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Committee Passenger Transport
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Integrated Ticketing – progress report and next steps

1. Purpose

To inform the Committee of progress with the GW Integrated Ticketing project, and to recommend steps for the further development of the project.

2. Significance of the decision

The matters for decision in this report **do not** trigger the significance policy of the Council or otherwise trigger section 76(3)(b) of the Local Government Act 2002.

3. Background

3.1 Integrated ticketing

An integrated ticketing system is one where the passengers have the ability to use a single ticket regardless of the service used. Thus this single ticket could be used on all trains, buses and ferries in the region.

The ticket is usually an “electronic” one, usually a credit card sized contactless “smartcard” on which the user can store money. This ticket is then passed over a reader on the vehicle, which deducts the appropriate fare. Often the passenger is required to “tag-on” the vehicle when boarding, and “tag-off” when getting off. This allows for accurate fare calculation, and requires no input from the driver/guard.

Information regarding ticket transactions is sent to a central clearing house. This clearing house processes the data and redistributes the fare revenue to the appropriate operators according to service usage.

Integrated ticketing systems are usually run by the local regional council (such as in Christchurch and Hamilton, which have the only integrated ticketing systems in NZ) rather than the operators as the information obtained by the system includes patronage data which is commercially sensitive.

Benefits from integrated ticketing include:

- user convenience
- operational advantages (speedier trips, revenue protection)
- easier sales, and extra information for planning, monitoring and marketing.

3.2 Why GW is looking at integrated ticketing

Increasing public transport patronage is one of the key goals of the GW Long-Term Council Community Plan (LTCCP). The LTCCP states that increasing patronage will (among other measures) require “*a new integrated ticketing system*”.

The LTCCP also provides for the Council to “*Undertake an integrated ticketing review by 30 June 2007*”.

The LTCCP contains provision for funding of \$6.2m for integrated ticketing (available from 2008/09).

The Draft Regional Passenger Transport Plan contains the following objective:

“A ticketing system that is integrated and transferable across all operators”,

and the following policy:

“support the implementation as funding permits of an integrated ticketing system under GWRC or other public agency control which enables all train, bus and ferry journeys to be paid with a single smart card”.

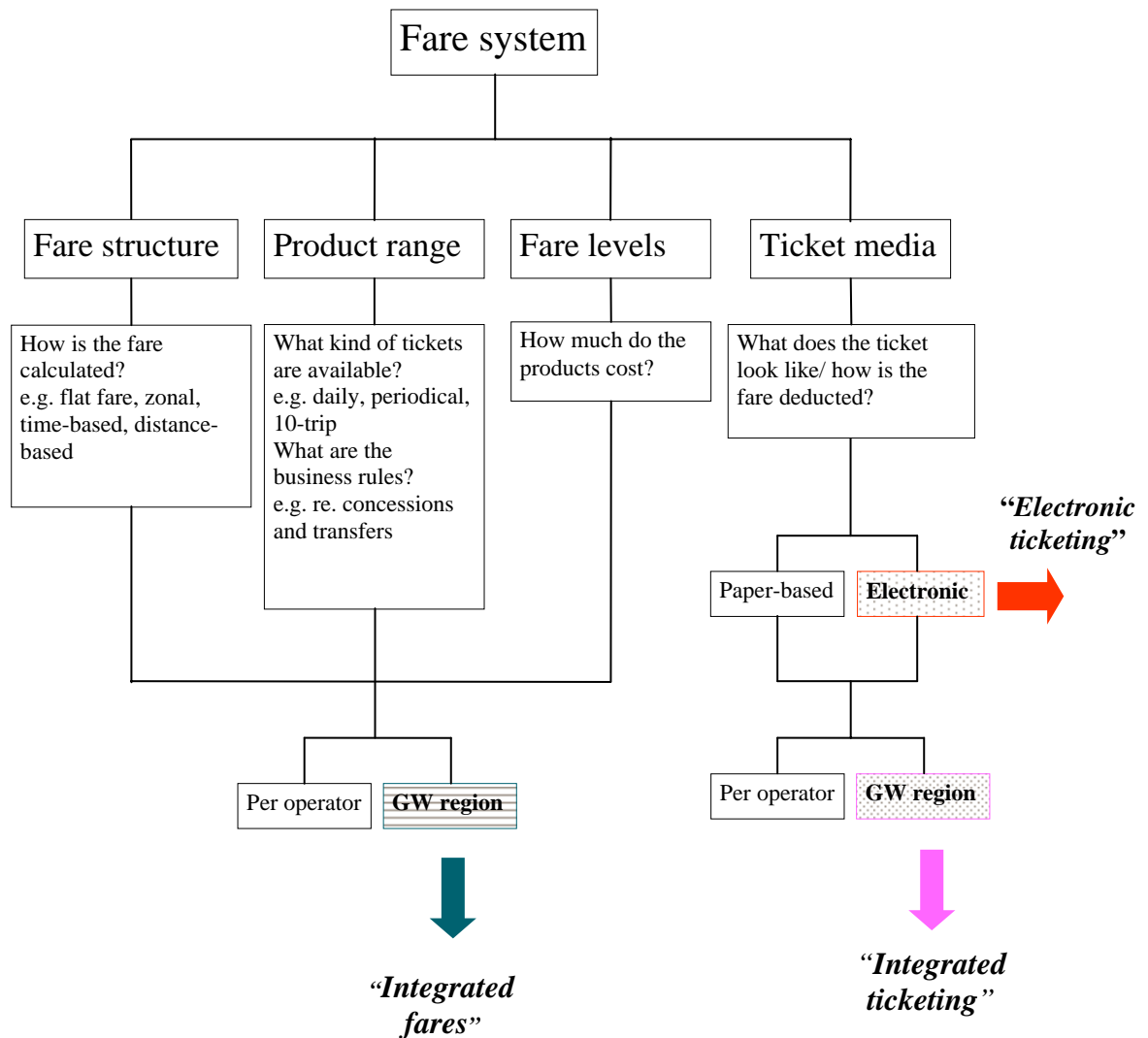
This Council’s current annual agreement with Land Transport NZ also contains the following clause:

“The Minister of Transport has asked Land Transport NZ to work with stakeholders towards understanding and removing the impediments to implementing integrated ticketing for public transport services where possible. Land Transport NZ expects approved organisations to undertake studies as necessary for this purpose, and implement integrated ticketing systems where possible.”

3.3 Definition of terms

It is useful to distinguish between several terms used in the discussion of integrated ticketing. These terms include ***Integrated Ticketing***, ***Integrated Fares***, and ***Electronic Ticketing***.

The diagram below shows the main four components of a fare system and how each of these terms fit into a fare system:



Integrated Ticketing and **Electronic Ticketing** are associated with the “Ticket media”, which refers to the physical appearance of the tickets (paper-based or electronic). Ticketing systems (electronic or paper) can be introduced by individual operators and are simply a method of dispensing tickets and collecting fare data. Paper system use paper tickets issued by drivers/guards. Electronic systems use a machine to dispense tickets and record patronage data.

In Wellington, for example, Tranz Metro use manually issued paper tickets, Mana use electronic smartcards, and Stagecoach use electronic (machine dispensed) paper tickets.

The ticketing system becomes **integrated** when a single ticket is able to be used by passengers for all their journeys, and similarly, the same ticket will be accepted by more than one operator. Ideally, to make the system as convenient as possible for public transport users, all operators in the whole region would join an integrated ticketing system. This often covers different modes.

Theoretically an **Integrated Ticketing** system could be paper based, but in a modern public transport system it would be an **electronic** system using smartcards (a smartcard is defined as any pocket-sized card with embedded integrated circuits which can process information).

Integrated Ticketing still requires passengers to pay for each individual trip unless it is combined (as it usually is) with an **Integrated Fare** system. An integrated fare means that all components parts of a journey are treated as one, and the fare is calculated as if it is one journey. Thus a trip from Wainuiomata (by bus) to Waterloo Station, then (by train) to Wellington Station, then (by bus) to Courtney Place, would be treated as one trip and one fare would be paid (5 zone, \$4.50). The smartcard would recognise this and deduct the appropriate fare from the smartcard. Currently a passenger making this trip would pay three individual fares (totalling \$7.50).

Integrated Fares belongs to the discussion regarding the fare structure i.e. the fare product range and the fare levels in the region. It is not related to integrated ticketing, although the two often go together. Although there are integrated ticketing systems that work without integrated fares, the present fare structure in the GW region makes it worthwhile to think about introducing integrated fares as well. Clearly there are funding implications to be addressed as part of any decision to introduce integrated fares.

The following illustration shows that both integrated fares and integrated ticketing are critical elements in the provision of a high quality public transport network, because they both support the desirable concept of seamless travel:

<p>YES</p> <p>“Integrated ticketing”</p> <p>NO</p>	<p>Supports seamless travel using common media</p>	<p>Supports seamless travel using common fare media and common fares</p>
	<p>Does not support seamless travel</p>	<p>Supports seamless travel using common fares and multiple fare media</p>
	<p>NO</p> <p>“Integrated fares”</p> <p>YES</p>	

Source: Mark Streeting, Geoff Hobbs: Presentation Fares Policy Reform in the Smartcard Era, Lisbon, March 2007

Further definition of important terms is given in **Attachment 1**.

3.4 Integrated tickets in the Wellington region

Limited integrated ticketing products are currently available in the Wellington region:

- The “Hutt Plus” monthly ticket enables passengers to use certain bus routes in the Hutt Valley as well as Tranz Metro services in a specified

area. The passenger pays the usual fare for the Tranz Metro monthly pass plus \$50 extra for the bus addition. The average number of Hutt Plus tickets sold per month in this financial year (until March 2007) is 69, with a maximum of 90 tickets sold in March.

- The Metlink Explorer ticket is a daily ticket (cost \$15) that can be used after 9am on most of the bus routes throughout the region as well as most of the train services.
- A combined bus/rail monthly ticket for the Wairarapa services is currently being developed, and is likely to be introduced later this year.
- The possibilities of introducing a combined ticket for the Paraparaumu train/buses is being investigated.

4. Integrated ticketing work undertaken by GW to date

GW has undertaken a number of integrated ticketing projects to date. Officers have undertaken background research to address some basic questions regarding integrated ticketing in the Wellington region. A brief summary is given in **Attachment 2**.

Emphasis to date has been placed on the Wellington rail system, for the following reasons:

- Rail is the 'spine' of the regional public transport system in the Wellington region. Most passengers who travel by public transport from outside Wellington to Wellington City use the train for the main part of their journey (Tranz Metro carry approximately 10 million passenger annually, which is almost 30% of all trips).
- Tranz Metro still works with manual paper-based tickets. Before integrated ticketing can be introduced throughout the GW region the train system needs to be upgraded to electronic ticketing. This upgrade is a GW responsibility in terms of the rail contract (this differs from the bus system, where the operators are responsible for ticketing and revenue collection).
- There are specific ticketing issues relating to train systems (train ticketing systems are usually "off-board" systems, whereas bus systems are usually "on-board").
- Go Wellington/NZ Bus is already upgrading its ticketing system and is about to introduce a smartcard electronic ticketing system. This means most bus services in the region will soon have smartcard ticketing systems.

Thus the rail ticketing system needs to be improved to bring it up to a standard where it can then be integrated with the bus system.

The main work undertaken to date on the Wellington rail system includes investigating gating options at Wellington Station, and an investigation into overall rail ticketing options. These are discussed further below:

4.1.1 Gating Study

In 2006 consultants Booz Allen Hamilton (BAH) undertook a study for GW addressing electronic gate layout options at Wellington Station (in preparation for electronic ticketing). The study addressed the physical constraints imposed by the Station, and developed a number of gating options.

4.1.2 Automatic Ticketing Options for Wellington Rail

BAH has recently finished a study for GW investigating options for electronic ticketing for the rail system. BAH undertook a high level investigation of four options:

- A manual, on-board system
- An automated, on board system
- A mixture of on-board and off-board systems
- An automated, off-train system.

Those options were assessed against eleven different factors, including staff impacts, fare flexibility, installation complexity, maintenance and operational requirements, customer usability and costs.

As a consequence of this evaluation, the automated off-train option was recommended. This “tag-on, tag-off” option involves ticketing sales and validation devices on platforms rather than trains. Gates would exist at Wellington Station. Smartcards would be the primary ticket media, but paper tickets would also be available.

In reaching its conclusion, BAH assumed the system will be component of a Wellington-wide integrated ticketing solution, and that commercial off-the-shelf systems will be utilised.

One advantage of electronic ticketing on rail would be a reduction in fare evasion.

The next stage in the introduction of electronic ticketing on rail would be the further investigation of the preferred option, and the development of a business operating model.

5. Related developments

There are a number of related developments that may impact on the GW integrated ticketing project. These are discussed below.

5.1 NZ Bus smartcard project

NZ Bus is in the process of upgrading the ticketing system on its bus fleet in the Wellington region, and is introducing an electronic (smartcard) tag on/tag off system. This project, which began in 2003, is currently being developed on

Runciman services in the Hutt Valley. The project has been through the design and the procurement phase, and is currently in the implementation phase. NZ Bus plan to introduce the system on a trial basis on Wellington city buses later this year, with full introduction in 2008.

The NZ Bus project shows (as do all other comparable projects around the world) that introducing a modern smartcard scheme is a complex and lengthy project. NZ Bus and their system supplier have been confronted with a number of problems, some of which still have to be resolved before the system can be rolled out on all NZ Bus vehicles throughout the region.

The relevance of the NZ Bus project to the GW ticketing project is that it will mean that most buses in the region will soon have modern ticketing systems capable of integration with any region-wide system. This makes it even more important that the rail services are brought up to a comparable standard. It is only at that time that a full integrated ticketing system is possible. It is also important that the rail system be compatible with the bus system so that this integration can occur. This introduces the concept of “interoperability” – the need for systems to be built in such a way that the equipment of any operator can be used on the same system. This prevents the manufacturers of the chosen system gaining a monopoly over the supply of equipment.

5.2 Snapper Services Ltd

Infratil Ltd subsidiary Snapper Services Ltd was set up recently with the intention of supplying the smartcards to be used for the new NZ Bus ticketing machines planned for Wellington/Hutt Valley (and eventually in NZ Bus vehicles in Auckland). Thus a “Snapper” branded smartcard will soon be in operation on buses in Wellington.

Snapper Services Ltd is also offering a whole integrated ticketing system, and is looking to sell its smartcard system to other bus operators in the region and to GWRC for the trains. Snapper has also offered to operate a regional clearing house in the Wellington region and even a national clearing house for all public transport in New Zealand.

5.3 Regional and national developments

5.3.1 Regionally

In New Zealand two cities already have integrated ticketing systems - Christchurch (where the system was developed and is run by Environment Canterbury), and Hamilton (developed and run by Environment Waikato). Both systems are relatively simple, largely because of the simple fare structure in operation in those centres, and the absence of trains.

Environment Canterbury and Environment Waikato are currently working on upgrades of their systems - in Hamilton because its contract with the supplier expires in September 2007; and in Christchurch because its system has reached its capacity limit.

Otago Regional Council is in the advanced stages of planning integrated ticketing systems for Dunedin.

However these systems have limited applicability to Wellington – of more relevance is what is happening in Auckland. ARTA is aiming to introduce an integrated ticketing system with integrated fares by 2010, taking the following steps:

1. Develop a paper-based transferable ticket for the new North Shore connection (to be ready to use by the end of 2007); and
2. Develop a smartcard integrated ticketing system with integrated fares (by 2010).

ARTA has been working extensively on this project for some time, and in May 2007 called for expressions of interest from suppliers of integrated ticketing systems. This is a forerunner to tendering which ARTA expects to commence later this year. ARTA expects to tender a system later this year. The tender work will involve the system design, development, manufacture, installation and testing. ARTA expect to be able to announce the winning tender in mid 2008, and have its system in operation in 2010.

The ARTA system will include electronic ticketing on its rail system (which like Wellington currently has a paper-based ticket system).

As part of its work ARTA is also developing an integrated fare policy.

ARTA is currently putting together an integrated ticketing project team of about ten people, with the required skills (such as project management, technical and integrated ticketing knowledge, marketing, communication, change management, implementation management, procurement).

To achieve funding from Land Transport NZ, ARTA has had to prepare a supporting business case, including:

- an analysis of solution options for ARTA's smartcard ticketing system; and
- the development of the business case for the ticketing system.

Much of the consultant work in this project is being undertaken by BAH. Work on the business plan, the first step of which is to develop an acceptable methodology, is currently underway.

As part of its project, ARTA has undertaken some work, in association with Land Transport NZ, on the possibility of a national integrated ticketing system. This issue is discussed further below.

5.3.2 Nationally

Land Transport NZ

Because of the large costs involved with integrated ticketing, Land Transport NZ has been investigating the potential for some nationwide initiatives, including:

- The establishing a nation-wide ticketing scheme (one card, one clearing house);
- The establishment of a single nation-wide clearing house (rather than several regional stand-alone systems), but having regional cards; and
- The establishment of national standards for integrated ticketing systems (but allowing regional systems).

Land Transport NZ engaged BAH to investigate these issues. Several different options for the clearing house were analysed, included national and various regional options (including a combined ARTA and GWRC clearing house). BAH also assessed private and public ownership variations of these options. The options were assessed against many criteria, included “contestability” (avoiding being tied to a contract with only one supplier over the lifetime of the solution), “interoperability” (ensuring that other participants can join the scheme, even those using systems provided by different suppliers) and “multiple issuers” (ensuring that the issuance of smartcards is not limited to a single client).

As the study report has still to be presented to the Boards of ARTA and Land Transport NZ, no official decisions regarding the content of the report and the recommendations have yet been made. However it seems that there are likely to be some potential disadvantages with a national clearing house concept (likely to be too complicated), although a combined ARTA/GW clearing house may have advantages.

It is also likely that BAH will conclude that any system should be owned and operated by regional councils, and should not be under private control.

We are monitoring these developments closely, especially because one of the options is a combined integrated ticketing clearing house for Auckland and Wellington. Land Transport NZ is also likely to be of the view that this option is worth further investigation, even if an ARTA ‘stand-alone option’ is the recommended option in the BAH report. For GW a combined ARTA/GWRC clearing house has potential advantages such as lower costs, and the opportunity to join an already tested system (assuming that ARTA would get the system up and running before GW joins it, an assumption which is very likely, as the ARTA planning is far ahead of ours).

Currently Land Transport NZ is considering its leadership role in integrated ticketing. The ARTA project reflects that Land Transport NZ is seeking an

efficient way of introducing integrated ticketing in New Zealand, and minimising duplicate work being undertaken in the different regions.

One tool which is being developed at the moment by BAH for Land Transport NZ is a methodology for the preparation of a business case which will be able to be used by all regional councils to evaluate projects (and which is also needed to obtain funding from Land Transport NZ).

A further idea Land Transport NZ is developing is achieving national *open standards*, which would help achieve the above mentioned principles of “contestability”, “interoperability” and “multiple issuers”. This idea is still in a very early stage, and it might be expanded towards a national or ARTA/GWRC clearing house.

Super Gold Card

A national development which may impact on integrated ticketing is the “Super Gold” card for seniors. The Government has expressed the idea of using this card to obtain public transport discounts. Land Transport NZ is exploring this possibility and the practicalities involved with such a scheme. These practicalities include funding, and how the card might integrate with an integrated ticketing system.

6. Next steps

Projects such as integrated ticketing are large, complex, expensive and high risk. The approach taken by GW to date involves breaking the project into smaller pieces to help avoid unrealistic expectations and to enable us to manage the project in a systematic way. The focus to date has been on the introduction of electronic ticketing on the train network, while at the same time ensuring that the train system will be able to be integrated with any wider ticketing system.

The next stage in the GW project is to take the next step towards introducing electronic ticketing on rail, and continue to monitor other regional and national development. These are discussed further below.

6.1 Continue to work towards the introduction of electronic ticketing on the rail system

Substantial work on investigating the electronic ticketing options for Wellington rail has already been undertaken. If the Committee wishes to continue to build on this work, the next step in this investigation now needs to be undertaken. That next step involves refining the options set out in the earlier studies, and addressing GW requirements for the system.

BAH was asked to provide a proposal addressing these issues. Its proposal involves the following:

Phase 1 - developing an electronic ticketing concept. The output will be:

- a business operating model

- a detailed analysis of staffing and ticketing costs
- an analysis of the justification for the use of electronic gates at Wellington station and
- an assessment of the system architecture (which will include the option of a joint GW/ARTA system).

Phase 2 provides the preparation of a business case, based on the concept developed in phase 1.

Phase 1 especially is crucial for the success of the whole project. In this stage strategic decisions will have to be made, e.g. regarding the overall objectives of the system. Overseas experience strongly indicates that this planning/decision making phase is critical to the success of the project.

Agreeing to this work does not commit GW to introducing electronic ticketing on rail – that decision can only be made once the work outlined above has been undertaken. The work will take about four months.

The GW 2007/08 budget has made provision to further the investigation of integrated ticketing.

If the work is undertaken, the subsequent steps in the process, along with indicative costs and duration, would be as follows:

Step	Likely Duration	Likely Costs
Specification and contract preparation	6 - 12 months	Specification: \$100,000 + lawyers fees
Procurement process	12 -18 months	\$ 500,000
System development	18 months	Depending on the chosen supplier/system
System implementation	Depending on the chosen supplier/system	Depending on the chosen supplier/system

BAH estimate that from the moment a decision is made to proceed with a project of this size and complexity, it is likely to be at least 4 years before the implementation can be started.

Electronic ticketing is an important step towards an integrated ticketing system, but it can also be treated as a stand alone project. Upgrading the paper-based train ticketing system is expected to be a beneficial investment on its own (although the business case will have to prove this assumption before the project can proceed).

The Committee is not being asked to make a decision regarding the introduction of an electronic ticketing system for rail or an integrated ticketing system in the Wellington region right now. All that is sought at this time is approval to further develop and design the electronic ticketing system for rail.

6.2 Monitor developments at a regional and national level

As indicated above, the GW integrated ticketing project is likely to be influenced by developments which are not under the direct influence of GW, such as the NZ Bus smartcard project, Land Transport NZ and ARTA activities, the work of other regional councils, developments on the supplier market, and the discussion regarding the SuperGold card.

These activities and developments will need to be followed carefully and input made as appropriate.

6.3 Work towards strategic decisions regarding fares policy and ticketing objectives

A clear vision and strategic decisions regarding the future fare policy and ticketing objectives needs to be developed in association with the integrated ticketing project. Work is being currently being undertaken in these areas and reports will be made to this Committee in due course.

7. Summary

The introduction of integrated ticketing has been given high priority at a regional and national level.

In the Wellington region work on integrated ticketing has focussed on introducing electronic ticketing on the rail network. This will bring rail up to the level of ticketing of the bus system, and from there it will be a relatively short step towards full integration.

Options for a rail electronic ticketing system have been investigated – it is now suggested that this work be further developed to the stage where GW will be in a position to make a decision to proceed with implementation.

At the same time the monitoring and where necessary, involvement, in related developments such as the work at ARTA and at a national level, and developments regarding NZ Bus and Snapper, should continue.

8. Communication

No communications are required.

9. Recommendations

That the Committee:

- 1. Receives the report.*

2. *Notes the content of the report.*
3. *Agrees to proceed with the investigation of an electronic ticketing system for rail.*

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Attachment 1: Definitions

Attachment 2: Projects carried out by Greater Wellington