



Aberdeen Rapid Transit

Detailed Options Appraisal

Technical Note D - Ticketing

On behalf of:

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Registered Office: Buckingham Court Kingsmead Business Park, London Road, High Wycombe, Buckinghamshire, HP11 1JU
Office Address: 3rd Floor, Randolph House, 4 Charlotte Ln, Edinburgh EH2 4QZ
T: 0131 297 7010 E: info.edinburgh@stantec.com

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	Name	Position	Signature	Date
Prepared by:	Emma Schneider	Principal Transport Planner	ESc	15/02/23
	Emily Seaman	Senior Associate	ES	
	George Daugherty	Senior Associate	GD	
Reviewed by:	Emily Seaman	Senior Associate	ES	15/02/23
Approved by:	Scott Leitham	Director, Transport Planning	SL	15/02/23
For and on behalf of Stantec UK Limited				

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1 Ticketing Options

1.1 Introduction

- 1.1.1 This technical note sets out the options available for ticketing and fares collection on the ART system, and considers the benefits, shortcomings and risks of each. The analysis covers the price and range of ticketing products offered, as well as the means of purchase, method of payment, validation process, eligibility criteria, physical form and relationship with other tickets/systems.
- 1.1.2 This includes discussion regarding the opportunities that are available to scheme promoters and how they could apply to the different options.

1.2 Pricing

- 1.2.1 Detailed decisions regarding individual ticket pricing will inevitably depend upon finally agreed objectives for ART in respect of target patronage and mode share; financial performance, either target profit margin or level of available budget support (subsidy); and level of operating cost. While these issues are yet to be fully determined, there are some principles that it is useful to consider at this stage, specifically:

- Relationship with other local bus service fares
- Basis of pricing – whether based on distance and/or time of day or flat fee per trip

- 1.2.2 These are discussed in turn below.

Relationship with other local bus service fares

- 1.2.3 The key question in the relationship with other bus services is whether ART is charged at a premium that recognises the higher service quality, in terms of vehicle standards and journey times etc., or whether it is aligned to prevailing fare scales in the area.
- 1.2.4 The argument for a premium fare is that ART is a superior service offer and can command a higher price that users are willing to pay. A premium fare would also potentially offset any higher costs of operation associated with the type of vehicles used and the supporting infrastructure, the latter extending beyond physical works to the employment of customer support staff, for example.
- 1.2.5 There are, however, some clear disadvantages with a premium fare approach:
- Impact on demand – there is an inevitable trade-off between price charged and volume of sales due to the elasticity of demand. This is a complex area for analysis, involving comparison of price and generalised cost of ART versus alternatives but at a high level, all else being equal, higher prices will lead to lower demand.
 - Affordability and inclusion – there is a risk that the application of a premium will make fares unaffordable to people with lower incomes and could contribute to increased social exclusion. This would be a particular concern in instances where a ‘standard’ bus service is replaced by ART and travellers do not have the choice of a lower cost option.
 - Confusion and complexity – the existence of a two-tier pricing structure creates complexity in the treatment of through and joint tickets, for example where users may have a two-leg journey that involves both ART and a standard service, or where there is a common route section served by both. This complication is exacerbated for multi-journey tickets which are typically sold on an area and period basis, rather than for a specific number of journeys,

and could involve myriad combinations of ART and standard bus trips. It would be unwieldy to try to capture these permutations in different versions of a multi-journey ticket and users would be entitled to expect that an integrated public transport network would have a simple integrated ticket offer.

- 1.2.6 The option of premium fares would be most feasible under ART options 5 and 5A where new ART services are added to the existing network, albeit with rationalisation of some local services. It would be more difficult in options 2, 3 and 3A where enhanced existing services form the basis of the offer. Assuming these latter options were delivered via a BSIP, then LTA powers are limited to setting maximum fares for particular journeys; this would enable it to rule out premium fares but not to deliver them.
- 1.2.7 Overall, however, it is considered that the ART vision is best delivered with prices that are aligned with existing local bus fares.

Basis of pricing

- 1.2.8 There are two broad options for the basis of single ticket pricing: by distance or per trip. In the former the price varies according to distance travelled while with the latter a flat fare is applied, regardless of distance travelled.
- 1.2.9 The distance based approach is traditionally the most common for UK bus and rail networks and was historically seen as the best to maximise revenue, particularly if the farescale had fine gradations. It is, however, less easily communicated to potential users because of the number of different fares that apply across a single route and is therefore difficult to include in printed publicity material. It can also act as a barrier to travel for irregular users or those unfamiliar with an area, because they may not know the cost before boarding or be uncertain about the correct name of their alighting point.
- 1.2.10 The flat fare approach has the advantage of simplicity, leading to faster boarding times and making it easier to promote and advertise. It is, of course, much coarser than a distance based scale leading to potential diminution of revenue, either from longer distance passengers having a lower than expected fare or short distance users being deterred by a relatively high fare that is not seen as value for money. The system is popular in European cities and has been adopted more widely in the UK in recent years where operators have found that the simplicity can be a selling point that generates additional trips.
- 1.2.11 For ART, much of the route coverage is within the Aberdeen built-up area where First and Stagecoach each have flat rates for day and weekly tickets, albeit with some variation in single fares. This would suggest that a flat fare could be appropriate; however, there may need to be a second higher rate for trips to and from Portlethen and Craibstone Park & Ride, given the much higher fares that currently prevail. Subject to more detailed demand analysis, this higher rate may also be appropriate for cross-city trips if these form a significant element of overall demand.
- 1.2.12 As noted previously, for ART Options 2, 3 and 3A delivered via a BSIP, the LTA is limited to specifying maximum fares and would therefore not be able to deliver flat fares without operator agreement.

1.3 Ticket Range and Products

- 1.3.1 There are several options for the specification of the range of tickets offered for ART and decisions will be required in due course on the following factors:
- Class of user
 - Period

- Multi-operator
- Multi-modal

1.3.2 These are discussed in turn below.

Class of user

- 1.3.3 Public transport operators have traditionally offered separate ticketing products for different classes of user. As well as the default adult class, operators have typically offered separate tickets for children, for students in full-time education and, as required by the National Entitlement Card, for elderly and disabled users. Some operators and authorities have also provided discounted tickets for jobseekers.
- 1.3.4 Under current legislation, ART will be required to provide free travel for elderly and disabled persons and for young persons under the age of 22, with reimbursement by Transport Scotland at fixed proportions of the corresponding adult single fare. The latter removes the need for child and student tickets, although there is arguably a case for an offer aimed at full time students over the age of 21. Consideration would need to be given to the administrative costs of such a scheme and potential revenue foregone versus the benefit to a relatively small number of users.
- 1.3.5 Bus operators in Aberdeen currently take differing views of the offer to jobseekers: Stagecoach North Scotland participates in the Group's national scheme that gives 50% off the corresponding adult single or return fare for holders of a Jobcentre Plus travel card while First does not offer any discount. The question for ART is whether to emulate the Stagecoach or First policy. In ART options that involve rationalisation of existing services, it may be the case that a current Stagecoach service is replaced by ART; if a jobseeker ticket is not offered on ART there would be a loss of benefit to some users and potential reputational damage to the ART promoter. For that reason, it is likely to be appropriate to offer a jobseeker ticket.

Period

- 1.3.6 Bus operators have become more imaginative in recent years in developing their ranges of tickets. In many places, returns have been replaced or supplemented by unlimited travel day tickets while weekly point to point 10-journey tickets and seasons have been superseded by area-based unlimited travel weekly and monthly products. There has also been an expansion of 'hopper' or transfer tickets, allowing unlimited boarding within a timeframe of one or two hours, thus enabling interchange between services with no financial penalty.
- 1.3.7 Many of these developments are the result of the increased functionality of electronic ticketing systems and are to be welcomed.
- 1.3.8 Most recently, changes in working patterns following the pandemic has led to operators introducing more flexible ticket options, typically in the form of 'bundles' of either single journey tickets or day tickets priced at a discount to individual purchase. The pricing and specification of bundle offers needs to be carefully considered to minimise the risk of users switching to bundles and bulk buying tickets for occasional travel and thus undermining the revenue base.

Multi-operator

- 1.3.9 It is implicit in the vision for ART that it forms part of an integrated public transport system with users able to transfer seamlessly between services and, indeed, modes. It follows that ART ticketing should facilitate travel on multiple operators. In Aberdeen, this would mean building upon the Grasshopper scheme that already offers day and weekly ticket options; however, to be truly effective, the full range of ticket types ought to be available on a multi-operator basis.

Multi-modal

- 1.3.10 A further development from multi-operator ticketing would be to extend the scheme to rail and, potentially, other travel-related activities such as car parking or cycle hire. The PlusBus scheme already exists for add-on bus travel to longer rail journeys, a fully multi-modal system would require considerable planning and development. Whether there is sufficient demand to justify the investment may be debatable at present, but the recent history of technological development in smart phones, GPS and intelligent transport systems suggests that the concept is kept under review.

Delivery

- 1.3.11 Delivery of a full range of ART tickets as described above could be constrained by the operating model. Under a BSIP, the LTA is able to specify maximum fares, 'ticketing requirements' and multi-operator travel card pricing. So, for ART options 2, 3 and 3A the operators' agreement would be needed to achieve full delivery. With options 5 and 5A, the LTA would be able to specify all aspects of the ticketing scheme.
- 1.3.12 A further consideration is the multi-operator aspect of ART ticketing: typically, multi-operator tickets are priced above individual operator tickets, reflecting the better service offer that is provided and also protecting the revenue bases of the operators. A balance needs to be found between the aspiration for ART to be an affordable system and the requirement not to distort competition by interfering with individual operators' ticket sales.

1.4 Purchase and Methods of Payment

- 1.4.1 The range of purchasing channels and methods of payment for tickets have increased significantly in recent years, with multiple options available for both on-bus and advance purchase. These options and their relative strengths and weaknesses are discussed in turn below.

On Bus

Cash Transaction

- 1.4.2 Cash transaction is the traditional, simplest and most accessible method of payment, this can be accompanied by an exact fare policy where passengers place their money in a secure vault viewed by the driver with no change given, as used by First Aberdeen. This has security advantages over the alternative of drivers giving change, as used by Stagecoach, but is less customer friendly. Perceived risk of infection from handling cash has seen a move away from direct cash transactions since the pandemic, but it remains a necessary option for users without access to smarter solutions.

EMV (Europay Mastercard®, Visa ®) Smartcard

- 1.4.3 Payment by debit or credit card using a card reader integrated into the driver's ticket machine. This option results in on-board transactions usually being quicker than paying by cash, removes the security risks and logistics involved in cash handling and automates accounting. First Bus Aberdeen have recently implemented a Tap On Tap Off (TOTO) payment system where customers 'Tap On' with the driver as they board, and 'Tap Off' using one of the readers on the bus as they exit the bus. The single fare is then calculated based on the distance travelled. If additional journeys are made throughout the day, the overall day payment is capped at the maximum cost of a day ticket. Payment can be made with any valid credit card or debit card as well by Google and Apple Pay.

Mobile Payment

- 1.4.4 Mobile Payment involves payment using a financial services app on a smartphone. The principal technologies are Apple Pay and Google Pay, both of which function in a similar way to EMV cards, from the operator's perspective.

Off Bus - at Time of Travel

Ticket Vending Machine

- 1.4.5 Tickets are purchased from a vending machine at the boarding stop, either using cash or card/mobile payment. The system transfers the time spent in the purchasing transaction from the bus, reducing dwell times, although a validation process is required on bus, either by visual inspection or ticket reader. Vending machines can be a target for theft or vandalism.

Off Bus - in Advance

Operator office or agent

- 1.4.6 Traditional form of travel pass purchase where the customer requires to visit either an operator travel shop or a retail outlet acting as a ticket agent. This can be a useful back up to smarter options but is not recommended as the sole means of advance purchase due to the potential inconvenience for users. From an operator perspective, the system requires some form of support to agents for ticket stocks etc., incurs commission fees and creates a cash flow delay compared to other options.

Ticket Vending Machine

- 1.4.7 As described in paragraph 1.4.5 above.

Online or app

- 1.4.8 This involves an internet based transaction using the operator's website or app and functioning in a similar way to the smart options described above.

Ticket Validation

- 1.4.9 For the off bus purchase options, there is a need for ticket validation on the bus. At its simplest, this could be a visual inspection by the driver but for the tram-like vehicles proposed under Option 5, this would not be feasible as the driver sits in a segregated cab. However, card readers placed at vehicle entrances would provide a quick and straightforward check. They could also be used in conjunction with a Tap On, Tap Off system.
- 1.4.10 Generally speaking, ticket scheme purchase arrangements are determined by the scheme promoter which, in the case of a BSIP, could be a continuation and development of Grasshopper with Aberdeenshire Council administering the scheme on behalf of the participating bus operators. Under a franchising arrangement, as per Options 5 and 5A, the LTA would likely have this power, assuming it carries the revenue risk.

Off-Bus Revenue Protection

- 1.4.11 Off-bus ticketing does generate a risk to operator revenue due to the potential for fares evasion. The chosen ticket purchasing mechanism must ensure revenue protection for the scheme can be maximised, which may require additional operator costs for e.g. ticketing inspectors.

1.5 Physical form

- 1.5.1 The physical form of tickets is most likely determined by the purchase and payment arrangements that are put in place. It is reasonable to expect that a number of formats will be available including paper tickets printed either by on-bus ticket machine or off-bus vending machine (although note that First Bus Aberdeen are removing paper tickets, at least for concessionary fares) and e-tickets using QR code technology stored in app and capable of display on smartphone or printed off from personal computer. In the case of Tap On Tap Off, there would be no physical ticket at all, but the EMV card used can be interrogated to confirm purchase for revenue protection purposes.

1.6 Relationship with other tickets

- 1.6.1 Under Options 2, 3 and 3A, operators would have commercial freedom to specify and sell their own ticket ranges for use on the services that they operate, in addition to the ART range. This is a common feature of most areas with more than one operator: as noted above, in Aberdeen at present the multi-operator Grasshopper is available alongside the individual First and Stagecoach ticket ranges and similar arrangements apply in Glasgow with ZoneCard and Dundee with ABC 'All Bus Companies' tickets.
- 1.6.2 As noted in Section 1.3, there is a degree of tension between the aspiration for ART ticketing to be affordable and avoidance of distorting competition by interfering with individual operators' ticket sales.

1.7 Conclusions

- 1.7.1 This technical note has discussed the key issues relating to ticketing arrangements for ART.
- 1.7.2 On pricing, it is recommended that ART is not priced as a premium product, principally because it is anticipated that there will be instances where ART replaces existing services, and it would not be appropriate for those users' fares to rise when they do not have an alternative (cheaper) service.
- 1.7.3 It is recommended that pricing follows latest best practice in the bus industry with simple fare scales, multiple options for ticket duration and specific products aimed at key user groups. The need to balance affordable fares with avoiding interference with individual operator tickets is highlighted.
- 1.7.4 Options for payment and purchase arrangements are discussed and we recommend taking advantage of latest developments in electronic ticket system technology while maintaining accessibility for users who rely on cash, while ensuring revenue protection.