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MELBOURNE AND METROPOLITAN TRAMWAYS BOARD.

MEMO. TO MEMBERS OF THE BOARD.

THE BOURKE STREET - NICHOLSON STREET AND
CLIFTON HILL - NORTHCOTE CONVERSION.

With the cable routes running from Bourke Street almost at the end of their life, the Board, in July last year, resolved to continue its policy of electrification. While I am as convinced as ever I was that electric trams for the mass transportation of large cities are still unrivalled both for capacity and economy, there are special considerations which apply to Bourke Street which, allied with what I saw abroad, in the company of the Secretary, make me disposed to invite the Board to re-consider the decision to electrify Bourke Street and, if thought advisable, to embark on a crude oil bus experiment with the qualification that if found unsuitable we could revert back to electrification and use the buses to improve existing bus services and give further developmental services as the city continues to expand.

As you are aware, I left Melbourne in March last with a perfectly open mind in relation to street transport. After the Secretary and I got to England, and as we went about examining system after system, we got the feeling gradually that perhaps it would be advisable to come to some modification of our electrification policy. I am going to discard London from this report for the reason that the conditions there are so entirely different that they offer no accurate basis of comparison. By that I mean that London has always been a bus city with, in addition, huge masses of people being moved at the peak periods by the trams, tubes, electric suburban railways and buses. It is outside London, in such cities as Birmingham, Liverpool, Manchester, with huge housing schemes being developed, that I began to be impressed with the ability of the crude oil bus to render yeoman service.

The factor of economy must ever be kept in mind when considering the problem involved in supplying transport to such housing schemes, far removed from the city proper. In each case the tendency has been for those housing estates to become little communities on their own, with

shops, places of entertainment and recreation all available, and with the working population leaving them in the morning and returning to them at night. Incidentally, the sites of many of those housing schemes were fixed without any consultation with the transport experts. The latter were called in at the last moment with the bland intimation that transport was required. This hint may be of some value to those who have building ground within the Metropolitan area, and who are contemplating the planning of a housing scheme. In the past the practice has been to build and then clamour for transport, no matter what the cost would be to the authority concerned. In future it would not be a bad plan to consult the transport authority first.

Obviously, with the sites of those housing schemes far removed from the city proper, and with most pronounced morning and evening peaks, but with traffic during the rest of the day quite negligible, it was economically impossible to embark on the heavy capital cost involved in the construction of electric tramways. The petrol bus at the commencement of those schemes made a transport service possible, while in the last five years the rapid development and improvement in the crude oil bus made the business of providing adequate transport facilities still easier.

I admit that there is a substantial difference between providing transport in such cases with the problem of Bourke Street proper, but the distances we run from that thoroughfare, to Nicholson Street in the one case and to Northcote in the other, do provide some similarity. That remark has a direct relation to the expenditure involved. Estimates prepared 15 months ago informed us that the initial cost of converting those lines would be in the region of £550,000. Looking to the rise in the cost of materials which has occurred since, the cost to-day would probably reach £600,000. To convert the lines to crude oil buses would cost approximately £240,000. I recognise that our technical officers advised us that the estimated annual surplus on trams would be £27,267 as against £13,524 for crude oil buses, and that trams seemed to be the better proposition for the operation of a route where the traffic is heavy, as in this case, and that in view of the possibility of re-routing the East Preston electric

trams down High Street, Northcote, and over the Clifton Hill route into Bourke Street, and thence to Albert Park, conversion to electric traction seemed to be the logical solution.

But I personally, and I think the Board is also, am of the opinion that we cannot afford to ignore new ideas. The crude oil bus is a tremendous advance from the economical point of view on the petrol vehicle, and has in Great Britain, as with us here in Melbourne, made possible services which would otherwise have been impossible, except at a particularly heavy loss. The growth in the use of this particular bus can be illustrated by mentioning that during the two years which ended on the 30th June last the number of crude oil passenger buses operated by municipal transport departments in Britain advanced from 2,586 to 5,421, whereas during the same period the number of petrol buses declined from 4,407 to 3,337. It has to be remembered also that really startling developments are occurring with buses which can operate either with ordinary town gas as the fuel or which produce gas as they run. Judging by what is happening in Germany and France, where the respective Governments are encouraging by every means in their power the use of those engines, the progress in the near future will be such that from the point of view of running costs they will have as great an advantage over the crude oil bus as the crude oil bus has to-day over the petrol bus, with the highly important added merit that they would make us independent of imported oil in the event of an outbreak of war. I will not enlarge on this point, as the Erren engine which will be here shortly will provide us with all the data we require. If it is as successful with us as it has proved in Germany, it will be a simple matter to convert all our buses to the use of gas.

To get back to the question of what policy we should pursue with Bourke Street, I wish to explain that to most of the Tramway Managers and Engineers I met while abroad I described our problem in detail. While there were exceptions, most of them expressed the view that looking to the rapidly changing conditions they would not be disposed to construct a new electric line, except extensions to existing lines, but would be disposed to consider seriously the bus. In view of those opinions, and bearing in mind the enormous capital expenditure which would be involved

in electrification, which would add considerably to the Board's already great loan liability, I came reluctantly to the conclusion that, if it were practical from the traffic point of view, buses should be given a trial; and that, if experience proves that notwithstanding their greater number they are unable to answer up to our traffic requirements, and fail to satisfy the public, we can then revert to our electrification policy, using the buses to augment our existing bus services, which are growing rapidly, and to develop the new housing areas which will unquestionably be established in the outer suburbs as the city expands.

You are all aware that trams have been superseded in many of the smaller cities of Britain and America by petrol, crude oil and trolley buses, and that the general feeling among transport experts is that trams should be retained only for trunk lines with a heavy density of traffic. In a paper read before the Canadian Transit Association only two months ago, Mr. Gordon, the Managing Director of the American Transit Association, defined roughly the respective spheres of the tram and bus by saying, in effect, that where traffic needs demanded a vehicle capable of carrying 60 and more passengers, you required a tram, but that below that figure the bus was the more suitable vehicle.

Where trams have been superseded by trolley buses--and the cases where trolley buses constitute the sole means of transport can be counted on the fingers of one's hand--it has generally been because the operators have felt unable from the financial point of view to scrap the existing overhead, or because the municipality concerned desired to retain the transport load for their own electrical power undertaking. I reject the idea of trolley buses because if we are going to convert to buses we ought to secure all the mobility possible and not go in for a bus which is every whit as route-bound as a tram and which, therefore, we would be unable to use outside its own particular area. The great majority of the Transport Managers prefer the crude oil bus because it costs less to instal, is much cheaper to run, costs less in maintenance, and is available for use in any part of the transport area as and when required.

This opinion of the crude oil bus is confirmed by events since I left England. In March last, the Manchester Corporation commenced an experimental service of trolley buses on two routes, and

when I was there in June careful consideration was being given to the question of which type of bus should be chosen to gradually take the place of the trams. The General Manager (Mr. R. Stuart Pilcher) was then collecting all possible data for the report he had been asked to prepare. On the 23rd of August last, he recommended that the remaining tramway lines should gradually be replaced as they fell due for renewal and reconstruction by crude oil buses. The reason for that recommendation was that the cost of a conversion to crude oil buses would amount to £855,800 as compared with £1,188,351 for trolley buses. In addition, the operating costs per vehicle mile for the crude oil bus would be but 14.087d. as compared with 16.097d. for the trolley bus, a substantial difference of 2.010d. per mile, while, Mr. Pilcher added, "the crude oil bus is more mobile and more adaptable in congested streets than the trolley bus. For this reason I am of the opinion that the motor bus is the more suitable vehicle for operation in the centre of the city." The recommendation was adopted. Birmingham has now 700 crude oil buses. When several routes were converted to trolley buses six or seven years ago, the crude oil bus had not reached its present stage of perfection. Now that it is such an admirable vehicle, however, the Birmingham General Manager is strongly opposed to trolley buses, and his view has the unqualified support of the engineering department, which finds the trolley bus very costly both in operation and maintenance. "The trolley bus", said the General Manager (Mr. Baker) to me, "is not so fast as either a good tram or oil bus."

The tables showing the results of operation on the Nicholson Street and Clifton Hill-Northcote routes for the year which ended on the 30th June last, a comparison of the present cable services with the proposed bus services, the capital costs of each method, and the estimate for the conversion of the routes to electric traction, are as follows :-

It will be seen that 72 buses are required for the service, to which must be added 10% for spares, making the total number of buses required 79.

<u>Route</u>	<u>Passengers</u>	<u>Miles run</u>	<u>Revenue</u>
Clifton Hill and Northcote ..	12,679,150	1,598,232	£132,391
Nicholson Street ..	4,950,718	527,536	47,445
	<u>17,629,868</u>	<u>2,125,768</u>	<u>179,836</u>
<u>Less Operating Expenses</u> - 2,125,768 miles at 16.29d.			144,286
			<u>Surplus from Operation</u> .. £ 35,550
<u>Less Standing Charges</u> , excluding 4% on Capital Cost and Consolidated Revenue Payments, 2,125,768 miles at 1.69d. ..			14,969
<u>Surplus for year to 30/6/38</u> ..			<u>£ 20,581</u>

Revenue for this year showed a decrease of £10,000, due principally to the Infantile Paralysis outbreak.

To replace these routes with Single-Deck C.I. buses (32-seats) would, with an estimated peak load capacity of 40 passengers, require a service and headway as set out hereunder:-

COMPARISON OF PRESENT CABLE AND PROPOSED BOURKE STREET BUS SERVICES.

<u>Present Cable</u>		<u>Proposed Bus (32 seats)</u>	
<u>Northcote - City</u>		<u>Northcote - City</u>	
Round Trip Distance ..	12.16 miles.	Round Trip Distance ..	12.16 miles.
" " Time ..	80 & 82 mins.	" " Time ..	76 mins.
Schedule Speed ..	9.72 m.p.h.	Schedule Speed ..	10.13 m.p.h.
Maximum Cars ..	50	Maximum Buses ..	54
Miles per annum ..	1,589,056	Miles per annum ..	1,904,500
Headway "Slack" ..	2.96 mins.	Headway "Slack" ..	2.25 mins.
" " "Peak" ..	1.64 mins.	" " "Peak" ..	1.40 mins.

<u>Nicholson St. - City</u>		<u>Nicholson St. - City</u>	
Round Trip Distance ..	6.63 miles.	Round Trip Distance ..	6.63 miles
" " Time ..	47 mins.	" " Time ..	43 mins.
Schedule Speed ..	9.82 m.p.h.	Schedule Speed ..	10.20 m.p.h.
Maximum Cars ..	17	Maximum Buses ..	18
Miles per annum ..	511,056	Miles per annum ..	654,044
Headway "Slack" ..	5.11 mins.	Headway "Slack" ..	4.00 mins.
" " "Peak" ..	2.88 mins.	" " "Peak" ..	2.38 mins.

<u>TOTAL CARS</u> ..	<u>67</u>	<u>TOTAL BUSES</u> ..	<u>72</u>
<u>MILES PER ANNUM</u>	<u>2,100,112</u>	<u>MILES PER ANNUM</u>	<u>2,558,544</u>
		<u>INCREASE:</u>	5 vehicles and 458,432 miles per annum.

It will be seen that 72 buses are required for the service, to which must be added 10% for spares, making the total number of buses required 79.

The Capital Cost of these would be as under :-

79 C.I. (32-seat) buses at £1,900 each ..	£150,100
Proportionate cost of bus garage, plant, offices, etc. - 79 at £600 per vehicle ..	47,400
Track reinstatement 8.1 miles at an average cost of £5,000 per mile to be spread over a period of 15 years ..	40,500
Sundry Expenses	2,000
	£240,000

Estimated Revenue after conversion ..	£195,000
<u>Less</u> Cost of operating 2-man buses with wages of drivers showing 35/- margin as per Bus Log, 2,600,000 miles at 12.5d. ..	135,500
	£ 59,500

Less Standing Charges:-

Interest on 240,000 @ $4\frac{1}{4}\%$	£10,200	
Depreciation Buses 14%	21,014	
" Garages, Plant, etc. 4%	1,976	
Writing off track reinstatement $\frac{1}{15}$	2,700	
Sinking Fund other assets $1\frac{1}{2}\%$	494	
Passgr. seat tax 70 x 32 x £3:7:6	7,560	
Licence and registration 79 x 8	632	
Employees' Benefits 280 x £5	1,400	45,976
	ESTIMATED ANNUAL SURPLUS	£ 13,524

An estimate of the cost of converting Clifton Hill and Nicholson Street to electric traction, made 12 months ago, including track, overhead, rolling stock, depot accommodation, etc., was £550,000, but as there have been considerable increases in costs since that time, the cost today would probably be in the order of £600,000.

Standing Charges would be as follows:-

Interest $4\frac{1}{4}\%$ on £600,000 ...	£ 25,500
Sinking Fund 1% on £600,000 ...	6,000
Depreciation 4% on £600,000 ...	24,000
Employees' Benefits ...	1,400
	£ 56,900

Estimated result of operation under Electric Traction.

Estimated Revenue (same as for Buses) ..	£195,000
<u>Less</u> Operating Expenses - 1,900,000 miles @ 14d. ..	110,833
	SURPLUS FROM OPERATION
	£ 84,167
	<u>Less</u> STANDING CHARGES
	56,900
	ESTIMATED ANNUAL SURPLUS
	£ 27,267

If you adopt the course which I recommend, viz., an experimental conversion of the Bourke Street, Nicholson Street and Clifton Hill and Northcote routes to crude oil buses, I propose also that the Collingwood cable line should be closed down as soon as practicable, and that the buses we had intended to use in Bourke Street during the conversion operations should be employed on that route and extended to North Kew.

H. H. BELL,
CHAIRMAN.

13th October, 1938.