

2006 Rail Submission

1.1 CityRail Fare Submission to IPART

Position

I am a retired telecommunications engineer with an interest in the transport scene. My response to the 2006 CityRail request for fare increases, which is influenced strongly by the slowness of the CityRail network, concludes that:

- CityRail needs to make a strong commitment to an ongoing program of achieving the best possible service speeds, a commitment that is designed to reverse and potentially improve on the slowing introduced with the new timetable.
- In the absence of such a strong commitment, any fare increases should be limited to tickets covering peak period journeys to and from the CBD/North Sydney area where rail is presently most time competitive with car travel.
- Even with the speed commitment, off-peak fare increases should be limited to the CPI adjustment proposed for peak fares until Tcard becomes available. At that time, CityRail should be required to propose a more logical and equitable approach to **all** off-peak fares for implementation under Tcard.

The substance of this response follows.

1 Introduction

CityRail, in its 02 March 2006 submission to IPART, is seeking approval to increase both peak and off-peak same-day rail fares, and periodical fares with a rail component. A large number of welcome "doing better" examples are presented to justify the increases, but these conveniently underplay two key issues. These are that any fare increase should minimise the incentive to switch to road use, and that several factors, both internal and external, limit the ability of CityRail to achieve this.

Some external factors are generally recognised as justifying community support for rail fares. They include the low perceived user cost and the high (unfunded) external cost of urban motoring, and the social welfare benefits from affordable fares, within what is, by world standards, a very dispersed metropolis. Other external factors are more perverse, with the Fringe Benefits Tax regime favouring car use, and the Sydney tollway network, including part of the "orbital", excessively facilitating car use to the CBD/North Sydney. It is ironic that the "no cost to the Government" tollways tend to increase the need for CityRail fare support by the community.

The key internal issue for CityRail is service speed, and the relevance of this is developed below.

2 2 SPEED

The 2002 Household Travel Survey (TPDC) notes, inter alia, that increasingly busy lifestyles and the time pressures they induce may be behind the increase in car use given the convenience offered by the private vehicle.

Actual travel data also suggests that time is of major importance. The average CityRail journey from the Survey is 18 km, and takes 29 minutes. The peak single fare for 18 km now, according to the CityRail submission, is \$3.60, whereas the time cost for someone on a modest annual salary would be around \$10.00. This time dominance of the generalised travel cost would increase for both longer distances or for periodical tickets (lower fares per kilometer) and for those on higher incomes.

Of course the situation is more complex and particular to each individual. Users can benefit from, and therefore see value in, their train time, however, access and waiting time act in the opposite direction. It is reasonable to believe, however, that service frequency and journey time are strongly appreciated by users, and that improvements in these areas would allow room for fares to be increased without diverting significant patronage to road. Alternatively, speed and frequency improvements could increase the catchment area for rail, as the consequent time saving would offset the extra access time, or the indirectness of some rail routes, for marginal users.

Less obviously, speed can also benefit the rail operator through lower costs. This is because fewer trains and crew are required. However, CityRail has slowed services with the new timetable, and thus contributed to the cost increases it is advising in its submission. For example, many of the Millennium carriages have been used to make up additional trains, also requiring additional crew, rather than to replace older carriages, as claimed by CityRail. Some of the overcrowding with the new timetable can be attributed to the use of 6 car trains, further indicating an ongoing shortage of carriages. Similarly, the new Illawarra timetable has probably been delayed to later this year because of the additional, but not yet available, trains required to support it.

On one level, the new slower timetable is a politically motivated, but necessary, fix to recover from many years of neglect, but the issue goes deeper than this. The Sydney morning Herald of 06 September 2005 reported, presumably with expert advice, that CityRail's trains were already the slowest of any comparable urban railway, and had just become slower. Railway Digest recently published a timetable comparison revealing that CityRail's trains, even before the new slower timetable, were at least 10 km/h slower than services in Brisbane and Perth on a comparable station spacing basis. While train design, traction performance and legacy network issues contribute, these only go part way towards explaining the current speed difference of over 20%.

The railway engineering community has described CityRail's trains as "sadly slow" which reflects frustration with CityRail's apparent cultural aversion to striving for better productivity. It is interesting that CityRail is prepared to benchmark itself with other systems on fares, where it is seeking an increase, but not on service speed, where it reportedly lags the field. Indeed, CityRail seems to be proud to be slow, but safe, whereas speed and safety go hand-in-hand on well-managed railways. A number of suggestions for possible improvements, which could form the basis of a strong commitment to an ongoing

program of achieving the best possible service speeds, are presented under the Speed-up Possibilities listed in Annex A below.

3 SPECIFIC FARE ISSUES

This section relates the above discussion on speed to the specific fare increases sought by CityRail.

An analysis of TPDC data presented recently to the Transport Panel of the Institution of Engineers by Tim Raimond indicated a broad catchment along rail routes of areas where rail travel was time competitive with road for journeys to the CBD/North Sydney during the (morning?) peak. However there was no significant catchment for time competitive rail journeys to other centres. This reflects peak period traffic conditions, rail's present focus on the CBD/North Sydney and the longer than average journey lengths to get there. It is probable that rail has become less time competitive with the new slower timetable, but with this being countered by higher fuel prices.

Accordingly, there are grounds for concluding that CPI fare increases to the CBD/North Sydney, where rail is time competitive, will not significantly increase the incentive to switch to road. This is less clear for peak period journeys to other centres and CityRail, in the absence of a strong commitment towards increasing service speeds, should be required to first demonstrate an acceptably low incentive to switch for these journeys before fare increases are allowed.

The substantial off-peak return fare increases proposed are of concern, and appear to be little more than an ambit claim. Missing is any meaningful rationale for lower off-peak fares in the first place. The proposal is especially cheeky considering the cuts in, and the excessive (see Annex A) slowing of, off-peak and weekend services that have been made. Historically, the discounted off-peak fare was seen as a commercially motivated excursion ticket designed to generate travel, and revenue, that would not otherwise occur and at times when costs were low. Further, the return component of a ticket purchased on Friday or Saturday was available initially through to the end of the weekend, but this was cut back to the same day with magnetic tickets. However, the commercial case for such a ticket is weakened under the present circumstances where all fares are below cost, even if off-peak costs **are** lower than for the peak.

CityRail mentions equity issues, but it is not clear from where it is coming. A comparison with other operators is subject to selective manipulation, as presumably the UK position, where many day-return fares are actually cheaper than the single fare, would be excluded. If equity is about shifting patronage from the peak to the off-peak, or about a welfare motivated move to provide more affordable travel during off-peak periods, then the rationale for different treatment of single and return off-peak fares seems to disappear. CityRail also mentions a "loss" where the return component of an off-peak return fare is made during the evening peak, but does not mention the "gain" where the return component of a full fare return is made during the off-peak.

Perhaps, from a welfare perspective, it is more logical to think in terms of a normal fare for off-peak services and a surcharge for peak use, particularly to the CBD/North Sydney and potentially to other centres in the future. Under Tcard, there will be no specific need for a return ticket, and each direction of a return trip could be charged according to the time and

origin/destination of travel. Thus the fare paid would be full return, off-peak return, or a hybrid of the two depending on the time of travel, for seemingly more optimum equity. An off-peak day-tripper is also a possibility.

Overall, it is concluded that:

- CityRail needs to make a strong commitment to an ongoing program of achieving the best possible service speeds, a commitment that is designed to reverse and potentially improve on the slowing introduced with the new timetable.
- In the absence of such a strong commitment, any fare increase should be limited to tickets covering peak period journeys to and from the CBD/North Sydney area where rail is presently most time competitive with car travel. Logically, this would extend from single and return tickets to include all Traveypasses with a rail component, as these are based on zones around the CBD, and rail-only periodicals to and through (to cover journey break possibilities) the CBD/North Sydney.
- Even with the speed commitment, off-peak fare increases should be limited to the CPI adjustment proposed for peak fares until Tcard becomes available. At that time, CityRail should be required to propose a more logical and equitable approach to **all** off-peak fares for implementation under Tcard.

4 ANNEX A: SPEED-UP POSSIBILITIES

5 A1 BACKGROUND

The new timetables incorporate a significant (5-10%) slowing of peak services on the basis that previous running times were no longer realistic. Off-peak services, which were previously faster than peak services, were slowed even further to match the peak period running times, and this has resulted in long waits at key stations and/or slower driving under normal off-peak conditions, and an unfortunate side effect of early departures from some intermediate stations.

While some of the changes, which have slowed services, have been necessary, improvements are possible in other areas and should be pursued wherever feasible as follows.

6 A2 DISPATCH

Trains are presently dispatched from key stations by reference to a common clock, with the scheduled departure time at the exact minute (the door closing procedure is initiated 30 seconds before this). Thus the interval between departures from one key station to the following one must be rounded up to the next whole minute, which, over a number of spans between key stations per run, pads out the timetable unnecessarily.

A solution would be to allow sub-minute dispatching. This would require a countdown display, separate from the main clock, to be shown on platform indicators. A prominent red number showing seconds to go, overwriting the "due out" minute number, would be useful and could also help to manage dwell times (see next item). Sub-minute dispatching would also allow off-peak timetables to be accelerated, compared with the peak, to take advantage of generally shorter dwell times.

A3 Dwell Times

Dwell times with double deck rolling stock tend to be both long and variable under crowded conditions. The new timetable has extended these times due to safety concerns and the provision of power interlocking on all doors. Audio/visual warning indicators have been fitted to all pre-Tangara rolling stock, as an apparent aid to managing dwell times, but not activated.

Station design issues can help reduce dwell times. Matching platform heights to train doorways, and minimising the gap, means that passengers would have less need to hesitate and look down. However, this needs to be universal to be effective. The vertical LCD indicators are also better than the first plasma displays for late arriving boarders, as there is less scroll time required for any particular station to appear. The horizontal scanning LED indicators are the worst in this regard, particularly for those unfamiliar with the network.

So to can guard behaviour. The requirement for the guard to make the "stand clear, doors closing" announcement from deep within his compartment, rather than with a handset while watching passengers, can also add to delays, particularly when a train is running behind

schedule. It is reasonable to assume that the current train procurement program will eliminate this problem in due course.

A4 Driver Behaviour

Speed recorders have been fitted to trains, and drivers are subject to penalty for a number of violations, which include exceeding speed limits or overshooting stations. Drivers are reportedly both resentful and overly cautious in response to this skewed situation, and this has contributed to the need for a slower timetable. For example, trains are specified to have a service braking capability of -1.0 m/s^2 , which is a force equal to 10% of gravity, but, although some margin is desirable to allow for wet weather conditions, drivers appear to be routinely applying only about half of this braking force. It is also difficult to drive just within the speed limit, so a considerable, and variable, margin is being applied to avoid penalty. The timetable also seems to have been designed for worst-case drivers, and, as discussed below, worst case trains.

Crews, including drivers, need to participate in the structuring of their work, rather than just being dictated to by reportedly insulated management, to manage this issue and achieve an optimised outcome.

7 A5 SPEED LIMITS

Speed boards are now being more rigorously observed, with drivers also properly considering the location of the train rear. This has contributed to the service slowing in the new timetables. However, there are grounds for suspecting that speed limits are too conservative.

For suburban lines shared with freight, there is one set of speed boards for all services except where there is a higher limit shown for XPT services. It seems logical that suburban trains, which have an axle loading lower than XPT power cars, should also be permitted the higher limit (up to their allowed maximum). For non-XPT lines, the suspicion remains that speed board are similarly set for locomotive hauled trains, and that suburban train speeds could be higher.

Another example is from the Bankstown line. CityRail recently publicised that this line has been fully upgraded with concrete sleepers, however there has been virtually no change to the 65-80 km/h speed limits that apply.

Other speed limits could also, in principle, be raised. In some cases a speed limit has been imposed due to signalling overlaps, which affect the safe distance between trains, now being considered inadequate. The solution here, of course, is to adjust the signal locations accordingly or possibly adopt a more sophisticated (moving block) type of signalling. Severe speed limits have been imposed under some air rights developments, due to the possibility of a derailed train bringing down the structure. Although slide walls and check rails have been provided at several sites, such as North Sydney and Goulbourn Street, it is puzzling that the 30 km/h speed limits remain at these locations. With hindsight, such developments were undesirable and demolition may be the best long-term solution.

A6 Train Design

While the double deck design provides many more seats per train, the long loading times limit the number of trains per hour that can be provided. Accordingly, the overall track carrying capacity is less than for an efficient metro, with perhaps Moscow and Hong Kong being appropriate examples. However, the journey times for long distance commuting make the provision of more seating appropriate, and the double deck design seems to be regarded as the best solution for these users.

The situation is different for shorter distance services. Here there is less need for seats and a single deck design with many doors would allow dwell times to be much improved. This, and better traction arrangements (eg more motored axles), would allow significantly faster services to be provided. Such trains can either be used to advantage on dedicated lines for a very frequent service, or where mixed with limited-stop double deck trains, to delay these less. The Redfern to Strathfield Local Line is a key example of the latter, with its mix of stopping and semi-fast services.

CityRail has tendered for a number of single deck trains as part of the current rolling stock procurement program, however the commitment to purchase is less clear. It seems that cost, rather than service delivery, may be the prime motivation and that only two doors per standard length carriage are being considered. As more doors per train are desirable for a good dwell time outcome, this in turn requires articulated carriages to minimise gaps due to the curvature of many legacy platforms. The easier-to-supervise passenger environment of single deck trains also opens the possibility for cost savings through one-person operation.

CityRail's best trains have only mediocre traction performance by modern standards, and more can be achieved. The first air-conditioned trains were further burdened with the weight of this equipment and heavy motor/alternator sets to provide an uninterruptible auxiliary power source, but with no traction improvements. Unfortunately, these worst performing (K-set and C-set) trains are not to be replaced in the current rolling stock procurement program, and it seems that the new timetable for **all** lines is based on their performance. Tangara trains have better performance, benefiting from weight-saving static inverters to replace the motor/alternator sets, but the newer Millennium trains suffer from increased weight in other areas.

The new outer suburban trains, currently under trial, set a new traction standard for CityRail electric trains with motors of 200 kW each, rather than 140 kW, being provided. This increase comes from the more compact design possible with modern 3-phase AC traction. Although more power will give better acceleration and braking initially, the design also allows this to be traded off for a higher 160 km/h maximum speed for outer suburban services in the future. In principle the new suburban trains could be similarly equipped with more powerful motors, but it is not known what CityRail's intentions are in this area.

A7 Track Alignment

Obviously, straighter track would permit higher operating speeds, but there are limited opportunities to do this with the existing network. Exceptions include the excessively curved approaches to some stations, and foreshadowed major route upgrades such as to the Central Coast and South Coast. New lines can, of course, be built to higher alignment standards.

Another possibility is to increase the cant deficiency, which relates to the lateral force experienced by passengers through curves. An increase from the present 3° (a lateral force equal to 5% of gravity) to 6° (a 10% lateral force) would, with a matching increase in track superelevation, allow a possible 40% increase in curve speeds. A 6° cant deficiency is being used for the UK West Coast Main Line upgrade, and a similar figure is believed to be being considered by the ARTC for upgrading the Melbourne to Brisbane rail route to achieve more competitive freight transit times.

More tracks for express running can also be built, providing additional opportunities for limited stop services to pass slower trains, and junctions can be improved by grade separation. The Clearways program already does these to some extent.

A8 Turnouts

There are many sharply angled turnouts in the CityRail network that are subject to severe speed limits, such as 15 and 25 km/h. In some cases, track renewal projects have incorporated faster turnouts but many slow turnouts remain. Faster turnouts do more than just save journey time; they can also reduce the cascading of delays through the shorter occupancy time of trains through junctions.

The Clearways program will also bring improvements, through both faster turnouts at some locations and less use of others. In principle, a program of providing faster turnouts throughout the network, where space is available to do this, would be beneficial.

8 A9 OTHER

There are a number of other slowing issues. At some key stations, a slow (controlled) approach is required, not for any track or traffic related reason, but simply because the exit signal has not been set to clear. Sydenham and Strathfield are reported examples.

Temporary speed limits, while necessary to manage short-term problems with the network, can sometimes extend over considerable periods. In response to the claim that the number of temporary speed limits has been reduced, one employee has remarked that this is only because they have been made permanent! In the UK, a more concerted effort in reducing the number of temporary speed limits on the Cambridge lines has reportedly improved on-time running in the (most difficult) evening peak through the reduction of cascading delays.

There is a further long-term issue that affects the topology of Sydney, and therefore the future CityRail network, which is presently oriented to, and performs best in, serving the CBD/North Sydney. This is that the metropolitan strategy will encourage the growth of other centres so as to both reduce travel distances and increase the use of public transport. The proposed City of Cities topology requires good transport links between such other centres, as well as between them and the CBD/North Sydney. Future rail planning needs to consider this, so that more direct rail travel is possible with its commensurate time advantages. To date, the only plans that have been publicised are Action for Transport 2010 and the Christie Report, but with no commitment towards implementation outside of the NW and SW rail links to the new growth areas. Further, the Christie Report is only a CityRail focused first step towards a plan for the future, subject to adjustment by others, and seemingly does not really address the City of Cities issues adequately.