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**Committee**         **Passenger Transport**  
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## **Train Capacity Project Update**

### **1. Purpose**

To provide the Committee with an update on the progress of the recommended train capacity studies from the 5 October 2006 Passenger Transport Committee meeting. The purpose of the studies are to determine the feasibility of specific solutions for increasing peak period passenger carrying capacity on the Wellington region's rail network, prior to the delivery of new Electric Multiple Units (EMUs) in 2010.

### **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**

At the 5 October 2006 meeting the Passenger Transport Committee resolved:

That the Committee:

1. Receives the report.
2. Notes the content of the report.
3. Authorises the commissioning of Tranz Metro Wellington or a suitable independent rail operations professional to undertake an audit of passenger counts and carriage capacity.
4. Authorises the commissioning of Toll PSG to undertake a detailed feasibility study of:
  - (a) Ganz Mavag Standing Capacity Modification;
  - (b) EO Locomotive Refurbishment; and,
  - (c) BR MKII Minimal Modification for Express services, and
  - (d) Out of service English Electric EMUs.

5. Asks Officers to report back on funding options, including for Capex 3.
6. Asks Officers to design and implement a communications programme to keep rail commuters informed of changes, reasons, and progress in the short and longer term upgrade of commuter rail services.

## **4. Progress**

Progress on recommendations 3, 4(a), 4(b), 4(c), 4(d), 5 and 6 is outlined below. Two other options, the use of more buses and obtaining SX carriages (from Cairns), proposed since the last meeting will also be discussed.

### **4.1 Resolution 3. Audit of passenger counts and carriage capacity.**

Tranz Metro have provided some preliminary peak service passenger counts which outline passenger to seat ratios and passenger high counts (ie. a count when the train has the most passengers on board). Further analysis is required to determine the spread of passengers throughout all carriages on the train and the build up of passengers over the period of the service.

This analysis will help determine whether there is any spare capacity at the rear of any of the most overcrowded trains and/or the timing for next scheduled service with spare capacity.

More detailed information and options, if any, for operational adjustments will be available in December.

### **4.2 Resolution 4(a). Ganz Mavag standing capacity modification.**

Toll Professional Services Group (PSG) has completed a detailed study of seating modifications to the Ganz Mavag units to increase overall passenger capacity.

The feasibility study looked at four different seating configurations and modelled the extra capacity achieved with standing passenger density of 4.4 passengers per square metre ( $4.4/m^2$ ) and six passengers per square metre ( $6.0/m^2$ ). The study also details the costs, risks and timeframes for each configuration.

#### **4.2.1 Options**

The four proposed seating arrangements are briefly described below (all proposals require ceiling mounted handrails to be fitted):

##### *Proposal 1.*

Removal of all transverse (parallel) seats and replaced with longitudinal (side facing) seats to increase standing room down the centre of the car. This modification is costed with the fitting of new longitudinal seats and the refurbishment of the existing seats to fit longitudinally.

*Proposal 2.*

Removal of transverse seats in the centre seating section of each car. This arrangement is not recommended by PSG engineers as it places a larger concentrated load in the centre of the car.

*Proposal 3.*

Removal of transverse seats from the end section of each car. This places the denser loads over the bogies of each car.

*Proposal 4.*

Removal of nearly all seats except longitudinal seats by the door. This arrangement is not acceptable as it can potentially overload the cars, and causes a major deterioration in passenger comfort.

A comparison of the proposals is tabulated in Table 1.

**Table 1. Comparison of Ganz Mavag 2 car EMU Seating Modifications**

EMET 2 car EMU	Existing		Proposal 1		Proposal 2		Proposal 3		Proposal 4	
Passenger Density /m2	4.4	6	4.4	6	4.4	6	4.4	6	4.4	6
Seated	148	148	137	137	77	77	65	65	23	23
Standing Area m2	33.69	34.87	37.62	43.85	56.99	58.14	60.96	62.26	74.96	76.02
Standing	148	208	165	262	250	348	267	372	329	455
<b>Total</b>	<b>296</b>	<b>356</b>	<b>302</b>	<b>399</b>	<b>327</b>	<b>425</b>	<b>332</b>	<b>437</b>	<b>352</b>	<b>478</b>
<b>% Increase</b>			<b>2.0</b>	<b>12.0</b>	<b>10.5</b>	<b>19.4</b>	<b>12.2</b>	<b>22.8</b>		
Cost per 2 car	New seats: \$131k Refurb seats: \$88k				\$29k		\$44k			
Cost total fleet	New seats: <b>\$5.7m</b> Refurb seats: <b>\$3.9m</b>				<b>\$1.3m</b>		<b>\$1.9m</b>			
Time frames			3 – 4 weeks		2 – 3 weeks		3 – 4 weeks			
- Per car			3+ years		3+ years		3+ years			
- Fleet										

The cost of installing the required ceiling mounted handrails is included in the cost of the proposals in the table. Installing full car length ceiling mounted handrails without any seat modification whatsoever has been costed at \$35k per 2car unit (\$1.5m total fleet) and would require 3 - 4 weeks per unit.

**4.2.2 Risks**

Engineering risks apply to all the options and specific safety risks eliminate Proposal 2 and 4 from further consideration. Proposal 4 would allow the unit

to exceed the design weight of the axles. Proposal 2 would concentrate too much weight in the centre of the car structure which is not recommended.

All proposals require handrails to be fitted; unfortunately the roof was not constructed with the intention of being used to support the weight of passengers. The fitting of overhead handrails would require a steel frame to be inserted inside the roof cavity to attach to and spread the load. In the wide standing areas, the luggage racks are at adult head height and will need to be removed. Structural analysis of the car bodies is required to check the new loading arrangements are acceptable.

Operational risks should also be considered, for example, the higher the concentration of standing passengers, the less likely TranzMetro staff will successfully collect tickets.

#### 4.2.3 Summary

At this stage the feasible options appear to be:

- Do nothing - retain the existing configuration
- Retain the existing configuration – and install full length handrails
  - o total cost: \$1.5m – total time 3+ years – no increase in passenger capacity
- Proposal 1. - All longitudinal (side facing) seats
  - o total cost: \$3.9m - \$5.7m – total time 3+ years – 2%-12.0% increase in passenger capacity
- Proposal 3. - Removal of seats from the end section of each car
  - o total cost: \$1.9m – total time 3+ years – 12.2%-22.8% increase in passenger capacity

Other than the do nothing option any project would effectively remove a 2 car unit from service for over three years.

There are options within the proposals for partial installation of longitudinal seats and/or less removal of seating. Such measures will appreciably reduce the capacity increase; however neither the costs nor timeframes will be significantly reduced.

The outcomes of this feasibility study need to be considered further in the light of the passenger capacity audit, and in contrast to the outcomes from the studies below.

#### 4.3 Resolution 4(b). EO locomotive refurbishment.

PSG will focus on the feasibility and cost of reinstating some or all of Toll's five EO class 1500 V DC electric locomotives for use in hauling express

commuter trains. Modelling of the possible performance of such trains will be reported on as part of this study. Advice on the matter of improving the maximum running speed of the EO locomotives by modifying their electrical equipment will be sought from specialist consultants.

The target date for delivery of a completed final proposal is the first Passenger Transport Committee meeting in 2007.

#### **4.4 Resolution 4(c). BR MKII minimal modification for express services.**

The feasibility, specification, cost and lead time for supply of reduced specification BR MkII based trainsets for use on selected express services will be investigated and reported on.

The target date for delivery of a completed final proposal is the first Passenger Transport Committee meeting in 2007.

#### **4.5 Resolution 4(d). Out of service English Electric EMUs.**

PSG will prepare a proposal for returning stored English Electric EMU sets to service. This study will focus on the most recently stored three car "red" set. Limited comment on the status of coaches which have been in storage for much longer (and therefore less likely to be economically resurrected) will also be made.

The long term storage of these vehicles has resulted in the extensive removal of parts for spares and repairs. To determine the practicality, cost, and lead time for reinstating these vehicles requires an in depth inspection of each to establish a full bill of materials for the project.

The target date for a final report is December 2006.

#### **4.6 Resolution 5. Funding options**

Funding options are being considered and will be progressed in detail once the costs and benefits of each option become clearer.

#### **4.7 Resolution 6. Communications**

The first of a stand alone, regular Metlink newsletter (previously a Metlink newsletter has been included inside Elements) as a vehicle to provide detailed and easy to understand Passenger Transport information will be introduced on 13 November 2006.

Initially the focus will be on rail issues but it may at a later stage be used to inform the public about bus news, such as the introduction of new trolley buses.

The newsletter will be distributed at Wellington Station and other key stations/PT hubs by Metlink promotional staff and at timetable stockists.

We will print 25,000 newsletters for the first print run. Based on demand we can then assess the distribution requirements for the second issue. The newsletter will also be made available electronically so that it can be emailed to interested parties.

Elements, the GWRC newsletter distributed to all households in the region which is due for distribution in early December 2006, will also discuss some of the current issues with rail capacity and train procurement.

#### **4.8 Using buses to provide extra rail capacity**

A brief report outlining broad analysis of bus based options has been presented to GWRC officers from Stagecoach. The options involve initiatives that would see more buses covering all or sections of current rail routes.

The bus options will be considered in more detail once the costs and benefits of each rail option are known.

#### **4.9 SX Carriages from Cairns**

The availability of between seven to nine SX carriages has been brought to the attention of GWRC officers. These carriages are currently out of service in Cairns, Queensland and owned by a private operator. They are essentially identical to the SX carriages currently running in Auckland.

More information is being gathered on the current condition and costs of purchase, shipping and refurbishment. This information will be added to the analysis of options being studied by PSG once the costs and benefits of each previous rail option is known.

### **5. Communication**

Officers will provide concerned members of the community with the details of this report or any ongoing information regarding the analysis undertaken and progress on any approved detailed feasibility studies or implementation programmes.

### **6. Recommendations**

*That the Committee:*

- 1. Receives the report.*
- 2. Notes the content of the report.*

Report prepared by:

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