

Overlaps: Identification of routes with potential for bus to rail substitution

Summary

1. 55 routes were identified where there were concerns raised about the potential for substitution between bus and rail services on overlapping flows (see paragraph 3). Of these, on 30 routes the revenues from overlap flows exceeded 10 per cent of all revenues on the route, for 16 routes concerns arise from the potential for possible reconfiguration of routes and possible problems with catchment areas, eight routes were raised as problems raised by third parties, and one route overlaps with a new rail service that is due to be opened by the end of 2005.
2. This appendix identifies 'probable' problem routes where our analysis suggests that there could be a potential for FirstGroup to seek to encourage passengers to transfer from bus to train services, and where there do not appear to be significant route-specific constraints to prevent this. The problems apply on some routes throughout the day, and on other routes only out of hours when other operators do not run and so do not form a competitive constraint (see paragraphs 22 and 23). There are no out of hours services on some routes. 36 routes are identified as 'probable' problems either in hours or out of hours or both. 15 of these routes are identified where there is a 'probable' problem out of hours only, and 12 routes where there are potential 'probable' problems both in hours and out of hours. There are 'probable' problems in hours only for nine routes (typically these are commuter services that only run at peak times). Of the 36 'probable' problem routes, 23 of these routes are based on existing routes; eight are based on possible reconfiguration of routes and possible issues with broad catchment areas; and five are based on concerns raised by third parties. Of the routes that were not categorized as 'probable' problem routes, ten could become 'probable' problem routes if competitors withdraw services and there becomes no effective competitive constraint; these are labelled 'possible' problem routes.¹ In total, 46 routes are classified as 'probable' or 'possible' problem routes. The categorization of the 55 routes between 'probable', 'possible' or excluded (due to reasons not related to the presence of an effective competitor) is shown in Table 6.
3. This categorization is based on current operating patterns. New 'possible' problem routes may be created if new rail services are started which produce overlap flows with other bus routes.

Background

4. The objective of this exercise is to consider the precise routes or flows where consumers may have a potential choice of travelling by either train or bus from a similar starting point to a similar destination, and to identify where there may be potential for FirstGroup to seek to take advantage of possibilities of encouraging passengers to transfer from bus to rail services.²

¹Route 91/92 is included in this ten 'possible' problem routes figure, although the overlap flows will only be created when a new train service starts operation (see paragraph 39).

²The overlap analysis does not address impacts on any other flows, for example, the analysis excludes any journeys which involve a change of train or bus, ie the 'flow' is indirect.

5. FirstGroup has provided details of 784 ‘flows’ where there is an overlap between its bus services and ScotRail services, ie rail stations that are co-located or very close to relevant bus stops. ‘Flow’ means a particular journey between start and end points which may be all, or any part, of a longer bus or train route. Bus and train flows are overlapping if they share start and end points. Different bus services (ie operating on different routes with different service numbers) travelling between the same stops, however, are treated as different flows; the number of distinct start and end point flows is under half of the total number of flows identified above.
6. FirstGroup has defined bus stops and train stations as being at the same point if there is any overlap in its catchment areas. For First Edinburgh, in more rural areas FirstGroup listed overlaps where both bus and train serve a settlement regardless of the station/stop locations. In the more urban areas, FirstGroup has listed bus services and rail routes as overlapping where broadly speaking the catchment area of a rail station overlaps with the catchment area around the nearest bus stop on a bus service, using 800 metres for a rail station and 400 metres for a bus stop.³ Within Glasgow, reflecting the much denser provision of public transport, FirstGroup has listed bus services and rail routes as overlapping where broadly speaking rail stations are within 300 metres of a bus stop. Where there was an overlap, all bus passengers on that fare stage were considered as overlap passengers, even when some of the bus stops in the fare stage were a long way from the rail station.⁴
7. Precise information was available on passenger numbers and revenues for flows by rail. For bus services, data is collected only according to the fare stage where the passenger got on the bus, and the fare paid, which may correspond to many possible destination fare stages. Therefore FirstGroup had to estimate passenger numbers and revenues for specific flows, which it did based on assumptions that destinations corresponded to where passengers got on the bus on the return journey, and that all destinations within a destination fare stage were equally attractive.
8. FirstGroup argued that the methods of estimation used, while the best available, were likely to lead to an overestimation of passenger numbers on overlap flows, partly because overlap flows were less likely to be used by bus passengers than other flows as such passengers would be using the train services already, and partly because FirstGroup counted any instance where there was an overlap, however slight, between bus and rail catchments as an overlap for all the fare stage, which it argued would substantially overestimate passenger numbers (it estimated by a typical factor of at least three). However, there were instances where it appeared to us that the catchment areas used around rail stations seemed small, particularly around commuter areas and outlying towns where the provision of public transport was less dense than in more urban areas. Park and ride facilities at stations appeared to demonstrate that a proportion of passengers travelled to stations from outside the identified catchment area.⁵

³This means that the bus stop and rail station could be up to 1,200 metres apart.

⁴In some cases FirstGroup told us that two fare stages were found to be overlapping with station catchments and both were treated as overlapping, ie all passenger boardings were assigned to the overlap flows on both fare stages. FirstGroup said that in a very few cases an adjacent fare stage was used for the overlap rather than the one that fell within the catchment area. An example was East Kilbride where the main town centre was a substantial distance from the rail station, and so many more passengers used bus stops there than on the fare stage that overlapped with the rail station catchment. Instead FirstGroup attributed all passengers on the town centre fare stage to the overlap as it felt this was more representative of the choices between rail and bus for overlap flow journeys.

⁵FirstGroup told us that many ScotRail stations with free park and ride facilities are already at their parking capacity. This suggests that no more passengers could be attracted from bus services to trains using park and ride.

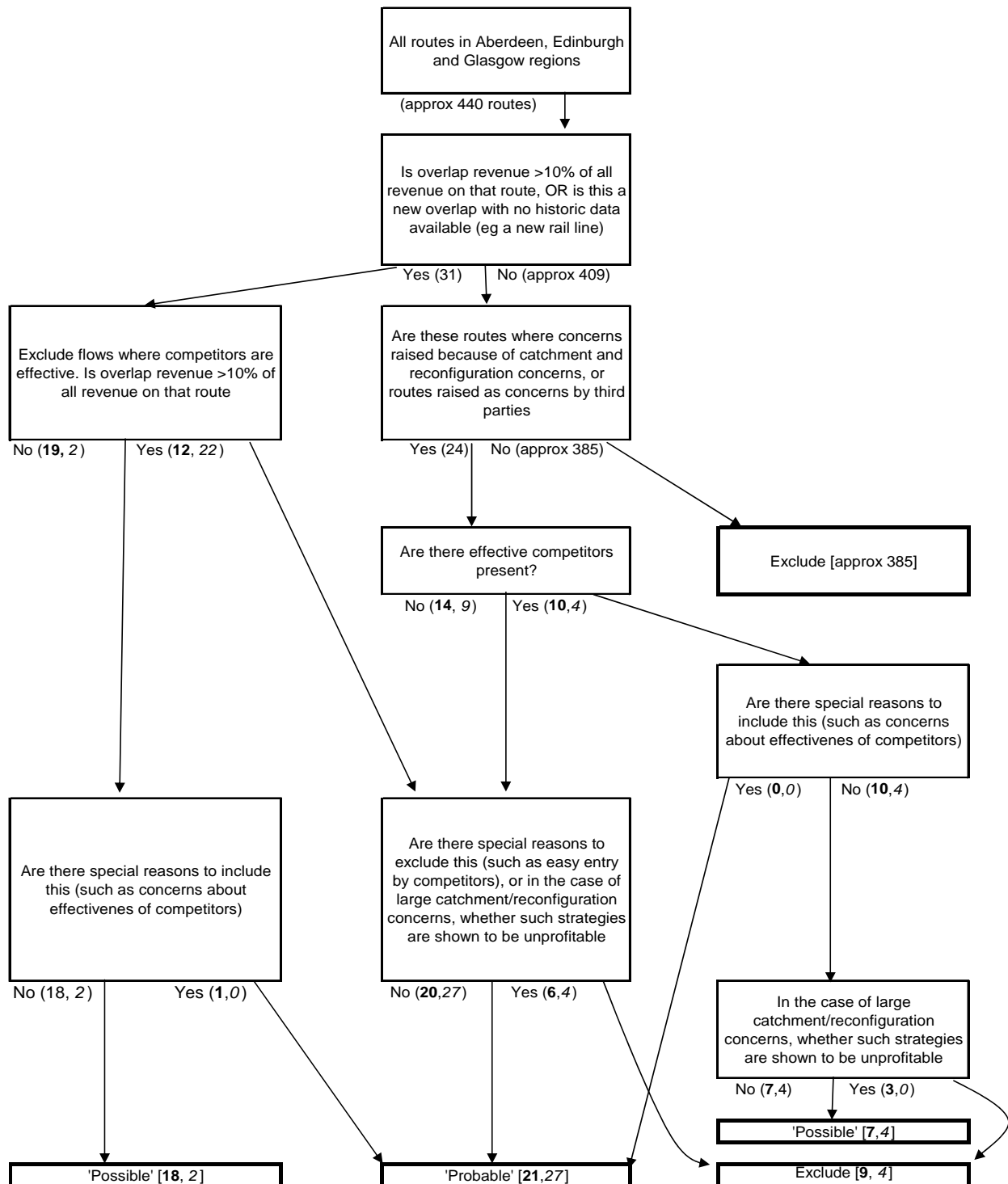
OFT assessment

9. In its assessment, the OFT applied two criteria to focus on flows where it believed there could be particular issues of concern:
 - (a) where the bus journey takes more than twice as long as the rail journey: it was considered that the two services would be regarded as poor substitutes if there was a great disparity in journey times; and
 - (b) where there was already an existing competitor, ie another bus company or rail operator serving the flow.
10. We identified a large number of instances where there was a high level of bus use despite bus journeys taking over twice as long as trains. We considered that this arose because passengers valued the convenience of bus stops situated close to the start and destination points, the greater frequency of bus services, and in some cases, cheaper fares on buses. Buses also offer free travel to concessionary passengers. We noted that competitors on flows may not offer a service of comparable frequency or quality as FirstGroup, and so we believed that in some cases these competitor services may be seen as an inferior substitute.
11. We therefore undertook our own investigation. Various criteria were used to identify routes and flows where concerns were unlikely to arise. These are described below, FirstGroup's suggestions for filters to identify such routes and flows, and our reasoning for employing our own criteria are described in paragraphs 5.3 to 5.31 of the report. The steps of the analysis are shown in Figure 1, while the exact methods used are described in the rest of this appendix. The number of routes at each stage⁶ are shown to illustrate where and how routes were excluded from our concerns, based on current data; relevant factors such as competitor services and passenger journeys may change over time.

⁶ FirstGroup's website (June 2004) describes its services as comprising 22 routes in the Aberdeen area, 118 in Greater Glasgow and approximately 300 in the Edinburgh operating area. Consequently Figure 10 starts with approximately 440 routes.

FIGURE 1

Flow diagram of the steps used to identify routes with 'probable' and 'possible' concerns



Source: CC.

Notes:

1. The exercise has to be completed for in hours and out of hours services separately.
2. The numbers on the decision tree diagram indicate the number of routes in each category. Where results differ for in hours and out of hours services, in hours are shown in bold, out of hours in italics. Numbers of out of hours routes do not add up to the total of routes, as some routes do not operate out of hours.

Routes where revenue from overlaps exceed 10 per cent of route revenue

12. We considered that if FirstGroup were to take advantage of any gain in market power arising from owning the Scottish passenger rail franchise, it would be likely to involve fare changes, frequency adjustments and/or route changes that would affect the whole bus route. Second, if the share of fare revenue on the route attributable to overlaps was trivial, then there would be little incentive for FirstGroup to try to take advantage of this.
13. We therefore identified routes where the proportion of revenue arising from overlap flows accounted for at least 10 per cent of total revenue from that route. This led to 30 routes, seven in Edinburgh and 23 in Glasgow (see Annex 1).
14. For each of these routes we discussed the circumstances and competitive environment with FirstGroup, which provided details on the identities and frequencies of competitors at various times of the day and at weekends. This information was used to identify whether there were flows and routes where constraints imposed by competitors might deter FirstGroup from seeking to transfer passengers from bus to rail services, for example because passengers would be likely to switch to a competitor's bus services. This process is described in paragraphs 19 to 28.

Limitations of this analysis

15. On the other hand, routes could be reconfigured in a manner which may raise concerns. For example, routes could be replanned to serve as feeders into railway stations, with services along the length of the flow between railway stations made unattractive, by cutting service frequencies, increasing journey time, raising fares etc. Such route changes are not captured by this analysis which is based on existing routes. We also considered that in some circumstances catchment areas may differ from those used to identify overlaps, rather they may depend on the characteristics of particular locations and the nature of services available. This is discussed in paragraphs 5.16 to 5.18 of the report. Further routes have been identified because of these factors, see paragraphs 16 to 20.

Other potential problem routes

16. We identified 16 routes (11 in Glasgow and five in Edinburgh) where it was felt that there could be significant overlaps which were underestimated by the FirstGroup methods used to calculate overlap flows. For example, it might be that the catchment area around an outlying town is large—passengers from the whole town could consider travel from a central train station, or local bus stops, as substitutes. However, only passengers on the closest fare stage to the station may be attributed to the overlap. Another possibility in these circumstances might be for routes to be reconfigured to serve as feeders into the rail stations as described in paragraph 15.
17. In particular, we identified services from Cumbernauld, Hamilton and East Kilbride into Glasgow, and Livingston into Edinburgh. These routes are identified in Table 1.

TABLE 1 Additional routes added to reflect journeys from significant centres of population outside main conurbation

Region	Route number	Start	End	Number of significant overlap flows	Number of all overlap flows	Route revenue [£]	Proportion of revenue from all overlaps %
Glasgow	16	East Kilbride	Blairdardie	7	11	<div style="border: 1px solid black; border-radius: 50%; width: 100px; height: 100px; display: flex; align-items: center; justify-content: center;"> £ </div>	
Glasgow	18	East Kilbride	Summerston	7	10		
Glasgow	31	East Kilbride	Glasgow	1	4		
Glasgow	36	Abronnhill	Glasgow	3	4		
Glasgow	87	Kilsyth	Glasgow	1	1		
Glasgow	88	Kirkintilloch	Glasgow	2	2		
Glasgow	138	Newton Mearns	Easterhouse	5	10		
Glasgow	175	Campsie Glen	Glasgow	2	2		
Glasgow	240	Coltness	Glasgow	6	7		
Glasgow	X4/X5	Abronnhill	Glasgow	1	1		
Glasgow	X27	Kirkintilloch	Glasgow	1	2		
Edinburgh	27/X27	Bathgate	Edinburgh	1	3		
Edinburgh	28/X28	Bathgate	Edinburgh	1	6		
Edinburgh	X37/X39	Falkirk	Glasgow				
Edinburgh	44	Haddington/ Pencaitland	Balerno	4	16		
Edinburgh	129	Seton Sands	Silverknowes	6	10		

Source: CC.

18. The revenue for these 16 routes is about £[£] million (£[£] million for Glasgow and £[£] million for Edinburgh). The total overlap revenue is £[£] million (£[£] million for Glasgow and £[£] million for Edinburgh).

19. Additionally, concerns were raised by third parties about eight routes in the West Lothian region. These are mainly in the Livingston/Bathgate area, but were routes where FirstGroup did not identify relevant overlaps. These routes, identified in Table 2, are mainly peak-hour express services.

TABLE 2 Additional West Lothian routes added because of concerns put to us

West Lothian	X1	Armadale	Edinburgh
West Lothian	X2	Fauldhouse	Edinburgh
West Lothian	X23	Livingston	Edinburgh
West Lothian	X24	Livingston	Edinburgh
West Lothian	X26	Fauldhouse	Edinburgh
West Lothian	X32	Livingston	Edinburgh
West Lothian	X33	Fauldhouse	Edinburgh
West Lothian	16/212	Bathgate	Edinburgh

Source: CC based on third party evidence.

20. Some new passenger railway schemes are expected to be opened in Glasgow in the next few years. One that overlaps with existing FirstGroup bus services is the planned extension of the northern suburban line to a terminal at Anniesland via a station at Dawsholm. This expected to be introduced by the end of 2005. The only FirstGroup bus service which overlaps with this new flow is the service 91/92, and this creates a potential problem route.

Consideration of competition on these routes

Identifying 'effective' competition

21. For the 30 routes identified in Annex 1 as meeting the condition that at least 10 per cent of route revenue arose from overlap flows, we eliminated flows from consideration if there was effective competition on that route. Competition was considered effective if competitors offered a comparable frequency of service. If FirstGroup offered a 'frequent' service, ie at least one bus every 10 minutes, to be effective we required that competitor services had a frequency of less than 10 minutes greater than the FirstGroup service, for example if FirstGroup ran a service every 5 minutes, competitor frequencies had to be greater than every 15 minutes. This was because passengers facing a frequent bus service would be unlikely to refer to a timetable but instead would probably just wait at the bus stop for the next service, in which case the extra time they would be willing to wait for a competitor bus service would probably be limited. Where FirstGroup services were less frequent, then passengers would most probably plan their journey with reference to a timetable, as they do for trains. Therefore a longer gap between services would be more tolerable. We considered that competitor frequencies had to be at least half as frequent as FirstGroup services to be effective. These frequencies were calculated across all bus routes covering a particular flow: no account was taken of the quality or reputation of the competitor.

Out of hours services

22. FirstGroup runs many of its services outside peak times: early in the morning, late in the evening and on Sundays. Few other bus operators are active during early mornings or late evenings, and may have few or no services on Sundays.⁷ The extent of competition may therefore differ substantially between 'in hours' times, which we took to be weekdays and Saturdays between 7 am and 7 pm, and some or all out of hours periods, ie 7pm to 7am and all day Sunday. The concern has been raised that during periods when there are few competitors operating, and levels of patronage are low, it may be more worthwhile for FirstGroup to cut services and to influence customers to switch to rail, due to savings on bus operating costs, fewer non-overlap customers being adversely affected, and less threat of response from competitors.
23. Consequently we considered whether there was effective competition according to the criteria defined above both in hours, and out of hours. An out of hours problem was identified if there was not effective competition in any part of the out of hours period (provided that FirstGroup was running its bus service and the relevant train service was also operating on the relevant overlap) even if effective competition did exist for a part of out of hours period.

Applying competition rules

24. With regard to the routes identified in Annex 1, flows were excluded where there was effective competition, and we then recalculated for which routes overlap revenues exceeded 10 per cent of total route revenue. In hours, this led us to identify 12 routes where concerns were raised (seven in Glasgow and five in Edinburgh).

⁷In Edinburgh, Lothian tends to operate services outside peak times; in Glasgow Arriva and Caledonian have evening and Sunday services, and a few other operators run some of their services on Sundays or for a while during the evenings.

25. We discussed these routes with FirstGroup to see if there were any other factors which could affect competition on these routes. Issues considered included:
- Competitor bus services—where competitor services were seen as poor competitors, for example because they took a longer or slower route.
 - Entry/expansion—the threat of entry was considered where an existing operator was operating services that could very easily be extended or diverted to serve the same flows.
 - Fares—there may be difficulties in revising fares (for example, because of the interaction with the fare structure for the rest of the route, and area tickets etc).
 - Impact on non-overlapping flows—any service revisions may have an adverse effect on customers not on overlap flows.
 - Whether part of the route could be operated in isolation from the rest of the route in order to take advantage of areas where, for example, there were a high density of overlap flows or competitors were not present.
 - Alternative routes or modes of transport—we considered where passengers could easily shift to different non-overlap bus services going to similar start and end points.
 - Trains are a poor substitute—because of slow or infrequent services, much higher ticket prices, because rail stations are inconveniently situated for most passengers, crowding on the train etc.

These points could have an impact to some extent, but we did not find that any of the last five points were substantive enough to alter our assessments of any of the relevant routes. We were persuaded with regard to the first two points that there could be a substantive impact in the specific cases of a very few routes.

26. One Edinburgh route was identified where two large-scale competitors were very active close to this route, and FirstGroup argued that the competitors could very easily divert or extend their services in competition with FirstGroup should it raise fares or cut services. Additionally, one route was identified in Glasgow where one large-scale operator, and one smaller operator, were very active on routes running parallel to this route, and FirstGroup argued the competitors could easily establish new routes or divert existing routes to compete with this service, or passengers could easily take a competitor's service on a parallel corridor. Whether the competitors would or would not divert or extend their services is uncertain, but we were persuaded that FirstGroup was likely to believe that the competitors might well do so in these two cases, and so we dismissed these routes from our concerns.
27. However, we identified one express service where competitors took a much longer route serving intermediate stops. As this service provided a fast alternative to the train, we felt that it could potentially be at risk of withdrawal. Therefore we included this additional Glasgow route.
28. Allowing for these factors, four routes in the Edinburgh area, and seven routes in the Glasgow area, were identified as being of possible concern. The revenue for these 11 routes is about £[redacted] million (£[redacted] million for Glasgow and £[redacted] million for Edinburgh). The total overlap revenue is £[redacted] million (£[redacted] million for Glasgow and £[redacted] million for Edinburgh) and the significant overlap revenue is £[redacted] million (£[redacted] million for Glasgow and £[redacted] million for Edinburgh).

29. This process for identifying routes of concern is shown diagrammatically in Figure 1. The steps of this process that lead us to these 11 routes are shown in Table 3, along with the number of routes identified at each stage, with the relevant flows on the routes and the level of passenger revenues on them. The 11 routes are identified in Table 4.

TABLE 3 Steps to identifying problem routes using the 10 per cent rule—in hours

Step		Glasgow	Edinburgh	Aberdeen	Total
All overlap flows identified	Routes	66	19	1	86
	Flows (in identified routes)	620	163	1	784
	Revenues (from flows in identified routes) (£m)	[redacted]	[redacted]	[redacted]	[redacted]*
Identify routes where at least 10% of revenue is generated on overlap flows	Routes	23	7	0	30
	Flows (in identified routes)	363	87	0	450
	Revenues (from flows in identified routes) (£m)	[redacted]	[redacted]	[redacted]	[redacted]‡
For those routes, exclude revenues on flows where competitors offer a frequency of service comparable to FirstGroup	Routes	7	5	0	12
	Flows† (in identified routes)	58	50	0	108
	Revenues (from flows† in identified routes) (£m)	[redacted]	[redacted]	[redacted]	[redacted]§
Adjust for any special factors that meant services should be added to those identified, or excluded	Routes	7	4	0	11
	Flows† (in identified routes)	52	48	0	100
	Revenues (from flows† in identified routes) (£m)	[redacted]	[redacted]	[redacted]	[redacted]¶

Source: CC calculations.

*Less than £10million.

†Excluding flows with effective competition.

‡Less than £7.5million.

§Less than £2million.

¶Less than £2million.

TABLE 4 Problem routes identified using the 10 per cent rule—in hours

Region	Route number	Start	End	Number of all overlap flows	Route revenue [%]	Proportion of revenue from all overlaps %	Proportion of revenue from overlaps not facing significant competition %	Comments
Edinburgh	58	Dunblane	Stirling	3				Significant
Edinburgh	38/38A	Stirling	Edinburgh	38				Significant
Edinburgh	54/54A	Bridge of Allan	Stirling	1				Significant
Edinburgh	X5	North Berwick	Edinburgh	15				Significant
Glasgow	54	Penilee	Summers-town	8				Significant
Glasgow	64	Carmyle	Glasgow	2				Significant
Glasgow	216	Helensburgh	Glasgow	45				Significant
Glasgow	262	Airdrie	Glasgow	39				Significant
Glasgow	109/119	Baljaffray	Glasgow	4				Significant
Glasgow	204/205/215	Balloch	Glasgow	45				Significant
Glasgow	X1	Hillhouse	Glasgow	1	Not significant but added in because competitors take a much longer route and potential for interchange at Hamilton			

Source: CC calculations.

30. An out of hours problem was identified for 20 of the 30 routes listed in Annex 1, where there would be potential to shift customers from buses to rail and overlap revenues exceed 10 per cent of route revenue even after excluding overlaps where competitors are operating. Two services have been excluded as before because we consider that there is a credible threat of entry by large operators nearby. These 20 routes are identified in Table 5. Note that not all the services identified as being of concern in hours are an issue out of hours, either because FirstGroup do not run buses at these times or there are no trains at the times when competitors are not operating.

TABLE 5 Routes meeting the 10 per cent criteria where there is an out of hours concern

Region	Route number	Reason
Edinburgh	38/38A	Problem identified in all hours
Edinburgh	58	Problem identified in all hours
Glasgow	203	[%] overlap at some out of hours time
Glasgow	262	Problem identified in all hours
Glasgow	54	Problem identified in all hours
Glasgow	45	[%] overlap at some out of hours time
Glasgow	57	[%] overlap at some out of hours time
Glasgow	109/119	Problem identified in all hours
Glasgow	20/X12	[%] overlap at some out of hours time
Glasgow	204/205/215	Problem identified in all hours
Glasgow	62	[%] overlap at some out of hours time
Glasgow	267	[%] overlap at some out of hours time
Glasgow	263	[%] overlap at some out of hours time
Glasgow	64	Problem identified in all hours
Edinburgh	54/54A	Problem identified in all hours
Glasgow	40	[%] overlap at some out of hours time
Glasgow	19/43	[%] overlap at some out of hours time
Glasgow	255	[%] overlap at some out of hours time
Glasgow	61	[%] overlap at some out of hours time
Glasgow	66	[%] overlap at some out of hours time

Source: CC.

Identifying effective competition on broader catchment area/reconfiguration concerns routes

31. Routes that raised concern because of the potential for route reconfiguration, or because of the size of the catchment areas, as identified in Tables 1 and 2, were also examined to see if the presence of competitors would prevent FirstGroup from seeking to transfer passengers from bus to rail services. The approaches to identifying which of these routes may cause concern are also illustrated in Figure 1.
32. The concerns related to a number of discrete geographical areas. Our assessment of the effectiveness of competition on these routes for in hours services is:
 - (a) Three routes serve East Kilbride (16, 18, 31) and could be subject to some reconfiguration as feeder routes to the rail stations (one party described East Kilbride to us as a 'classic opportunity to run a feeder network'). There is very little competition on the East Kilbride section of those routes. Such concerns could extend to the 66, although there is infrequent competition from Caledonia on the (less direct) 66 route (which has a very limited overlap with the other routes). Therefore the 16, 18 and 31 were not ruled out from causing concern for in hours services.
 - (b) Four routes (36, X4, X5, X37/X39, the last of which is operated by First Edinburgh) serve Cumbernauld. Stagecoach, however, operates every 15 minutes, but generally not late evening. The X4/X5 run every 10 minutes (as does the X3, but serving the northern part of Cumbernauld). Although there are four services an hour on the slower 36, the frequency criteria are likely to be satisfied in hours. We ruled out these services from our concerns for in hours services.
 - (c) Four routes serve Kirkintilloch (87, 88, 175, X27) where some reconfiguration of feeder services to Lenzie may be a concern. McKindless operate every 10 minutes, satisfying the frequency criteria, but not out of hours. We ruled out these services from our concerns for in hours services.
 - (d) One route (138) serves Newton Mearns, with a frequency of three services an hour (as does the 44A by a different route), which could be regarded as giving rise to concern about reconfiguration into feeder services. But Newton Mearns is also served (albeit on different routes) by Stagecoach (two out-of-town services an hour) and Caledonia (on the 44 route, less regularly, once or twice an hour) possibly sufficient to satisfy the frequency criteria, and which also both provide limited out of hours service. We ruled out these services from our concerns for in hours services.
 - (e) The 240 is a lengthy service between the outskirts of Wishaw and Glasgow, with no competition on much of its route and feeder possibilities at various points. Therefore the 240 was not ruled out from causing concern for in hours services.
 - (f) In Edinburgh, the 27/X27/28/X28 could be regarded as giving rise to concern about some reconfiguration on feeder services to North or South Livingston. We understand that current catchment areas are based on limited radii around these stations and would exclude most of the Livingston bus passengers; also that most passengers travel to the centre of Edinburgh. There is currently no competition between Edinburgh and Livingston. The 'X' services in the list are all limited peak-hour services only to/from the Livingston or Bathgate areas and with limited annual revenue, but subject to the same considerations—ie a risk

of reconfiguration as feeders, but no out of hours concern. With regard to service 28, the specific concern was expressed to us about Kirknewton, between Livingston and Edinburgh, similar to that above about other possible reconfigurations of the route as a feeder. These services were not ruled out from causing concern for in hours services.

- (g) The Musselburgh routes (44 and 129), however (also included because of concern about possible reconfiguration as feeders), face strong competition from Lothian with 14 buses an hour, including out of hours and are unlikely to be of concern.
 - (h) The 16 and 212 (a Sunday service) is a lengthy route from Bathgate and Livingston to Edinburgh, with concern expressed to us only about the Uphall–Edinburgh flow, but which passes several fully built-up areas not served by rail. There is no competition on this route. However, as the route primarily serves intermediate traffic going to or from Uphall, Bathgate and the Edinburgh suburbs, and these destinations are not served by rail, we conclude that there would be no profitable strategy FirstGroup could pursue to divert passengers to rail as many could not complete their journeys.
33. Consequently we do not rule out the following routes from causing concerns because of effective competition in hours: the 16, 18, 31 and 240 in Glasgow, and the X1, X2, X23, X24, X26, X27/27 and X28/28, X32 and X33 routes in the Edinburgh and the West Lothian areas.
34. For the routes identified because of concerns about catchment areas or the potential for reconfiguration (Tables 1 and 2), there are also some concerns about out of hours operations where competitors are not active. However, some of the FirstGroup routes do not operate outside peak times. We therefore considered whether other operators provided effective competition (using the criteria identified in paragraph 21) over a substantial proportion of the route out of hours when both FirstGroup buses and Scotrail services are running. The following routes can not be ruled out of concern out of hours: in Glasgow the 16, 18, 36, 88, 175, 240 and X4/5; in Edinburgh, the 27, 28, and X37/39.

Scope for profitable reconfiguration of broad catchment area/reconfiguration routes to transfer passengers to rail

35. The routes identified in Tables 1 and 2 are held to present a problem in that if catchment areas were potentially larger than had been assumed by FirstGroup, the proportion of revenue from overlap routes could in fact exceed 10 per cent such that it might be feasible to attempt to profitably divert passengers to rail, and/or there would be potential to run feeder services around the larger catchment area that take passengers to the rail station rather than running through services to the final destination.
36. For the routes identified in paragraphs 31 and 32, FirstGroup provided a detailed analysis attempting to demonstrate that there were no profitable options for running feeder routes and severing through services within the wider catchment areas, or for reducing service frequency, in order to encourage passengers to transfer to rail. It argued that only a proportion of passengers who could make their trip between the same start and end points would transfer to rail, and cost savings from reducing bus mileage would be limited by the need to run feeder services and maintain some proportion of service levels within the major conurbations. It further stated that revenues would be lost because passengers who wanted to travel to non-rail served

destinations would be unable to do so. Therefore it argued that the net effect of such policies would be to reduce profits.

37. We noted that FirstGroup had employed some conservative assumptions, for example it used a value of 50 per cent for the proportion of passengers who would switch to rail services if bus services were withdrawn.⁸ However, we did not consider that its models fully identified all potential revenue gains and cost savings which could lead to an associated increase in profits, eg from where passengers make extra multi-modal trips (such as taking a feeder bus service to a station or a bus from the destination station to their final journey's end) or alternative trips. We also noted that rail fares could often be higher than bus fares, and that a substantial number of bus journeys were made within the broad catchment areas and these trips would not be harmed by these policies. Nonetheless, even allowing for these other effects, some routes did not appear capable of supporting the profitable operation of service cutting policies. These routes were those where a high proportion of their passenger traffic arose in the broad catchment areas, rather than in the suburbs of the conurbations, but where a substantial proportion of those passengers were travelling to final destinations which were not served by rail, and so they would not find a transfer to rail services attractive.
38. We concluded on the basis of the evidence presented by FirstGroup that there was no likelihood that it could profitably practice policies of cutting through services from Kirkintilloch (services 88, 175 and X27 (Glasgow)), Motherwell (service 240) and the X2 and X33 service from Fauldhouse in West Lothian. Other routes were found to be profitable under our assumptions as described in paragraph 37.⁹ Services X27 and X28 into Edinburgh appeared to offer no profitable opportunities but these routes are almost identical to the service 27 and 28 (and had been grouped with these services as a combined 27/X27 or 28/X28 route by FirstGroup for other purposes), differing only in that they did not stop in suburban Edinburgh. We found it difficult to distinguish between these services which were running identical routes, and as the 27 and 28 might offer potential for a profitable reduction in through services, the 27/X27 and 28/X28 have been retained as problem routes.

New rail services

39. As noted above there is a potential future overlap between the new train services to Anniesland from the Northern Suburban line in Glasgow and FirstGroup's service 91/92. The levels and pattern of demand for public transport on this flow, and the hours and frequency of operation of this bus service and the rail service and competitor bus services cannot be known in advance as they may vary following the introduction of this rail link. Therefore this route is classified as a 'possible' problem route, as in the future overlap flows, excluding those where there is effective competition, might exceed 10 per cent of route revenue. FirstGroup estimated on the basis of one week's passenger data that the proportion of route revenue arising from journeys between the bus fare stages closest to Maryland and Anniesland stations accounted for [] per cent of route revenue. Further, it noted the closest two fare stages at Maryhill are both some 1km distant from the actual rail station, ie further than has generally been assumed to constitute an overlap in Glasgow. Therefore it appears that route 91/92 would be unlikely to constitute a 'probable' problem route based on current data. Other new rail services may open during the period when

⁸This value was larger than the proportion of respondents in the NOP survey who said that they would switch to rail if bus services ceased to operate. However, this does beg the question whether the other 50 per cent could really switch to private transport, alternative journeys or not travel at all.

⁹For example, allowing for the diversion of passengers to additional or alternative journeys on FirstGroup services, higher train fares, or cost reductions from cutting service frequencies.

FirstGroup operate the Scotrail franchise, in which case any new overlap routes would also be added to the list of 'possible' problem routes.

Conclusions

40. In total therefore we considered actual and potential overlap flows on 55 routes: 35 in Glasgow, about one-third of its First Glasgow routes, and 20 in Edinburgh, under 10 per cent of First Edinburgh's routes. From the considerations listed above, possible concerns in hours may arise on only some of these routes, but on others out of hours.
41. The list of all the potential problem routes which have been raised is shown in Table 6, together with whether the route is classed as a 'probable' problem route, a 'possible' problem route (ie it could become a 'probable' problem if competitors reduced relative services, or if the patterns of passenger use on the service change so that overlap flows without effective competitors account for more than 10 per cent of route revenue) or whether the route has been excluded for other reasons.

TABLE 6 Allocation of routes to possible and probable categories

(i) Bus routes where the proportion of revenue arising from overlap flows is over 10 per cent of whole route

Region	Bus service number	Number of overlaps	Flow/ route ratio of revenues %	In hours probable or possible	Out of hours* probable or possible	Exceptional reasons for inclusion or exclusion from problem routes	
Edinburgh	38/38A	38	<div style="display: flex; align-items: center; justify-content: center;"> } </div>	Probable	Probable		
Edinburgh	X5	15		Probable	No out of hours service		
Edinburgh	58	3		Probable	Probable		
Edinburgh	X29	6			Possible	No out of hours service	
Glasgow	M29	8			Possible	Tendered out of hours	
Glasgow	X1	1			Probable	No out of hours service	Classed as probable as competitor service substantially slower
Glasgow	203	11				Probable	
Glasgow	262	39			Probable	Probable	
Glasgow	54	8			Probable	Probable	
Glasgow	45	15				Probable	
Glasgow	57	18				Probable	
Glasgow	109/119	4			Probable	Probable	
Glasgow	216	45			Probable	No out of hours service	
Glasgow	20/X12	1				Probable	
Glasgow	204/205/215	45		✂	Probable	Probable	
Glasgow	38	6				Probable	Possible
Glasgow	62	34				Probable	
Glasgow	267	10				Probable	
Glasgow	263	7				Probable	
Glasgow	44	2				Probable	
Glasgow	64	2		Probable	Probable		
Edinburgh	124	21			Probable	Possible	
Edinburgh	54/54A	1		Probable	Probable		
Glasgow	40	28			Probable		
Glasgow	19/43	5			Probable		
Glasgow	255	10			Probable		
Glasgow	61	5			Probable		
Edinburgh	43/43B	3		-	-	-	Excluded—ease of entry by competitors
Glasgow	66	34			Probable		
Glasgow	55	6		-	-	-	Excluded—ease of entry by competitors
TOTAL	30			11	17	20	2

(ii) Additional routes added to reflect journeys from significant centres of population outside main conurbation

Region	Route number	Number of all overlap flows	Proportion of revenue from all overlaps %	In hours Probable or possible		Out of hours Probable or possible		
Glasgow	16	11	}	Probable		Probable		
Glasgow	18	10		Probable		Probable		
Glasgow	31	4		Probable			Possible	
Glasgow	36	4			Possible	Probable		
Glasgow	87	1			Possible	No out of hours service		
Glasgow	88	2			Possible (excluded)	Probable (excluded)		FG demonstrate no scope for profitable reconfiguration
Glasgow	138	10			Possible		Possible	
Glasgow	175	2			Possible (excluded)	Probable (excluded)		FG demonstrate no scope for profitable reconfiguration
Glasgow	240	7		✂	Probable (excluded)			FG demonstrate no scope for profitable reconfiguration
Glasgow	X4/X5	1			Possible	Probable		
Glasgow	X27	2			Possible (excluded)	No out of hours service		FG demonstrate no scope for profitable reconfiguration
Edinburgh	27/X27	3			Probable*		Probable*	
Edinburgh	28/X28	6			Probable*		Probable*	
Edinburgh	X37/X39					Possible	Probable	
Edinburgh	44	16			Possible		Possible	
Edinburgh	129	10			Possible		Possible	
TOTAL	16			5	7	7	4	

(iii) Additional West Lothian routes added because of concerns put to us

Region	Route number	Number of all overlap flows	Proportion of revenue from all overlaps %	In hours Probable or possible		Out of hours Probable or possible		
West Lothian	X1			Probable		No out of hours service		
West Lothian	X2			Probable (excluded)		No out of hours service		FG demonstrate no scope for profitable reconfiguration
West Lothian	X23			Probable		No out of hours service		
West Lothian	X24			Probable		No out of hours service		
West Lothian	X26			Probable		No out of hours service		
West Lothian	X32			Probable		No out of hours service		
West Lothian	X33			Probable (excluded)		No out of hours service		FG demonstrate no scope for profitable reconfiguration
West Lothian	16/212			Probable (excluded)		No out of hours service		CC consider no scope for profitable reconfiguration
TOTAL	8			5	0	0	0	

(iv) Others—route added because of potential future overlap with new rail service

Region	Route number	Number of all overlap flows	Proportion of revenue from all overlaps %	In hours Probable or possible		Out of hours Probable or possible	
Glasgow	91/92		☒		Possible	No out of hours service	
TOTAL	1			0	1	0	0
	<i>Routes</i>			<i>In hours</i>		<i>Out of hours</i>	
				<i>Probable</i>	<i>Possible</i>	<i>Probable</i>	<i>Possible</i>
Grand total	55			21	25	27	6

Source: CC calculations.

*For both route X27 and X28, First have presented evidence arguing that it would be unprofitable to introduce service cuts or reconfigurations. However, the same results did not apply for the 27 and 28 which are identical services apart from the fact that the X services do not pick up or drop customers in suburban Edinburgh. As these routes have generally been viewed together and appear to be interchangeable, we have here treated them as one entity and therefore have defined any problem as applying to both of them. If they were separated this would create problems for controlling fares, service headway etc, and the undertakings would need to define stopping patterns as well as service numbers on relevant controlled routes.

TABLE 1 Bus routes where the proportion of revenue arising from overlap flows is over 10 per cent of whole route

Region	Bus service number	Number of overlaps	Route total passenger numbers '000s	Route total revenues £'000	Overlapping passengers '000s	Overlapping revenue £'000	For all overlap flows (%)	
							Flow/route ratio of passengers	Flow/route ratio of revenue
Edinburgh	38/38A	38)					
Edinburgh	X5	15						
Edinburgh	58	3						
Edinburgh	X29	6						
Glasgow	M29	8						
Glasgow	X1	1						
Glasgow	203	11						
Glasgow	262	39						
Glasgow	54	8						
Glasgow	45	15						
Glasgow	57	18						
Glasgow	109/119	4						
Glasgow	216	45						
Glasgow	20/X12	1						
Glasgow	204/205/215	45						
Glasgow	38	6				✂		
Glasgow	62	34						
Glasgow	267	10						
Glasgow	263	7						
Glasgow	44	2						
Glasgow	64	21						
Edinburgh	124	21						
Edinburgh	54/54A	1						
Glasgow	40	28						
Glasgow	19/43	5						
Glasgow	255	10						
Glasgow	61	5						
Edinburgh	43/43B	3						
Glasgow	66	34						
Glasgow	55	6						

Source: CC analysis of FirstGroup data.