

ST KILDA ESPLANADE LINE

Date of opening: 27 October, 1891
Round trip: 3.90 miles
Running Time: 36 minutes including 3 minutes each shunt
Route colour: Yellow - red light
Engine House: On northern side of Wellington Street
midway between Chapel Street and
St Kilda Junction.
Cables: One only - 20,940 feet
Speeds: 10 m.p.h. 27 October, 1891
12 m.p.h. 1 October, 1892
Fares: Through fare 2d.
Closure: 29 August, 1925.
Further information: General recordings pages 10, 11, 12.

The line from Chapel Street to St Kilda Esplanade via Wellington and Fitzroy Streets was the last to be opened. Great discussion preceded the construction of this line and for many weeks, even months, it was considered that horse traction should be employed.

News items from the Melbourne ARGUS show the controversy that took place at the time. Many public meetings were held and many opinions expressed.

Melbourne ARGUS 30 September, 1887

"A meeting was held last night at the George Hotel, Fitzroy Street, St Kilda to devise means for obtaining the substitution of cable for horse trams on the proposed branch line from Chapel Street along Wellington and Fitzroy Streets to the Village Belle. Mr W. Simpson was voted to the chair. Mr W.J. Butcher explained that the borough councillors had agreed to accompany a deputation of persons interested to interview the Directors of the Tramway Company on Friday morning. He thought there was a probability of the Company agreeing to a change from horse to cable line if it could be made clear to them that the line would pay. One objection would probably be that the line was too short for the cable but the petitioners would be able to show the feasibility of extending the line to the Bluff, or even to Elwood. The distance would then be about two and three-quarter miles. The cost of horse lines was about £10,000 and of cable lines about £20,000 per mile, or a difference of £10,000. As to the advantages to the inhabitants along the route, he reminded the meeting that Fitzroy Street was noted for its dust nuisance, the street lying due north and south. The horse trams would increase the dust in summer, whereas a cable tram would abate the nuisance.

/Mr O'Donnell

Mr O'Donnell said that in summer the traffic on the line would be enormous, the whole of Prahran and Toorak would be tapped and, if the line were carried on to Elwood, the Government would be saved the trouble and expense of making a costly railway to that suburb. Of course they would be prepared to make certain concessions to the Company for making the change.

Mr Grondona and other speakers also addressed the meeting in support of the proposition. It was resolved that as many as possible of the residents should meet the borough councillors at 11 o'clock to-day to obtain the opinion of the directors on the subject. After a vote of thanks to the chairman, the meeting dispersed."

Cable traction was finally decided upon and the line was the shortest of the system.

(Extract from Chairman's Report of the operations of The Melbourne Tramways Trust from 20th August, 1892 to 20th January, 1905).

"St Kilda Esplanade Line - This being a line which will probably have to depend for its returns largely upon the heavy and intermittent holiday and summer traffic, it was considered that a horse tramway would not be suitable, and in spite of the large increase of cost, the Company and the Trust agreed that it should be constructed on the cable principle, and further borrowing powers had to be obtained from Parliament, as will be explained further on. The contract for construction was let to Laudehr Bros for £14,965 7s. 1d., and that for the engine house to Thos. Clark for £6636 11s. 11d. The latter building is on a block of land with a frontage of 77ft 10 in. to Wellington Street, Prahran (near Chapel Street,) by a depth of 180ft 6in. through to Vine Street. The engines have cylinders 20in diameter by 40in stroke, and were supplied by Wright and Edwards at a cost of £1145. The machinery was at first driven direct through spur wheel and pinion; but since the opening of the lines rope gearing has been substituted at a cost of about £3500. The rope drivers are of a completely different design to any others erected by the Trust, being furnished with friction clutches, by means of which they may be stopped, if necessary, while the engine is running. The gearing was supplied by the Otis Elevator Co. and cost £2645. There are three boilers similar to those supplied to the other engine houses erected at a cost of £878 each. Arrangements have been made to connect this line with both the Chapel Street and St Kilda lines. At the latter junction an auxiliary cable has been fixed, worked by friction gear from the main cable, and which need only be used as required. The track was laid with the light rails in stock, purchased originally for horse tramways, and which were strengthened by riveting plates of iron to the lower flange. This arrangement has proved quite satisfactory at a considerable saving of cost. The line was opened for traffic on the 27th October, 1891."

/The Melbourne

The Melbourne ARGUS of 27 October, 1891 reported:

"The St Kilda Esplanade cable tramway will be opened for traffic to-day, The line runs from the corner of Dandenong Road and Chapel Street, Windsor, via Wellington Street, Fitzroy Street, the Esplanade and Acland Street to the Village Belle Hotel. Crossing points have been made to connect the new line with the Chapel Street and St Kilda Road tramways, so that cars will be able to run through, if considered advisable, from Abbotsford, North Carlton, Queensberry Street and from South Yarra and Prahran to the St Kilda beach. It is announced that for the one fare - viz. 3d. - passengers may be transferred as follows:-
To the St Kilda line or vice versa at the Junction: to the Prahran line or vice versa at Chapel Street: to the Orrong Road omnibus or vice versa at Chapel Street."

Only one cable was propelled from the engine house in Wellington Street but despite the few cars operating on the (Windsor/Esplanade section) route the cable was called on for some very heavy work especially when the line from North Carlton was linked - at St Kilda Junction - to carry traffic to the beach. This was effected on 18 December, 1897.

There were two similar engines with three boilers . under normal working, one engine and one boiler were kept as "stand-by". Upon occasions of heavy traffic the two engines could be coupled in just on one minute.

Early pictures of cars on this line show the eastbound destination board as CHAPEL STREET. WINDSOR was shown on the rocking panel of the cars.

On hot summer evenings cars were fully loaded and a great strain was imposed upon both the cable and engine. In fact on one particular hot evening, despite extra steam power, the engine ground to a halt and the terrific loads could not be moved for some time.

The engine house was situated in Wellington Street on the northern side about midway between Chapel Street and St Kilda Junction. Propulsion was effected by steam and a single cable, situated near the eastern wall, propelled the entire section of the route which extended from Chapel/Wellington Streets corner to the Village Belle at the corner of Acland and Barkly Streets. The rope was threaded so as to leave the engine house and turn east taking cars to Chapel Street. Here it traversed around a sheave and pulled traffic to St Kilda Junction. at this point it turned north into St Kilda Road on the east side of the St Kilda Road tracks ... went around a ten foot sheave into the DOWN tunnel then around the curve into Fitzroy Street and on to Acland Street terminal ... on the UP track at St Kilda Junction, it went UNDER the other ropes and back to the engine house along Wellington Street. (The information re the operation at St Kilda Junction was made available by Mr T. Reed of St Kilda - a retired member of the MMTB and cable tramway engineer.)

/A journey

A journey on the Windsor/Esplanade line took passengers for a total distance (single journey) of 1.95 miles. Boarding a tram at the corner of Wellington and Chapel Street (transfers from the Prahran cars were available) the journey traversed along the residential areas heading for St Kilda Junction. About half way along Wellington Street the engine house was passed on the right but gripmen did not 'throw the rope' as the cable continued on being a single rope operation. Cars moved to a point near High Street (on the left) and, upon acceleration gripmen 'threw the rope' and coasted across the (Brighton Road - Queensberry Street) track and picked up the cable again in Fitzroy Street. The journey continued on along Fitzroy Street passing parkland (St Kilda Cricket Ground) on the right and residential areas on the left. Cars proceeded to Grey Street where the 5' 3" gauge electric cars operated by the Victorian Railways to Brighton Beach from St Kilda station which was situated on the right on the corner. After crossing the electric line cars proceeded to the Upper Esplanade and moved steadily around this roadway and reached the terminal of the electric line (from Glenferrie Road) passing Luna Park on the right and then making a right hand turn into Acland Street to travel a few hundred yards to the terminus at Barkly Street corner.

After shunting cars made the return journey passing the car shed which was situated about three hundred yards on the left and returned along the Upper Esplanade to Fitzroy Street making their way to the Junction. After stopping short of the Junction momentum was gained and gripmen 'threw the rope' to enable cars to coast across (the junction) and then picked-up the same rope to continue along Wellington Street until reaching the engine house on the left where, as the cable turned in for propulsion, it was necessary to again 'throw' and pick-up to continue to the terminal at Chapel Street.

Although the Windsor line was constructed to link with Chapel Street, the line was never used and in latter years of the service was in fact cut-off. (During reconstruction of the electric lines at the end of 1968 the old curve was revealed when the roadway was opened - a colour picture has been included in my records: C.N.G. 1 August, 1972)

The car shed for the Windsor/Esplanade line was at the beach end. Only a few sets were required to maintain the service. An unslotted line led from the shed to the UP line and cars were hauled in and out by a horse.

This was the first line to be converted to electric traction in the overall plan but immediately after closure industrial troubles developed and, although overhead gear was installed at the time, a strike of over three weeks' duration held up work - records show it was a matter of 6d per day increase in pay demand.

When the Esplanade line was closed, the engines were removed to the Northcote engine house (also single rope) to replace a very noisy rumbling machine with gear drive.

/FROM

FROM THE MELBOURNE "ARGUS"...

"TRAMWAY CONVERSION

RATES OF PAY DISPUTED

Work May be Delayed

Owing to a dispute which has arisen regarding the rates of wages to be paid to the men who were to be engaged in the work of conversion of the St Kilda road and Esplanade to Windsor cable tramway lines to the electric system, it is unlikely that the work will be begun to-day as originally intended. The dispute originated between members of the Australian Workers' Union, who usually perform this class of work, and the contractors, and it was stated had become somewhat complicated because an application had been made by the Tramway Employees' Association to the contractors for the employment of certain of its members whose services had been dispensed with by the Tramways Board owing to the reduction of the cable services.

Efforts by union officials to adjust the dispute having failed, the matter was placed in the hands of the Trades Hall industrial disputes committee. The secretary (Mr E.J. Holloway) said on Saturday that the contractors had refused to pay the rate of 10/- a day which was demanded by the union. Similar work on the new electric tramway at South Melbourne was being paid for at the rate of 15/6 a day. Under the quarterly adjustment based upon the statistician's cost of living figures, however, the rate had been increased to 16/-. Mr Holloway claimed that the Tramways Board paid this rate, and for holidays in addition. Without desiring to harass the board in any way the men concerned had been advised not to accept employment to-day. The disputes committee, however, was still making an effort to bring about a settlement of the dispute."

Small buses were used to convey passengers during the conversion period but their running brought many bitter comments from the St Kilda Council and passengers affected. For some reason the beach terminal was near Luna Park and not the old cable terminus and the fare was increased from 2d to 3d. After much comment buses were diverted to run to the cable terminal via Shakespeare and Chaucer Streets.

Extensive reports of the Esplanade line conversion can be found in the newspapers of the day ... especially the ARGUS.

When the line was converted to electric traction, a link was made with the existing line in Carlisle Street. However, this line was rarely used.

THE LONSDALE STREET EXTENSION - 1924

- Purpose: To link Swanston Street and Elizabeth Street lines.
- Construction: In the weeks prior to the closure of the cable section in Swanston Street between Lonsdale Street and Queensberry Street - this was during the latter months of 1923 until 9th February, 1924.
- Propulsion of cable: Firstly the Swanston Street cable was extended around drum pulleys and extended along Lonsdale Street to Elizabeth Street returning along the DOWN track and so along Swanston Street DOWN. This continued until 26th December, 1925 when the CARLTON (Collingwood) cable was extended straight across Swanston Street and operated the North Carlton and Collingwood services until closure. Thus the new short section was operated by firstly the St Kilda Road engine house and then by Collingwood engine house.
- Grip Operation pre 9 Feb 24: Prior to closure of Queensberry Street section (in Swanston Street) - trams proceeding to Queensberry Street terminus (Brighton Road, Toorak) ... carry cable right through from Bourke Street.
- Trams proceeding to Carlton, North Carlton throw Swanston Street cable approaching Lonsdale Street and coast to pick-up point near the points. The conductor picked-up the auxiliary cable which hauled trams around into Lonsdale Street and again around the corner into Russell Street where auxiliary was thrown and the cable for Lygon and Elgin Streets automatically picked-up.
- Closure: The section to Queensberry Street closed on 9th February, 1924 and the curves at Swanston Street and Elizabeth Street constructed (ie linked) after midnight. Opened for traffic at 1.30pm Sunday, 10th February, 1924.
- Rerouting: Toorak trams shunted in Lonsdale Street opposite St Francis' Church. St Kilda (Brighton Road) trams continued around the new curve to North Melbourne.
- Route colours: Toorak retained YELLOW (white light) but North Melbourne changed from green to WHITE (amber light) to conform with the St Kilda Brighton Road traffic. West Melbourne trams changed to BLUE.

/Grip

Grip operation
post 9 Feb 24:

From Swanston Street
CARLTON and NORTH CARLTON trams continued to throw
Swanston Street cable and pick-up auxiliary to proceed
along Russell Street. TRAMS TURNING LEFT along the new
section (Toorak, North Melbourne etc) ... accelerate in
Swanston Street then throw and coast around corner into
Lonsdale Street.

Toorak trams rolled to the shunt but NORTH MELBOURNE
bound traffic had to pick-up the rope to gain speed before
throwing to negotiate the curve into Elizabeth Street.
This was a fairly wide curve and trams stopped after
turning and the Elizabeth Street rope was picked-up by
hand operation (drum pulley).

On the southbound journey, North Melbourne trams proceeded
along Elizabeth Street and gripmen threw the rope just
before Lonsdale Street coasting into the new section of
track. The points were set for straight ahead in
Elizabeth Street so conductors had to alter them for
turning into Lonsdale Street. Trams moved to the
Swanston Street corner after a hand pick-up in Lonsdale
Street.

Here all traffic turning right (south) into the city's
main artery accelerated, threw and coasted around the
curve and automatically picked-up the (same) cable.

Further Closure:

The Elizabeth/Lonsdale Streets curve was discontinued on
18th July, 1925.

The Swanston/Lonsdale Street curve discontinued on
26th December, 1925 when the line straight across was
constructed.

When the MMTB decided to extend the Coburg electric tramway from
Queensberry Street to Lonsdale Street in order to bring the electric line nearer
to the centre of the city, a new section of cable track was installed along
Lonsdale Street between Swanston and Elizabeth Streets to link the existing lines.
This was possibly the last ever cable track constructed in the world and was to
be used for only fourteen years.

/The tracks

The tracks were laid with a wider clearance than the older sections of track to enable their use for electric traction. However, this section was never converted. Two crossovers, one slotted, were installed at the western end. A curve of wide radius was installed into Elizabeth Street and the approach at Swanston Street was uphill both ways.

A new sheave was installed at the west end and when the north end of Swanston Street was closed (9th February, 1924) the cable, powered from St Kilda Road engine house, was drawn into the tunnel around the sheave and then back along the DOWN track.

The new operation gave much trouble and there were frequent breakdowns. Flexing of a heavily loaded cable that had to be thrown and collected continually caused most of the trouble.

When services commenced (10th February, 1924) on the new section, St Kilda cars were through-routed to North Melbourne (route colour WHITE with amber light) and Toorak cars also turned left and shunted on the new shunt in Lonsdale Street. However, on 19th July, 1925 the curve from Elizabeth Street was discontinued and North Melbourne traffic reverted to the Flinders/Elizabeth Street shunt ... route colour GREEN, green light which was retained until final closure. There had been suggestions that the long Brunswick bogie cars could occasionally be diverted to St Kilda Beach but this never operated. Brunswick cars continued to the city terminal at all times and HELD the rope when passing the new curve into Elizabeth Street in both directions.

St Kilda Beach traffic was through-routed to North Carlton and then when Swanston Street was closed on 26th December, 1925 a new section of track was laid straight across Lonsdale Street/Swanston Street intersection. St Kilda traffic stopped at Prince's Bridge (for a short period) and North Carlton traffic continued along the new section of line to shunt outside St Francis' Church. To provide propulsion following the withdrawal of the Swanston Street cable, the auxiliary rope between Swanston and Russell Streets was replaced by extending the Carlton cable to the sheave in Lonsdale Street (ext) and propelling traffic both ways.

With this new arrangement, a service from Collingwood, and North Carlton to the City operated for some time. The engine house at Collingwood provided the main power and the short branch line along Rathdown Street operated by the electrically driven motor hauled the four cars used on the North Carlton Service. Route colours were COLLINGWOOD - RED, red light and NORTH CARLTON - green, green light.

/The Lonsdale

The Lonsdale Street diversion was the death of the cable system in Melbourne. James Duncan (Engineer) told the authorities that the arrangement would not work.

The rope was thrown when cars turned Swanston/Lonsdale Streets in both directions. A series of drum pulleys was installed to carry the rope from Swanston into Lonsdale Street. These pulleys proved to be one of the major problems as they could not be kept adequately greased with consequent frequent breakdowns in the bearings.

The Swanston Street rope was always overloaded and with the introduction of two 90 deg turns and one of 180 deg, the cable could just not cope. With many fast accelerations, throws, pick-ups and very often poor judgment, the rope was subject to much abuse with consequent strandings and many delays to the service. New ropes were constantly being installed and frequently with a short life duration. Men earned much overtime trying to cope with faults and delays and so electrification became urgent.

Some time before this happened, James Duncan suggested that the St Kilda-City cable be shortened and the northern end of Swanston Street be serviced by a separate rope powered by an electric motor. This would probably have overcome the shortage of power in Swanston Street and given the cable system a new lease of life.

17th JAN 1924

TRAMWAY DEVELOPMENT.

LINKING "DEAD-ENDS."

Conversion of Cable System.

Before the constitution of the Melbourne and Metropolitan Tramways Board there were so many tramway bodies spread over Melbourne and suburbs that lines were constructed without regard to uniformity in coping with traffic. This policy had the effect of producing a number of "dead-end" lines. The latter have been taken in hand by the central authority for the purpose of connecting the whole system. This provision is embraced in the general plan of tramway extension outlined by the board, in addition to numerous new lines and the conversion of the whole of the cable system into electric traction. Officials of the board state that the most difficult, and, indeed, the most costly, work will be the electrical conversion project, which is regarded as the most stupendous undertaking in dealing with traffic problems.

Among the cable lines proposed for conversion into electric traction, there are two outstanding routes for the linking of "dead-ends." One is the extension of the electric line which runs from Bell street, Coburg, along Lygon street, Carlton, and now terminates in Madeline street, at the intersection of Queensberry street. There it connects with the commencing point of the cable tramway—two "dead-ends" being thus formed. The other project, which is in a similar category, is at the converging of Chapel street, Windsor, with Dandenong road on the one side and Wellington street on the other. The Dandenong road electric tram runs from Malvern, and terminates at Chapel street. On the opposite side of Chapel street is the commencing point for the cable tramway running along Wellington street, and converging with the St. Kilda road line at the Junction, thence proceeding along Fitzroy street, round the Esplanade, to the St. Kilda power-house.

Swanston Street Extension Urgent.

Officials of the board consider that the extension of the Coburg electric line from Queensberry street along Swanston street as far as Lonsdale street should be one of the first works undertaken. It is proposed, therefore, that the conversion of that short stretch embracing the Queensberry street cable line should be begun almost immediately, to transport passengers from Coburg to a point within easy walking distance of the centre of the city. Other construction work is at present in progress at West Brunswick to form connections in that district.

There has been some comment regarding the action of the board in building a new cable line in Lonsdale street, between Elizabeth street and Swanston street. This, it has been contended, is an unnecessary expense in view of the probable early conversion of the whole of the cable service into electric traction. It has been pointed out, however, that the Lonsdale street link is being built in such a way that it can be transferred readily for electric traction. Much heavier rails than are required for the cable trams are being put down; these will be of sufficient strength to carry electric cars. All that will be required will be to instal the overhead equipment when the time comes for the other city lines to be electrified. This link has been necessitated for a long time in transferring traffic from Elizabeth street to Swanston street, and it will afford direct connection to the beach along St. Kilda road by the employment of the large "bogie" cars which are run exclusively on the Brunswick line.

St. Kilda Link Desired.

Some inconvenience is caused at present to numerous Windsor, East St. Kilda, Armadale, and Malvern residents who use the Dandenong road electric trams by reason of the fact that the line has its terminus at Chapel street. If they desire to travel to St. Kilda, it is necessary for them to cross a busy portion of Chapel street, and catch the Wellington street cable tram on the opposite side. This short stretch is the only cable tramway which does not run into the city, and its early electrification would appear to be essential. Dandenong road passengers are now compelled to pay double fares to reach St. Kilda. That is, if they travel only one section on the electric tram, they must pay 3d. to reach St. Kilda beach. Passengers from the city, although travelling more than double the distance, can reach the same destination for 2d. There is also heavy traffic on both these lines during the winter to the St. Kilda football ground, when the same set of conditions obtain. The Wellington street line is included in the general project for electrification, but early electrification, as far as the St. Kilda Junction at least, would be a distinct advantage. This would not interfere with the cable system in Fitzroy street, and it would avoid the shunting of cable cars in Wellington street.

In reply to an inquiry, the deputy chairman of the Tramways Board (Mr. T. O'L. Reynolds) said that the conversion of the cable line in Wellington street and the extension of the Dandenong road electric tramway to St. Kilda would form portions of the work of converting the cable lines south of the Yarra. The board proposed to undertake this work as soon as possible after it had provided for the more immediate needs of the unserved areas. The conversion of this section could not be carried out before the conversion of the Esplanade line, as the rope on the latter section was driven from the engine-house at Windsor. The conversion of the St. Kilda road tramway to electric working, after the conversions already authorised, would be the most important, but the necessary preliminaries would occupy considerable time.

TRAMWAY EXTENSIONS.

LONSDALE STREET LINK.

8 FEB. 24

Through Route to Operate Monday.

Arrangements are being made by the Tramways Board to operate from Monday next the Lonsdale street tramway extension, which has been constructed to improve the service through the city and relieve the congestion in Elizabeth street. With the exception of the connection with the Swanston street lines at the intersection of Lonsdale and Swanston streets, the extension has been completed. It is proposed to make the connection during the week-end, and, afterwards, North Melbourne cars will run via Lonsdale and Swanston street, along St. Kilda road, and through to the present Brighton-road terminus. The cable track from Lonsdale street to Queensberry street -- the terminus of the Coburg electric cars and the Brighton road cable cars -- will be disconnected, and the work of extending the Coburg lines to Lonsdale street so that the electric service from the north can be brought close to the city, will be pushed forward with all possible speed.

To permit the board to complete the work at the junction referred to in time for the Monday morning traffic, the Toorak and Brighton road cars will be short-shunted at the intersection of City road and St. Kilda road, from 2 p.m. on Saturday next, until Monday morning, unless the work is sufficiently advanced to permit of both the Toorak and Brighton road cars being run to Lonsdale street, and shunted opposite St. Francis's Church, some time on Sunday afternoon.

Passengers from North Melbourne can travel to the City road for the present fare; and the fare section for the Brighton road passengers will be at the junction of Lonsdale and Elizabeth streets.

While the work of extending the Coburg track from Queensberry street to Lonsdale street is in progress, arrangements will be made to bring the electric cars to Franklin street, by using and operating as a single line, part of the old cable track. Two gangs will be employed on reconstruction work, and it is planned to have the reconstruction sufficiently advanced to permit of the Coburg cars running to Lonsdale street in a few weeks.

When the North Melbourne and Brighton road cars are through-routed on Monday next, the present system of fare-collection on the North Carlton, Carlton, Prahran, Toorak, Brighton road, and Esplanade lines will be discontinued, and the system of tickets used in other parts of the board's system will be introduced. Each passenger will receive a ticket for the amount of fare paid, which will indicate the section for which same is available. When this practice is introduced on the lines referred to above, the ticket system on the whole of the board's lines will be uniform.

"THROUGH-ROUTING."

ADVANTAGES OF TRAMWAYS.

Shunting an Economic Waste.

Recently the Tramways Board stated that the construction of the Lonsdale street loop to allow North Melbourne cars to travel to St. Kilda, instead of terminating and shunting at the corner of Elizabeth and Flinders streets, had resulted in four fewer trams being used at "peak" periods. Several inquiries having been made as to its effect on the handling of traffic on the lines concerned, the manager (Mr. A. D. Mundeck) explained the position. He said that it was the aim of the board to strive for "through-routing" as much as possible. Before the loop line was constructed it frequently happened that the trams on one route were comparatively empty, while the trams on the other were heavily laden. The construction of the loop enabled a better distribution of passengers and provided for full loads on both routes in both directions, with the use of fewer trams. It was the aim of the board to obviate shunting also in every possible way. It had frequently been noticed at shunting places that as many as six cars were waiting together to shunt. If that kind of thing continued throughout the day it meant that six cars on one route alone were practically out of commission, and were not earning a penny. "Through-routing" on the other hand, kept the cars going all the time, and prevented any waste of time or cars.

22nd SEP 1925

TRAMWAY CONVERSION.

Work Begun at St. Kilda.

The work of converting the cable tram tracks on the St. Kilda Esplanade to electric tram tracks was begun yesterday morning by the Foundation Company Ltd., after a delay of three weeks caused by a strike of labourers. A gang of about 40 workmen was employed to tear up the old tracks on the southern end of the Esplanade, and the strength of the gang was increased considerably during the day. Many rails have been taken out, and the work of dismantling the cable tunnel over a large section of the track has been begun. When the cable way has been removed the deep pit which will be left will be filled in, and a heavy concrete bed for the rails of the electric trams will be laid. As the work proceeds, additional labourers will be engaged until a gang of more than 200 men is employed.

The conversion of the Esplanade section of the line is being hurried forward as quickly as possible so that the section may be connected to the new electric system tramway from St. Kilda to Melbourne, through South Melbourne, which will be opened at the beginning of November.

TRAMWAY CONVERSION.

REARRANGING SERVICES.

Last Cable Trams in Swanston Street

Cable trams will run in Swanston street for the last time on December 26, and the North Carlton and St. Kilda road systems will be rearranged when the cars begin running on the morning of December 27, to permit the work of electrifying the cable line in Swanston street to be begun. As a result of the closing of the Swanston street line, the North Carlton cars which now turn into Swanston street from Lonsdale street will continue down Lonsdale street and shunt at Elizabeth street. The Brighton road cable service will be discontinued, and its place will be taken by a motor-bus service. The Wattle tree road and Brighton Cemetery electric trams, which now terminate in Dandenong road at Chapel street, will cross Chapel street and run to the St. Kilda Esplanade by way of the new electric tramway in Wellington street and Fitzroy street. An electric service will be provided from the Esplanade to Melbourne by way of the Fitzroy street permanent track and the temporary tracks in St. Kilda road, and by a track in Park street, which will connect with the South Melbourne electric tram in Hanna street. The service will terminate at the present terminus of the South Melbourne tramway until additional lines can be laid to connect the South Melbourne tramway on to the lines on Prince's Bridge. A service to Toorak and Windsor will be provided from a shunt, which has been constructed on the cable track at the southern end of Prince's Bridge, until the work of electrifying the cable line in the city section of St. Kilda road is begun.

The work of converting the cable line in Swanston street to electric traction will be begun early on the morning of December 28.

21st MARCH 1924

NORTH MELBOURNE SERVICE. TO THE EDITOR OF THE ARGUS.

Sir,—We are in the position to make a fairly accurate statement of how the new alteration of the running of the North Melbourne trams has affected the travelling public. The new system has been in operation since February 1, which should give the public sufficient time to get used to the running of trams along Swanston street instead of to the terminus at Elizabeth street. The first and most frequent complaint is that previously passengers could leave the terminus and reach the post-office, North Melbourne, in approximately 10 minutes. Now, they state, that catching a tram at St. Paul's it takes 20 minutes to reach the post-office, North Melbourne; that is, providing there is no delay in the loop. Should any delay occur in Swanston street, North Melbourne trams are sent back to Elizabeth street, which causes confusion to the travelling public.

The advantages so far as the North Melbourne public are concerned are nil. We would offer a suggestion which has been mentioned to us by numerous people that would overcome the difficulty, and allow the public to gain some advantage of the Lonsdale street loop. Each alternative tram, both on Brunswick and North Melbourne lines, should be sent round the new loop labelled "Beach Cars," the other cars to continue the Elizabeth street service to the terminus at Flinders street station, thereby giving the northern suburbs the benefit of both services. Business firms and the travelling public of North Melbourne consider they are badly treated by this innovation.—Yours, &c.,

FITZGERALD BROS. PTY. LTD.
North Melbourne, March 20.

SCHEDULE OF PASSENGER FARES

The passenger fares charged by M.T.O.Co Ltd at 30 June, 1916 have not been substantially amended, the more important fares are as follows:

CASH FARES

- 3d for a through journey over the Toorak - Prahran - St Kilda (Brighton Road and St Kilda Esplanade routes).
- 2d for a through journey on any line except the abovementioned routes, and for specified sections of such routes.
- 1½d for workmen only for through fare on all routes, by special morning and evening trains.
- 1d for the following sections:

Richmond Line	Between Spencer St and Swanston St
Clifton Hill Line	Between Johnston St & Clifton Hill Terminus
South Melbourne Line	Between intersection of Clarendon & Park Sts and the Sth Melb Terminus.

CONCESSION TICKET FARES

Twelve tickets for 2/9d - available over all lines entitling the holder to certain transfers to other lines.

Six tickets for 1/- - available over all lines upon which a 2d cash fare is payable.

Eight tickets for 1/- - available over the City sections of all lines upon an area, the boundaries of which are as follows:

Upon the North - Victoria St	Upon the West - Spencer St
South - Flinders St	East - Spring St

BRUNSWICK RETURN TICKETS

3d - available for return to Brunswick on all days except Sundays and holidays - sold only before 9.00a.m.

WORKMEN'S TICKETS

1½d - sold only on workmen's morning trains for return journey at anytime on all days except Sundays and holidays.

3d return fare paid on forward journey.

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SCHOOL TICKETS

At 9/- per 100 for scholars under 17 years attending schools registered by the Board. Available only between residence and schools between 8.00a.m. and 1.00p.m. Saturday and 8.00a.m. and 6.30p.m. other days. Not available Sundays, Public Holidays or during school vacations.

ROUND TRIP TICKETS

(Adults 9d - Children 5d). Issued by the Board and the Prahran and Malvern T.T. covering a day return round trip over specified tramways of the Board and the Trust.

COMBINED TICKET

2d - issued by the Board and the Melbourne, Brunswick and Coburg Tramways Trust covering a journey between City Road South Melbourne and Princes Street, Carlton via St Kilda Road, Swanston Street, Madeline Street and Lygon Street.

CHILDREN'S FARES

Children over three and under twelve - half of any 2d or 3d adult cash fare.

SCHEDULE OF ROUTES AND MILEAGES

Cash fare of 3d or by ticket sold at 2/9d per dozen

<u>Route</u>	<u>City Terminus</u>	<u>Suburban Term</u>	<u>Mls</u>
St Kilda (Brighton Rd)	Madeline & Queensberry Sts Carlton	Brunning St & Brighton Rd St Kilda	5.01
Toorak	"	Irving & Toorak Rds Toorak	4.95
Prahran & South Yarra	Lonsdale & Swanston Sts	Chapel & Carlisle Sts St Kilda	4.80
St Kilda (Esplanade)	"	Barkly & Acland Sts St Kilda	4.40

Cash fare of 2d or by ticket sold at 6 for 1/-

Brunswick & Royal Park	Flinders St Rly Stn	Sydney & Moreland Rds Brunswick	4.45
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<u>Route</u>	<u>City Terminus</u>	<u>Suburban Terminus</u>	<u>Mls</u>
Collingwood & Clifton Hill	Spencers St Rly Stn	Northcote Bridge Queens Parade	3.79
North Fitzroy	"	St Georges Rd & Barkly St N F'roy	3.69
Victoria Street	"	Victoria Bridge	3.61
Richmond	"	Hawthorn Bridge	3.60
Port Melbourne	Gisborne Street	Beach St Port Melb	3.53
South Melbourne	"	Victoria Ave & Beaconsfield pde	3.60
Carlton & Abbotsford	City Rd Princes Bridge	Johnston St Bridge Abbotsford	3.34
Nicholson St	Spencer St Rly Stn	Nicholson & Park Sts N F'roy	3.34
North Melbourne	Flinders St Rly Stn	Flemington & Boundary Rds Nth Melbourne	2.92
North Carlton	City Rd Princes Bridge	Rathdown & Park Sts Nth Carlton	2.84
West Melbourne	Flinders St Rly Stn	Queensberry St & Abbotsford St Nth Melbourne	2.05
Windsor	Chapel St Windsor	Barkly & Acland Sts St Kilda	1.95
Mileage Double Track	Cable 43.677m	Passengers - 103,118,377	
	Horse .625m	.. for year ended 30 Jun 1917.	
	Number of cars in stock	536	
	Dummies	490	

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EXTRACTS FROM ANNUAL REPORTS

28TH JANUARY, 1916 TO 30TH JUNE, 1917

Operation of the Tramways

The Board feels that under existing conditions it would be unwise to make changes involving large capital expenditure and possibly a serious reduction in revenue.

Although many important questions which must be solved in the near future have not been decided by the Board, it has compiled a large amount of information upon these subjects and obtained reports which will be of value in the future.

The following matters have specially engaged its attention:

- a. the continuance of the sub-surface cable system of traction;
- b. introduction of sectional fares;
- c. improved lighting of cars;
- d. increasing the running speed of the cars.

Some of the above problems involve not only grave financial considerations, but are partially dependent upon a decision as to the method of traction to be employed.

The number of passengers carried for the year ended 30th June, 1916 was 96,107,673, whilst for the year ended the 30th June, 1917, the number was 103,118,379 - an increase of over 7%.

The utmost capacity of the rolling stock has been required to cope with the increasing traffic, and one of the Board's first acts was to put in hand the building of 35 dummies and 25 closed cars, of which 10 dummies and 12 cars are available for traffic.

The engine power which was installed 30 years ago shows at some of the stations such a small margin that no large increase of traffic could be dealt with except by additional power. Assuming an increase of passenger traffic sufficient to require the provision of extensive additional rolling stock and power, the accentuated congestion of tramway traffic in Elizabeth, Swanston and Collins Streets and possibly elsewhere, would be such as to greatly add to the difficulty of providing sufficient headway for the cars. At times of daily peak

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loading the headway of the Elizabeth Street cars at the Flinders Street terminus is only 30 seconds and in a part of Collins Street the interval between cars is reduced to 40 seconds; to this must be added the physical difficulty of working the cars across the intersections at Swanston and Elizabeth Streets with Flinders, Collins and Bourke Streets without accident and undue delay. At present about 380 cars per hour cross the intersection of Collins and Elizabeth Streets and a similar number cross at the intersection of Collins and Swanston Streets during the busiest portion of the day. The consulting engineers are of opinion that the speed of the cars upon some of the routes might be accelerated about 2 mph by the provision of auxiliary power. In this connection it is interesting to quote a comparison of the average speed of cars between termini, including stops, compiled from official information.

Melbourne	(cable)	8.986mph
Sydney	(electric)	8.640 "
Adelaide	(electric)	10.060 "
Prahran & Malvern	"	10.938 "

The Board has decided to reconstruct the power station at Richmond by the installation of a modern plant, and to supplement the power at Fitzroy and Brunswick. During the past few months an auxiliary high speed engine was added to the St Kilda Road Power House plant and has satisfactorily met all requirements upon this route.

Improved Car Lighting

One of the first problems considered by the Board was the question of improving the lighting of the cars, and as the result of working trials of several systems extending over many months it has invited tenders, closing on 20th September, for the installation of a system of lighting by electricity which will give satisfaction to the travelling public. In consequence of the war, some months must elapse before the first section of the cars can be equipped.

Storage of Fuel Reserves

Realising the importance of securing stocks of fuel to provide against the possibility of interruption to traffic, the Board decided to acquire two properties adjoining the power houses at Victoria Parade and South Melbourne. The land will be used for the storage of reserves of coal and coke, which are being built up as rapidly as possible and are now in a satisfactory position.

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Passenger Traffic

<u>Y.E.</u> <u>30 June</u>	<u>Traffic</u> <u>Receipts</u>	<u>Passengers</u> <u>Carried</u>	<u>Average</u> <u>Fare per</u> <u>Passenger</u>	<u>Mileage</u>	<u>Revenue</u> <u>per</u> <u>Mile</u>
1909	£555,614	65,488,902	2.036d	9,631,534	13.844d
1913	741,004	88,172,687	2.017	11,610,729	15.317
1914	756,818	90,315,178	2.011	11,827,786	15.356
1915	729,372	87,148,059	2.009	11,745,053	14.904
1916	805,778	96,107,763	2.012	11,924,472	16.217
1917	841,784	103,118,379	1.959	12,423,929	16.261

EXTRACTS FROM GENERAL MANAGER'S REPORT
TO JUNE, 1917

The question of revising the points at which cars shall stop for passengers has received careful consideration, and during the past few months important alterations have been made. Since 1st September, 1916 cars running in either direction have stopped only at the near side of intersections of Elizabeth and Swanston Streets with Collins and Bourke Streets. Whilst some inconvenience to passengers was at first caused, the public has accommodated itself to the change, with the result that the severe congestion of tramway traffic during "peak" loading has been somewhat reduced. The system of stopping on the "near" side only of street crossings (with certain exceptions) has been extended to all lines between Spring and Spencer Streets and between Flinders and Victoria Streets with the usual stop at about the centre of long City blocks.

Outside these limits the routes have been divided, and the stops will be made at a maximum distance of ten chains. About 350 plates lettered "Hail Cars Here" have been affixed in prominent positions principally on poles carrying overhead wires. In selecting the stopping places, regard has been given to the points which meet the convenience of the majority of people travelling.

Rolling Stock

The manager of the car repair shop reports that the cars are in good running condition. In order to cope with the increasing traffic, the construction of 25 standard closed cars and 35 dummies or grip cars was undertaken some months ago. Twelve of the cars and ten dummies are already in traffic and the balance are in various stages of construction. The whole of the new rolling stock will be available for the summer traffic.

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Car Houses

The maintenance of the various car houses has received attention and many minor improvements effected, such as asphaltting the floors of several car houses not previously asphalted. At some of the depots increased accommodation for the housing of cars will be necessary. An extension of the Victoria Street house is already in progress.

Power House Plants

The superintendent's report that the various power house plants have, up to date, satisfactorily met all demands, but it is apparent that some of the stations will not be adequate to cope with any largely increased traffic. The difficulty has been met at the St Kilda Road power house by the provision of auxiliary power and arrangements made to supplement the power at Brunswick and Fitzroy as rapidly as possible.

Owing to the lay-out of the Richmond plant, and to the fact that it will be prudent to provide for a large increase in power at this station, the Board's consulting engineers advise the installation of new modern plant. Enquiry has been instituted in this and other States to ascertain what portion of the plant required can be obtained locally and efforts will be made to expedite the importation of such of the plant as cannot be manufactured in Australia.

Owing to the demand by the British Government for wire ropes for war purposes and to the difficulty of obtaining freight to Australia, the maintenance of the supply of cables has occasioned some anxiety during the year. The manufacturers in England have executed the Board's orders as rapidly as possible and the authorities controlling exports (both in Victoria and in Britain) have fully recognised the urgency of our requirements in this important matter. A succession of supplies has been arranged, and it is hoped that no serious inconvenience will be experienced.

Cost and Description of the Undertaking

The sub surface cable tramway system of Melbourne and suburbs was constructed between the years 1884 and 1890 by the Melbourne Tramways Trust, representing twelve municipalities (afterwards reduced to eleven through the absorption of the Town of North Melbourne by the City of Melbourne) and leased to the Melbourne Tramway and Omnibus Company Limited until 30th June, 1916.

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The capital cost was raised by the issue of debentures (secured upon the revenues of the municipalities) to the face value of £1,650,000 bearing interest at 4½% per annum. A premium of £55,794 was obtained from the issue of the debentures making a total of £1,705,794, the whole of which was expended upon the undertaking, which included certain horse tramways, since excised from the system.

The terms of the Company lease provided (inter alia) that the Company should pay to the Trust the half-yearly interest upon the debentures, together with an annual contribution to a Sinking fund sufficient to redeem the debentures at maturity. This covenant was fulfilled, and the undertaking originally constructed by the Melbourne Tramways Trust is free from debt.

Power Stations

The cables are driven from eleven brick power houses situated at various points upon the routes.

Steam at a pressure of 100 lbs per square inch is supplied to the engines from marine type and Babcock and Wilcox boilers. Spare boilers are installed at each power house to allow repairs to be effected. Most of the engines and boilers were constructed locally.

The transmission machinery is operated by horizontal engines working in pairs at speeds averaging about 70 revolutions per minute. Duplicate sets of engines are installed at all but three of the power houses to serve as stand-bys. The aggregate indicated horse power is about 7,000 h.p. (exclusive of stand-bys) of which about 5,000 h.p. is at present utilised at times of peak loading. The engines range from 600 I.H.P. to 800 I.H.P. per pair. In all but two instances, power is transmitted from the engines to the main driving shafts by hemp rope drives. The I.H.P. required to drive the machinery, transmission ropes, and cables (without cars) at present speeds is about 1,500h.p. The power necessary to move each empty train (dummy and closed car) varies with the gradients and curves but the average per train over the whole system is about 4h.p.

The cables are constructed of 6 strands each containing 7 steel wires surrounding a hempen core. The circumference of the cable is 4 inches and the breaking stress is over forty tons. After passing over the driving sheaves the cables are led over automatic tension carriages which keep the strain constant notwithstanding the ever varying load.

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Permanent Way

The rails are steel and of the grooved girder type of various sections according to the density of the traffic. The weight ranges from 57 to 87 lbs per yard and the depth from 5 to 6½ inches. A small proportion are of 57 lb section (St Kilda Esplanade), the majority being of 67 lb section with 87 lbs in the streets carrying the heaviest general traffic. The rails are jointed with fish plates and bedded upon concrete 6 inches thick. The gauge of the tracks is 4'8½" throughout and the space between the tracks about 4 feet. The whole of this width and for 18 inches beyond the outer rails is paved with wood blocks varying from 5 to 6" in depth and dressed with tar and sand. The total width of the track (17 feet) is maintained by the Board.

The cable runs in concrete tunnels beneath each track, 3'8½" deep, in which are embedded wrought iron "U" shaped frames (yokes). Longitudinal iron girders, known as slot beams, are bolted to the top of the yokes, forming a continuous opening 7/8ths inch wide, through which the dummy grips pass to connect with the cables. The cable is supported in the tunnels by small vertical pulleys spaced 33 feet apart. At curves and termini the cables are conducted by larger horizontal pulleys and sheaves. The routes and power houses are provided with telephone and electrical alarm equipment which allow the traffic staff to promptly signal instructions to stop the cable in case of accident, and also automatically indicate when a stranded or otherwise injured cable reaches the power house.

The length of the cable tramways is 43.677 miles and of the Royal Park horse tramway .625m all double track, and the total cost to the Melbourne Tramways Trust, of the existing cable system, including permanent way, power houses, machinery, cables, alterations to drains and other constructional charges was £1,660,736 or about £38,000 per mile of double track. A further sum of £45,058 was expended by the Trust in the construction of the Kew and Hawthorn horse tramways, which were transferred to the Prahran and Malvern Tramways Trust and the Hawthorn Tramways Trust and converted to electric traction under the authority of Acts of Parliament.

In addition to the undertaking constructed by the Trust the Board acquired from the M.T.C.Co Ltd the Royal Park horse tramway, various car houses, tramway repair shops etc, head offices, rolling stock and appliances necessary to operate the tramways.

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Car Houses and Tramway Repair Shops

Sixteen car houses are situated at or near the suburban termini of the various routes. Fourteen of the car houses are built upon freehold land and two upon leasehold property. Two of the car houses are of brick construction, the others having wood and iron walls resting upon brick foundations. The whole of the roofs are of galvanized corrugated iron.

The tramway repair shops consist of iron buildings on brick foundations and are situated upon a large block of land in Nicholson Street, North Fitzroy. They are equipped with the necessary plant and appliances for the manufacture and repair of the rolling stock and for repairing the machinery and track.

Rolling Stock

The rolling stock consists of 1,026 units of which 1,004 were acquired from M.T.O. Co Ltd. Nearly 80% of these dummies and cars were built prior to the year 1890. With the exception of 20 standard and 4 small cars (imported from America in 1884-5) the whole of the rolling stock was built by the Company and the Board at the Tramway Repair Shops. Practically the whole of the timber now used in the construction of rolling stock is of Australian origin.

The construction of 35 dummies and 25 standard closed cars has been put in hand by the Board. Of these, 10 dummies and 12 cars are available for traffic and the balance are expected to be completed by October, 1917.

Cars (standard)	472	Cars (small)	4
(bogie)	56	(horse)	2
(open)	2	Dummies	490

TOTAL 1,026

EXTRACTS FROM TRAMWAY BOARD REPORT
REPORT FOR YEAR ENDED 30.6.18

Congestion of Traffic

In our last report we referred to the increasing difficulty of operating the cars through the congested traffic at certain street intersections in Elizabeth and Swanston Streets at the busiest portion of the day especially between 5.00 and 6.00p.m. The Collins & Swanston Streets tramways each carry four separate lines of cars, and no less

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than 424 cars per hour now enter the intersection of those streets at the Melbourne Town Hall compared with a total of 388 last year.

The numerous public demonstrations connected with Patriotic movements and the frequent welcomes to returned soldiers (with which the Board is in entire sympathy) not only seriously interfere with the tramway services but also frequently necessitate a total cessation of traffic in some of the principal streets.

To illustrate the importance of the cable tramway traffic, a statement prepared from the annual report of the Victorian Railways for the year ended 30 June, 1917 showed that the suburban railways operating within the area served by the cable tramways carried approximately 33 million passengers compared with 103 million upon the Board's cars.

Wire Ropes

The importance of maintaining a supply of wire ropes has always been recognised by the Board, large orders being cabled in May, 1916. All supplies require the approval of the Munitions Departments in Melbourne and England, and licences must be obtained for both manufacture and shipment. The British Government has given our orders next preference to the needs of the Army and Navy, which rightly come first, and the Board desires to gratefully acknowledge its generous treatment. Owing to the war there has been great delay in the execution of orders: some of the ropes which were ordered 18 months ago are not yet to hand and others have been lost at sea en route to Australia.

Under these circumstances it is necessary to keep the ropes in use as long as possible; this has led to frequent interruptions to traffic and it is feared the Board may yet be compelled to discontinue some of the services.

Buildings

Many of the car houses require extension in order to house the increasing number of cars and to give better accommodation for the employees. With this object a property adjoining the southern boundary of the Acland Street-St Kilda car house was purchased. A substantial extension to this car house and men's rooms is in progress. Similar improvements have been made to the Victoria Street-Richmond car house on the western side and a contract has been let for additions to the Rathdown Street-North Carlton car house. A modern signal box has been erected at the intersection of Collins and Swanston Streets.

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Richmond Power House

In order to provide additional power, the engines are to be transferred from the Rathdown Street, North Carlton power house to Richmond and two 125KW electric motors will be installed at the former station to propel the cables. A contract has been entered into for the supply of the motors, which are to be manufactured locally. It is hoped that both stations will be reconstructed by January next.

Improved lighting of
rolling stock and buildings

After a careful investigation into a number of systems of car lighting, a contract with the Australian General Electric Co was entered into on 19th October, 1917 for the installation of electric light in the cars by means of Edison storage batteries, which has been successfully adopted upon the cable tramways in San Francisco. Each car and dummy will be equipped with a battery to be charged from motor generators at the car houses. Owing, however, to war conditions, the work has been greatly delayed, but a considerable portion of the material has now been landed and it is hoped that the rolling stock upon at least one line will be electrically lighted by October and that the others will be finished without much further delay.

Rolling Stock

At 30 June, 1917 the number of cars and dummies in stock was 1,026; during the year 25 dummies and 13 cars were built, and a further 25 dummies are in various stages of construction. Four of the old 12 foot horse cars, which were of little value to the Board are being converted into two bogie cars for the Brunswick line.

Rolling Stock 30th June, 1918

Standard closed cars	485
Bogie cars	56
Open cars	2
Small cars	4
Horse cars	2
Dummies	515
	<hr/>
	1,064
	<hr/>

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Royal Park Horse Tramway

The lease from the Zoological and Acclimatisation Society will expire 31st December, 1918. Negotiations are in progress for a renewal. The question of replacing horse traction by electrical or petrol motive power has, for some time, engaged the Board's attention.

GENERAL MANAGER'S REPORT

Traffic Operations

In order to enable the suburban services to be maintained during interruptions to traffic in the City caused by street processions, etc., shunts have been installed at the intersection of Russell and Lonsdale Streets and at Gisborne Street and have already proved a great convenience. Improved terminal car house shunts are also in progress.

In consequence of the difficulty of obtaining new ropes on account of war demands, the lives of those in use have been extended by devoting the utmost care and attention to their maintenance and the consumption of ropes has consequently been reduced to a minimum. If ropes on order are received in any reasonable time, the service will be maintained.

Buildings - Rolling Stock
and car repair shops

Extensive additions and improvements to several of the car houses have been put in hand and others will be dealt with during the current year.

The manager of the car repair shops reports that cars have been maintained in good running condition during the year under review, and the number has been increased by 25 dummies and 13 closed cars with more under construction.

Passengers carried	113,034,157
Cars in stock	549
Dummies	515

EXTRACTS FROM GENERAL MANAGER'S REPORT
FOR YEAR ENDED 30TH JUNE, 1919

Wire Ropes

During the earlier portion of the year, the supply of wire ropes caused the Board great anxiety, and it was only by the exercise of the utmost care that it was possible to maintain the various services without serious interruption. Of late the supply of new ropes has been steadily improving, and I think the position is now quite safe.

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Buildings Etc.

During the year alterations and extensions have been made to the car houses at North Carlton, Brighton Road, Prahran, South Melbourne, Port Melbourne, Richmond, Nicholson Street, St Kilda Esplanade and North Melbourne.

Contracts have been let for improvements at Brunswick car house and plans are in course of preparation for further improvements at Richmond, North Fitzroy, Johnston Street and Toorak car houses, which will complete all those necessary for the present.

New and additional office accommodation and two brick shops have also been erected upon vacant land adjoining the car house at Clifton Hill and the shops let at satisfactory rentals.

A property adjoining the car repair shops Fitzroy was purchased and portion of the land utilised for the erection of a building to accommodate the forges and blacksmiths' shops. This will allow additional and much needed space for building and repairing cars etc.

The electric lighting of the whole of the power and car houses and car repair shops is now complete and has proved a great convenience and economy.

Additional Power at
Richmond Power House

Unavoidable delay has occurred in the delivery of essential portions of the electric plant ordered for the Rathdown Street Power House and it has therefore not been practicable to transfer the steam engines from that station to the Richmond power house as referred to in the Board's last annual report. The required plant has now been shipped and it is believed that the reconstruction of both power houses will be completed this year.

Rolling Stock

At 30th June, 1918 the number of cars and dummies in stock was 1,064. During the year the construction of 24 additional dummies was completed, and four small cars converted into two bogie cars.

The rolling stock in traffic on 30th June, 1919 was as follows:

Standard closed cars	485
Bogie cars	58
Open cars	2
Horse cars	2
Dummies	539
	<hr/>
	1,086
	<hr/>

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Improved lighting of rolling stock

The non-delivery of electrical plant required to equip the charging stations delayed the execution of the contract for lighting the cars by electricity. The recent arrival of the necessary material has, however, enabled the contractors to complete the installation of electric light in the whole of the cars upon the Brunswick - Brighton Road, Nicholson Street and Toorak lines. The Esplanade and Clifton Hill cars are almost completed and the equipment of the other lines will be speedily carried out.

Royal Park Horse Tramway

The lease of this tramway from the Zoological and Acclimatisation Society expired on 31st December, 1918 and an extension of one year was arranged.

In accordance with the Melbourne and Metropolitan Tramways Act 1918, the tramway will on 1st November, 1919 pass to the new Tramway Board.

Considerable attention has been devoted to the possibility of replacing horses on this line by some other motive power. A car was recently equipped with a petrol motor but an extended trial proved that it was unsuitable.

In order to reduce the number of cars in the southern end of Elizabeth Street a scheme was adopted some months ago by which about 25% of the Brunswick cars, at busy periods, terminate then "UP" trips at Lonsdale Street. The scheme has proved effective and is a convenience to passengers desiring to board the cars north of Bourke Street.

Passengers carried	118,302,781
Cars in stock	547
Dummies	539

MELBOURNE AND METROPOLITAN TRAMWAYS BOARD
EXTRACTS FROM REPORT DATED 30TH JUNE, 1920

The Board first met on 1st November, 1919.

The Prahran and Malven T.T., Hawthorn Tramways Trust, Melbourne, Brunswick and Coburg Tramways Trust, The Fitzroy, Northcote and Preston Tramways' Trust and the Footscray Tramways' Trust were taken over from 2nd February, 1920.

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Northcote Cable Tramway

An examination of the Northcote cable tramway showed the track and rolling stock to be in need of immediate and extensive repair. A large proportion of the rails are being replaced. Several of the cars are no longer fit for service and require replacement. The balance will be thoroughly overhauled and put in proper repair. The cost of the replacements and repairs is estimated at the sum of £7,000.

In order to allow of through running of the cars from Preston to the City, the necessary alterations will be made so as to connect this tramway with the Clifton Hill tramway and to permit the same rolling stock to run over both. The estimated cost of this work is £4,500. The Board is considering the advisability of extending the Clifton Hill car house so as to accommodate the Northcote cars.

Suburban Terminal Penny Sections

With the approval of the Governor-in-Council, a by-law was passed by the Board on 9th March last providing for penny sections at the suburban terminals of the Board's cable lines, except where such penny sections already exist.

Proposed new Customs tariff

The proposed new Customs tariff will greatly increase the Board's expenditure both as regards maintenance of existing and the construction of new tramways. By way of example, two items may be mentioned viz. the proposed duty upon cable tramway ropes and upon tramway rails.

Cable tramway ropes are not manufactured in Australia and practically the whole of the Board's supplies are obtained from Great Britain. Ropes of the special manufacture required for the cable tramways are not used in connection with other industries and are at present imported duty free. From 1st January, 1921, however, a duty of 30% is proposed upon ropes imported from England. The proposed duty upon tramway rails will also very seriously add to the cost of the new electric tramways.

Grooved tramway rails are not at present manufactured in the Commonwealth and even if their manufacture be decided upon, a considerable time must elapse before rails can be delivered. It is therefore probable that for the time being the Board will need to import rails manufactured outside Australia. The present Customs duty is 17/6d per ton upon rails imported from Great Britain and 25/- per ton on those from other countries. It is proposed that from 1st January, 1921

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the duty shall be 35/- and from 60s to 75s respectively. Latest advices are to the effect that British manufacturers are not at present prepared to receive orders for rails. If the new duty be enacted the cost of the rails will probably be about four times that existing before the War.

Traffic

Arrangements have been made to combine the services of the South Melbourne and North Fitzroy lines so that the North Fitzroy cars will in future, run through to South Melbourne and vice versa with the exception of certain early morning and special cars.

One effect of this alteration will be to reduce the number of cars traversing Collins Street at the busy periods by 54 cars per hour.

It is intended to increase the speed of the ropes operating the Victoria Street, North Fitzroy and Collins Street lines, the two former lines by two and the latter by one mile p.h.

Rolling Stock

Cable - Ten dummies and two cars have been built at Nicholson Street.

Number of cars in service:

Cable tramways including Northcote - 561 dummies; 506 cars; 58 bogie cars.

Cable Engine Houses

Additional power at Richmond. The extension of the building for the accommodation of the steam plant transferred from Rathdown Street has been completed and the engines and shafting are partially erected. Great delay and difficulty has been experienced in carrying out this work owing to the shortage of fuel due to industrial troubles making the supply of cement and castings slow and uncertain. The job is now, however, in a fairly advanced state, and should be completed in the next few months.

Rathdown Street - The electric drive was started on 19 October, 1919. Some trouble has been experienced with the driving chain which transmits the power from the intermediate shaft to the main driving wheels, and it has been decided to substitute spur gearing for this drive. With this exception, the electric drive may be said to be quite satisfactory.

Fitzroy - An auxiliary high speed engine has been installed to assist the main engines at peak loads and is working satisfactory.

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Brunswick - One of the Rathdown Street boilers has been installed at this power house to provide the additional steam which will be required when the auxiliary engine is working.

St Kilda - Owing to the increasing load upon this power house, the steam engines, even with the auxiliary engine installed some years, have become inadequate. It has therefore been decided two electric motors of 350h.p. each to drive on the main shaft and to remove the steam auxiliary which will then be available for use elsewhere.

Report for year ended 30th June, 1922

Cable Tramway Conversion

Plans are being prepared for the conversion of the cable tramway in Swanston and Madeline Streets from Lonsdale Street to Queensberry Street with a view to the extension of the Coburg electric service to the City.

Rolling Stock

Eleven dummies and 22 standard cars were constructed and three new cars are in course of construction.

A sample dummy is at present being fitted with glass screens to serve as a protection to the gripman from the weather.

The number of cars and dummies now in service:

536 standard cars; 58 bogie cars; 585 dummies.

Cable Power Plant

Brunswick engine house, the auxiliary engine was put to work May, 1922.

Fitzroy Engine House, new and larger cylinders for engines No 3 and 4 were put to work November, 1921.

St Kilda Engine House, the 350h.p. motor with reduction gear has been installed. Owing to delays it is not anticipated that the electric drive will be in operation before early in September.

EXTRACTS FROM MMTB REPORT
YEAR ENDED 30TH JUNE, 1923

Seven dummies and three standard cars were constructed.
Number now in service:

539 standard cars; 58 bogie cars; 592 dummies.

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Cable repair shops in addition to the construction of the abovementioned cars, special work for the Lonsdale Street cable tramway. The Blyth Street Brunswick cable shunt, and a large amount of mechanical repair work for the cable power houses has been carried out.

Cable Power Plant

Nicholson Street Power House - Two new and larger cylinders have been fitted to Nos 3 and 4 engines.

Northcote Power House - A larger crank shaft has been fitted to the engine.

South Melbourne Power House - A new crank shaft has been fitted to Nos 3 and 4 engines and a new intermediate shaft installed.

St Kilda Road - The 350h.p. motor with induction gear has, except at the start, given satisfactory operation.

c New car and dummy shunts with automatic point gear were installed at North Fitzroy terminus and a new dummy shunt for special shunting was put in at Blyth Street on the Brunswick line.

Number of cars in stock 601; dummies 592.

YEAR ENDED 30TH JUNE, 1924

Traffic Returns

The cable system receipts totalled £1,184,009, being £70,273 less than last year. This decrease is attributable to two causes viz. motor bus competition, particularly on St Kilda Road, South Melbourne, Toorak and Clifton Hill lines and loss of over £50,000, consequent upon the strike 5/19th May.

During the police strike cable services were suspended after 7.00p.m. for seven days, the cable car mileage decreased 125,305.

The public has indicated a preference for high speed transportation and whilst the cable tramways provide an average speed between terminal points which compares very favourably with that obtaining on electric tramways in most cities of the Old World, it does not satisfy the requirements for speed, apart altogether from the question of through routing. The average speed of the cable operating the Clifton Hill tramway has been improved by 2m.p.h. and preparations are well advanced for increasing the cable speed of the following lines:

North Melbourne - Esplanade - Brighton Road - Richmond -
North Carlton - Johnston Street - Brunswick - Toorak and
Chapel Street.

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