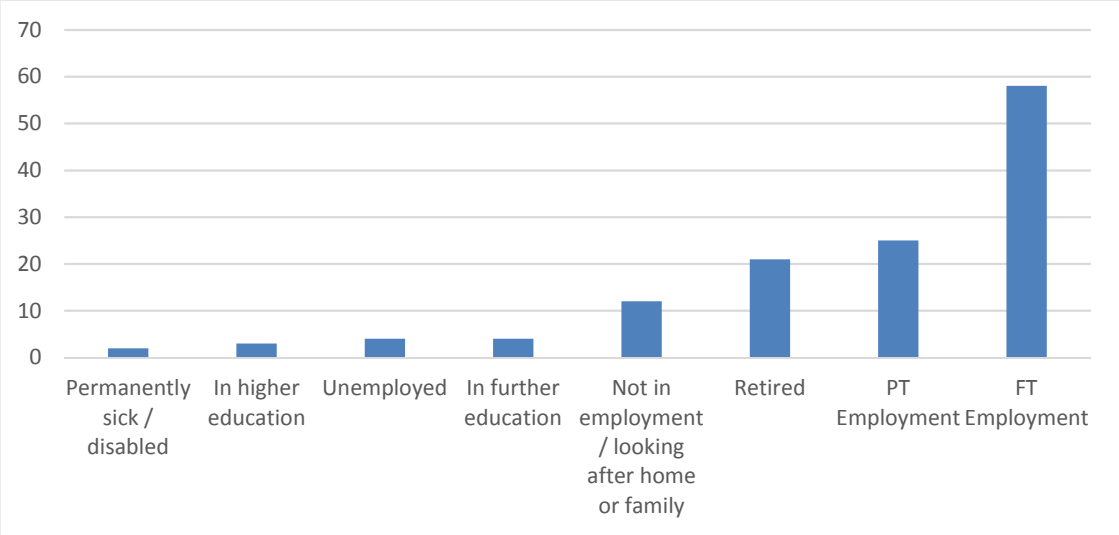

Figure Q.13: Employment Status of Survey Respondents

How many cars are there in your household?

Q.5.17 The 2011 census shows that approximately 70% of households in Annan have one or more cars/vans available. The platform survey found that approximately 57% of Annan railway station users have access to a car.

Do you hold a National Entitlement Card (bus pass)?

Q.5.18 17 of the 129 respondents (13%) explained that they hold a National Entitlement Card.

Q.6 Platform Survey Findings – Gretna Green

Q.6.1 Platform surveys were also completed with 31 departing railway passengers at Gretna Green railway station. This represents a sample rate of 21%.

Where are you coming from?

Q.6.2 Passengers were asked about how they made the journey to Gretna Green station. 25 out of 31 respondents came from origins in and around Gretna, and one respondent also came from each of the following locations: Kirkpatrick Fleming, Longtown, Canonbie, Eastriggs, Carlisle and Annan.

Q.6.3 For all but five respondents their origin location was their home. Again, this suggests a predominantly local catchment area.

How did you travel to Gretna Green station?

Q.6.4 Of those who provided an answer to this question, 65% indicated that they walked to Gretna Green station and the remainder travelled by car. Figure Q.14 illustrates how mode varies with origin location.

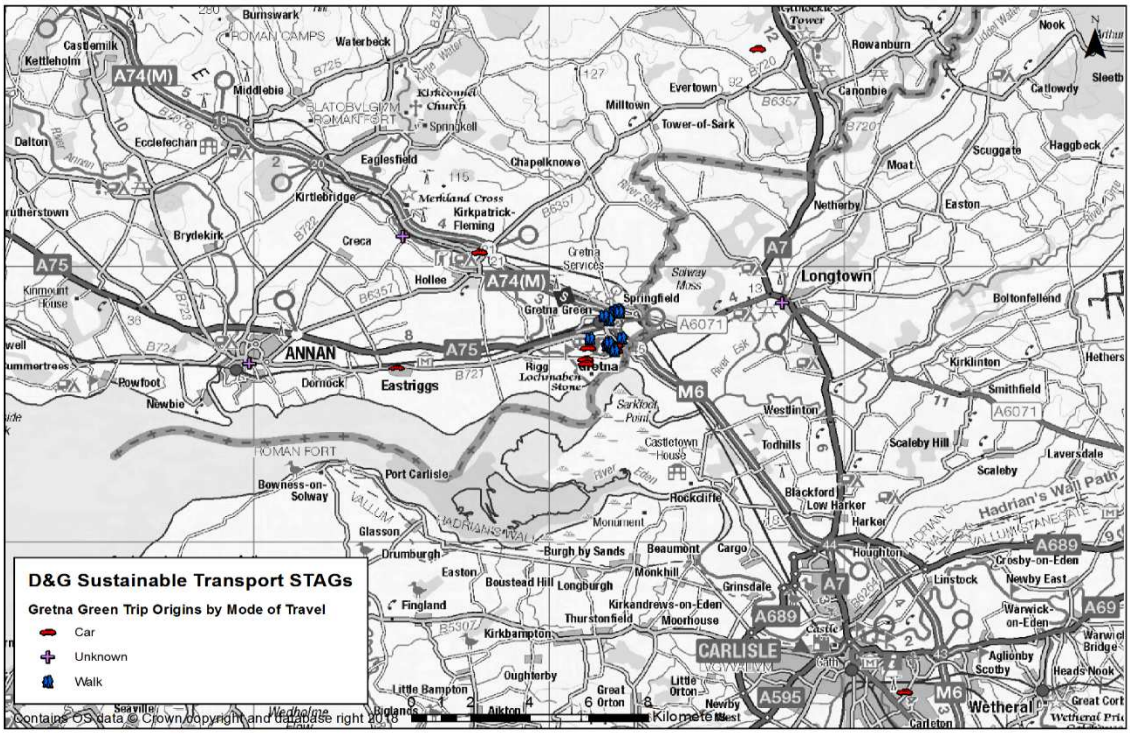

Figure Q.14: Gretna Green Trip Origins by Station Access Mode

Q.6.5 77% of respondents noted origins with 2km of the station, again suggesting a predominantly local catchment.

Where are you going today?

Q.6.6 The platform surveys suggest that 35% of passengers were bound for destinations to the west of Gretna Green (e.g. Annan or Dumfries) and 65% to the east/south (e.g. Carlisle). This balance varied from circa 30:70 during the week to 40:60 at the weekend. Figure Q.15 compares the number of respondents noted as travelling to each location by day of the week.

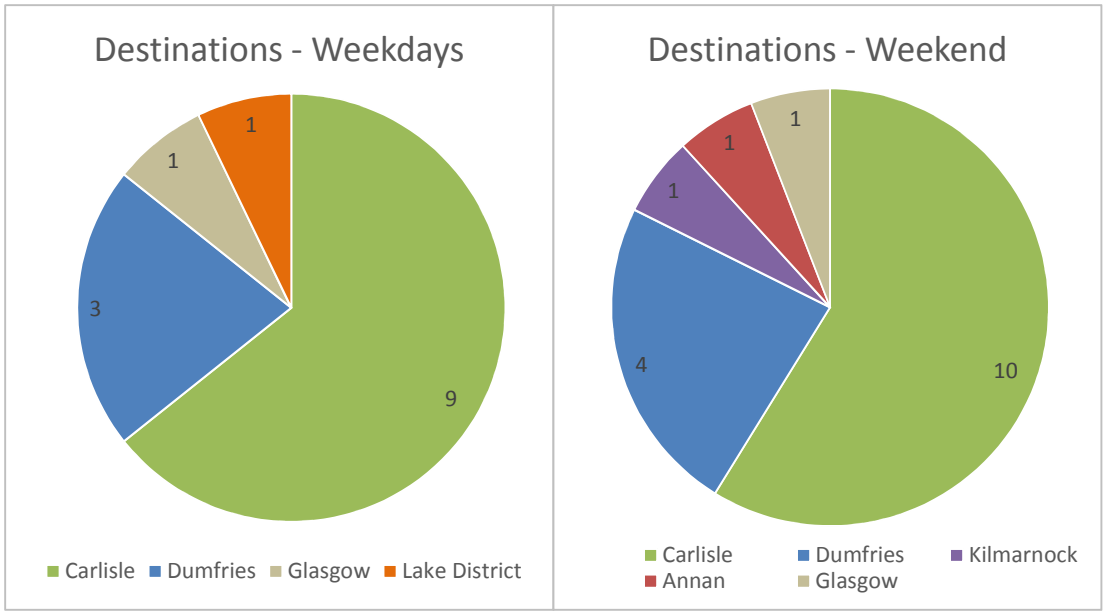

Figure Q.15: Weekday Destination Split (left) and Weekend Destination Split (right)

Q.6.7 The most common destinations from Gretna Green are Carlisle then Dumfries. Overall, it seems that passengers are slightly more likely to make a longer journey at the weekend.

Why are you travelling?

Q.6.8 At Gretna Green travel purpose varies strongly with day of the week. During the week, 57% of trips are made for the purposes of commuting to work or education, and 43% for leisure or personal business purposes (e.g. medical appointment or grocery shopping). Whereas at the weekend, commuter movements make up only 4% of trips and the remainder are made for leisure or personal business purposes. This highlights an active commuter market in Gretna Green.

Q.6.9 Figure Q.16 provides a detailed breakdown of travel purposes, by weekday and weekend.

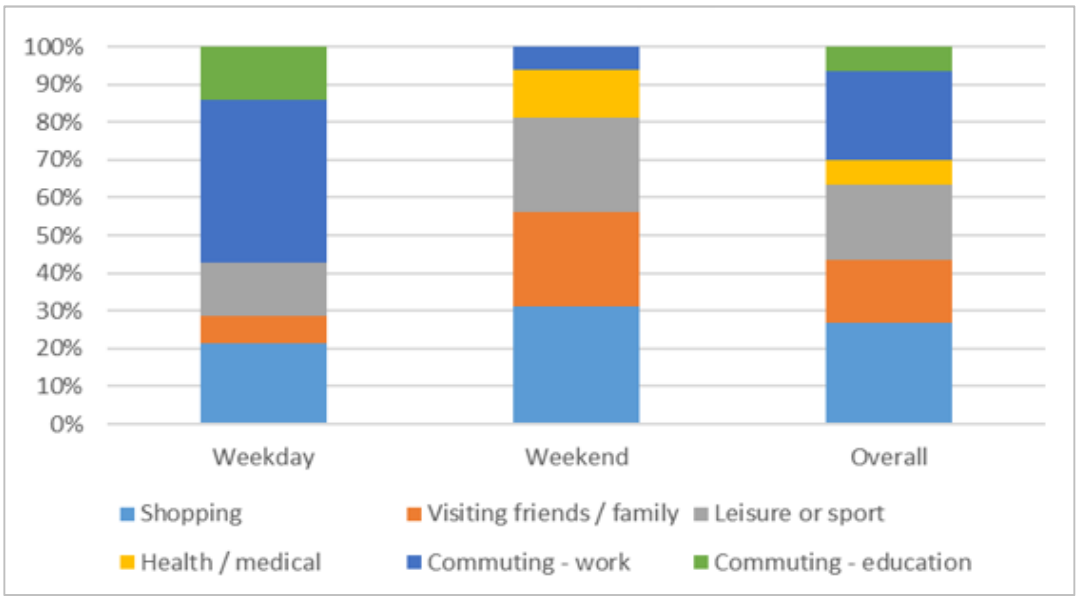

Figure Q.16: Travel Purpose across the Week

Q.6.10 Overall, commuting to work was the most common travel purpose during the week (43%) and shopping was the most common travel purpose at the weekend (both 31%).

Q.6.11 Of those commuting to work or education, 5 had a destination in Carlisle, 3 had a destination in Dumfries and one had a destination in the Lake District.

How frequently do you make this journey?

Q.6.12 Travellers were also asked how frequently they made the journey they were embarking upon at the time of the survey. Figure Q.17 shows the number of respondents falling into each frequency bracket. It is important to note that this question only gauges how frequently respondents make the same trip that they were making at the time of survey and does not account for rail travel to other destinations.

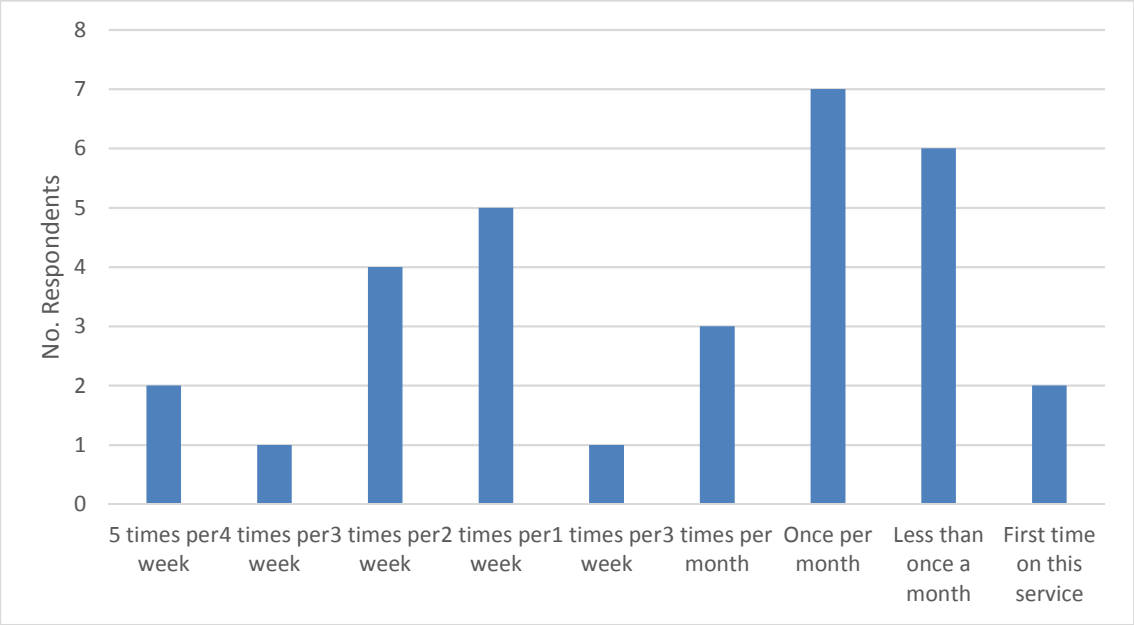

Figure Q.17: Trip Frequency at Gretna Green Station

Q.6.13 Multiplying the number of respondents by the indicated frequency, it is estimated that the 31 respondents generate circa 1900 outbound trips (and 1900 inbound trips) per year. This relates to circa 124 trips (outbound + inbound) per person per year on average.

Q.6.14 Data from the Office for Rail Regulation (ORR) indicates that there were 39,042 entries and exits through Gretna Green railway station over the period 2016-17. If the survey captured 31 passengers making circa 3,800 trips per year, that represents circa 10% of the total annual trips to/from Gretna Green.

Q.6.15 Trip purpose is heavily influenced by frequency, as can be seen from Figure Q.18.

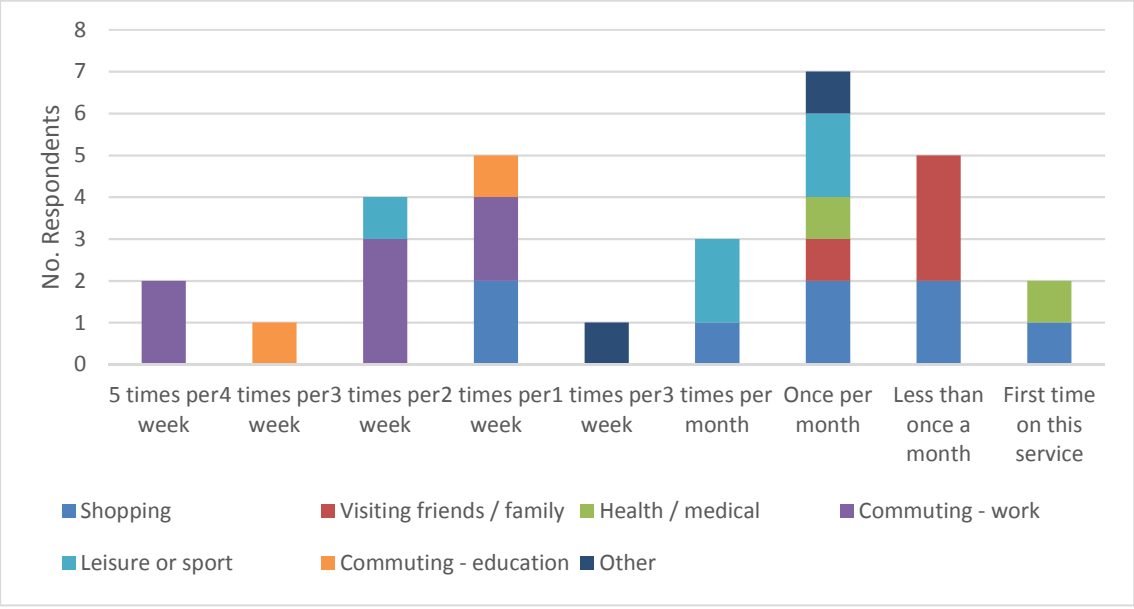

Figure Q.18: Trip Frequency by Purpose

Where else do you travel by train?

Q.6.16 The statistics above relate to how frequently passengers make the particular rail journey they were undertaking on the day of survey, but passengers were also asked about other locations they travel to by train.

Q.6.17 Figure Q.19 indicates the proportion of respondents who use the train to travel to each of the listed destinations. This takes account of the rail journey that travellers were making at the time of the survey in addition to wider rail travel. More than half of respondents noted that they travel by rail to Carlisle (71%), and nearly 40% use the train to travel to Dumfries and Glasgow (39%).

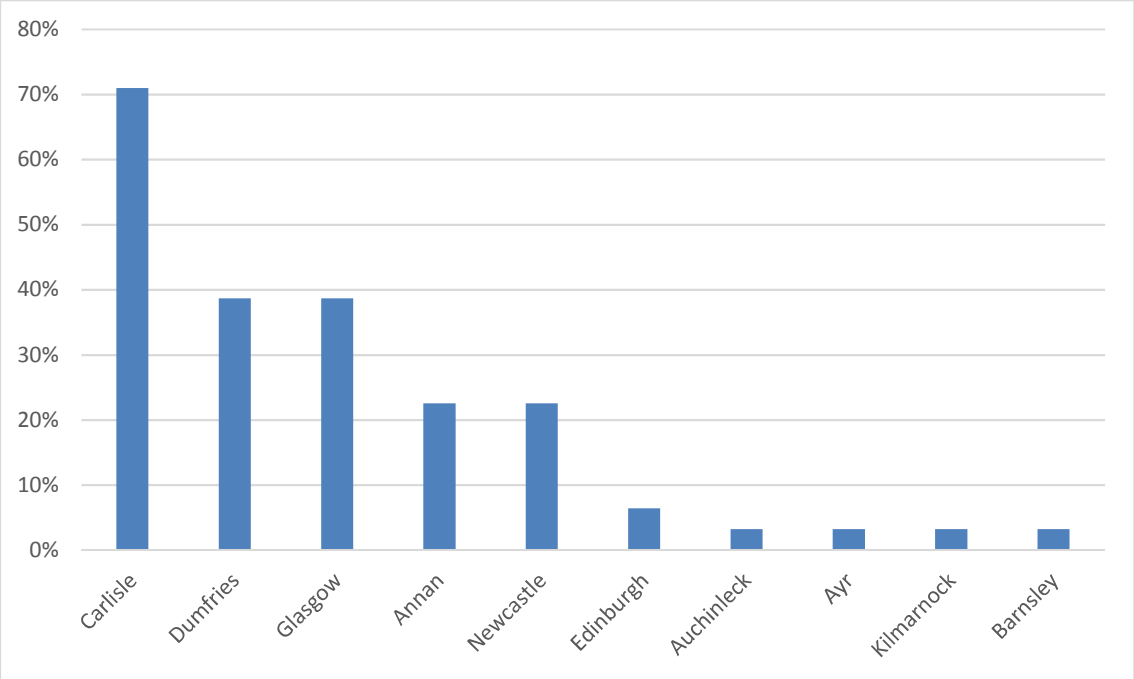

Figure Q.19: Proportion of Respondents Who Use the Train to access each Destination

Why did you choose to travel by train?

Q.6.1 Travellers were also asked about their reasons for using the train. The most common responses included:

- Quicker (48%);
- Convenience (23%);
- No access to car (10%);
- Cheaper (10%); and
- Easier to access (10%).

How would you have made this journey, if the train was not running?

Q.6.2 Approximately 50% of respondents explained that they would have taken the bus if the train was not running, while 37% would have driven, 10% would not have travelled and 3% would have taken a taxi.

What is your employment status?

Q.6.3 Respondents were also asked about their employment status. Figure Q.20 provides a detailed breakdown of employment statuses. Overall, 80% were in employment, 7% in further education and the remainder were unemployed or retired. One respondent did not answer this question.

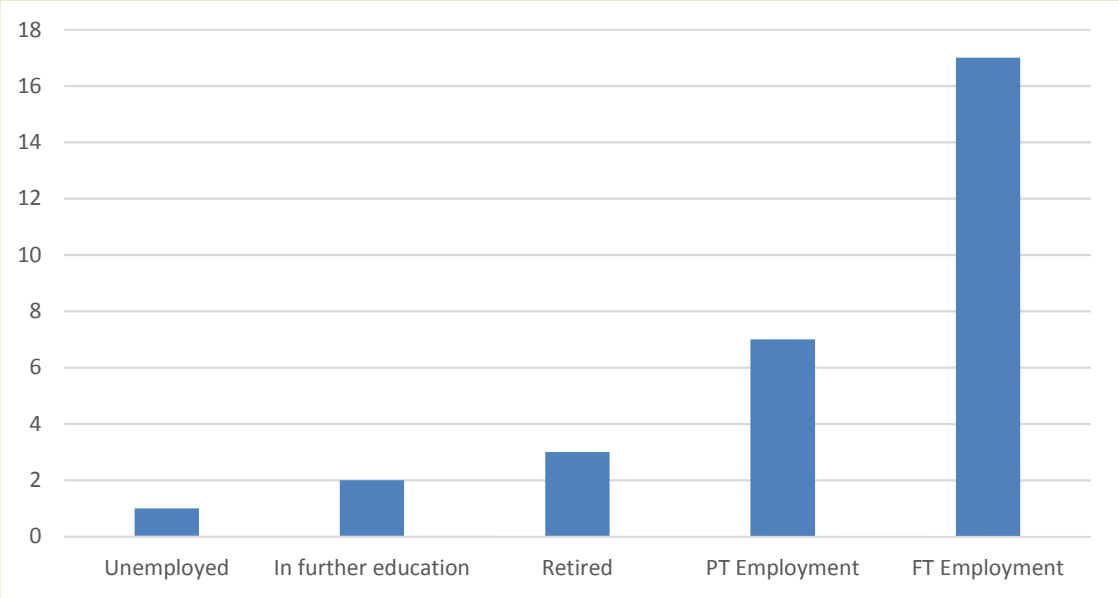

Figure Q.20: Employment Status of Survey Respondents

How many cars are there in your household?

Q.6.4 The 2011 census shows that approximately 78% of households in Gretna have one or more cars/vans available. Similarly, the platform survey found that among Gretna Green railway station users, approximately 80% had access to a car.

Do you hold a National Entitlement Card (bus pass)?

Q.6.5 3 of the 31 respondents (10%) explained that they held a National Entitlement Card.

Q.7 Online Survey Findings – Gretna

Q.7.1 Leaflets were posted to all properties in Gretna requesting that residents complete an online survey regarding their usage of Gretna Green railway station. Three surveys were completed, and Gretna is home to approximately 1,370 households (2011 census).

How do you access Gretna Green Station?

Q.7.2 All three respondents said that they walk to Gretna Green station.

Where do you travel to by train?

Q.7.3 The survey asked respondents which locations they commonly travel to by rail. Two of the three respondents noted that their most commonly visited location was Carlisle when travelling by train, and the other said Dumfries.

Q.7.4 All respondents indicated that at times they use the train to travel to Carlisle, two use it to travel to Dumfries and one also travels by rail to Glasgow.

What is the typically the purpose of your rail trips?

Q.7.5 Two of the respondents noted that their most frequently made rail trips were for the purposes of commuting to work, and one respondent indicated they most frequently travelled by rail to attend music/arts events.

How frequently do you travel by rail?

Q.7.6 None of the respondents answered the question on trip frequency.

Why did you choose to travel by train?

Q.7.7 Travellers were also asked about their reasons for using the train. The most commonly cited reasons were:

- Quicker (2 respondents);
- Cheaper (2 respondents); and
- Convenience (2 respondents).

If rail was not an option for accessing the destination of your most frequent rail trips, how would you travel?

Q.7.8 75% of respondents said that they would drive if rail was not an option, and 25% say they would not travel.

What is your employment status?

Q.7.9 Respondents were also asked about their employment status. Two noted that they were in full-time employment, and one that they were retired.

How many cars are there in your household?

Q.7.10 One respondent noted that there were 2 cars in their household, another said there was one car in their household and the third respondent indicated that there were no cars in their household.

Do you hold a National Entitlement Card (bus pass)?

Q.7.11 None of the respondents noted that they hold a National Entitlement Card.

Q.8 Key Findings

Annan

Q.8.1 This section highlights some of the key findings from the surveys undertaken at Annan railway station.

- Weekend demand is approximately twice as high as weekday demand.
- Throughout the week, the majority of trips to/from Annan are made to destinations in the east (e.g. Carlisle).
- Approximately 89% of respondents reported origins within 2km. This shows that the catchment area is predominantly local.

- The majority of respondents walked to Annan station (63%) and circa 26% used the car.
- 78% of rail trips recorded from Annan were being made for leisure or personal business purposes, and 22% for the purposes of commuting to work or education.
- 60% of respondents surveyed were found to be en-route to Carlisle and 26% were en-route to Dumfries.
- Overall, more than half of respondents also report using the train at some point to travel to Carlisle (84%) and Dumfries (57%), and approximately 48% use the train for trips to Glasgow.
- The most commonly cited reason for using the train is that it is quicker than other options (48% of respondents).
- Platform surveys suggest that Annan rail users undertake an average of 2.3 rail trips per week (outbound + inbound).
- Approximately 65% of respondents were in employment, and approximately 35% were not.
- Respondents were less likely to have access to a car than the Annan average – 57% of respondents have one or more cars in their household versus the Annan average of 70%.

Gretna Green

Q.8.2 This section highlights some of the key findings from the surveys undertaken at Gretna Green railway station. We focus upon the passenger count and platform surveys due to concerns surrounding the representativeness of the very small online survey sample.

- Weekend demand at Gretna Green Station is approximately nine times as high as weekday demand. This is very high compared to the difference seen at other stations locally, and possibly reflects the attractiveness of Gretna Green as a shopping destination.
- Approximately 77% of respondents reported origins within 2km of the station. This shows that the catchment area is predominantly local, although to a lesser degree than Annan.
- The majority of respondents walked to Gretna Green station (65%) and the remainder travelled by car.
- 78% of rail trips recorded from Annan were being made for leisure or personal business purposes, and 22% for the purposes of commuting to work or education.
- 61% of respondents were found to be en-route to Carlisle, and 22% were en-route to Dumfries. These values are very similar to those recorded at Annan station.
- Overall, more than half of respondents also report using the train at some point to travel to Carlisle (71%), while 39% also report using the train to access Dumfries and Glasgow respectively.
- The most commonly cited reason for using the train is that it is quicker than other options (48% of respondents).
- Approximately 80% of respondents indicated that they were in employment, and remainder stated that they were either retired (10%), in education (7%) or unemployed (3%).
- 80% of respondents have one or more cars in their household. This aligns closely with the Gretna average of 78% (2011 census).

Appendix R Part 2: Transport Planning Objectives Appraisal

R.1 Transport Planning Objectives

R.1.1 Three transport planning objectives have been set for the study:

- **TPO 1:** Reduce public transport journey times to improve access to key, commutable employment and educational centres from Eastriggs
- **TPO 2:** Provide public transport connectivity which enables travel to and from the area across the day and across the week

R.2 Transport Planning Objective 1: Appraisal

Reduce public transport journey times to improve access to key, commutable employment and educational centres from Eastriggs

R.2.1 In order to appraise the options, TRACC accessibility software was utilised assess the number of jobs accessible from Eastriggs within 30 minutes, 45 minutes and 60 minutes, during both the morning (08:00 – 12:00) and evening (16:00 – 20:00) periods.

R.2.2 For comparison purposes the same analysis was undertaken or Annan and Gretna.

Option 1a

R.2.3 The results of the assessment for Option 1a are shown in Table R.1. Note that TRACC provides the fastest journey time available by public transport between the origins and destinations in the time period considered.

Table R.1: Appraisal against TPO1 – Option 1a

		Number of jobs within reach from…								
		Eastriggs			Annan			Gretna		
	Within	Existing Situation	With Option	% Difference	Existing Situation	With Option	% Difference	Existing Situation	With Option	% Difference
08:00 - 12:00	30 mins	5,733	5,733	***0%***	6,405	6,405	***0%***	12,141	12,141	***0%***
	45 mins	18,153	18,153	***0%***	29,166	30,840	***5%***	37,706	37,706	***0%***
	60 mins	48,053	49,727	***3%***	62,226	62,226	***0%***	63,444	63,444	***0%***
16:00 - 20:00	30 mins	5,733	5,733	***0%***	6,405	6,405	***0%***	11,694	11,694	***0%***
	45 mins	14,726	15,338	***4%***	29,166	29,166	***0%***	34,037	34,037	***0%***
	60 mins	42,545	44,219	***4%***	62,226	62,226	***0%***	68,462	68,462	***0%***

7.4.8 Option 1a provides direct access to the WCML through a direct bus connection to Lockerbie station. When considering access to jobs however, a maximum commute time of 60 minutes has been utilised as an upper bound. As such, increased access to jobs in Edinburgh and Glasgow has not been considered as the travel time to these two locations would be well outwith the 60-minute band. There is an approximate increase of 3-4% in the number of jobs accessible from Eastriggs in the morning and evening period. This is likely due to the increased access to jobs in Lockerbie.

R.2.4 The option therefore provides a positive benefit against this TPO.

Option 3

R.2.5 The results of the assessment for Option 3 are shown in Table R.2. Note that TRACC provides the fastest journey time available by public transport between the origins and destinations in the time period considered.

Table R.2: Appraisal against TPO1 – Option 3

		Number of jobs within reach from…								
		Eastriggs			Annan			Gretna		
	Within	Existing Situation	With Option	% Difference	Existing Situation	With Option	% Difference	Existing Situation	With Option	% Difference
08:00 - 12:00	30 mins	5,733	5,733	***0%***	6,405	6,405	***0%***	12,141	12,403	***2%***
	45 mins	18,153	18,153	***0%***	29,166	29,166	***0%***	37,706	38,840	***3%***
	60 mins	48,053	49,557	***3%***	62,226	62,226	***0%***	63,444	63,444	***0%***
16:00 - 20:00	30 mins	5,733	5,733	***0%***	6,405	6,405	***0%***	11,694	11,956	***2%***
	45 mins	14,726	14,726	***0%***	29,166	29,166	***0%***	34,037	35,171	***3%***
	60 mins	42,545	45,183	***6%***	62,226	62,226	***0%***	68,462	69,355	***1%***

R.2.6 The analysis shows the increased access to jobs from Eastriggs, within the 45 – 60 minute time range, indicative of the increased access to jobs in Carlisle. Note there is also a benefit for Gretna and Annan, given the route of the express service also passes through these communities.

R.2.7 The option therefore provides a positive benefit against this TPO.

Option 6

R.2.8 The results of the assessment for Option 6 are shown in Table R.3. Note that TRACC provides the fastest journey time available by public transport between the origins and destinations in the time period considered.

Table R.3: Appraisal against TPO1 – Option 6

		Number of jobs within reach from…								
		Eastriggs			Annan			Gretna		
	Within	Existing Situation	With Option	% Difference	Existing Situation	With Option	% Difference	Existing Situation	With Option	% Difference
08:00 - 12:00	30 mins	5,733	8,977	***36%***	6,405	6,405	***0%***	12,141	12,141	***0%***
	45 mins	18,153	41,826	***57%***	29,166	25,997	***-12%***	37,706	38,180	***1%***
	60 mins	48,053	69,379	***31%***	62,226	61,554	***-1%***	63,444	63,159	***0%***
16:00 - 20:00	30 mins	5,733	12,041	***52%***	6,405	6,405	***0%***	11,694	11,694	***0%***
	45 mins	14,726	43,369	***66%***	29,166	25,997	***-12%***	34,037	34,037	***0%***
	60 mins	42,545	79,528	***47%***	62,226	61,554	***-1%***	68,462	65,299	***-5%***

R.2.9 It can be seen from the results that:

- There is a significant increase in the number of jobs accessible from Eastriggs in both the morning and evening periods, highlighting the much improved accessibility to employment opportunities with the rail station in place; and
- The alternations to the rail timetable to accommodate Eastriggs cause some decrease to the number of jobs accessible from Annan and Gretna (due to missed connections from changes in the rail timetable), especially those for Annan in the morning period between 30 and 60 minutes away, which are now in the 45-minute bracket.

R.2.10 The option provides a major positive benefit in terms of this TPO when considering the accessibility of employment from Eastriggs, but the reduction in accessibility from Annan should be noted. However, the rail timetable is only altered at Annan by 2 minutes, and as such, the changes in accessibility are likely due to the public transport journey time from Annan to employment in Carlisle just 'tipping' over the 60-minute band and not a wholescale significant reduction in access to jobs through lost connectivity.

R.3 Transport Planning Objective 2: Appraisal

Provide public transport connectivity which enables travel to and from the area across the day and across the week

R.3.1 This TPO has been assessed through consideration of:

- For Option 1a:
  - The earliest available northbound connections **from** Eastriggs in both the existing and 'with option' situations; and
  - The latest available southbound connections **to** Eastriggs from Lockrebie in both the existing and 'with option' situations.
- For Options 3 and 6:
  - The earliest available eastbound and westbound connections **from** Eastriggs to Dumfries / Carlisle in both the existing and 'with option' situations; and

- The latest available eastbound and westbound connections **to** Eastriggs from Dumfries / Carlisle in both the existing and 'with option' situations.

- The results of the appraisal are set out in For access to Dumfries:

  - Only a 30-minute increase in operating hours on Monday to Saturday but with 18 new connections;

  - No increase in operating hours on a Sunday but with 5 new connections;

- For access to Carlisle:

  - Over a 2-hour increase in the operating hours on a Monday to Saturday with 16 new connections;

  - A very marginal increase in operating hours on a Sunday, with an additional 5 connections.

R.3.2 Table R.4. Note that for Option 1a the analysis considers access to Lockerbie, given the remit of the option.

The analysis shows:

- Option 1a provides new direct connections to Lockerbie with operating hours across the day of nearly 15 hours Monday to Friday, over 14 hours on a Saturday and nearly 11 hours on a Sunday;

- Option 3 providing:

  - For access to Dumfries:

    - No increase in the operating hours on a Monday to Saturday but with seven new connections;

    - An increase in operating hours of 90 minutes on a Sunday, at the start of the day, allowing access to Dumfries much earlier and with an additional three connections.

  - For access to Carlisle:

    - No increase in the operating hours on a Monday to Saturday but with ten new connections;

    - An increase in operating hours of over 3 hours on a Sunday, mostly extending the operating day into the evening, allowing access back from Carlisle much later and with an additional three connections.

- Option 6 providing:

  - For access to Dumfries:

    - Only a 30-minute increase in operating hours on Monday to Saturday but with 18 new connections;

    - No increase in operating hours on a Sunday but with 5 new connections;

  - For access to Carlisle:

- Over a 2-hour increase in the operating hours on a Monday to Saturday with 16 new connections;
- A very marginal increase in operating hours on a Sunday, with an additional 5 connections.

Table R.4: Appraisal against TPO2 – All options

		Scenario	Earliest Departure From	Latest Arrival Back	Operating Hours	Change in Operating Hours from Existing	Number of connections	Change in number of connections from existing
Northbound (to/from Lockerbie)	Monday	Existing	N/A	N/A	N/A	-	0	-
		1a	06:20	21:17	14:57	14:57	13	13
	Saturday	Existing	N/A	N/A	N/A	-	0	-
		1a	06:20	20:39	14:19	14:19	12	12
	Sunday	Existing	N/A	N/A	N/A	-	0	-
		1a	09:32	20:19	10:47	10:47	11	11
Westbound (to/from Dumfries)	Monday to Saturday	Existing	06:10	22:45	16:35	-	15	-
		3	06:10	22:45	16:35	00:00	22	7
		6	05:48	23:01	17:13	00:38	33	18
	Sunday	Existing	11:00	22:45	11:45	-	6	-
		3	09:30	22:45	13:15	01:30	9	3
		6	11:00	22:45	11:45	00:00	11	5
Eastbound (to/from Carlisle)	Monday to Saturday	Existing	06:00	21:57	15:57	-	28	-
		3	06:00	21:57	15:57	00:00	38	10
		6	05:05	23:10	18:05	02:08	44	16
	Sunday	Existing	09:50	21:10	11:20	-	7	-
		3	09:10	23:35	14:25	03:05	10	3
		6	09:50	21:26	11:36	00:16	12	5

Appendix S Part 2: Environmental Appraisal

S.1 Methodology

S.1.1 In order to provide a consistent and 'nested' approach to environmental appraisal in the local authority area, this appraisal has also utilised the framework developed for the Strategic Environmental Assessment of Dumfries and Galloway Council Local Development Plan 2 (LDP2)[18], published in 2017. This provides an additional robust and means tested framework that has been developed specifically for the local area. This assessment process also forms an appropriate starting point should any of the options require an Environmental Impact Assessment (EIA) or Strategic Environmental Assessment (SEA) at a later stage.

S.1.2 To assist with the LDP2 SEA assessment process, objectives were identified for each SEA topic to be considered when seeking to reach a conclusion on the potential impact of each strand of the LDP2 strategy. These objectives were identified through an analysis of the environmental problems, baseline data and other relevant plans, programmes and environmental protection objectives, and finalised through consultation with the relevant authorities.

S.1.3 This analysis considers the potential impact of each transport option under the STAG criteria and against the LDP2 objectives. The full assessment framework is presented in Table S.1

Table S.1: STAG Environmental Appraisal Criteria and LDP objectives

STAG Criteria	LDP Topic	Objective
Noise and vibration	N/A	▪ N/A
Global air quality – carbon dioxide (CO2)	Climatic Factors	▪ To contribute to the reduction of greenhouse gases and reduce energy consumption ▪ To promote sustainable energy technologies and energy efficiency ▪ To minimise / reduce the need for travel by car
Local air quality – particulates (PM10) and nitrogen dioxide (NO2)	Air Quality	▪ To maintain and, where possible, improve air quality
Water quality; drainage and flood defence	Water	▪ To manage and reduce flood risk and to support opportunities to do so through sustainable flood management (SuDS) ▪ To protect and enhance the state of the water environment

[18] Dumfries and Galloway Council Local Development Plan 2. Environment Report. January 2017

STAG Criteria	LDP Topic	Objective
Geology	N/A	▪ N/A
Biodiversity and habitats	Biodiversity, Flora and Fauna	▪ To conserve and enhance biodiversity
Landscape	Landscape	▪ To protect and enhance the character, distinctiveness and diversity of the region's landscape. ▪ To protect and enhance the landscape setting of settlements plus the landscape and scenic qualities of designated landscapes, areas of wild land, and important views
Visual amenity	N/A	▪ N/A
Agriculture and soils	Soil	▪ To safeguard the soil quality, geodiversity and improve contaminated land ▪ To reduce negative effects on peat and carbon rich soils ▪ To reduce and minimise soil and coastal erosion
Cultural Heritage	Cultural Heritage	▪ To protect and enhance the region's rich built and historic environment including its setting
Physical Fitness	Population & Human Health	▪ To improve the quality of life, human health, well-being and inclusion for all ▪ To increase the opportunities for access to, and enjoyment of, greenspaces and the wider landscape ▪ To encourage development within areas which are easily accessible by public transport as well as having

STAG Criteria	LDP Topic	Objective
		good pedestrian and cycle linkages
N/A	Material Assets	▪ To manage, maintain and promote the sustainable use of natural resources ▪ To reduce waste production and adopt sustainable waste management practices

S.1.4 The LDP2 SEA Environment Report includes a description of the relevant aspects of the current nature of the environment in Dumfries and Galloway and the environmental characteristics of areas likely to be significant affected by future development. There are outlined in Table S.2 below.

Table S.2: Key Environmental Issues as noted in Dumfries and Galloway LDP2 document

Topic	Key Environmental Issues/Problems
Noise and vibration	▪ N/A
Climatic Factors	▪ Anticipated that summers will be warmer and drier, autumn and winter will be milder and wetter, with an increase in intense rainfall, and rising sea levels. ▪ There are a significant number of renewable energy schemes installed throughout the region using a variety of technologies with wind and hydro being the main elements. ▪ Car ownership in the region is relatively high recognising the relatively sparse population and limited public transport options. ▪ Rail usage has increased in the region however overall the region is poorly served by rail routes. ▪ Observed climate changes have had impacts on many aspects of our environment, the resilience of our businesses, the health and well-being of our people and our infrastructure and these impacts will continue and even intensify in the projected future climate.
Air	▪ Air quality within the region is generally good. ▪ There are no Air Quality Management Areas within the region.
Water	▪ There are a number of watercourses that are subject to potential flood risk. ▪ The number of flood incidents has fluctuated over the years and appears to be directly related to rainfall. ▪ The condition of water bodies has generally improved over the long term but not in the short term. ▪ The quality of groundwater in the region is generally good but there appears to be a declining trend. ▪ The quality of the public water supply is generally high although there is a relatively high number of private water supplies.

Topic	Key Environmental Issues/Problems
	▪ Climate change may cause increased competition for water, as well as increased flood risks.
Geology	▪ N/A
Biodiversity, Flora and Fauna	▪ There are a number of international and national designations across the region. ▪ Of the 29 international designations, 10 have some element 13 that is in an unfavourable and declining state. ▪ Biodiversity generally is in decline but the rate of decline appears to be slowing. ▪ Invasive non-native species continue to spread. ▪ Approximately a third of the region is covered in woodland and forestry ▪ Climate change may rise in significance in the future, adding to existing pressures.
Landscape	▪ The region has a rich and diverse landscape and includes areas designated for their landscape and scenic qualities at both the national and local levels. ▪ SNH have identified two areas of wildland in the region. ▪ TPO records in the region are limited and require updating. ▪ The loss of larch and ash trees to Phytophthora ramorum and ash die-back is likely to have a significant impact on region's landscape. ▪ The changing climate is already altering our unique Scottish landscapes.
Visual Amenity	▪ N/A
Soil	▪ Only a small proportion of land is considered to be prime agricultural land. ▪ The region contains large areas of peatland. ▪ There are a number of sites with potential contaminated land issues that may require mitigation. ▪ There are issues of soil erosion particularly through flood events and in coastal areas.
Cultural Heritage	▪ The region contains a range of diverse historic assets there have been few changes to the number of designated historic assets. ▪ A significant number of historic assets are under-used or in poor condition. ▪ Within the region, there are potential restoration schemes for 15 of the buildings on the Buildings at Risk Register for Scotland. ▪ There are a relatively high number of designated archaeological sites throughout the region.
Population and Human Health	▪ Declining and older population with high life expectancy rates. ▪ The number of households is increasing although household size is predicted to decrease. ▪ Over a quarter of the region's population live in Dumfries but overall, the region has a relatively low population density of 23 persons per km^2. ▪ Overall, there are low levels of household income with a poorly performing labour market.

Topic	Key Environmental Issues/Problems
	▪ The region is diverse containing some of the most and least deprived areas of Scotland. ▪ There is high reliance on car ownership in the rural parts of the region although 20% of households do not have access to private transport. ▪ There is a wealth of recreational opportunities within the region.

S.1.5 All options taken forward to STAG Part 2 have been assessed in detail to identify the likely significant effects on the environmental objectives. The assessment of each option was undertaken on a pre-mitigation basis i.e. assuming full implementation of the option as stated and without the provision of additional policy safeguards or mitigation measures.

S.1.6 The assessment outcomes are shown for each option below.

Table S.3: Option 1a – Environmental Appraisal – Table 1

Environmental Aspect	Baseline Key Characteristics	Commentary	Score
Noise and vibration	• Eastriggs village is situated on the B721 which routes between Gretna and Annan. However the A75 provides the main strategic route between the Gretna and Annan and the B721 is a rural uncongested route. Given this,, there is limited noise from traffic. • The GSWL rail line runs to the north of the village with associated noise and vibration from passing trains.	• The option includes the provision of a new bus service however this is unlikely to produce any significant additional noise and will not be operated on any new routes not already utilised by traffic. • The route will predominantly be through the rural countryside and as such their are limited noise receptors that would be affected.	0
Global air quality – carbon dioxide (CO2)	• In 2015, the anticipated total CO2 emissions for Dumfries & Galloway was 715 kilotonnes (kt), 554 kt (77%) of which resulted from road transport	• Providing this new public transport route would directly help to encourage increased bus patronage in the area. This would support sustainable modal shifts and could reduce car dependency, especially for single occupancy journeys. This would help reduce car traffic and associated fossil fuel consumption and greenhouse gas emissions, resulting in a positive effect on Climatic Factors.	1
Local air quality – particulates (PM10) and nitrogen dioxide (NO2)	• There are no Air Quality Management Areas (AQMA) designated in Dumfries & Galloway. • Car ownership in Dumfries & Galloway is increasing, exacerbating pressure on the network and contributing to poor public health through poor air quality, noise and inactivity.	• Providing this public transport route would directly help to encourage increased bus patronage in the area. This would support sustainable modal shifts and could reduce car dependency, especially for single occupancy journeys. This would help reduce car traffic and associated air pollution, resulting in a positive effect on Air Quality.	1
Water quality; drainage and flood defence	• The principle watercourses in the area are River Annan, Pennyland Burn, Dornock and Saugh-hope Burn. • To the south of the study area is the Solway Firth and Estuary which is site of various SSSI and other environmental designations	• This option would utilise existing roads and infrastructure and would not require acquisition of new land or construction of new facilities. • There is therefore no clear relationship between this option and Water.	0

Table S.4: Option 1a – Environmental Appraisal – Table 2

Environmental Aspect	Baseline Key Characteristics	Commentary	Score
Geology		• This option would utilise existing roads and infrastructure and would not require acquisition of new land or construction of new facilities. • There is therefore no clear relationship between this option and Geology.	0
Biodiversity and habitats	• Ramsar Site: Upper Solway Flats and Marshes, Castle Loch, Lochmaben • Special Protection Areas: Upper Solway Flats and Marshes, Castle Loch, Lochmaben • Special Conservation Area: Solway Firth • SSSI: Castle Loch, Upper Solway Flats and Marshes	• This option would utilise existing roads and infrastructure and would not require acquisition of new land or construction of new facilities. • There is therefore no clear relationship between this option and Biodiversity.	0
Landscape	• The study area is characterised by urban towns (Lockerbie, Eastriggs, Annan) with large areas of agricultural land and green space and the coastline providing diversity • The landscape is characterised in the main as" Coastal Flats". • There are no Garden and Designed Landscape (GDL) areas or Country Parks located within the study area.	• This option would utilise existing roads and infrastructure and would not require acquisition of new land or construction of new facilities. • There is therefore no clear relationship between this option and Landscape.	0
Visual amenity		• This option would utilise existing roads and infrastructure and would not require acquisition of new land or construction of new facilities. • There is therefore no clear relationship between this option and Visual Amenity.	0
Agriculture and soils	• Eastriggs and the surrounding area is listed as Prime Agricultural Land.	• This option would utilise existing roads and infrastructure and would not require acquisition of new land or construction of new facilities. • There is therefore no clear relationship between this option and Agriculture and soils.	0

Table S.5: Option 1a – Environmental Appraisal – Table 3

Environmental Aspect	Baseline Key Characteristics	Commentary	Score
Cultural Heritage	• There are a small number of listed buildings within Eastriggs, Lockerbie and Annan (Categories B to C). • There are a number of Canmores within the study area including Eastriggs Station, Eastriggs War Memorial, Roy Bungalow, Graham Inn and Dornock.	• This option would utilise existing roads and infrastructure and would not require acquisition of new land or construction of new facilities. • There is therefore no clear relationship between this option and Cultural Heritage.	0
Physical Fitness	• The population of Dumfries & Galloway at 2011 Census was 151,324. • 21.8% of the total population is people aged 65 years and over. • Life expectancy in Dumfries & Galloway in much in line with the Scotland average with life expectancy at birth being 78.1 for males and 81.3 for females.	• Improvements to bus services and integration with other modes would reduce journey time and congestion for all demographic groups in the areas, and by improving access to essential facilities and services promote social inclusion for those without a car. As such, positive health benefits are predicted. • This option provide would support increased bus patronage in the area which would improve accessibility to recreational activities, open space and healthcare facilities, especially for those without a car. • A modal shift towards public transport would also reduce air pollution and noise in urban areas that is usually associated with vehicular traffic. This option would therefore health a positive effect on health.	1

Table S.6: Option 3 – Environmental Appraisal – Table 1

Environmental Aspect	Baseline Key Characteristics	Commentary	Score
Noise and vibration	• Eastriggs village is situated on the B721 which routes between Gretna and Annan. However the A75 provides the main strategic route between the Gretna and Annan and the B721 is a rural uncongested route. Given this,, there is limited noise from traffic. • The GSWL rail line runs to the north of the village with associated noise and vibration from passing trains.	• The option includes additional bus services however this is unlikely to produce any significant additional noise and will not be operated on any new routes not already utilised by traffic. • The route will predominantly be through the rural countryside and as such their are limited noise receptors that would be affected.	0
Global air quality – carbon dioxide (CO2)	• In 2015, the anticipated total CO2 emissions for Dumfries & Galloway was 715 kilotonnes (kt), 554 kt (77%) of which resulted from road transport	• Providing the additional public transport services would directly help to encourage increased bus patronage in the area. This would support sustainable modal shifts and could reduce car dependency, especially for single occupancy journeys. This would help reduce car traffic and associated fossil fuel consumption and greenhouse gas emissions, resulting in a positive effect on Climatic Factors.	1
Local air quality – particulates (PM10) and nitrogen dioxide (NO2)	• There are no Air Quality Management Areas (AQMA) designated in Dumfries & Galloway. • Car ownership in Dumfries & Galloway is increasing, exacerbating pressure on the network and contributing to poor public health through poor air quality, noise and inactivity.	• Providing the additional public transport services would directly help to encourage increased bus patronage in the area. This would support sustainable modal shifts and could reduce car dependency, especially for single occupancy journeys. This would help reduce car traffic and associated air pollution, resulting in a positive effect on local air Quality.	1
Water quality; drainage and flood defence	• The principle watercourses in the area are River Annan, Pennyland Burn, Dornock and Saugh-hope Burn. • To the south of the study area is the Solway Firth and Estuary which is site of various SSSI and other environmental designations	• This option would utilise existing roads and infrastructure and would not require acquisition of new land or construction of new facilities. • There is therefore no clear relationship between this option and Water.	0

Table S.7: Option 3 – Environmental Appraisal – Table 2

Environmental Aspect	Baseline Key Characteristics	Commentary	Score
Geology		• This option would utilise existing roads and infrastructure and would not require acquisition of new land or construction of new facilities. • There is therefore no clear relationship between this option and Geology.	0
Biodiversity and habitats	• Ramsar Site: Upper Solway Flats and Marshes, Castle Loch, Lochmaben • Special Protection Areas: Upper Solway Flats and Marshes, Castle Loch, Lochmaben • Special Conservation Area: Solway Firth • SSSI: Castle Loch, Upper Solway Flats and Marshes	• This option would utilise existing roads and infrastructure and would not require acquisition of new land or construction of new facilities. • There is therefore no clear relationship between this option and Biodiversity.	0
Landscape	• The study area is characterised by urban towns (Lockerbie, Eastriggs, Annan) with large areas of agricultural land and green space and the coastline providing diversity • The landscape is characterised in the main as" Coastal Flats". • There are no Garden and Designed Landscape (GDL) areas or Country Parks located within the study area.	• This option would utilise existing roads and infrastructure and would not require acquisition of new land or construction of new facilities. • There is therefore no clear relationship between this option and Landscape.	0
Visual amenity		• This option would utilise existing roads and infrastructure and would not require acquisition of new land or construction of new facilities. • There is therefore no clear relationship between this option and Visual Amenity.	0
Agriculture and soils	• Eastriggs and the surrounding area is listed as Prime Agricultural Land.	• This option would utilise existing roads and infrastructure and would not require acquisition of new land or construction of new facilities.	0

Table S.8: Option 3 – Environmental Appraisal – Table 3

Environmental Aspect	Baseline Key Characteristics	Commentary	Score
Cultural Heritage	• There are a small number of listed buildings within Eastriggs, Lockerbie and Annan (Categories B to C). • There are a number of Canmores within the study area including Eastriggs Station, Eastriggs War Memorial, Roy Bungalow, Graham Inn and Dornock.	• This option would utilise existing roads and infrastructure and would not require acquisition of new land or construction of new facilities. • There is therefore no clear relationship between this option and Cultural Heritage.	0
Physical Fitness	• The population of Dumfries & Galloway at 2011 Census was 151,324. • 21.8% of the total population is people aged 65 years and over. • Life expectancy in Dumfries & Galloway in much in line with the Scotland average with life expectancy at birth being 78.1 for males and 81.3 for females.	• Improvements to bus services would improve connectivity for all demographic groups in the areas by improving access to essential facilities and services promote social inclusion for those without a car. As such, positive physical fitness effects are predicted. • This option provide would support increased bus patronage in the area which would improve accessibility to recreational activities, open space and healthcare facilities, especially for those without a car. • A modal shift towards public transport would also reduce air pollution and noise in urban areas that is usually associated with vehicular traffic. This option would therefore health a positive effect on health.	1

Table S.9: Option 6 – Environmental Appraisal – Table 1

Environmental Aspect	Baseline Key Characteristics	Commentary	Score
Noise and vibration	• Eastriggs village is situated on the B721 which routes between Gretna and Annan. However the A75 provides the main strategic route between the Gretna and Annan and the B721 is a rural uncongested route. Given this,, there is limited noise from traffic. • The GSWL rail line runs to the north of the village with associated noise and vibrationm from passing trains.	• The option does not consider the provision of additional rail services, but that existing services incur an additional rail stop at Eastriggs. Currently trains (freight and passenger) pass the proposed site without stopping. The only impact on the local noise environment will be the noise associated with passenger trains pulling away from the proposed platform. There are a number of residential properties on the north of Annan Road who would be impacted by this increased noise level. Final station design should ensure these noise impacts are minimised through the incorporation of appropriate Nosie barriers. • The principal source of vibration will be that associated with train movements. As the GSWL is already utilised by trains, no new types of vibration will be introduced by the option. As vibration increases with train speed, the additional halt at Eastriggs which will reduced the train speed, will lessen the vibration impact.	-1
Global air quality – carbon dioxide (CO2)	• In 2015, the anticipated total CO2 emissions for Dumfries & Galloway was 715 kilotonnes (kt), 554 kt (77%) of which resulted from road transport	• This option would directly help to encourage increased rail patronage in the area. This would support sustainable modal shifts and could reduce car dependency, especially for single occupancy journeys. This would help reduce car traffic and associated fossil fuel consumption and greenhouse gas emissions, resulting in a major positive effect on Climatic Factors. • It is assumed that construction works would follow good site practices to avoid pollution of the water environment.	1
Local air quality – particulates (PM10) and nitrogen dioxide (NO2)	• There are no Air Quality Management Areas (AQMA) designated in Dumfries & Galloway. • Car ownership in Dumfries & Galloway is increasing, exacerbating pressure on the network and contributing to poor public health through poor air quality, noise and inactivity.	• This option would directly help to encourage increased rail patronage in the area. This would support sustainable modal shifts and could reduce car dependency, especially for single occupancy journeys. This would help reduce car traffic and associated air pollution, resulting in a major positive effect on Air Quality. • It is assumed that construction works would follow good site practices to avoid pollution of the water environment.	1

Table S.10: Option 6 – Environmental Appraisal – Table 2

Environmental Aspect	Baseline Key Characteristics	Commentary	Score
Water quality; drainage and flood defence	• The principle watercourses in the area are River Annan, Pennyland Burn, Dornock and Saugh-hope Burn. • To the south of the study area is the Solway Firth and Estuary which is site of various SSSI and other environmental designations	• At time of site visit some localised flooding was witnessed near one of the proposed station sties. A detailed flood assessment would need to be considered at a later design stage. • It is assumed that construction works would follow good site practices to avoid pollution of the water environment.	0
Geology		• There are no SSSIs or RIGS sites in the vicinity of the proposed station site. • The required platform and station structures are not significant and the area already supports the railway line. It is therefore reasonable to assume that the underlying geology is capable of bearing the necessary load. • Given the scale of the proposal, it is unlikely that the option would impact on hydrogeology or future exploitation of mineral reserves.	0
Biodiversity and habitats	• Ramsar Site: Upper Solway Flats and Marshes, Castle Loch, Lochmaben • Special Protection Areas: Upper Solway Flats and Marshes, Castle Loch, Lochmaben • Special Conservation Area: Solway Firth • SSSI: Castle Loch, Upper Solway Flats and Marshes	• This option would require the construction of a new rail station in the village of Eastriggs, at one of two proposed sites, which would require land acquisition. This permanent development on previously undeveloped land could potentially affect a range of species as a result of habitat loss/fragmentation and displacement including protected species such as badger, red squirrel, otter and bats. Further protected species surveys would need to be undertaken to inform a more specific appraisal of potential impacts. • Mitigation measures would need to be employed to ensure that disturbance works and impacts such as habitat loss from permanent development did not adversely affect conservation objective of surrounding designation sites, and measures were taken to avoid affecting the water quality of nearby watercourses. Depending on the potential for likely significant effects, Habitats Regulations Appraisal (HRA) would be required.	0

Table S.11: Option 6 – Environmental Appraisal – Table 3

Environmental Aspect	Baseline Key Characteristics	Commentary	Score
Cultural Heritage	• There are a small number of listed buildings within Eastriggs, Lockerbie and Annan (Categories B to C). • There are a number of Canmores within the study area including Eastriggs Station, Eastriggs War Memorial, Roy Bungalow, Graham Inn and Dornock.	• There are a number of Listed Buildings within 1km of the proposed station site and construction works could affect the setting of these sites depending on the final design of permanent infrastructure. • Construction works for permanent infrastructure works are predicted to have the potential to encounter as yet unrealised archaeology and it is assumed that mitigation measures, such as watching briefs and appropriate trial trenching works would be undertaken in key areas, without significant adverse impacts.	0
Physical Fitness	• The population of Dumfries & Galloway at 2011 Census was 151,324. • 21.8% of the total population is people aged 65 years and over. • Life expectancy in Dumfries & Galloway in much in line with the Scotland average with life expectancy at birth being 78.1 for males and 81.3 for females.	• Improvements to rail infrastructure would reduce journey times for all demographic groups in the areas to essential facilities and services (in Dumfries and Carlisle) promote social inclusion for those without a car. As such, positive effects are predicted. • This option provide would support increased rail patronage in the area which would improve accessibility to recreational activities, open space and healthcare facilities, especially for those without a car. • A modal shift towards public transport would also reduce air pollution and noise in urban areas that is usually associated with vehicular traffic. This option would therefore health a major positive effect on health.	1

Appendix T Part 2: Safety Appraisal

Table T.1: Option 1a – Safety Appraisal – Table 1

Safety Criteria	Sub-criteria	Relative Importance	Vulnerable Groups of Society affected	Commentary	Score
Accidents	The user groups affected by improvements and the anticipated change in the balance of accidents, for example fewer fatalities or serious injury accidents, but an increase in slight injury accidents	Low	• Road Users	It is anticipated there be minor reductions in those using the road between Eastriggs and Lockerbie if there is some modal shift to bus. This is however likely to only have a very minor impact on accident rates. It is unlikely that there would be any specific change in the balance of accidents (minor, serious or fatal) as a result of option implementation.	0

Table T.2: Option 1a – Safety Appraisal – Table 2

Safety Criteria	Sub-criteria	Relative Importance	Vulnerable Groups of Society affected	Without Strategy	With Strategy	Commentary	Score
Security	Site perimeters, entrances and exits	Low		Moderate	Moderate	These options will utilise existing bus stops whose perimeters have varying levels of clarity depending on where they are sited. Some bus stops in the area offer a covered shelter for passengers with a marked stopping area in the road where appropriate. The option will remove the need to interchange between buses (in Annan) to access Lockerbie Railway Station. As such the wait time at the bus station in Annan will be removed - reducing security concerns for those waiting in an unsecure environment.	0
	Formal surveillance	Medium		Poor	Poor	Bus stops and services do not offer formal CCTV surveillance facilities.	0
	Informal surveillance	High		Moderate	Moderate	Whilst often in remote locations away from retailers or activity, bus stops in Dumfries & Galloway are made of transparent materials that allow for open visibility from site surrounds.	0
	Landscaping	Low		N/A	N/A	There is no clear relationship between the effect on landscaping and the perceived security of this option.	0
	Lighting and visibility	High		Poor	Poor	There is no dedicated lighting for bus stop facilities in the study area.	0
	Emergency call	Medium		Poor	Poor	There is no provision of emergency phones, help points or public telephones associated with this option.	0

Table T.3: Option 3 – Safety Appraisal – Table 1

Safety Criteria	Sub-criteria	Relative Importance	Vulnerable Groups of Society affected	Commentary	Score
Accidents	The user groups affected by improvements and the anticipated change in the balance of accidents, for example fewer fatalities or serious injury accidents, but an increase in slight injury accidents	Low	• Road Users	It is anticipated there be minor reductions in those using the A75 if there is some modal shift to bus. This is however likely to only have a very minor impact on accident rates. It is unlikely that there would be any specific change in the balance of accidents (minor, serious or fatal) as a result of option implementation.	0

Table T.4: Option 3 – Safety Appraisal – Table 2

Safety Criteria	Sub-criteria	Relative Importance	Vulnerable Groups of Society affected	Without Strategy	With Strategy	Commentary	Score
Security	Site perimeters, entrances and exits	Low		Moderate	Moderate	The option will utilise existing bus stops whose perimeters have varying levels of clarity depending on where they are sited. Some bus stops in the area offer a covered shelter for passengers with a marked stopping area in the road where appropriate.	0
	Formal surveillance	Medium		Poor	Poor	Bus stops and services do not offer formal CCTV surveillance facilities.	0
	Informal surveillance	High		Moderate	Moderate	Whilst often in remote locations away from retailers or activity, bus stops in Dumfries & Galloway are made of transparent materials that allow for open visibility from site surrounds.	0
	Landscaping	Low		N/A	N/A	There is no clear relationship between the effect on landscaping and the perceived security of this option.	0
	Lighting and visibility	High		Poor	Poor	There is no dedicated lighting for bus stop facilities in the study area.	0
	Emergency call	Medium		Poor	Poor	There is no provision of emergency phones, help points or public telephones associated with this option.	0

Table T.5: Option 6 – Safety Appraisal – Table 1

Safety Criteria	Sub-criteria	Relative Importance	Vulnerable Groups of Society affected	Commentary	Score
Accidents	The user groups affected by improvements and the anticipated change in the balance of accidents, for example fewer fatalities or serious injury accidents, but an increase in slight injury accidents	Low	• Road users • Pedestrians	It is anticipated there be minor reductions in those using the road between Eastriggs and Lockerbie if there is some modal shift to bus. This is however likely to only have a very minor impact on accident rates. It is unlikely that there would be any specific change in the balance of accidents (minor, serious or fatal) as a result of option implementation.	0

Table T.6: Option 6 – Safety Appraisal – Table 2

Safety Criteria	Sub-criteria	Relative Importance	Vulnerable Groups of Society affected	Without Strategy	With Strategy	Commentary	Score
Security	Site perimeters, entrances and exits	Medium	• Lone travellers • The Elderly • Children	Moderate	High	The proposed station site would be clearly marked with site perimeters/exists.	2
	Formal surveillance	Medium		Poor	High	Whilst the proposed station is unlikely to be staffed, it is assumed that a CCTV system will be installed to ensure a formal surveillance. No such surveillance system currently exists for bus stops in the area.	2
	Informal surveillance	High		N/A	High	The final design of the station site is still to be determined, however will be arranged in a manner that allows informal surveillance across platforms and from the surrounding street.	2
	Landscaping	Low		N/A	High	The final design of the station site is still to be determined however it is assumed will utilise a positive use of landscaping features to contribute to visibility and deter antisocial behaviour.	1
	Lighting and visibility	High		Moderate	High	The final design of the station site is still to be determined, but it is assumed will feature sufficient lighting in passenger areas. The lighting in the station environment is likely to be of a better quality than existing lighting at bus stops in the area, leading to real and perceived security improvements for public transport users.	2
	Emergency call	Medium		Poor	High	The proposed station would have an emergency phone on site alongside appropriate information on emergency help procedures. No such emergency help exists at current bus stops in the area.	2

Appendix U Part 2: Economy Appraisal

U.1 Option 6

Demand and Revenue Forecasting

U.1.1 A demand forecasting exercise has been undertaken to estimate the passenger demand and revenue generated by a new railway station at Eastriggs. This exercise also considered the knock-on effects of a new station upon demand and revenue at the adjacent Annan and Gretna Green stations, in addition to the journey time costs borne by through traffic on the line. This allowed calculation of a net base year impact in terms of journeys and revenue – i.e. how many additional rail journeys would be generated overall and how much additional revenue would this raise if the station were to open today.

U.1.2 The approach taken to the calculation of these impacts is discussed in the sections below, and split into the following elements:

- Outbound demand at Eastriggs Station;
- Inbound demand at Eastriggs Station;
- Transfer of existing rail passengers to Eastriggs Station;
- Journey time impacts on through passengers.

Outbound Demand and Revenue at Eastriggs

U.1.3 Demand for travel from the new Eastriggs Station was estimated primarily on the basis of demand profiles seen at the existing Annan and Gretna Green Stations.

U.1.4 Firstly, the catchment areas for the existing Annan and Gretna Green stations were specified, and the likely future catchment for the proposed Eastriggs station. It was assumed that the outermost extents of the respective catchments corresponded with the area over which each station is the closest station available (per STAG Part 1). See Figure U.1 for illustrations of the existing station catchment areas and the future station catchment areas if Eastriggs is constructed.

U.1.5 Sub-catchments of 0-800m, 801-5000m and 5001m+ buffers of the station were then defined to identify which output areas had centroids within each of the catchment bands to provide an estimate of the population living within each catchment band (2001 census Table KS101SC).

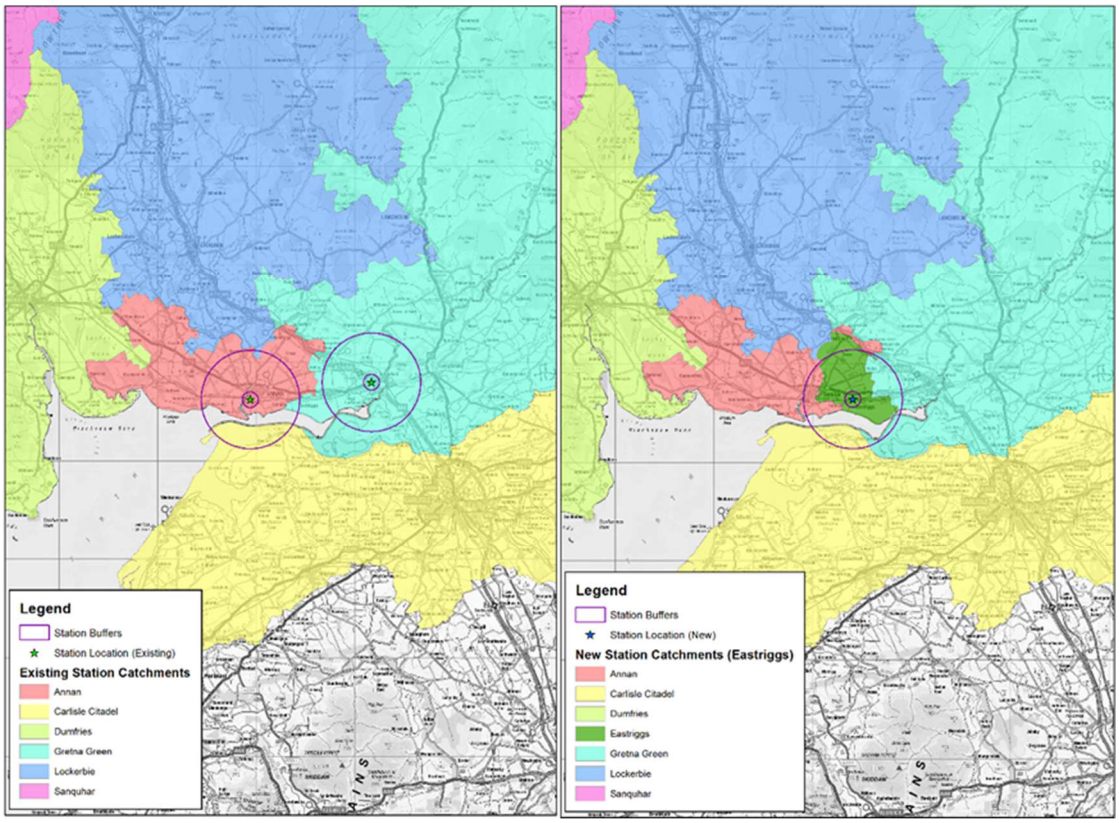

Figure U.1: Existing Station Catchments (left) and Future Station Catchments with Eastriggs (right)

U.1.6 The proportion of outbound railway station trips which were recorded as being made from each of the Annan and Gretna Green catchments from the January 2018 Platform Interview surveys were then similarly identified. These proportions were applied to the total annual outbound journeys from each station, as per MOIRA estimates (taking account of additional services which began operating along the route in December 2017) to calculate the annual outbound rail journeys being made by residents of each catchment.

U.1.7 Table U.1 summarises the values used in this calculation.

Table U.1: Outbound Demand and Revenue Calculation

Element	Catchment Band		
	0-800m	801-5000m	>5000m
Annan population	4,430	6,445	1,588
Annan survey respondents estimated annual journeys	2,676	2,792	75
Annan Catchment split	48.3%	50.4%	1.3%
Annual outbound journeys from Annan	39,821	41,541	1,112
Estimated trip rate based on Annan survey data (per resident per year)	8.99	6.45	0.70
Gretna Green population	1,000	3,284	14,588

Element	Catchment Band		
	0-800m	801-5000m	>5000m
Gretna Green survey respondents estimated annual journeys	654	829	38
Gretna Green Catchment split	43.0%	54.5%	2.5%
Annual outbound journeys from Gretna Green	9,761	12,378	565
Estimated trip rate based on Gretna Green survey data (per resident per year)	9.76	3.77	0.04
Average trip rate (Annan + Gretna Green)	9.38	5.11	0.37
Eastriggs population	838	1,779	108
Eastriggs annual outbound demand	7,856	9,086	40
Eastriggs average outbound yield (2018 Prices)	£4.04		
Eastriggs annual outbound revenue (2018 Prices)	£68,576		

U.1.8 The corresponding revenue was then calculated based on an estimated average yield from the new Eastriggs station as below:

- Average westbound and eastbound outbound yields obtained from MOIRA for Annan and Gretna Green Stations.
- Eastriggs westbound and eastbound yields estimated by interpolating between Annan and Gretna Green station based on the rail distance between the stations.
- Derived a relationship between the proportion of passengers travelling in each direction along the GSWL and the distance from Dumfries and Carlisle stations.
- Applied this relationship to calculate relative proportions of westbound and eastbound traffic expected from Eastriggs station, and these weightings were applied to the westbound and eastbound yield estimates for Eastriggs to calculate the overall average yield.
- Multiplied forecast outbound demand by average yield to estimate outbound revenue.

Inbound demand and revenue at Eastriggs

U.1.9 To calculate the demand and revenue associated with inbound trips to Eastriggs, a ratio was obtained of inbound to outbound trips at Annan and Gretna Green stations and the average of these factors to the forecast outbound trips to estimate inbound demand.

U.1.10 The same approach as was used to calculate outbound revenue was to taken to calculate inbound revenue, except using inbound values from MOIRA for both Annan and Gretna Green stations.

Table U.2: Inbound Demand and Revenue Calculation

Element	Value
Ratio of Outbound to Inbound journeys at Annan	60:40
Ratio of Outbound to Inbound journeys at Gretna Green	51:49
Average Ratio of Outbound to Inbound journeys	55:45
Annual Inbound Journeys at Eastriggs	13,712
Eastriggs average inbound yield (2018 Prices)	£5.61
Eastriggs annual inbound revenue (2018 Prices)	£76,910

Transfer of Passengers from Existing Stations

U.1.11 The new Eastriggs station will also attract passengers who currently travel by rail but use other stations, specifically Annan and Gretna, which sit to the immediate west and east respectively.

U.1.12 The number of existing rail users likely to be abstracted from Annan was calculated as follows, with the same approach taken to calculate abstractions from Gretna Green:

- Identification of the proportion of outbound Annan station journeys which are made by users who reported that they live within the new Eastriggs Catchment area (i.e. closer to Eastriggs than Annan station), as illustrated in Figure U.1. This value was then applied directly to annual Annan outbound demand to calculate the number of existing outbound rail journeys which will be lost from Annan;
- As inbound passengers at Annan were not surveyed, there was no available information on the distribution of their destinations. However, it was assumed that the rate of inbound transfer will be approximately half of that for outbound transfer;
- In each case the number of passengers transferred was multiplied by the average yield for outbound journeys (obtained from MOIRA) at each station to calculate the revenue lost.

U.1.13 Table U.3 presents the values used in the above calculation.

Table U.3: Passenger Transfer Calculation

Element	Annan	Gretna Green
Assumed proportion of outbound journeys transferred to Eastriggs	0.4%	1.4%
Assumed proportion of inbound journeys transferred to Eastriggs	0.2%	0.7%
Existing outbound demand	82,474	22,704
Existing inbound demand	55,668	21,761

Element	Annan	Gretna Green
Outbound demand transferred to Eastriggs	-336	-317
Inbound demand transferred to Eastriggs	-114	-152
Average existing outbound yield (2018 Prices)	£3.45	£4.68
Average existing inbound yield (2018 Prices)	£3.92	£7.75
Change in revenue (2018 Prices)	-£4,265	

U.1.14 Given that Eastriggs lies in such close proximity to existing stations, the number of passengers who might transfer is small. Overall, it was estimated that 919 passenger journeys will be lost from Annan and Gretna Green stations because of the construction of a new station at Eastriggs. This will result in a total lost revenue of £4,265 at these stations.

Journey Time Impacts on Demand and Revenue

U.1.15 The addition of Eastriggs Station to the GSWL will increase journey times experienced by all those travelling through the new station. Elongating journeys will have two key impacts – greater inconvenience to passengers and making it more difficult to achieve short connections.

U.1.16 MOIRA Timetable Manager provides a means of comparing one timetable with another to identify the impacts in terms of demand and revenue. A Pseudobase timetable was developed which reflected timetable changes which took place in December 2017, and also a 'Do Something' timetable which is based on the Pseudobase timetable but also extends journey times by 2 minutes for all destinations east/west of Eastriggs. MOIRA generated estimates of the change in revenue and journeys which would result.

U.1.17 It is estimated that the addition of a stop at Eastriggs Station would result in a reduction in passengers using the GSWL of 10,754 journeys and a loss of £39,132 in revenue (in 2018 Prices). Note: MOIRA cannot take account of the transfer of Annan and Gretna Green passengers to Eastriggs. Therefore, this is a conservative estimate as a small proportion of total passengers on the GSWL would not be affected by this journey time increase, i.e. if they were one of the passengers who transferred from Annan or Gretna Green to Eastriggs.

Base Year Results

U.1.18 Combining the various demand and revenue impacts explored above, it is estimated that if Eastriggs Station was to open in 2018, it would have an overall net impact of increasing rail passenger journeys by 19,022 per annum and bringing an additional £102,089 in revenue. A full breakdown by market segment is provided in Table U.4.

Table U.4: Base Year Results

Market Segment	Journeys	Revenue
Outbound Demand	16,982	£68,576
Inbound Demand	13,712	£76,910
Eastriggs Station Usage	**30,695**	**£145,486**
Transfer from Adjacent Stations	-919	-£4,265

Market Segment	Journeys	Revenue
Impact on Through Pax	-10,754	-£39,132
Overall Net Impact	**19,022**	**£102,089**

Benefit Cost Ratio

Benefits Calculations

U.1.19 In order to calculate a Benefit Cost Ratio (BCR) for the potential station re-opening, the calculated anticipated demand and revenue impacts have been estimated over the 60-year appraisal period along with the costs the overall financial impacts have been discounted to 2010.

U.1.20 The associated journey time benefits have been calculated and to 2010, to then generate an overall BCR for the option.

U.1.21 To calculate the benefits, the following steps were undertaken:

- The demand figures calculated above comprised of:
  - **'Station Switchers'** - Those switching from another station (Annan or Gretna Green). Travel time savings (and hence the benefits associated with these) for these users were estimated based on an assumption on journey purpose. The journey purpose split assumptions were estimated based on the platform surveys undertaken at Annan and Gretna Green stations (discussed in Appendix Q) with journey purpose identified as either Commuting; Business or Other travel purposes.
  - **New rail trips**, either:
    - Entirely new trips;
    - Those switching from car; or
    - Those switching from public transport.

  The proportions were estimated on the basis of the platform surveys where people were asked how they would have made that journey in the absence of a train service
- For trips switching from other modes,
  - LENNON data was utilised to consider the distribution of these trips based on trip origins and destinations at Annan and Gretna Green stations; and
  - Time savings from these trips was estimated to determine the benefits based on the assumptions on journey purpose.
- Overall demand was projected forward for 30 years using a 2.5% per annum growth rate (based on recent local trends in rail passenger growth), with no further growth for the following 30 years;
- The volume of through passengers was estimated from the LENNON data, with each affected passenger assigned a 2-minute travel time disbenefit (again based on an assumed purpose split)

- The figures were combined to provide an estimate of the overall net benefits assuming an opening year of 2023;
- The benefits were then discounted to a base year of 2010 to provide the Present Value of Benefits (PVB).

Revenue Calculations

U.1.22 Revenue for the station was calculated as discussed above. It was assumed that, as per the railway industry Passenger Demand Forecasting Handbook, there would be a station demand 'ramp up' from the opening year (53% in Year 1, 78% in Year 2, 90% in year 3, 100% thereafter).

- The revenue figures assumed from assuming an opening year of 2023 for 60 years and were discounted to a base year of 2010 to provide the Present Value of Revenue (PVR).

U.1.23 The anticipated revenue was added to the Present Value of Benefits to provide an adjusted BRC figure.

Station Cost Calculations

U.1.24 The station costs were estimated as set out in Appendix J . Optimism Bias of 44% was added to the figures (although it should be noted that the station costs were based on station ***outturn*** costs as and such already make allowance for optimising bias).

U.1.25 Station build costs were split:

- 50% in 2021; and
- 50% in 2022.

U.1.26 The costs were discounted to a base year of 2010 to provide the Present Value of Costs (PVC).

Calculating a BCR

U.1.27 Table U.5 sets out the estimated Benefit Cost Ratio assuming a station cost of:

- £11m – the higher end of the estimated range;
- £8m – the lower end of the estimated range;
- £5m and £2m - to account for a level of optimism bias already inherent in the cost figures as they are based on other station build ***outturn*** costs.

Table U.5: Option 6 Benefit-Cost Ratio

Station Costs (£m)		PVC (£m)	PVB (£m)		BCR (£m)	
Base	With optimism bias	With optimism bias	Without revenue	With revenue	Without revenue	With revenue
£11.00	£15.84	£10.67	-£4.75	-£1.86	-0.45	-0.17
£8.00	£11.52	£7.76	-£4.75	-£1.86	-0.61	-0.24
£5.00	£7.20	£4.85	-£4.75	-£1.86	-0.98	-0.38
£2.00	£2.88	£1.94	-£4.75	-£1.86	-2.45	-0.96

Appendix V Part 2: Integration Appraisal

V.1.1 The STAG integration criteria focuses on three key integration elements:

- Transport integration;
- Transport and Land-use Integration; and
- Policy Integration

V.1.2 Appraisal was undertaken at the Part 1 stage of the study, focussing on the transport integration elements of the integration criteria, and specifically focussing on the bus options.

V.1.3 At this stage of the appraisal, a full appraisal against all three elements of the integration criteria has been undertaken, drawing on the work at the Part 1 stage.

Option 1a

Transport Integration

V.1.4 In terms of transport integration, Option 1 was appraised in great detail during the Part 1 appraisal when the reduction in walk and wait time between bus and rail services due to the option was analysed in detail. The analysis is presented in Appendix L presenting the detailed analysis. In summary, the analysis highlighted that the option had the potential to:

- Substantially reduce average journey times for inbound and outbound trips along the GSWL, and also to a lesser degree along the WCML.
- Average reductions in journey times on the WCML were lower, primarily, because the majority of rail services don't stop at Lockerbie, meaning that travellers must route through Carlisle which will be unaffected by Option 1a. However, time savings of up to 40 minutes were noted for connections to Edinburgh and Glasgow.

V.1.5 It should be noted that the option has altered since this analysis and Option 1a now considers a direct rail link between Eastriggs and Lockerbie (i.e. only serving the WCML and not the GSWL). As such, no benefits in terms of reduced interchange time would be felt with regards to train services on the GSWL. However, the bus would now be timed to ensure good integration with WCML services at Lockerbie alone – whereas before, it was trying to ensure connections with trains on both lines which meant some compromise. In this regard, integration between bus and rail at Lockerbie could be managed to be as seamless as possible.

V.1.6 The option would not provide any improvements in terms of ticketing and would utilise existing buses and bus stop infrastructure.

Transport and Land-Use Integration

V.1.7 Eastriggs is identified in the *Dumfries and Galloway 2014 Local Development Plan* as a Local Centre within the Annan Housing Market Area and is strategically located adjacent to the A75 within the Gretna-Lockerbie-Annan (GLA) regeneration corridor. By improving public transport, the option supports an objective within the LDP to identify mixed use sites with potential to provide opportunities for new start-up businesses or enterprise units to support sustainable economic growth and the regeneration of the GLA corridor.

V.1.8 Housing is proposed in the plan within Eastriggs Village, the location of which was highlighted in Figure O.5 The housing lies to the north-east of the village where around 200 dwellings are

proposed. The proposed new bus service offering direct access to Lockerbie railway station and improving the connectivity of the village especially to the north, may make these dwellings more attractive to potential home-buyers, helping facilitate this housing development.

V.1.9 The recently published Proposed Local Development Plan (to 2029), *Dumfries and Galloway Council Local Development Plan 2*, was approved at the Full Council meeting in January 2018 and was published for 8 weeks (until late March 2018) to allow the public to make representations. Two sites have been identified within the Eastriggs settlement boundary (as noted above), equating to approximately 230 dwellings in total.

V.1.10 The former nuclear station at Chapelcross, located approximately 5 miles north of the village, is currently being decommissioned. It's long term redevelopment as a Business Park could trigger residential redevelopment in Eastriggs, although this is very long term and the Chapelcross site is in closer proximity to Annan. However, the bus service proposed is highly likely to route very close to the Chapelcross site and could offer direct access from the village to the site, en-route to Lockerbie.

V.1.11 The former Ministry of Defence site to the south of Eastriggs is currently being considered for redevelopment. The site is mentioned in the Council's Economic Strategy, where it is stated that *"The former MOD site at Eastriggs is likely to be available during the plan period and may provide scope for business/industry use and/or tourism sector development."* A direct service from Lockerbie to Eastriggs may enable improved public transport access to the site, however, the proposals are long-term and should not be relied upon to provide support for the option in the short term.

V.1.12 Email correspondence with a MoD Senior Estates Office highlighted that:

- The MoD is looking at various options for Eastriggs but they are still at a fairly early stage;
- Some work has been undertaken on a high level future use concept plan as the MoD considers what the likely future uses could be and whether the land could ultimately be released for development e.g. light industrial, rail, leisure, amenity;
- There have been initial discussions between the MoD and the Dumfries and Galloway Planning Department but substantial further work is needed by the MoD before any meaningful decisions could be taken on any future change of use;
- At this stage, no decision has been taken while a number of studies are undertaken with regard to issues such as Land Quality, ecology, historic environment etc. which will help inform the decision making process and whether various potential future uses are indeed viable and compatible with site conditions.

Policy Integration

V.1.13 Improving the public transport network and transport integration supports the aims of the National Transport Strategy, SWestrans Regional Transport Strategy, the Bus Action Plan and the Local Transport Strategy. The option is therefore aligned with the broader policy goals included within key national, regional and local policy documents.

V.1.14 STAG's Policy Assessment Framework (PAF) has been used to appraise how well the option fits with national policy objectives. The outcomes of this assessment is shown in Figure V.1 and Figure V.2. Note that for comparative purposes, these diagrams also contain the scores for Option 3 and Option 6. The assessment shows Option 1a scoring either neutrally or positively against all national objectives and sub-objectives.

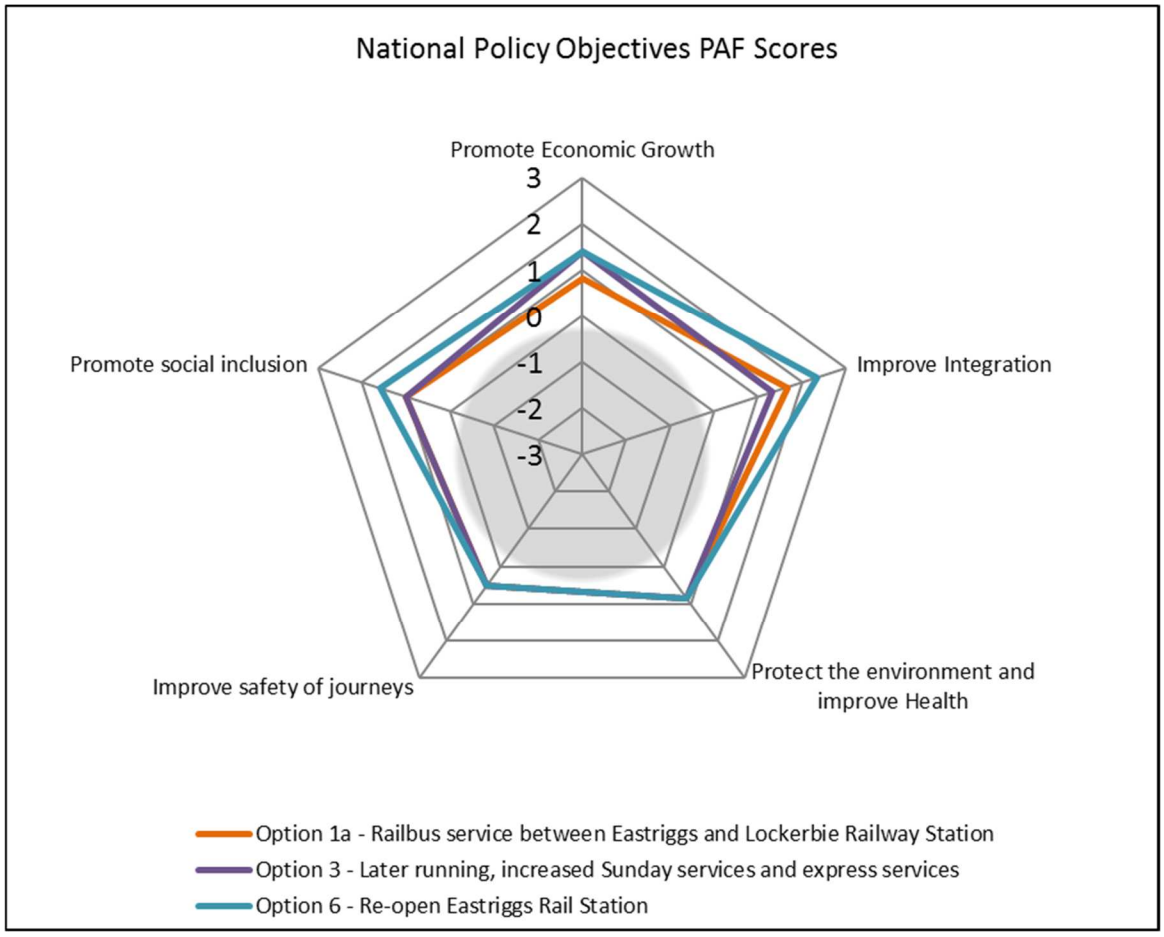

Figure V.1: Policy Assessment Framework – National Policy Objectives – PAF Scores (Option 1a and 6)

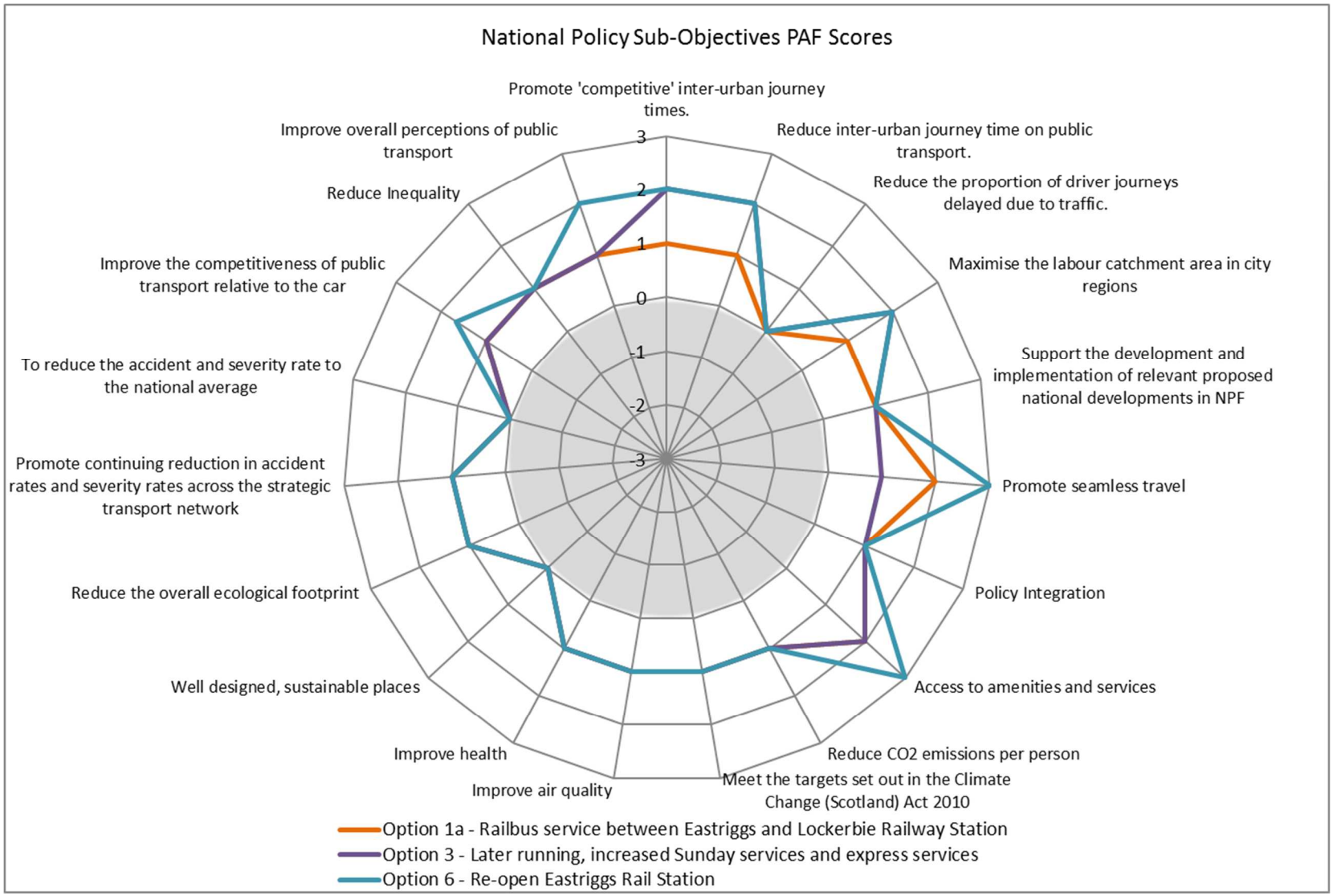

Figure V.2: Policy Assessment Framework – National Policy Sub-Objectives – PAF Scores (Option 1a and 6)

Option 3

Transport Integration

V.1.15 In terms of transport integration, Option 3 would offer increased accessibility to and from Dumfries and Carlisle, enabling access both from and to the study area later in the evening and at weekends.

V.1.16 The option would not provide any improvements in terms of ticketing and would utilise existing buses and bus stop infrastructure.

Transport and Land-Use Integration

V.1.17 Similar to Option 1a, the option offers additional public transport connectivity which could support development in the village as well as supporting connectivity to the Chapelcross and MoD sites, although it should be noted that the future of both sites is very much in the early planning stages.

Policy Integration

V.1.18 Improving the public transport network supports the aims of the National Transport Strategy, SWestrans Regional Transport Strategy, the Bus Action Plan and the Local Transport Strategy. The option is therefore aligned with the broader policy goals included within key national, regional and local policy documents.

V.1.19 STAG's Policy Assessment Framework (PAF) has been used to appraisal how well the option fits with national policy objectives. Figure V.1 and Figure V.2 presented the option appraisal against STAG's Policy Assessment Framework (PAF). The assessment shows Option 3 scoring either neutrally or positively against all national objectives and sub-objectives.

Option 6

Transport Integration

V.1.20 In terms of transport integration, Option 6 was not appraised in the same detail as Option 1a during the Part 1 appraisal. However, the high-level Part 1 appraisal against this criterion has been revisited and developed into greater detail at Part 2.

Transport and Land-Use Integration

V.1.21 As noted above, Eastriggs is identified in the *Dumfries and Galloway 2014 Local Development Plan* as a Local Centre within the Annan Housing Market Area and is strategically located adjacent to the A75 within the Gretna-Lockerbie-Annan (GLA) regeneration corridor. By improving public transport, the option supports an objective within the LDP to identify mixed use sites with potential to provide opportunities for new start-up businesses or enterprise units to support sustainable economic growth and the regeneration of the GLA corridor.

V.1.22 Again, as noted above, housing is proposed in the plan within Eastriggs Village, the location of which was highlighted in Figure O.5. The housing lies to the north-east of the village where around 200 dwellings are proposed. The proposed railway station site is around 1.5km from the proposed housing development, a walkable distance, and as both are located to the north of the B721, no major road crossing is required for pedestrian access. In addition, the proposed housing is adjacent to the B721 on which the 79 / 179 bus service routes, which would allow for direct access from the proposed housing to the station.

V.1.23 The recently published Proposed Local Development Plan (to 2029), *Dumfries and Galloway Council Local Development Plan 2*, was approved at the Full Council meeting in January 2018 and was published for 8 weeks (until late March 2018) to allow the public to make

representations. Two sites have been identified within the Eastriggs settlement boundary (as noted above), equating to approximately 230 dwellings in total.

V.1.24 There are many opportunities coming forward in and around Carlisle (particularly with respect to the emerging Borderlands Growth Deal) which could be accessed more easily by Eastriggs residents if the village were directly served by rail (the trip by bus is around 50 minutes but would be around 16 minutes by rail). House prices in Eastriggs are significantly lower compared to Carlisle and Cumbria, and as such, improving connectivity between Eastriggs and Carlisle, particularly by rail, may encourage people to capitalise on these opportunities with a lower associated living cost - supporting the planned growth and future prosperity of Eastriggs village.

V.1.25 The former nuclear station at Chapelcross, located approximately 5 miles north of the village, is currently being decommissioned. It's long term redevelopment as a Business Park could trigger residential redevelopment in Eastriggs, although this is very long term and the Chapelcross site is in closer proximity to Annan, and would provide the closer access by rail.

V.1.26 The former Ministry of Defence site to the south of Eastriggs is currently being considered for redevelopment. As noted above, the site is mentioned in the Council's Economic Strategy, where it is stated that *"The former MOD site at Eastriggs is likely to be available during the plan period and may provide scope for business/industry use and/or tourism sector development."* A railway station at Eastriggs may enable improved public transport access to the site, however, the proposals are long-term and should not be relied upon to provide support for the option in the short term. In addition, onward travel from the station to the MOD site itself would be required.

V.1.27 As noted above for Option 1a, email correspondence with a MoD Senior Estates Office highlighted that the MoD is looking at various options for Eastriggs but these options are still at a fairly early stage. However, it was felt that potentially re-opening the station at Eastriggs would be beneficial regardless of what is ultimately decided for the future of the site and may assist in making the case for development if the transport links were improved in this way. The MoD have previously had discussions with parties from the rail industry who mentioned the possibility of doing so.

Policy Integration

V.1.28 Improving the public transport network and transport integration supports the aims of the National Transport Strategy, SWestrans Regional Transport Strategy, the Bus Action Plan and the Local Transport Strategy. The option is therefore aligned with the broader policy goals included within key national, regional and local policy documents.

V.1.29 STAG's Policy Assessment Framework (PAF) has been used to appraise how well the option fits with national policy objectives. Figure V.1 and Figure V.2 presented the option appraisal against STAG's Policy Assessment Framework (PAF). The assessment shows Option 6 scoring well against all national objectives and sub-objectives.

Appendix W Part 2: Accessibility and Social Inclusion Appraisal

W.1 Option 1a

Community Accessibility

Public transport Network Coverage

W.1.1 The option provides increased public transport coverage for the area with the new direct link to Lockerbie. This enables improved connectivity and reduced access time to the WCML rail network for travel to / from further afield, particularly to the north.

Local Accessibility

W.1.2 The option is strategic in nature and does not provide any additional opportunities to walk or cycle to services and facilities. No severance arises from the proposed option.

Comparative Accessibility

People groups

W.1.3 The option is particularly beneficially to those without a private car or unable to drive. This includes:

- Those on lower incomes for whom owning a car is not possible due to the costs involved;
- Those less-abled for whom driving is not an option;
- The elderly who have stopped driving;
- Those seeking Higher Education opportunities;
- Children under the age of 17.

W.1.4 In terms of those on lower incomes and the less-abled, the increased accessibility may open up new job opportunities further afield as well as enabling better access to social and recreational activities in Edinburgh and Glasgow. For the elderly, the improved access would enable ease of access to the major hospitals in Edinburgh and Glasgow by removing an interchange.

W.1.5 In terms of education, the improved accessibility to Edinburgh and Glasgow may benefit those for whom living away from home is not affordable. The increase in access to two of Scotland's major cities may enable travel from home on a part-weekly basis (many university courses now run as 3-full days rather than spread across the week). Students may be able to stay at home to continue their education.

W.1.6 Particularly for school children, the option would provide an increased ability to travel independently, providing access to a greater range of extra-curriculum and social activities in which to participate.

Geographical Location

W.1.7 Eastriggs is located in a rural location. The improved access to the WCML would connect the community to trains offering travel to much further afield. This may help combat feelings of community isolation.

W.2 Option 3

Community Accessibility

Public transport Network Coverage

W.2.1 The option does not provide increased geographical coverage for the area but does provide increased coverage in terms of the times / days over which services are operational.

Local Accessibility

W.2.2 The option is strategic in nature and does not provide any additional opportunities to walk or cycle to services and facilities. No severance arises from the proposed option.

Comparative Accessibility

People groups

W.2.3 As with Option 1a, the option is particularly beneficial to those without a private car or unable to drive. This includes:

- Those on lower incomes for whom owning a car is not possible due to the costs involved;
- Those less-abled for whom driving is not an option;
- Children under the age of 17.

W.2.4 In terms of those on lower incomes and the less-abled, the increased accessibility to Carlisle and Dumfries may open up new job opportunities which require shift or weekend working as well as enabling better access to social and recreational activities in the towns.

W.2.5 Particularly for school children, the option would provide an increased ability to travel independently, providing access to greater range of extra-curriculum and social activities in both Carlisle and Dumfries.

W.2.6 The option may also help support local tourism through enabling improved access to the Devil's Porridge Museum in Eastriggs.

Geographical Location

W.2.7 As noted for Option 1a, Eastriggs is located in a rural location. The improved access to Dumfries and Carlisle would enable the community to participate in a greater range of activities in the region's biggest town. This may help combat feelings of community isolation.

Option 6

Community Accessibility

Public transport Network Coverage

W.2.8 The option provides increased public transport coverage for the area with new direct access to the rail network. This enables improved connectivity and reduced access time to locations on the GSWL including Dumfries and Carlisle.

Local Accessibility

W.2.9 The option is strategic in nature and does not provide any additional opportunities to walk or cycle to services and facilities, however it was noted during Public Engagement that the location of the station in the village would offer the opportunity to walk or cycle to the station, allowing for onward travel without taking the car.

W.2.10 It should be noted that the re-opening of the station in Eastriggs may impact on operating bus services (79 and 179) between Eastriggs and Carlisle / Dumfries, potentially reducing. This would impact on smaller communities along the route, for whom the rail station at Eastriggs would not be immediately accessible, and whom would experience a reduction in bus service offering, reducing the connectivity from these communities.

Comparative Accessibility

People groups

W.2.11 As with Option 1a, the option is particularly beneficially to those without a private car or unable to drive. This includes:

- Those on lower incomes for whom owning a car is not possible due to the costs involved;
- Those less-abled for whom driving is not an option;
- The elderly who have stopped driving;
- Those seeking Higher Education opportunities;
- Children under the age of 17.

W.2.12 In terms of those on lower incomes and the less-abled, the increased rail accessibility would open up new job opportunities as shown in the TPO appraisal. For opportunities in Carlisle, the travel time with the option reduces from just less than an hour to less than 20 minutes, which could be considered a very satisfactory commute time, making part time working more possible. It should be noted that the train would in fact be quicker than the private car to both Dumfries and Carlisle.

W.2.13 It was noted in the Public Survey that the station would reduce the need to: drive personal cars; rely on getting a lift from family members; or pay for taxis. Many respondents noted that this adds on extra time to their journey and can be expensive. It was felt that removing this extra travel by re-opening the railway station in Eastriggs would be a huge benefit to the community.

W.2.14 Particularly for school children, the option would provide an increased ability to travel independently, providing access to a greater range of extra-curriculum and social activities in which to participate in both Dumfries and Carlisle. It may also enable children from Eastriggs to access Annan Academy by rail.

W.2.15 For the elderly, the improved access may enable improved accessibility to the most local GPs in Annan and Gretna Green and to the major hospitals in Dumfries and Carlisle.

W.2.16 The option may help support the tourism industry, by enabling people to more easily visit the area. The existence of a rail station does tend to place a location ‘on the map’.

W.2.17 The rail station location near the centre of the community would allow for safe and easy access for all.

W.2.18 It was noted in the Public Survey that for those with mobility issues, it can be a struggle to use local bus services when they are busy and there is limited space for wheelchair users. The train was seen as a much more attractive option offering easier access and more space.

Geographical Location

W.2.19 As noted for Option 1a, Eastriggs is located in a rural location. The improved access to Dumfries and Carlisle would enable the community to participate in a greater range of activities across a much wider area. In particular, given the fragility of the bus network and uncertainty surrounding future provision, the more permanent fixed nature of direct access to the rail network from the village may help combat feelings of community isolation and may support the long term sustainability of the village.