

Minimising Costs Real Time Passenger Information System


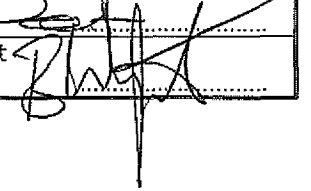
Overview of options

**Greater Wellington
Regional Council**

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Minimising costs Real Time System



Quality Assurance Statement	
	Project Manager: Phil Peet
	Prepared by: Daan Schneiders
	Reviewed by: Phil Peet 
	Approved for issue by: Barry Wright 

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1 Purpose

This report discusses different options to minimise the operational and capital costs of a future Real Time Passenger Information System in the Wellington Region.

The recommended implementation and scope of a RTPI system is described in the MWH report "Implementation of a Real Time Passenger Information System" (November 2007).

From this report the total estimated capital costs of the system is **\$12.8M** and the operational costs **\$2.2M** per year.

Greater Wellington has indicated that it would like these costs to be further examined. During the November 2007 Transport & Access Committee meeting it was decided to continue with the introduction of a Real Time System in Wellington but that further investigation of the costs was necessary. The committee stated that it:

"Agrees to investigate ways to minimise the capital costs and ongoing operational costs, and report back on this to the next meeting of this Committee." (*)

This report will provide an overview of ways to minimise both capital and operational costs.

Some possible solutions to minimise the costs are more attractive to implement than others. The solutions are therefore rated. The rating is based on the recommendation (not recommended, neutral, and recommended).

Finally, a recommended strategy to minimise the overall costs for a RTPI is described.

(*) The next meeting is scheduled for 13 February 2008



2 Minimising system costs

2.1 Cost sharing

As discussed in the internal business case, operators and local authorities will benefit from a RTPI system.

The operators gain more knowledge on their operations and can use the real time tracking to monitor their fleet as well as plan future routes and schedules.

The operator's benefits can be used as leverage for their financial contribution to the system. Costs that could be shared with the operators are:

A. On-board next stop equipment

The signs on the bus that show the next stop are an additional function to the RTPI system that can be entirely owned and paid for by the operators if they choose to provide that service to their customers.

Recommended as the on-board equipment provides an additional service to the core RTPI system. The equipment can be installed and maintained separately by the operator.

B. Communication costs from and to vehicles

The communication costs from and to vehicles can be shared with operators. The vehicles provide the opportunity to distribute the costs according to the operator's fleet size. It is assumed that operators would pay half of their fleet's communication costs.

Neutral recommendation as the communication is a core part of the RTPI system that has to be controlled by Greater Wellington.

The Territorial Authorities' benefits can be used as leverage for their financial contribution to the system. Costs that could be shared with the councils are:

C. Set-up/communication costs for signal pre-emption

TAs have a responsibility to operate a safe and efficient network. This includes roading for public transport. Accordingly the costs of the signal pre-emption could be shared with the TAs. In Wellington City this would fit well with the current bus priority project.

Not recommended as the cost benefits are minimal and communication is a core part of the RTPI system that has to be controlled by Greater Wellington.

D. Communication costs from and to On-street/platform signs

The communication costs from and to on-street signs can be shared with TAs. The signs provide the opportunity to distribute the costs according to the TA's relative participation. It is assumed that TAs would pay half of the communication costs of the signs in their region.

Neutral recommendation as the communication is a core part of the RTPI system that has to be controlled by Greater Wellington.



2.2 Price reduction

The RTPI component costs are based on a weighted average of costs provided by a number of suppliers. These costs should not be altered.

However, some other price measures can influence the total costs.

E. Price reduction through package deals

Communication costs can be minimised by ensuring a package deal with the telecommunication company. In Auckland the contract with the telecommunication company specifies a unit price of around \$30 per vehicle and on-street sign per month (in the business case an average of the variable communication costs was set on \$40).

Recommended because the communication cost are a major part of the system and it is to be expected that a deal with one of the telecommunication companies is feasible for Greater Wellington.

F. Price reduction through communication system used

If radio is chosen instead of GPRS there will be no ongoing communication costs. This provides a substantial cost reduction for the operational costs.

Neutral recommendation because the Wellington region most likely needs a high number of antennas installed. The costs of these are unknown and need more investigation. Another negative point of a radio network is the maintenance role that Greater Wellington has to fill if it becomes the network owner.

G. Prescribed maximum price in tender document

In the tender document Greater Wellington could specify a maximum price for both operational costs and capital costs.

Recommended since it provides Greater Wellington with a cost certainty. However, there is a risk that the number of tenderers will be less than without the prescribed maximum cost, or that the system tendered are not as high a quality.

Note: Non-conforming tenderers could still be considered, i.e. if a tenderer offers a system with less on-street signs than prescribed but offers a higher overall quality of the RTPI system for the maximum price the tenderer could still be considered by Greater Wellington.



2.3 Phasing

The costs for the system can be minimised by only undertaking the early phases of the project.

H. First phase only

All buses, no trains, and only signs in Wellington City will be installed. Greater Wellington will make a decision at a later point if the rest of the equipment should be installed.

Neutral recommendation as the cost savings are significant but entire areas and a mode of transport (train) are excluded. There is a risk that the remainder of the RTPI project will be more expensive as the supplier will have established a monopoly position at that point.

I. First two phases only

All buses, no trains, only signs in Wellington City and Hutt Valley. Greater Wellington will make a decision at a later point if the rest of the equipment should be installed.

Neutral recommendation as the cost savings are significant but some areas and a mode of transport (train) are excluded. There is a risk that the remainder of the RTPI project will be more expensive as the supplier will have established a monopoly position at that point.

2.4 On-street signs reduction

Reducing the number of on-street and on-platform signs will have a positive effect on the costs and does not affect the reliability of the system.

However, this needs careful consideration as this solution can have negative effects on the inclusion of all social areas in the region. The exact location of the signs has to be further examined.

The current system scope includes 250 Type I signs and 100 Type II (*) signs.

J. Use 250 Type I signs only

Neutral recommendation as the quality of the signs is ensured but the coverage of the system decreases without substantial cost reductions.

K. Use 250 Type II signs only

Not recommended as the quality of the signs is not ensured and the coverage of the system decreases.

L. Reduce number of signs to 150 Type I signs and 100 Type II signs

Recommended as the quality of the signs is ensured and a substantial cost reduction is gained.

M. Reduce number of signs to 100 Type I signs and 100 Type II signs

Not recommended as the quality of the signs is not ensured and the coverage of the system decreases significantly.

Note: The RTPI system includes a text function that is available throughout the entire region. This function allows passengers to receive departure information on their mobile.

(*) Type I sign: high visibility, high functionality, and showing up to ten lines
Type II sign: low visibility, low functionality, and showing less than four lines

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3 Cost impact of different measures

The following table provides an overview of the impact of the measures proposed in this paper. All costs calculations are based on the outcomes of the "RTPI cost calculator". A recommendation is also included on whether to consider the proposed measure, along with a comment on each of the measures.

	Cost reduction measurement	Cost Savings		Recommendation ✓ recommended - neutral × not recommended	Explanation
		Capex	Opex (per year)		
Cost sharing Operators					
A	On-board Next Stop Equipment	7%	4%	✓	Operators choose if they want to offer this as an extra service without influencing the core RTPI
B	Communication costs	0%	6%	-	Risk involved in engaging stakeholders
Cost sharing Territorial Authorities					
C	Signal pre-emption	0%	2%	×	Risk involved in engaging stakeholders & minimal cost implications
D	Communication costs	0%	6%	-	Risk involved in engaging stakeholders
Price reduction					
E	Package deals	0%	10%	✓	Existing situation in Auckland provides basis to assume feasibility of this option
F	Communication system	- 2%	10%-29%	-	Risk decreased reliability Additional responsibility for Greater Wellington as owner of network
G	Maximum price in tender document	Variable	Variable	✓	Provides Greater Wellington with cost estimate on forehand
Phasing					
H	First phase only	36%	26%	-	High savings but excludes train and areas outside Wellington City
I	First two phases only	31%	22%	-	High savings but excludes train and areas outside Wellington City and Hutt Valley
On-street signs reduction					
J	250 Type I signs only	9%	7%	-	Impact can be minimised by even distribution throughout the region. Average cost reduction
K	250 Type II signs only	29%	21%	×	Impact on quality too high
L	150 Type I signs & 100 Type II signs	17%	13%	✓	Impact can be minimised by even distribution throughout the region. High cost reduction
M	100 Type I signs & 100 Type II signs	25%	19%	×	Not enough signs to cover entire region



4 Recommendations

It is still recommended that the RTPI system is implemented as described in the Internal Business Case. The total estimated capital costs for the system are \$12.8M and the operational costs \$2.2M per year.

However, to minimise the costs Greater Wellington could consider:

- Excluding on-board equipment out of the project (**measure A**)
- Altering the number of on-street signs (**measure L**)
- Establishing a package deal with the telecommunication companies (**measure E**)

Independent of the chosen cost reductions (if any) Greater Wellington should consider specifying the maximum cost in the tender document (**measure G**).

The following has to be taken in account:

- The number of street-signs has to be at least 250 to cover the entire region (see Internal Business Case)
- On-street signs have to be clearly visible at the main hubs (shopping centres, trains stations, etc.)
- TxtBUS as an alternative to the on-street signs has to be extensively marketed
- At a later stage (after implementation) the number of signs should be revisited
- The contract with the telecommunication company should specify an unlimited number of data transactions for a set unit price (between vehicles, on-street signs, and server)

The total estimated costs after each measure are as follow (including contingency):

Option	Capex costs	Opex costs	NPV Costs
Complete regional coverage (as recommended in Internal Business Case)	\$12.8M	\$2.2M	\$29.7M
Exclude on-board equipment	\$11.9M	\$2.1M	\$28.3M
Reduce to 150 Type I and 100 Type II signs	\$10.6M	\$1.9M	\$25.8M
Communication package deal	\$12.8M	\$2.0M	\$28.2M
Complete regional coverage (including all three cost measures)	\$9.8M	\$1.6M	\$22.7M

