

the railway line. It is unlikely to be used for tramways in the future and is considered adequate in width for all other requirements. Epping-road connects into High-street at the municipal boundary at Mahoney's road—see plan, Sheet No. 7. High-street between Mahoney's-road and the level crossing just north of Reservoir Station, with a width of 66 feet, forms part of this proposed arterial road.

South of Reservoir Station the traffic from High-street now crosses the railway at the level crossing referred to and continues southerly along High-street, which is only 66 feet wide, through Preston and Northcote. It carries a double line of tramway and is the busiest shopping and traffic street in the municipalities of Preston and Northcote. Unless the traffic from the developing areas beyond this point is diverted from this street, it will soon become a congested thoroughfare. The following route, shown on the plan, Sheet No. 7, is recommended as the principal vehicular road in this area.

Instead of crossing the railway on the level at Reservoir Station, the Commission recommends that the traffic be diverted via Spring-street. For a short length near its junction with High-street, Spring-street is 100 feet wide, though for most of the balance of its length it is 55 feet, but in view of its use solely for vehicular traffic, this is considered adequate. A section of Spring-street between Berwick-street and Powell-street, and another section between Regent-street and Mitchell-street, are less than 66 feet wide, but the latter width should be attained by setting back the existing frontages, which will not involve any serious re-arrangement of properties. Spring-street should then be connected directly with St. George's-road at Murray-road, as shown on the plan, Sheet No. 7.

For the greater part of its length, between Murray-road and Miller-street, St. George's-road reserve needs only small forecourt excisions to allow 30-ft. roadways to be provided on either side of the pipe track. Between Showers-street and Miller (or Dundas)-street, however, the reserve narrows considerably. The workshops and property of the Melbourne and Metropolitan Tramways Board are located on either side of the road at this point and they abut on the eastern side of the pipe track reserve, whilst on the western side further buildings occupy most of the area, exclusive of a 50-ft. street. The available width between these buildings, including the pipe track reserve, is therefore reduced to 116 feet. The buildings on the eastern side are so designed that any interference would cause an expensive remodelling of the workshops. In order to secure one-way traffic routes on either side of the pipe track as far as Miller (or Dundas-street), it is believed that little difficulty would be experienced in providing a conduit for the pipes under the roadway at this point, or alternatively, excising from the tramway depot on the western side such land as may be necessary. A length of 1,000 feet of roadway would require to be so treated. From Miller-street southwards to the Merri Creek, St. George's-road is of varying widths, but there is ample room for 30-ft. roadways on either side of the pipe track central reserve, as well as for the location of one "parked" tram line between the roads and the pipe track reservation as shown by the cross-section below—



Cross section for St. George's-road at Northcote.

At the present time, both tramway tracks are constructed on the western side roadway, but the Commission considers that one track should be located on the other side at the first favorable opportunity. Some slight excisions of forecourts would be necessary, but in no case would any building resumptions be involved.

Although it would be unwise to plant trees along the pipe track reserve, it is considered that the ornamental treatment of the central reserve of St. Georges-road now being carried out north of the Merri Creek could be effectively and safely carried out in the northern extensions of the route by planting lawns and surface rooting shrubs.

At its junction with Merri Creek, the St. George's-road traffic would have two alternative routes to the City and southern suburbs. One is via the Fitzroy section of St. George's-road, thence along Nicholson, Prince's, Neill, and Lygon streets to Victoria-street, all of which are good wide roads. The other route would be via the proposed 100-ft. wide parkway on the eastern side of Merri Creek, of which Merri-parade forms the nucleus, to the bridge at High-street. After crossing the bridge and passing through the subway under the railway, the existing 198 feet route of Queen's-parade (Arterial Route No. 14) would be available. (See plan, Sheet No. 4.) This latter connexion would give access to Hoddle-street, which is regarded by the Commission as an extremely important thoroughfare in relation to the general scheme of traffic circulation and distribution on the eastern outskirts of the City business area.

Route No. 12—Fairfield and East Preston Highway.

The large and sparsely developed area between the Clifton Hill-Whittlesea railway and Darebin Creek is not provided with a north-south route direct to the City, excepting for High-street, which is adjacent to the railway and which, for reasons stated previously, is likely to become a congested thoroughfare. By taking advantage of the present sparse development and of existing streets, it has been found practicable to plan a north-south arterial road to serve this area, following the route indicated below.

For the purposes of this Report, it is proposed that this highway should commence at the Electricity Commission's transmission line, at the point where it crosses the Maroondah water supply aqueduct, as shown on the plan, Sheet No. 8. A road 66 feet in width is proposed parallel with the aqueduct reserve on its southern side to a point 70 chains south-westerly, where it continues through the subdivided but unbuilt-on land, and generally absorbing Argyle-street as far as St. Vigeon's-road, Argyle-street would need to be widened to 80 feet. A new road of 80 feet width is continued southerly to link with the northern end of Boldrewood-parade at Crookston-road. Boldrewood-parade is then continued southerly from Plenty-road 100 feet wide through subdivided but sparsely built-on lands as far as Wood-street, where it connects with Kathleen-street, which also needs widening to conform. From Kathleen-street, at Murray-road, a southerly extension by a new road would enable Albert-street to be reached at Gower-street. Albert-street is also shown widened to 100 feet, as far south as Dundas-street. The balance of the highway is shown on the plan, Sheet No. 3. A new 100-ft. street would be required to connect Albert-street with Station-street, which is already 80 feet wide for the whole distance to the railway at Fairfield Station. By setting back the building lines 30 feet along Station-street as far south as the shopping area, it would be widened to 100 feet in due course. That part of Station-street between the railway and Heidelberg-road would have to be widened, probably on the eastern side, from 66 feet to 80 feet. Station-street crosses the Heidelberg Railway line on the level, and some means would need to be found for separating the grades. At Heidelberg-road the highway would continue to the City via Arterial Route No. 14, which is described later.

Route No. 13—Ivanhoe-Bundoora-Whittlesea Highway (Waterdale-road and Extensions).

There is a large area between the Darebin Creek and that part of the Greensborough railway which connects Ivanhoe and Watsonia which is only partially and sparsely developed and which will in due course need an arterial route to the City. At the present time Waterdale-road provides the only north-south through communication as far as the northern boundary of the Shire of Heidelberg, but it is only between 33 and 50 feet wide. Waterdale-road is ideally situated as an arterial road in this sector of the metropolis. It feeds directly into Arterial Route No. 14. Although it is not selected as a tramway route in the Tramway Board's general scheme its location is such that some means of public transport will be necessary in the future. In addition to the effective service this road would render through the area which it traverses, it would serve as an extremely useful by-pass for the present traffic route between Melbourne and the districts beyond Bundoora, viz., Mernda, Whittlesea, Kinglake, &c. That traffic is now required to use High-street, Northcote, and Plenty-road, Preston, both of which are only 66 feet wide and carry tramways, whilst for the greater part of their length they are busy commercial thoroughfares. The details of this arterial route are outlined below and are shown on the plans, Sheets Nos. 8 and 3.

Entering the area of planning, via Upper Plenty-road, a new road 120 feet wide is then proposed southerly from its intersection with Bundoora-road, through the vacant private land as far as the Mont Park Asylum Reserve lands, thence continued directly south through that reservation, where no buildings would be affected, to connect with Waterdale-road at the boundary of the Municipalities of Preston and Heidelberg. This $1\frac{1}{2}$ miles of the road reserve should be

available at no cost to the community. From this point, Waterdale-road would be used throughout its whole length. It should be widened to 120 feet and, as far south as Haig-street, this could be done more economically on the eastern side, because the subdivisional development fronting the road on this side is not so far advanced. Between Haig-street and Bell-street, it would be more economical to carry out the widening on both sides, although the western side resumptions would affect forecourts only of allotments on which homes are erected. South of Bell-street to Acacia-street, widening on the eastern side is favoured because the land is unsubdivided. Between Acacia-street and Banksia-street, only forecourt resumptions on both sides of Waterdale-road are necessary. From Banksia-street southwards, the widening would be more easily effected on the western side, as far south as Ailsa-grove, because the opposite side is fully built up. Throughout the whole length of Waterdale-road from the Mont Park Asylum boundary to Bond-street (which is just north of Ford-street—see plan, Sheet No. 3), only two buildings would need to be resumed in securing a road 120 feet wide. Between Bond-street and Ailsa-grove (which is half-way between Ford-street and Livingstone-street—see same plan), about sixteen houses would need demolition. For 700 feet between Ailsa-grove and Heidelberg-road, a widening of Waterdale-road to 84 feet by resumptions on both sides would suffice, as this section is zoned as a business area. Central plantations would not be constructed in the business centre, thus leaving sufficient constructed roadway.

This arterial road would then join Arterial Route No. 14 at Upper Heidelberg-road near the Ivanhoe Railway Station.

Route No. 14—Melbourne, Heidelberg, and Greensborough Highway.

This highway is at present the main road between Melbourne, Heidelberg, Greensborough, Eltham, and the hilly country north of the Yarra River. Apart from its ordinary utility it is one of the favorite scenic motoring routes. For the purposes of this Report, the metropolitan section of the highway commences on Greensborough-road at the circumferential road at Watsonia. In view of other proposals in the Heidelberg district which, when provided, will obviate the use of this highway by much of the traffic that at present has no other suitable route, there should be little need for increasing the width of the Greensborough, Lower Plenty, or Upper Heidelberg roads, as far as Waterdale-road, especially as they are not contemplated as tramway routes. The Lower Plenty-road joins Plenty-road at Waiora-road and the highway connects into Upper Heidelberg-road at Bell-street, west of Heidelberg Station. The route is shown on the plan, Sheet No. 8. At Waterdale-road, just west of Ivanhoe Station, Arterial Route No. 13 from Bundoora joins this highway. It is considered that between this point and the City a wider road is essential, and the following scheme of improvements is recommended. (See also plan, Sheet No. 3.)

Between Waterdale-road and the bridge over the railway, Upper Heidelberg-road should be widened to 84 feet by resuming a strip on the eastern side. This would involve the demolition of buildings for a distance of about 500 feet, but in the remaining distance to the railway bridge, the widening would cause very little interference with buildings. The forecourts of a few properties on the eastern side of Lower Heidelberg-road, opposite the railway bridge, would require some small adjustments. Immediately after crossing the railway at this point, Upper Heidelberg-road is joined by Lower Heidelberg-road, and, on account of the further quantity of traffic to be accommodated on the one road, a width of 120 feet should be aimed at. It is considered that if the boundary of the railway reserve were adopted as the north-western alinement of the highway, a sufficient width would be obtained until 120 feet was attained south of Darebin Station. At the Darebin Station, the widening proposed would render necessary the resumption of a few shops and excisions from some shop allotments, many of which would still have sufficient depth, but only forecourts would be affected farther south to Kingsley-street in attaining the 120-ft. width, which width is then continued. The present bridge over Darebin Creek should be widened, and the approaches on either side made to conform to the 120-feet scheme.

That section of Heidelberg-road between the Darebin Creek and the existing park lands of which Bond-street (just west of and opposite Rathmines-street) forms the eastern boundary is only 66 feet wide. At Station-street, Arterial Route No. 12 from East Preston is planned to connect into Heidelberg-road, and westerly from this point and along Station-street a tramway route is projected. The Commission therefore recommends that this 66-feet wide section of Heidelberg-road between the Darebin Creek and Bond-street be widened on the northern side as follows:—

Between Darebin Creek and Station-street to 120 feet.

Between Station-street and the municipal boundary at Bond-street to 132 feet.

Although this widening would involve the demolition of about 45 buildings and the excision of forecourts of others, there are many unbuilt-on allotments in this section of the road. The allotments in nearly all cases have adequate depths, thus permitting this work to be carried out without much interference with blocks at the rear.

At the Station-street, Fairfield, intersection on the day of census, about 2,500 vehicles used Heidelberg-road, but on fine Sundays and public holidays this number is greatly augmented by tourist traffic. Having regard to the potential importance of this highway and the others which are tributaries of it, the improvements recommended will become imperative.

Between the level crossing at Clifton Hill and the Northcote-Heidelberg municipal boundary, the Heidelberg-road, through Fairfield Park, is about 132 feet wide, but the road reservation, part of which is now included in the park, is 198 feet.

The level crossing at the Clifton Hill Railway Station has been the subject of a special report by the Commission, and a scheme for treating Heidelberg-road at this point is referred to in detail under the heading of Level Crossings—page 138. Heidelberg-road enters Queen's-parade at this railway crossing, the latter being 198 feet wide.

The plan, Sheet No. 4, shows the remainder of this route. Queen's-parade enters Alexandra-parade at Fitzroy, and it is proposed that the highway should only follow Alexandra-parade (which is 198 feet wide) as far as Nicholson-street, at which point it joins Arterial Route No. 11 (St. George's-road, &c.). Although various alternative roads of approach to the City are available from this vicinity, that via Canning, Barkly, and Rathdown streets to Exhibition-street is recommended for development as the vehicular route, because it would not involve the use of tramline streets.

Route No. 15.—East Kew to Templestowe Highway.

From East Kew to Templestowe, there is a large area of sparsely settled country which has been subdivided for the greater part of the distance, especially in the vicinity of the Bulleen-Templestowe roads. This route is direct, with reasonably good grades throughout, and the Commission favours its development as the arterial road to and from the township of Templestowe. For the purposes of this report it is recommended that the outer end of this highway be at the south-western corner of the township where Templestowe-road joins Foote-street, Bulleen-road, and Union-street. This point is shown on the plans, Sheets Nos. 8 and 9. Immediately south of this junction there is a large unsubdivided area through which Templestowe-road runs, and there should be no difficulty, when plans of subdivision come forward, in securing, at no cost, the necessary adjacent land to enable the present 66-ft. road to be widened to 100 feet. The sides upon which the widening is recommended are shown on the plan, Sheet No. 9. Templestowe-road passes diagonally through the subdivided lands north of Koonung Creek. **The widening of this road to 84 feet on its northern side through the subdivisions north of the creek has already been incorporated in the plans of subdivision at the instance of this Commission,** and it is recommended that the allotments fronting this road should have any buildings set back sufficiently far to permit of additional width being acquired if a tramway is ever constructed. Any new subdivisions along this road should allow for a width of 100 feet. The Templestowe-road crosses the Koonung Creek and a short distance farther southwards joins Bulleen-road. As the land north of the Templestowe-road at this point has not been subdivided it should not be difficult to obtain the 34 feet required. Bulleen-road widens out sufficiently in the vicinity of Hillview-road (see plan, Sheet No. 9) to provide the desired uniformity of width, but for the balance of the distance to its connexion with Doncaster-road the widening will be necessary. It is recommended that 17 feet be obtained from each side by setting back the building lines and excising that amount of forecourts.

This arterial route joins Arterial Route No. 16 at Doncaster-Bulleen roads junction.

Route No. 16.—Fairfield to Doncaster Highway.

In deciding upon the route to be recommended for arterial roads leading from the City to the large areas east and south of the Yarra River and north of Whitehorse-road, the Commission found it essential to avoid, as far as possible, using the present main eastern arteries which serve the lands on either side of the Kew and Box Hill railway lines. Reference to Map No. 2 (see page 26) shows that the existing routes via Victoria-street, Bridge-road, and Swan-street are all carrying heavy volumes of traffic at present, whilst the comments on pages 30 and 33 set out the relation of this scheme to the traffic census results. The areas served by those roads are capable of very much greater development, whilst the provision of main road

communication between those areas and the City is a matter of some difficulty, even if other routes be provided for the immense amount of traffic which will in due time be generated by the closer settlement of such attractive lands north of Whitehorse-road. Incidentally, the proposal to build a railway from Kew to Doncaster suggests that more rapid and closer housing development may be expected in the North Kew to Doncaster locality.

In its Special Report dealing with the area to be served by the Darling to Glen Waverley Railway, issued under date 6th May, 1927, the Commission emphasized the above statements and recommended that the North and East Kew to Doncaster area should be served by an arterial route as set out in detail below. By following the route recommended, which avoids the eastern tramline approaches to the City, this traffic is given better right of way than is possible via Victoria-street, &c., and the distance to and from the City is the same.

Commencing on Doncaster-road at the boundary of the area of planning (see plan, Sheet No. 9), a widening of it to 100 feet throughout its whole length to its junction with Burke-road is recommended. The side on which the widening should be carried out, in this instance, would vary according to the existing state of subdivisional conditions and the opportunities which future development afford. The route is then via Kilby-road, which is already 100 feet wide, and it follows that road as shown on the plan, Sheet No. 3, thence via other existing and new streets (White-avenue, Park-terrace, &c.), which would need to be widened to 100 feet, thence across the Kew Asylum Reserve to the unused Outer Circle Railway Reserve, and the existing railway bridge over the Yarra at Fairfield. This section is not at all likely to be used again for railway purposes, nor is the unused bridge over the Yarra which previously formed part of the railway route between Fairfield Park and Deepdene. The adjoining municipalities have been endeavouring to get this bridge opened for road traffic for some considerable time, but there has been difficulty in reaching agreement as to terms. Its use for road purposes is strongly urged by the Commission.

After crossing the Yarra a small section of new road would be necessary to give connexion, as shown on the plan, Sheet No. 3, with other arterial roads at Heidelberg-road near the Northcote-Heidelberg municipal boundary. Park-crescent will assist in providing this section of the roadway, and its widening and the remainder of the section would necessitate resumptions of private property. Less than twenty buildings would be affected, however, of which not more than six are of brick or stone.

The relief that would be given to the other routes leading from the eastern suburbs to the inner areas by the adoption and provision of this direct artery would be very substantial. Its cost would be very small in comparison with other measures of improvements to existing routes, such as would become imperative if the present opportunity were not utilized.

Route No. 17.—Melbourne-Canterbury-Montrose Highway.

The present main roads of approach to the central business area from the east, in the sections passing through the industrial and densely built-on Municipality of Richmond, are all carrying a double line of tramway on roads of 66 feet in width. Not one of the existing bridges over the Yarra serving these roads can be regarded as at all effective. East of the Yarra the existing main roads running due east are in no instance more than 66 feet wide until the 8-mile radius line is reached, and then Whitehorse-road alone widens out.

Reference to the Density of Development Map, on page 24, shows that the area served by these routes, and lying south and east of the Yarra and north of Gardiner's Creek, as far east as the area of planning adopted, is only built up more or less fully in a few small sectors along the various suburban railway routes. Assuming that these eastern suburbs become housed to a population density averaging not more than twenty persons per acre, by a tapering development along the railway lines, existing and proposed, this stretch of country within the confines of the area of planning adopted for this Report would accommodate 650,000 people. There are only about 90,000 people in the same area at present. The eastern suburbs are so suitable for residential, development that it is quite impossible to forecast the limits of expansion in this direction.

In the Special Report dealing with the area to be served by the Darling to Glen Waverley Railway the Commission made some observations on this subject (pages 9 and 10), and the First Report issued in 1925 included various recommendations, now incorporated herein, for assisting in making the necessary provision for arterial road improvements.

It is considered that, by diverting the arterial road traffic generated by the East Kew, Doncaster, and Templestowe regions over the Yarra at Fairfield via Arterial Routes Nos. 14 (part), 15, and 16, very definite relief from ultimate congestion along the existing routes would

be achieved. A further scheme to serve the southern portion of this vast area is submitted by Arterial Route No. 18, and this, too, would prove of incalculable value not only to the area it will serve, but by obviating, in due time, the use of the present routes by such a large volume of traffic. Notwithstanding these diversions, the enormous future development which is to be expected in the eastern suburbs could not be provided with adequate through road facilities by the three roads now passing through Richmond, or by the 66-feet wide tramline streets in the Municipalities of Hawthorn, Kew, Camberwell, and Box Hill. To improve these existing through routes sufficiently to accommodate this ultimate traffic would involve a series of street widenings where the most intense development has already taken place. This costly method of improving the conditions is one which should not be generally favoured until other less expensive measures have been examined. Therefore, the Commission submits that, by providing the new arterial routes referred to, by the connexion of Canterbury-road with Barker's-road, and the improvement of the through route from the City as outlined below, the road access will be ample for a long time. Canterbury-road is unlikely ever to carry a tramway, and, if connected with Barker's-road, its traffic capacity should be very great. It is so located in relation to the districts to be served (see the Diagrammatic Plan on page 62) that it affords an opportunity to provide one of the most effective routes in the metropolitan area. It is shown to give excellent east-west communication across the metropolitan area skirting the City proper by the connexion in Victoria-street, City, with Arterial Route No. 5 (Dymon-road, &c.). Details of this arterial route, No. 17, follow:—

It commences, as shown on the plan, Sheet No. 15, at the eastern boundary of the area of planning at Heatherdale-road at Vermont. Canterbury-road at this point is 132 feet wide, which continues until a point about 220 yards west of Springvale-road is reached. For the remainder of the route, as shown on the plans, Sheets Nos. 15 and 10, to its intersection with Burke-road, Canterbury road is 66 feet wide and, for reasons already given, is regarded as of adequate width. It will be seen by the plan, Sheet No. 2, that Canterbury-road runs into Rathmines-road after crossing Burke-road. Rathmines-road is also 66 feet wide, but it ends at Auburn-road. There is a continuation westerly via Liddiard-street, but this street, which ends at Glenferrie-road, is only 33 feet wide, and the same difficulty of westerly continuation is again met with should any scheme for its improvement be considered.

Rathmines-road to Barker's-road—New Connecting Link.—The Commission therefore recommends that a new road 84 feet wide be cut through the built-up area to give direct connexion from Rathmines-road, to join Barker's-road opposite Rossfield-avenue, just west of



Aerial view showing connexion of Rathmines and Barker's Roads at Hawthorn.

Photo by "Airspy."]

Haines-street. The aerial view shows the route of and existing conditions along this proposed link. This link is regarded as of an urgent nature, and is included in the urgent works programme in Part III. of this Report. The scheme adopted by the Commission involves the demolition of 39 buildings, comprising 22 brick and 16 weatherboard houses and 1 shop. The number of persons dispossessed would be 175. The estimated cost of these resumptions is £70,380. The resale of frontages to the new road which could be resubdivided is estimated to yield £25,790. Road construction is estimated to cost £15,400, bringing the total cost of the scheme to £59,990. The new allotments, when built upon, would rehouse about 70 people.

Barker's-road Widening.—The arterial road is then planned to follow Barker's-road to the Yarra at Victoria Bridge. Barker's-road, between Rossfield-avenue and High-street south, is recommended for widening to 84 feet by setting back the northern alinement 18 feet. For a considerable distance this setting-back should not materially affect the abutting properties, especially those of Xavier College and the Methodist Ladies' College. In a very few instances only does a widening on the northern side by 18 feet necessitate interference with buildings.

West of the intersection with High and Church streets, Barker's-road carries a double track tramline, and High-street is shown by the traffic census map on page 26 to be an extensively used route. It is therefore recommended that the part of Barker's-road between High-street south and the Yarra should be widened on the north side to 100 feet. A scheme to give effect to this was submitted in detail in the Commission's First Report—page 42 and Plate XXIII. See also the plans, Sheets Nos. 2 and 3, of this Report.

Victoria Bridge, Victoria-street, Victoria-parade.—The balance of this arterial route, No. 17, via Victoria Bridge, Victoria-street, and Victoria-parade to the City was dealt with by the Commission in detail in its First Report, pages 39 to 41 and various accompanying plans. This section of the route is also regarded as urgent and is included in the schedule of such undertakings in Part III. of this Report. The scheme includes the reconstruction of Victoria Bridge to a width of 89 feet, the widening of Victoria-street to 198 feet, and the replanning of the adjacent lands on the south side in accordance with recognized town planning treatment.

The Melbourne and Metropolitan Board of Works has been authorized to undertake the rebuilding of the Victoria Bridge, and the Commission trusts that the width and alinement recommended by it will be adopted.

The plans, Sheets Nos. 2 and 3, show the scheme as far as the junction of Victoria-street with Victoria Parade at North Richmond. Victoria-parade (231 feet wide) is shown on the plan, Sheet No. 4.

Route No. 18.—Melbourne, Ashburton, and Ferntree Gully Highway.

In its comments dealing with Arterial Routes Nos. 16 and 17, the Commission emphasized the necessity for providing new and improved means of arterial road communication for the eastern suburbs. Analysis of the traffic census also showed the urgency for special consideration of this matter. (See, specially, pages 30 and 33). It was shown that, in two and a half years, the traffic entering and leaving the city area had increased by 31 per cent. (see page 37). The traffic on the eastern outlets of the City, however, increased in the same period by 37½ per cent.

The railway extension from Darling to Glen Waverley which is being built and is already partly opened will foster settlement in those parts. Having regard to the extensive use to which the present approach roads to the city from the east and south-east will be put, it is essential that these existing and indirect routes should not be further congested by the additional traffic which will result from this new development.

When the Commission was planning the area to be served by that new suburban railway, provision was made in the Special Report submitted under date 6th May, 1927 (page 10), for a new arterial road, 120 feet wide, to carry the increased traffic anticipated from these districts. Its construction would have a far-reaching effect on the areas through which it passes. It is practically a completely new route, designed to pass through unbuilt-on and, in the main, unsubdivided areas for the greater part of its length.

It is planned to commence at the junction of the Burwood-Ferntree Gully and Bayswater roads, just east of Dandenong Creek. After crossing Dandenong Creek at North Boundary-road, practically midway between North Boundary-Highbury roads and High Street-road (see plan, Sheet No. 14), it crosses Gardiner's Creek just north of High-street road and then crosses Boundary-road along the alinement of Baker-street (see plan, Sheet No. 10). It then follows

the valley of the tributary stream to Back Creek, taking advantage of Flowerdale-road and other existing streets. At Glen Iris-road, the route follows Gardiner-parade and continues along the southern side of Back Creek, crossing it just before its confluence with Gardiner's Creek, thence along the northern side of Gardiner's Creek, continuing across Burke-road (see plans, Sheets Nos. 10 and 2), Toorak-road, Auburn-road, and Glenferrie-road, thence continuing along the north side of the creek through the Scotch College Grounds, over the Yarra River and into Richmond Park. The road then follows the north bank of the Yarra River through the Municipality of Richmond, until it connects with Harcourt-parade at Church-street. The details of the scheme along the valley of Gardiner's Creek are shown more clearly on the plans of the Gardiner's Creek parkway scheme published on page 220. A scheme for improving the part of this arterial road which follows Harcourt-parade, Richmond (see plan, Sheet No. 1), was submitted in the First Report of the Commission (page 26). That part of the scheme along the Yarra Valley is also dealt with in connexion with the Yarra Boulevard, of which it forms part—see page 212.

After following along Harcourt-parade to Punt-road, the undermentioned alternative routes to the City are available (see plan, Sheet No. 1)—

1. Via Batman-avenue to Swanston-street direct.
2. Via Batman-avenue to the point of its connexion with Swan-street, thence across the proposed bridge over the Yarra in line with Swan-street to join Alexandra-avenue, underneath St. Kilda-road, and into the City via any of the several routes as shown on the plans.
3. Via Punt-road, widened on the park side to 100 feet, thence along the proposed Yarra Park-road, Wellington-parade, Wellington-parade South, and Flinders-street.

The last route is described in greater detail in the Main Roads Schedule as Route No. 37 (see page 99).

This artery would effectively handle the road traffic between the City and the newly developing areas in the Ashburton and Glen Waverley regions and at the same time provide an attractive and direct through route for the extensive tourist traffic to the Dandenong Ranges. The various roads planned in the undeveloped areas that will feed this road will encourage through traffic to use it in preference to the tramline streets in the eastern suburbs, many of which even at present are uncomfortably crowded. This road has great possibilities as a future trunk highway, and its location is such that the cross movement from less important streets should not cause interruption to the traffic in the main road. If the volume of traffic on this road becomes greater than anticipated, further relief could be obtained by the construction of subways and/or bridges at its intersection with other important cross routes, because its location renders it particularly adaptable to a series of grade separations, which would allow of higher speeds and greater safety.

The contour maps of the areas through which this road is planned show that it would have grades considerably more favorable to traffic than the existing routes, as it has been planned to conform with the contours. Its provision is considered to be of vital importance in the general scheme, and in the section between Gardiner's Creek and Warrigal-road it would create a considerable enhancement in value of the land, bringing districts which are comparatively inaccessible into direct connexion with the City.

Several small sections of this road have already been included in the plans of subdivision since the issue of the Special Report dealing with the area to be served by the Darling to Glen Waverley Railway. If the procedure recommended on page 259 is followed, it is considered that the greater part of the route through areas not yet subdivided should be obtained at no cost to the community. That part of the scheme which runs through these areas is included in the programme of urgent works—see Map No. 5.

The only portions of the whole length of this route which would involve the resumptions of buildings are as follows :—

Between Glen Iris-road and Great Valley-road	..	14 houses
Between Great Valley-road and Burke-road	..	12 houses
Between Toorak-road and Tooronga-road	..	14 houses
Between Tooronga-road and Burke-road	..	Lime kilns
Frontages to Harcourt-parade, Richmond	..	See First Report for details

Route No. 19.—Prince's Highway (Dandenong-road and Road through Prahran Valley).

One of the finest roads leading into Melbourne is Dandenong-road. Not only is it the arterial route from Gippsland, but it is fed by many tributary roads from many other parts of the State. It also forms the first part of the favorite overland route to Canberra and Sydney. In the inner suburban area of Melbourne, however, the existing road, which is 198 feet wide, is impaired in its effectiveness because of the narrow section, known as Wellington-street, which connects it and St. Kilda-road. Its value in the section between the Malvern and Caulfield Railway Stations is also lessened to some extent by reason of the fact that portion of its width has been taken over for railway purposes.

Analysis of South-Eastern Suburbs Traffic flow.—In analysing the suburban traffic census, the Commission drew attention to the destinations of traffic leaving the City via St. Kilda-road, and pointed out the obvious necessity for intercepting that which proceeds to and from the south-eastern suburbs, and diverting it into the City by routes other than those existing through the Municipality of Prahran. (See page 30 and the Suburban Traffic Flow Chart, Map No. 2, on page 26). Wellington-street (which connects directly with Dandenong-road), High-street, Commercial-road, Malvern-road, and Toorak-road are the only through roads leading easterly from St. Kilda-road. In each case they are only 66 feet wide east of Punt-road, and carry a double line of electric tramway. There are extensive business areas in all these roads excepting Wellington-street, which is only short by comparison, and the Traffic Flow Map shows how busy these streets are even now. The Commission therefore deemed it essential to find some way of supplying the arterial road requirements between the City, the south-eastern suburbs and the country beyond so that such traffic could be diverted away from the tramline thoroughfares.

Chapel-street, Prahran, Traffic.—The Traffic Flow Map also shows that Chapel-street, Prahran, another 66-ft. tramway route and a very important business street, which forms part of an alternative route to St. Kilda-road, is congested by reason of the movements of traffic to and from the east-west cross streets just referred to. The Commission has given considerable attention to schemes which would relieve this congestion, and many proposals for widening and/or providing parallel by-pass routes were investigated. The Commission is, however, of the opinion that the provision of the new arterial route along the Prahran Valley, in conjunction with the combined improvements recommended later in regard to Punt-road (Main Routes Nos. 34 and 79) and Williams-road (Main Routes Nos. 83 and 36), would avoid the necessity for the widening of Chapel-street or of providing by-pass routes immediately adjacent to it.

Prahran Valley Road Scheme.—The route for this highway in the inner area, as shown by the diagrammatic plan, is located so as to follow a course along the valley of the northern side of the railway between South Yarra and Armadale Stations and it would thus intercept practically all of the east and west roads which feed St. Kilda-road. It would encourage a greater use of north-south streets such as Kooyong-road and Williams-road, which it intercepts, and in many instances it would provide a shorter distance of travel to the city. The detailed description of this route within the area of planning adopted is as follows :—

Commencing on Dandenong-road, which is 198 feet wide, at its intersection with North-road (see plan, Sheet No. 11) and continuing along that road through Oakleigh and Caulfield (see plan, Sheet No. 12) to the railway embankment, thence by the roads parallel with and on either side of the railway to near Malvern Station (see plan, Sheet No. 2), and thence continuing along the Dandenong-road to Kooyong-road. The route is then via Kooyong-road as far as the bridge over the railway line at Armadale Station. This road is only 66 feet wide, but as it will not be utilized as a tramway route, there is little fear of it becoming a congested thoroughfare. Up to this point no alteration to the existing conditions is proposed. A new road 132 feet wide is then proposed through the Prahran Valley practically parallel to and on the northern side of the railway to South Yarra, giving connexion with Alexandra-avenue just east of Darling-street via a subway under the railway embankment (see plan, Sheet No. 2). This route is planned to connect with Arterial Route No. 1 by means of a subway under St. Kilda-road where it is at present intersected by Alexandra-avenue.

Alexandra-avenue is already sufficiently wide to accommodate large volumes of traffic. It is proposed, as stated in the Commission's First Report, that its present restricted use as a park road should be revoked, so that all traffic desiring to use it may do so.

The route selected as referred to above follows a depression which has many drainage easements and reserves along it, and which have not attracted a type of development in harmony with the immediate surroundings. The properties affected are in nearly all cases inferior to those



Chapel-street, Prahran—showing traffic and shopping.

"Darge" photo.]

on the higher elevations. This fact, together with the unsatisfactory existing street system in the vicinity, provides an excellent opportunity for planning this road in a situation that would supply a most important arterial link. By parkway treatment, the road would further enhance the value of all of the surrounding property. A number of small existing streets, the most important of which are Northcote-road, Lambert-road, Gordon-street, Norman-avenue, and Dunalbo-avenue, are absorbed in the scheme.

In order to avoid excessive interference with the sports ground of the Boys' High School at Forrest Hill between the railway line and Chapel-street, the road is planned to pass under the railway embankment immediately north of the South Yarra Railway Station, and thence to join Alexandra-avenue alongside Darling-street.

If the proposed new road had been planned to connect direct into Dandenong-road instead of via Kooyong-road, it would have involved an extra mile of new road passing across Glenferrie-road and along Station-street, Malvern. This would cause the demolition of many valuable shops. As only 15 chains in distance would be saved, and having regard to the fact that Kooyong-road is not likely to become a tramway route, a direct connexion with Dandenong-road could not be justified.

Nearly 400 houses would be demolished in the $2\frac{1}{2}$ miles of new roadway, but at the same time many excellent building sites with frontages to the new road would become available. The resale of these sites would yield a considerable sum, whilst the imposition of a betterment rate, which could equitably be applied in such a case as this, should materially assist in defraying the expenses involved.

If this road is not constructed, there is little doubt that the widening of the feeder roads to St. Kilda-road, which are only 66 feet wide and carry trams, will have to be faced in the near future. Likewise, some means of providing greater facilities for Chapel-street traffic will be imperative. The great cost of these alternatives makes the new road proposal outlined herein relatively a very economical scheme. It would not only overcome the congestion of the thoroughfares now leading through Prahran, but it would encourage through motor traffic, thus relieving the tramline streets and giving quicker and safer travel to both forms of transport.

Route No. 20.—Mornington Peninsula Highway.

The Mornington Peninsula provides a delightful combination of beaches and mountains, which are extremely popular tourist resorts. The Peninsula is developing fast and in due time will have a large population, especially during the summer months.

Point Nepean-road is the through route between the metropolis and this extensive area, and there is no route in Victoria which carries more traffic. On many occasions 60 to 70 vehicles per minute have passed along Point Nepean-road at Mordialloc. The Shire of Frankston and Hastings conducted special checks of the traffic at Frankston on 26th and 27th December, 1926, and 2nd January, 1927, for 11 hours on each of the two former days and for 10 hours on the latter occasion. The respective average numbers of vehicles per hour on each day passing the selected point were 663, 773, and 718, with a maximum of 1,247. As Frankston is 27 miles from Melbourne, these figures give some indication of the extent of the Point Nepean-road traffic nearer the City on such occasions.

Apart from its importance as a tourist road, it is the main trunk road to the whole of the southern municipalities of the metropolis, within which a greatly increased population will be housed in the future.

For the purposes of this Report, the metropolitan section of the highway is taken as comprising the following :—

From Mordialloc to the intersection with Glenhuntly-road at Elsternwick	Point Nepean-road
To the intersection with Carlisle-street at St. Kilda ..	Brighton-road
To St. Kilda Junction	High-street
To Prince's-bridge, Melbourne	St. Kilda-road.

Widening of High-street, St. Kilda, and Point Nepean-road.—Although St. Kilda-road and Brighton-road, and those portions of Point Nepean-road between Glenhuntly-road and Cochrane-street and between South-road and Mordialloc Creek, are 198 feet wide, High-street and the remaining portion of Point Nepean-road which comprise the smaller section of the highway are bottle-necked to a width of 66 feet. These narrow portions have destroyed the effectiveness and marred the beauty of the greater portion of the highway. The Commission has ascertained from the municipalities concerned the valuations of properties fronting these narrow sections so that the most economical schemes for widening these two stretches of roadway could be put forward. These widenings are regarded as works of an urgent nature, and they are therefore included in the schedule of urgent works submitted under Part III. of this Report. The estimates of costs, &c., and the scheme suggested for financing these undertakings are included in the same part of the Report.

High-street, St. Kilda.—Reference to the Suburban Traffic Flow Map published on page 26 shows what an important link High-street is in the St. Kilda-road-Brighton-road route. High-street carries more traffic than Brighton-road, which is three times its width. 26·8 per cent. of the traffic entering and leaving St. Kilda Junction is from and to High-street, whilst 59·5 per cent. of the St. Kilda-road traffic connects with High-street.

High-street has been built on largely for shopping purposes, but, except for a few isolated shops, it cannot be regarded as a good business area. Nearly all the premises are of an inferior type, and a large proportion of the shops are either vacant or merely occupied because of the dwelling accommodation attached. The photographs on next page indicate the class of property referred to. As these dilapidated buildings exist on both sides of the street, the Commission recommends that, in widening the thoroughfares so as to conform with the widths of St. Kilda and Brighton roads, the whole of the properties on both sides be resumed and demolished. It is considered that it would be extremely unwise to widen High-street on one side and allow the depreciating conditions of the opposite side to remain. The value of property fronting both St. Kilda and Brighton roads is very high, and as High-street runs over the crest of a hill by gentle slopes, the resale value of residential allotments facing a new 198-ft. road would greatly reduce the net cost of the widening. Moreover, there would be a general enhancement created through the whole neighbourhood by such a scheme, upon which a betterment rate could be levied. No shops should be allowed along the new 198-ft. road, as such roads are quite unsuitable for business purposes. The shopping areas as defined in later pages will adequately serve the locality.

The Commission recommends that the widening itself be effected on the western side of High-street as shown on the plans, Sheets Nos. 1 and 2. This scheme would give more directness of travel, cause less interference with property and adjacent streets and be more economical than by widening on the eastern side, or on both sides, all of which have been fully investigated.

Point Nepean-road Widening.—Point Nepean-road, in the metropolitan area, is 198 feet wide except for the section between Cochrane-street, Elsternwick, and South-road, Moorabbin, which is only 66 feet wide. This narrow section is approximately $3\frac{1}{2}$ miles long. The scheme for the widening of it is shown on the plan, Sheet No. 12, and the estimated cost is given in the schedule of urgent works, page 149. It is based upon a proposal to acquire sufficient property on the sides on which the widening is to be effected to admit of the resale of new frontages to the widened road, and to enable the full benefits of the widening to be reflected on adjacent property and street alinements by avoiding unsuitable and remnant allotments.



High-street, St. Kilda—looking South.



High-street, St. Kilda—looking North.

The widening would commence on the western side of Point Nepean-road just north of Cochrane-street to avoid interference with the eastern side of the road, and to maintain directness of travel. The scheme continues the widening on the western side as far as Hampton-street. It is then much more economical under existing conditions to transfer the widening to the eastern side of Point Nepean-road, and in giving effect to it a scheme is proposed for the special treatment of the intersecting streets at this point, as shown on the plan, which should materially assist the regulated movement of the traffic converging at this centre. From this point the widening is continued on the eastern side to South-road at Moorabbin. The plan also shows a treatment proposed at the intersection of Point Nepean-road with Marriage-road, Brewster-road, and Thomas-street, which will give the Point Nepean-road traffic a clear crossing, if this junction becomes very busy.

That portion of the proposed widening as far south as Hurlingham Park (which is south of Union-street) and a small section of the southern extremity of the 66-feet portion at Moorabbin are rather extensively built upon, and the bulk of the cost of the scheme is due to the large number of property resumptions and demolitions which are involved in these sections. The portion between Martin-street and North-road at Gardenvale has become a business area of some importance, and the cost involved in this small area is much greater in proportion than that of any other part of the scheme. The section between Hurlingham Park and North-avenue, just north of South-road, which is longer than the remainder of the scheme, is estimated to cost only 11 per cent. of the total sum involved in the widening, but as the whole length of it is regarded as equally urgent, the cost figures have been taken out for one complete undertaking.

In order to assist in keeping down costs as much as possible the Commission communicated with the municipalities concerned and requested them to refrain from authorizing subdivisions into shopping sites of land along the narrow section of Point Nepean-road. The Brighton Council complied with the request. The Moorabbin Council, however, endeavoured to pass a by-law which would have had the effect of allowing shops to be erected on the road on the side where the widening was intended and opposite where the Brighton Council had decided against shops. In view of the fact that any shops erected in the section to be widened must materially increase the cost of the scheme, the municipalities concerned should prevent their erection by using the powers they already have under the Local Government Act in regard to the definition of residential areas.

The Brighton Council has further assisted by its decision to reconstruct Point Nepean-road within its boundaries in concrete and by ensuring that this work will coincide with one of the side roads shown in the Commission's recommended cross-section for a 198-ft. road.

Route No. 21.—Gardenvale to Heatherton and Keysborough Highway.

There is an extensive area of sparsely settled land lying between Arterial Routes Nos. 19 and 20 which will ultimately attract a considerable development. Old Government roads at 1-mile intervals bearing in the cardinal directions intersect the area, and these are intercepted by Old Dandenong-road, which runs diagonally across the area about midway between the arterial routes referred to. The Old Dandenong-road forms the nucleus of the route described below, and it presents an unique opportunity for providing an arterial road to serve this locality. The selected route in its metropolitan section is as follows :—

Commencing at the boundary of the area of planning at its intersection with Centre Dandenong-road (see eastern boundary of the plan, Sheet No. 13) the Old Dandenong-road is utilized for its full length to its junction with Warrigal-road (see plan, Sheet No. 11). It is then proposed that a new 66-ft. road be provided giving direct connexion (as shown on the plan, Sheet No. 11) between Old Dandenong-road and Crosbie-road at North-road. Crosbie-road runs into Murrumbeena-road at Dalny-road, and would serve as a useful by-pass route to the eastern suburbs. North-road, which is 132 feet wide, is then utilized as the arterial route leading direct into Arterial Route No. 20 at Gardenvale (see plan, Sheet No. 12).

North-road is narrowed for some distance east of East Boundary-road, but is 132 feet wide at either end. It should be an easy matter to preserve this width throughout, as there is practically no development along this portion of it. The small section of it between the take-off of the proposed new arterial route which joins Old Dandenong-road and East Boundary-road is subdivided on the southern side, but steps should be taken without delay to effect the widening of this important section of the route. The remaining portion of North-road requiring widening is dealt with in the schedule of main roads, page 110.

Route No. 22.—Eastern Foreshore Highway.

Between the foreshore and the area served by Arterial Route No. 20 (Mornington Peninsula Highway), there is a long narrow strip of land which, as the plan on page 24 shows, is densely built upon. The beaches on Port Phillip Bay have become extremely popular. The attractiveness of this foreshore road for bayside traffic warrants its classification as an arterial route, inasmuch as there are no other roads available in this area which serve the purpose so effectively. It is most fortunate that the foreshore, for the greater part of its length, is not alienated, and that a strip

of natural reserve exists between the roadway and the beaches. This foreshore road has become one of the busiest in the metropolis, and on fine days and in the summer months, especially during week-ends, is taxed beyond comfortable and safe limits.

There is only one small section of the whole of the foreshore between Port Melbourne and Mordialloc that does not already possess a roadway on the sea-front. That section is in the Municipality of Brighton and is shown more particularly on the plan, Sheet No. 12. The present route for foreshore through traffic at this point is along Ormond-esplanade and St. Kilda-street. St. Kilda-street is only 66 feet wide, and carries a double line of tramway and is the nearest through route parallel to the sea.

The congestion brought about by this narrow portion demands a substantial measure of relief. The desirability of permanently incorporating St. Kilda-street in the foreshore road scheme was carefully considered and the possibilities of widening in order to overcome the difficulties mentioned were investigated. Quite apart from the great cost which would be involved in widening St. Kilda-street, the treatment of that thoroughfare would not meet the following conditions, which it is considered should be included in any scheme for this neighbourhood:—

- (a) Continuous drive fringing the foreshore.
- (b) Separation of vehicular from tram traffic and an encouragement to it to use other than a tramline street.
- (c) Resumption of the foreshore for greater public enjoyment and the provision of access thereto, instead of for a limited few.

Incidentally, it might be mentioned that St. Kilda-street is built-up on both sides with homes of a superior type, nearly all of which possess artistically designed gardens and forecourts. It is a little over 1 mile long between Head-street and its emergence into Beach-road at Middle Brighton.

It will be seen from this plan that Marine-parade already extends along the foreshore as far south as Cole-street. There are certain existing features which make the continuation of this route along the foreshore and independent of St. Kilda-street an economically practicable scheme. The foot of Birdwood-avenue at its western end and a new private street (Bonleigh-street) connecting it with Martin-street are available. Between North-road and Chatsworth-avenue, there is an existing reserve. St. Ninian's-road runs practically parallel with the foreshore, being not more than 400 feet distant therefrom. The linking of Marine-parade with the Esplanade beyond the pier at Middle Brighton, as shown on the plan, Sheet No. 12, is thus designed to take full advantage of these conditions.

On account of the necessity for relieving St. Kilda-street this scheme is regarded as an urgent work, and the estimated costs are given in Part III., page 149. These figures include the cost of resuming all properties between the proposed new foreshore road and high-water mark for the purpose of providing a foreshore reserve, comprising in all about 14 acres. This reserve would be of very great local benefit, but the fact that its provision will give a continuous strip of parklands around Port Phillip Bay from Port Melbourne to Frankston, a distance of 28 miles, and thence beyond, is sufficient reason why this portion of 1 mile should be resumed for public purposes. The cost would not be excessive by comparison with the advantages to be gained.

Largely as a result of the vision and efforts of the late Mr. C. Catani, when he was Engineer for Public Works, towards the provision of the foreshore road, all foreshore rights were abrogated by a special Act, thus giving back to the public the use of the sea-front. Unfortunately, the excision from the titles was insufficient for the construction of a roadway, and local erosion since that date has in places now brought the high-water mark slightly farther inland. In the event of the resumption of these properties, compensation should not involve the payment of any claims arising out of the interference with a supposed right to the water's edge or the beach.

It is recommended that the new road should be 80 feet wide. This width could be obtained without any serious difficulty.

The aerial view on the next page shows the existing conditions of development along the route of the proposed new foreshore road at Middle Brighton, as well as the recommended route for the highway.