1939.

VICTORIA.

STATE RIVERS AND WATER SUPPLY COMMISSION.

THIRTY-FOURTH

ANNUAL REPORT,

1938-39.

PRESENTED TO BOTH HOUSES OF PARLIAMENT PURSUANT TO THE PROVISIONS OF THE WATER ACT 1928

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STATE RIVERS AND WATER SUPPLY COMMISSION

ANNUAL REPORT, 1938-39.

In compliance with the provisions of the *Water Act* 1928, the State Rivers and Water Supply Commission submits the following Report and Statement for the Financial Year 1938-39, and Estimates for the ensuing year.

The personnel of the Commission is as follows :—

Mr. L. R. East, M.C.E., M.Inst.C.E., M.Am.Soc.C.E., M.I.E., Aust. ; Chairman.

Mr. W. A. Robertson, M.C.E., M.Inst.C.E., M.I.E., Aust. ; Commissioner.

Mr. H. Hanslow, Commissioner.

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ANNUAL REPORT

OF

THE STATE RIVERS AND WATER SUPPLY COMMISSION

FOR

YEAR ENDED 30TH JUNE, 1939.

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PART II.

WORKS CARRIED ON OR COMPLETED DURING THE YEAR.

REPORTS OF DIVISIONAL ENGINEERS.

GOULBURN AND GIPPSLAND DIVISION.

(E. P. Kendall, B.C.E., A.M.I.E. Aust., Divisional Engineer.)

The Districts included in the Goulburn and Gippsland Division comprise the Rodney, Shepparton, Katandra, North Shepparton, South Shepparton, Tongala, Stanhope, Deakin, Echuca North, and Rochester Irrigation and Water Supply Districts supplied from the Goulburn Irrigation System, the storages of which are the Eildon Reservoir, Waranga Reservoir, and Goulburn Weir, with a total capacity of 660,100 acre feet, the Campaspe Irrigation and Water Supply District supplied from the Campaspe River, the Maffra–Sale Irrigation and Water Supply District supplied from the Glenmaggie Weir on the Macalister River, the Bacchus Marsh and Werribee Irrigation and Water Supply Districts, the headworks of which are the Pykes Creek Reservoir, on a tributary of the Werribee River above Bacchus Marsh, and the Melton Reservoir on the Werribee River between Bacchus Marsh and Werribee and, in addition, the Werribee Waterworks District, and the Stanhope, Corop, Lockington, Heyfield, and Bacchus Marsh Urban Divisions.

The Rodney, Shepparton, Tongala–Stanhope, Rochester, Werribee and Maffra–Sale Drainage Districts, and the Loch Garry and Kanyapella Flood Protection Districts, are also controlled by this Division.

In the following pages a description is given of the principal works carried out in these Districts during the year.

Tatura Centre.

The **Rodney Irrigation and Water Supply District** and the **Rodney Drainage District** are administered from the Commission's Office at Tatura.

The area of the Irrigation District is 267,911 acres, of which 190,783 acres, carrying water rights of 61,085 acre feet, are commanded by gravitation from existing Commission channels which aggregate in length 639 miles.

Drought conditions during the year resulted in heavy demands for water for crop and pasture irrigation, and channels, for a period early in the season, were run at full capacity. The apportionment of water to irrigators was, however, limited, in view of the low state of Goulburn water storages. By carefully gauging and apportioning the available water, the Commission was able to meet the minimum requirements of water right holders for the maintenance of pastures, orchards and gardens. The temporary expedient adopted by the Commission, which enabled a landholder who had insufficient water right to lease another property and have the water rights grouped for the season, was welcomed by the landholders, particularly the orchardists who, without this arrangement, would have been in serious difficulties. Up to the end of February, 1939, approximately 82 per cent. of the total of the water rights allotted to the District had been delivered, and there was sufficient water available to continue deliveries to 85 per cent or more in the early weeks of the following month. The long dry spell, however, was broken at the end of February when torrential rains occurred which, with subsequent rains, brought irrigation operations to a close for the season, and enabled storages to be replenished.

Further improvements to the irrigation system were carried out with Unemployment Relief moneys made available by the Government. Sections of distributary channels were remodelled as required, and outlet and regulating facilities improved. In co-operation with the Country Roads Board and the Rodney Shire Council, the Commission renewed 20 channel crossings on main roads and highways within the district. These works involved complete replacement of the structures to provide for increased width of trafficway and to conform to the vertical alignment of the roads. Several regulators on main channels were renewed in reinforced concrete, and at the gauging weir of the Main Wilson Channel a new low level apron was constructed. Preparations are in hand to lower the sill of the Wilson Channel Offtake Regulator on the Goulburn-Waranga Main Channel, and to renew in reinforced concrete the existing timber superstructure which has decayed beyond repair. The lower sill will enable full irrigation streams to be diverted at all times to the Rodney District without interfering with the inflow to the Waranga Reservoir.

Repair and maintenance work was effected as far as the limited funds available would permit. To prevent loss of water by percolation, a section of Knox Channel was clay-blanketed and banks of various other channels were clay-cored where isolated drifts gave trouble. Telephone facilities were provided at the water bailiff's quarters at Girgarre East.

In the **Rodney Drainage District** the drainage scheme was advanced a further stage with Unemployment Relief Funds provided by the Government. The Wyuna Main Drain was continued through orchard areas to the Kyabram-Lancaster main road, and further extensions

were made to the Rodney, Ardmona, and Settlers Drains. These drains functioned satisfactorily when severely tested by the torrential rain of last Easter. Following this and subsequent rain, large tracts of undrained district lands were severely inundated, causing landholders much loss and inconvenience. This happening gave rise to numerous requests for the provision of drainage facilities in the flooded areas.

Shepparton Centre.

The Irrigation and Water Supply Districts administered from the Shepparton Centre are **Shepparton, North Shepparton, South Shepparton** and **Katandra.** The **Shepparton Drainage District** and the **Loch Garry Flood Protection District** are also controlled from Shepparton.

During the past year, many minor improvements were effected in all Districts, mostly in the enlargement of regulators, reconditioning of road bridges and other structures and topping up of channel banks. A 12-inch diameter pipe line, 27 chains in length, was laid to ensure an adequate supply of water for the Shepparton Preserving Company's Works. In North Shepparton, a channel extension, 3 miles 12 chains in length, to serve the Bunbartha Village Settlement, was constructed.

Water rights were apportioned to the North Shepparton and Katandra Districts during the year.

The North Shepparton District containing 121,485 acres, of which 59,342 acres are commanded and suitable for irrigation, was allotted 11,874 acre feet as water rights, and the Katandra District containing 14.171 acres, of which the commanded and suitable area is 11.370 acres, was allotted 5,704 acre feet water rights.

The abnormally dry season and limited supply of water rendered it necessary to restrict supplies to irrigators, but careful regulation of the water, together with the economy resulting from the co-operative efforts of the water users, enabled a very difficult problem to be dealt with without undue hardship to irrigators, and the season may be truthfully claimed a successful one. In the Shepparton District the temporary grouping of water rights on leased areas proved a great benefit to the fruitgrowers who were able to harvest a record crop.

The area devoted to the production of short term crops such as tomatoes, peas and other vegetables continued to increase, and numerous sales of small blocks for this purpose have been made, mostly to aliens.

In the **Shepparton Drainage District,** the remodelling of drains with Unemployment Relief Funds was continued and approximately 20 miles of drains have been remodelled to a definite grade and capacity. The system has proved of great benefit to the District, although insufficient to deal with the abnormal rains of the latter portion of the year when approximately 15 inches of rain were recorded in a period of 8 weeks.

Extensive flooding occurred in some portions of the District but, in spite of the abnormal conditions, the value of drainage was amply demonstrated. The flooded areas within the drainage district were freed of water within a few days, while areas where no drainage is provided were under water for very long periods. The oppo.tunity was taken to make a full inspection of the area and the information obtained will be used to further improve the system.

Tongala Centre.

From this centre the **Tongala, Stanhope, Deakin,** and part of the **Echuca North Irrigation Districts,** as well as the **Tongala-Stanhope Drainage District,** the **Kanyapella Flood Protection District,** and the **Corop** and **Stanhope Urban Divisions** are controlled. The total mileage of irrigation channels within these districts is 366 miles.

Conditions until the end of February, 1939, were very dry with high temperatures up to 117 degrees, and owing to the low state of the storages it was necessary to curtail the supply of water, resulting in the total amount of water delivered being 42,727 acre feet as against 67,252 acre feet in the previous year. The greatest restrictions were within the Deakin District where no definite water rights had been apportioned to the lands. Deliveries in this District were confined to a percentage of the average usage over a period of 5 years. As a result the total sales deliveries amounted to only 2,325 acre feet as against 6,001 acre feet in 1937-38. It is of interest to note that the area under pastures continues to increase at the expense of lucerne. During the year the area under pastures increased by 1,333 acres, while that under lucerne decreased by 1,245 acres. There was also an increase in the area of cereal crops by 849 acres over 1937-38, which may be accounted for by the large sale of lucerne at high prices in 1937-38 and to the fear that, with the restrictions in water, there would be insufficient lucerne and pasture to provide reserve fodder. The restrictions in water deliveries had a marked effect on the irrigation of natural pastures, the area irrigated during the year being 1,921 acres as against 6,585 acres in the previous year.

The continued improvement in the development of this centre can be seen. As an indication, properties submitted by the Lands Department for disposal have been sold at prices in excess of valuations. Splendid work was done by water bailiffs in efficiently delivering the limited supply of water available.

In the **Tongala-Stanhope Drainage District,** in which there are 252 miles of drainage channels, a dragline excavator has been continuously employed during the year on various sections of the Deakin Main Drain, 10½ miles of this drain having been cleared of silt and cobungi.

Maintenance has been carried out along the system but, owing to the delay in providing funds, it is difficult to catch up with the work. The whole of the drainage system requires bringing up to a satisfactory condition, and the provision of properly designed drainage inlets is essential to prevent siltation.

Heavy falls of rains following an abnormal downpour during April, 1939, severely overtaxed the drainage system and many holdings were flooded, with disastrous results. While these cases of flooding would tend to give the impression that the system failed, this was not so, as practically the whole area was cleared of storm water in a comparatively short time. The conditions were closely observed, and consideration is being given to the carrying out of further works.

Rochester Centre.

The Districts controlled from this centre are the **Rochester, Campaspe,** and part of the **Echuca North Irrigation and Water Supply Districts,** the **Rochester Drainage District,** and the **Lockington Urban Division.**

In the **Rochester Irrigation District** severe drought conditions prevailed for the first eight months of the past year. For the 12 months ending 31st December, 1938, only 709 points of rain were recorded, This was the lowest annual rainfall on record, being 10 inches less than the average annual rainfall, and 1½ inches below that recorded for 1914.

The month of January, 1939, produced only 12 points, but heavy rain which fell at the latter end of February relieved the position, 396 points being registered for that month.

The unfavourable position with regard to the storages on the Goulburn System made it necessary to delay the commencement of the irrigation season until 1st September, 1938, and to restrict deliveries to irrigators, from the commencement of the season, to one-tenth of the water right every 15 days. As the season progressed and the flow in the Goulburn River failed, further restrictions had to be enforced and, prior to the breaking of the drought, supplies to irrigators were restricted to one-twentieth of the water right in 21 days.

Of the 67,960 acre feet of water turned into the District, 67 per cent., or 45,822 acre feet, were delivered to irrigators, and of this quantity 44,427 acre feet, equal to 82 per cent. of the total water rights of 54,621 acre feet apportioned to the District, were delivered as water rights.

Approximately 93 per cent. of these deliveries were made during the months of September to February inclusive.

Farms throughout the District were not producing to their maximum capacity, and many farmers had to refrain from irrigating some of their pastures so that the limited amount of water available would be sufficient for the irrigation of their best paddocks. This was of course reflected in some reduction in the quantity of butter-fat produced, figures supplied by the Rochester Co-operative Butter Factory showing that 546 tons involving payment to farmers of £63,671 were produced, as compared with corresponding figures of 635 tons and £66,198 for the record year 1936-37. A successful pasture competition was conducted and the awards were as follow :— First, Mr. H. Schier ; second, Mr. J. Huon, and third, Mr. D. Holman.

Citrus crops were affected by the very hot summer and the yield was only an average one. Good prices were paid for late Valencia Oranges but only average prices were paid for Navel Oranges and Lemons.

The yield of deciduous crops was normal, but the expenses in connexion with production were higher on account of the very dry season. Had more water been available a better crop would have been realized. This applies particularly to pears which were inclined to be a little under size and badly shaped.

Owing to unsatisfactory markets, returns from lamb fattening were below average. During the drought period, thousands of sheep were on agistment in the District, the ruling rates averaging about 7d. per head per week. Other farmers leased their farms for 12 months at approximately £4 per acre.

Many market gardeners from Bendigo and the surrounding district leased land in the Rochester District and this accounted for the area of market gardens increasing from 63 acres to 164 acres this year.

A high flood occurred in the Campaspe River early in April. The maximum height on the Rochester gauge reached 22 feet 8 inches, which is the fourth highest on record, and the Restdown Plains, Rochester East, and Strathallan areas were inundated. Landholders did not suffer extensive loss. Some damage was, however, done to about 2 miles of the Restdown channel, banks in places being completely washed away, and elsewhere scoured to a depth of 4 feet below the natural surface.

The same weather conditions and water restrictions applied in **Echuca North District.** During the season 962 acres of crop were watered, as compared with 400 acres the previous season,and good yields were harvested. The area of pastures watered this year was 370 acres less than previously, due to the limited supplies available.

In the **Rochester Drainage District,** 13¼ miles of new drains, 1½ miles of intercepting drains and ¾ mile of private internal drains were constructed, and 3¾ miles of existing drains were remodelled. There are now 128 miles of Commission's drains in the Drainage District.

The abnormal wet autumn tested the drainage scheme, which however functioned very satisfactorily and fully justified the cost of its construction. The value of a drainage scheme was best demonstrated at Echuca South where Main Drain H was constructed during the year. Previously, in the event of heavy rain falling during an Autumn, this area would have remained flooded for many months, whereas now all lands served are drained off within two days.

In the **Lockington Urban Division** no restrictions were applied. The demand for water was heavy throughout the summer and the quantity pumped by the windmill proved insufficient, it being necessary to pump by auxiliary power for periods of up to 12 hours per week.

During the year the mill head was overhauled and minor leaks in mains received attention. Several holes developed in the storage tanks which are badly in need of replacement. Vote funds provided for pumping and repairs to plant in this district are far short of requirements.

Maffra Centre.

From the Commission's Office at Maffra, the **Maffra-Sale Irrigation and Water Supply District,** the **Maffra-Sale Drainage District** and the **Heyfield Urban Division** are administered.

Until good rains fell at the end of February, less than 6 inches of rain had been recorded in the Maffra–Sale District for the first eight months of the 1938–39 season, and irrigation supplies had never been so welcome, nor so valuable. The Glenmaggie Weir was 25,890 acre feet below full capacity when the irrigation season started, but as the district is not yet developed to the limit of the storage, no difficulty was experienced in delivering 29,830 acre feet. After allowing for 2,234 acre feet which were supplied to lands outside the District boundary, the quantity of water delivered to the District was equal to 145 per cent of the allotted water rights.

The dry conditions and the satisfactory position of landholders within the Irrigation District resulted in widely supported public movements for extensions of the supply system. Applications were made by residents of the Riverslea, Cowwarr, Heyfield, Dennison, Bushy Park, Llowalong, and Clydebank areas for irrigation service, as well as from numerous individual landowners for small extensions of supply channels to serve properties immediately adjoining the District boundaries. The provision of an unemployment relief grant enabled two channel extensions to be put in hand early in the season to serve additional lands, the first being at Riverslea and the other in the parish of Nuntin near Sale. Landholders showed commendable enterprise in constructing many miles of delver channels to obtain immediate supplies.

The 22 miles of permanent channels and structures for the supply of these two areas, which comprise over 7,500 acres, are now well advanced, and the areas will be included in the irrigation district for the 1939–40 season.

Following the practice instituted on the Heyfield Urban supply channel in 1937–38, 5 additional meter outlets were constructed on the Main Northern and Valencia Creek channels for sales of water outside the District. The areas served consist of light hill country not normally suited to irrigation but, due to the increased use of superphosphates, profitable use of water can be made in a dry season. Sales of water through these 5 outlets amounted to £519 for the season.

During the peak demand, main channels were again taxed to their limit, and proposed extensions of the District have to be examined with care to prevent any further overloading of the channel system. It is believed that the danger may be lessened by the institution of a roster system which should dampdown the peak demands, and the preliminary work for a roster will be put in hand during the coming season. Ultimately, however, some enlargement of parts of the Main Northern and Main Sale channels will be necessary.

Water supplied to the Stratford Waterworks Trust constituted a new record, the delivery for the year being 13,158,000 gallons.

The **Maffra-Sale Drainage District** containing 24,330 acres with 93 miles of drains has been constituted.

Drainage channel construction for the year consisted of 9 small extensions with a total length of 4 miles.

When the drought broke on February 26th, seven inches of rain fell within 48 hours. All supply channels were running to capacity, and the by-passing of this water, added to the run-off during and following the rain, overtaxed the drainage channel system. The new by-pass from the Main Sale channel to the Avon River proved of inestimable value in protecting the supply channel system, and for the first time under anything approaching similar conditions, no breaks or scours occurred in the main channel.

The position in the Bundalaguah–Myrtlebank–Sale area was much less satisfactory, and the necessity of providing a new and larger outfall drainage channel was again emphasized. The construction of the Station drain appears to be imperative, as this would halve the discharge to the Myrtlebank drain, permit of the re-grading and enlargement of the Bundalaguah drains, and allow of extensions of the drainage system, which at present have to be refused because of limited outfall capacity.

Normal maintenance works were continued, and a new method was used for repairs to the concrete-lined channels of Boisdale and Nuntin. Cement bags soaked in a rich grout were laid over joints and breaks, instead of the usual bitumen filling, and this appears to be a more satisfactory way of treating this work.

Drainage channel maintenance was facilitated by the use of the No. 24 dragline excavator. During the latter part of the season this machine has been engaged on drainage channel excavation in the new Riverslea area.

Preliminary surveys and boring were undertaken in Bundalaguah where extensive seepage is occurring between the Maffra–Sale road and the river.

The general prosperity of the District was reflected in the record revenue collections.

Bacchus Marsh and Werribee Districts.

The **Bacchus Marsh Irrigation and Water Supply District** and the **Bacchus Marsh Urban Division** are controlled from Bacchus Marsh, and the **Werribee Irrigation and Water Supply District,** the **Werribee Waterworks District,** and the **Werribee Drainage District** are administered from Werribee.

Very severe drought conditions were experienced in both districts during the year. Owing to the abnormally low run-off from catchment areas during the winter months, the storages at the commencement of the irrigation season were at a very low level.

In Pykes Creek Reservoir (capacity 21,000 acre feet) the storage at the commencement of the irrigation season was 3,530 acre feet only, as compared with 4,080 acre feet at the end of the previous season, an actual loss of 550 acre feet occurring during the winter months.

In Melton Reservoir (capacity 19,100 acre feet) at the commencement of the watering period only 3,200 acre feet of water were available, this volume being only 2,600 acre feet more than that in store at the end of the previous season.

Thus the Bacchus Marsh and Werribee Districts had available to them, at the commencement of the season only 6,730 acre feet of water in storages (capable of holding 40,100 acre feet) whereas, in a year such as was actually experienced, it is considered that at least 36,000 acre feet of water would have been required in the storages to meet all requirements.

It was necessary, therefore, to impose severe restrictions on water supplies at the beginning of the season, and all irrigators were advised that they would be supplied with only one-eighth of their water rights unless later rains improved the position.

Unfortunately no rain of consequence fell until the end of February, 1939, when a fall of over 4 inches was experienced.

This rain filled the Melton Reservoir, but the catchment of the Pykes Creek Storage contributed only sufficient water to allow of Bacchus Marsh irrigators being allotted an additional 3 inches (i.e. one-fourth) of their rights. However, the rain which fell also in the irrigation districts was of untold benefit and particularly good autumn conditions were experienced.

During the trying period of the drought the Advisory Boards of both the districts met regularly and their co-operation was of considerable value to the Commission.

In the **Bacchus Marsh Irrigation District,** with a water right of 3,332 acre feet, only 466 acre feet were supplied to irrigators and £3.224 representing irrigation charges on 2,866 acre feet was written off.

Further work has been carried out on the concrete lining of the tunnel from Werribee River to Pykes Creek, resulting in the increase of the carrying capacity of this tunnel.

Protection works on the banks of the Lerderderg and Werribee Rivers are showing good results. To protect the Commission's Lerderderg East channel and syphon inlet structure, 2 stone groynes, wire meshed, and a set of 4 tiers of stone gabions, wire meshed, were built in Coimadai Creek.

Storm catch drains in the Gorge to Gorge channel and main and distributary channels, which suffered considerably during the heavy rain in February following the long dry spell, were reconditioned from Unemployment Relief Funds.

In the **Bacchus Marsh Urban Division** 3,850 feet of old 6 inch concrete and cast iron mains in Lerderderg and Grant-streets were replaced with 6 inch fibrolite pipe, while in Young and Pilmer-streets 1,595 feet of 2 inch wrought iron and 4 inch wood mains were replaced with 4 inch fibrolite and in Millbank-street 770 feet of 1½ and 2 inch wrought iron mains were replaced with 3 inch fibrolite pipes.

The construction of water measuring wheels for use in all Districts controlled by the Commission is still being carried on at Bacchus Marsh workshops. During the year 155 large and 27 small wheels, 424 large vanes and 100 half drums were made.

In the **Werribee Irrigation District** the limited quantity of water allotted permitted landholders to irrigate, once only, an area equal to about one-third of their holdings, with the result that general irrigation had ceased by mid-November, 1938.

This severe restriction caused market gardeners to go out of production from November until March, 1939, when they were able to again sow crops. Dairymen had to purchase large quantities of hay and chaff with which to hand-feed their herds in order to maintain production up to their commitments under milk contracts.

From November, 1938, until rain fell at the end of February, 1939, the District consisted of bare fallow and parched pastures. At the end of February, 1939, a fall of over 4 inches of rain occurred, and was followed by further frequent useful falls. This ended the desperate situation of irrigators throughout the District.

Market gardeners re-commenced operations and, in a few weeks, favorable weather conditions promoted a re-growth of pastures which kept ahead of the requirements of the stock. This spring-like condition continued to the end of June, 1939.

During the period from November to June many dairymen sought the help of the Lands Department and were advanced supplies of hay and chaff under the Farmers Advances Act. In addition, 33 irrigators put down bores in an endeavour to obtain sufficient water to irrigate small areas of pasture or market garden. With two exceptions the bores were sunk to a depth of about 35 feet through sand to gravel, and in all those cases quantities of water sufficient for the purpose required were struck, but in only 4 cases was the salt content of the water low enough to justify the use of the water for irrigation.

In these 4 cases boring was continued through the rock, but only one of these deep bores was used. It was 92 feet deep, and water was pumped at the rate of 9,000 gallons per hour for irrigating market garden crops.

When it appeared that a prolonged drought might endanger supplies of water for domestic purposes and for the 5,000 head of stock in the District, the Commission put down a 10 inch bore to a depth of 135 feet at the head of the distributary channel system. The quality of the water obtained was excellent, but the maximum output obtained by pumping was very disappointing, the flow amounting to only 2,000 gallons per hour. However, the early break of the drought rendered the use of this water unnecessary.

In the Werribee Irrigation District concrete lined channels which suffered as a result of being empty during the fierce heat experienced in the summer were, with structures, maintained as fully as funds available permitted.

Following on the raising of the Werribee River Diversion Weir Wall by 4 feet, new Regulator Gates were installed at the District offtake and the increased supplies held at this weir after each run in the river will prove of great benefit in connexion with the irrigation of the District.

To prevent damage by seepage to the walls of the Melbourne and Metropolitan Board of Works main outfall sewer, a section of Spur Channel 1K, 6 chains in length, adjacent to the sewer reserve was concrete lined. The work carried out in this connexion has been very effective.

A pipe crossing over Drainage Channel No. 5 was replaced by a box section of concrete channel, and following a private subdivision an occupation crossing, outlet and wheel were installed, at the owner's expense, on the Main Channel at allotment 54, section D, parish of Deutgam.

Owing to lack of funds, maintenance of outlet wheels was entirely neglected, the only replacements being 16 large wheels and 3 small wheels which were re-constructed by water bailiffs from the good portions of worn-out wheels.

In the **Werribee Waterworks District** the usual service for domestic and stock purposes was run through the 24 miles of channels. Because of the lack of maintenance funds, only a section of about 1½ miles of the channel system in this District could be given any attention during 1938–39, and, in consequence of this and the small supplies available, considerable difficulty was experienced in providing the service.

In the **Werribee Drainage District** 27 miles of the total of 44 miles of drainage channels were cleaned out during the year. The drainage system functioned satisfactorily and gave excellent service in carrying away surface water or surplus irrigation water and thus preventing damage by seepage.

LODDON DIVISION.

(F. Rogerson, A.M.I.E. Aust., Divisional Engineer.)

The Districts controlled and administered within the Division include the Tragowel Plains, Dingee, Calivil, and Boort Irrigation and Water Supply Districts supplied from the Goulburn System, with supplementary supplies from the Loddon River regulated by the Laanecoorie and Loddon Diversion Weirs, the Cohuna, Leitchville, Kerang, Koondrook, Third Lake, Swan Hill, Mystic Park, and Fish Point Irrigation and Water Supply Districts supplied by gravitation from the River Murray at Torrumbarry some 20 miles—by road—downstream from Echuca, the Nyah Irrigation and Water Supply District supplied by pump from the River Murray at Nyah, the Tresco Irrigation and Water Supply District supplied by pumping from Lake Boga, the Kerang North-West Lakes Waterworks District, the Loddon United Waterworks Trust District, and the Urban Divisions of Dingee, Cohuna, Leitchville and Murrabit, the Urban Districts of Pyramid Hill, Mitiamo, Koondrook, Nyah, Nyah West and Lake Boga, and also the Cohuna and Kerang East Drainage Districts.

The principal operations carried out during the year are set out hereunder.—

Pyramid Hill Centre.

Included in this area are the **Tragowel Plains, Dingee** and **Calivil Irrigation** and **Water Supply Districts,** the **Loddon United Waterworks Trust District,** the **Pyramid Hill** and **Mitiamo Urban Districts,** the **Dingee Urban Division,** and the **Macorna** Town Supply.

The rainfall in the period under review was 12½ inches. Of this amount 2 inches fell in the first month—but during the next six months 1 inch only was recorded. The dry period indicated was disastrous to unirrigated crops and pastures. The lands served by irrigation, however, had generally a successful season, despite the incidence of minor water restrictions. The breaking of the drought early in February followed by frequent showers and warm weather promoted a good growth which ensured in most cases a plentiful supply of fodder for the winter.

The amount of irrigation water delivered was 43,143 acre feet compared with 58,833 acre feet last year. The lower deliveries were due chiefly to a shortage of water but, owing to a 2 inch rainfall in February, the demand eased earlier. The percentage of water rights delivered ranged between 87 per cent and 97 per cent.. the higher percentages being reached where grass watering was made.

The irrigated cereal area increased by 4,000 acres, but lucerne irrigation continued to decline. An increase was reported also in the irrigated acreage under tomatoes and tobacco seedlings. Water rights have been allotted to lands in the Calivil District on the 1 in 5 basis approved when the District was constituted.

Steady progress has been made with the replacement of old timber structures. This work was carried out with Unemployment Relief Funds made available by the Government. During the year 56 checks and 94 outlets were replaced or reconditioned, 18 road bridges and 1 subway constructed, and 12 old timber beam bridges extensively repaired.

Considerable improvements have been made to the Pyramid Hill and Mitiamo Urban reticulation systems, some 6,000 feet of old pipe being replaced.

Boort Centre.

In the **Boort Irrigation and Water Supply District** the season under review was the first in which irrigation supplies available to the District were on a water right basis. This resulted in a more uniform supply being received, which in turn permitted of the establishment of a quota system of delivery within defined periods to irrigators. The quantity supplied under water right and sales totalled 11,500 acre feet, as against 15,371 acre feet in the preceding season. Crops irrigated during the season showed a decrease of 25 per cent.

Construction works carried out included the replacement of 3 road bridges and 10 occupation crossings, and a check in the Main Western Channel.

Cohuna Centre.

From this Centre the **Cohuna** and **Leitchville Irrigation and Water Supply Districts,** the **Urban Divisions** of **Cohuna** and **Leitchville,** and the **Cohuna Drainage District** are administered.

Due to the absence of normal rains during the winter of 1938, a heavy demand for water was experienced when the watering season commenced, and this demand continued until the February rains. The entire District is supplied through the Torrumbarry System of the River Murray, and all water supply demands were met by the System. This was made possible by the augmented flow of the River Murray from the Hume Reservoir. By February the deliveries to irrigators were from 25 per cent. to 50 per cent. above the average, but subsequent showery weather was responsible for an appreciable falling off in demand. The total deliveries for the season were 53,803 acre feet in comparison with 62,642 acre feet during the preceding season.

The Gunbower Butter Factory manufactured 1,400 tons of butter during the year, most of the butter fat suppliers being within the Irrigation District.

The reconditioning of the drainage system was further advanced with Unemployment Relief Funds, and during the year 20 miles of drainage channels were completed and 10 miles partly completed by mechanical excavators. This work has been in progress for 3 years, and some 47 miles of drainage channels have been deepened, providing adequate drainage facilities to 30,000 acres.

In the **Cohuna Urban Division** 20 new residences have been erected, and the water reticulation system extended 6½ chains.

Kerang Centre.

The **Irrigation and Water Supply Districts** of **Kerang, Koondrook** and **Third Lake,** the **Urban District** of **Koondrook,** the **Urban Division** of **Murrabit,** and the **Kerang East Drainage District** are controlled from this centre.

The dry conditions which prevailed during the previous year continued for the greater portion of the season until the end of February, 1939, when the breaking of the drought caused practically a cessation of the demand for water. Water rights were allocated to lands in the Kerang District, and a total quantity of 67,000 acre feet under water rights and sales was delivered to users for the year in the irrigation districts administered from the Kerang Centre. Most of the water was used in the September–February period.

The **Koondrook Irrigation District** has been further extended to include 1,066 acres of the Parish of Benjeroop, which is served by 2 miles of recently constructed channel to be brought into operation for the first time during the coming season.

In the period under review there has been an increase in the irrigated acreage of annual crops, such as sorghum and millet. An interesting sideline is the growth of broom millet principally in the Koondrook District to which 500 acres are devoted. The broom was of excellent quality and prices up to £52 per ton were obtained.

One of the recommendations of the Committee, which was appointed to investigate the seepage and salt problems of the Kerang District, has been given effect to by the appointment of Mr. A. Morgan, B.Agr.Sc., an Officer of the Department of Agriculture, to carry out experimental work in the District, and generally to advise landholders on various agricultural matters. His services are being freely availed of, and this marks a definite advance in the progress of improved irrigation methods, which previously were below the

average of attainable standards. It is considered that with the advent of better irrigation methods, a greater use of fertilisers, and a growing belief that the successful working of irrigated lands is largely in the landholders' own hands. the District will progressively improve. This tone of optimism is reflected by the erection of Municipal Sale Yards by the Kerang Shire Council.

Unemployment Relief Funds made available from time to time enabled an extensive programme of maintenance and replacement works to be carried out, including the construction of 8 concrete culverts, 3 concrete subways. 6 checks and regulators and general structural repairs.

Swan Hill Centre.

The Swan Hill Centre administers the **Irrigation and Water Supply Districts** of **Swan Hill** and **Nyah** and the **Urban Districts** of **Nyah West, Nyah** and **Lake Boga,** and controls the Tresco Sub-centre which includes the **Irrigation and Water Supply Districts** of **Tresco, Fish Point** and **Mystic Park,** and the **Kerang North-West Lakes Waterworks District.**

All irrigation requirements were met during the season. Early indications were that all previous records would be eclipsed, but the fall of over 4 inches of rain in February limited subsequent demands. There were, however. 31.310 acre feet of water used, and an additional 4,850 acre feet were supplied for requirements on Pental Island. No restrictive measures or rationing were necessary during peak periods, owing chiefly to the higher efficiency of the Main Supply Channels after remodelling by dragline excavator. In this connexion, approximately 4 miles of laterals were also improved. With Unemployment Relief Funds, 7 outlets, 6 regulators. 2 road bridges, and 1 escape were constructed, and 1 mile of concrete channel was re-lined. A comprehensive maintenance programme involving 20 access structures was also carried out.

During the year the **Woorinen Drainage District** was constituted. To date $5\frac{1}{2}$ miles of pipe drain variously ranging from 6 inches diameter to 33 inches diameter have been laid, and $7\frac{1}{4}$ miles of open earth drain constructed by means of a backditcher excavator. The works are approaching completion.

Viticulturists experienced an adverse growing season, and due to the incidence of rains in February a varying proportion of fruit was destroyed on the drying racks. In consequence, the crop handled by the Woorinen Fruitgrowers' Co-operative Society declined to 2,427 tons compared with 3,606 tons in the preceding season. Butter manufacture at 527 tons also declined by 52 tons, and this decrease also is attributed to adverse weather conditions. Some 2,000 tons of lucerne, however, were sent from the District. and prices up to £9 5s. per ton were obtained in the Melbourne market.

The dried fruit crop handled by the Packing Sheds at Nyah showed a decrease from 4,134 tons to 3,575 tons which was primarily due to the factors affecting the Woorinen area.

A commencement has been made with drainage works contemplated in the **Nyah Irrigation District.** As a first requirement 60 chains of 24 inch diameter reinforced concrete pipe main outfall drain have been constructed.

In the **Nyah West Urban District** 18 chains of 12 inch diameter concrete pipe line were laid from the main supply channel to the storage reservoirs, and replaced the former earth channel. This work was undertaken to safeguard the quality of the town water supply.

The **Nyah Urban District** water supply system was extended and improved by the laying of $1\frac{1}{4}$ miles of fibrolite pipe, ranging variously between 6 inches diameter and 3 inches diameter, and the installation of an elevated tank of 11,500 gallons capacity.

WIMMERA MALLEE DIVISION.

(R. F. McNab, L.S., A.M.I.E. Aust., Divisional Engineer.)

The Districts administered under this Division comprise the Red Cliffs and Merbein Irrigation and Water Supply Districts, the Red Cliffs and Merbein Drainage Districts, the Waterworks Districts (13) served from the Wimmera–Mallee Water Supply System, the Millewa, Millewa Central, Coreena, Carwarp and Yelta Waterworks Districts supplied by pumping from the River Murray, the Walpeup West Waterworks District which is supplied by bores, and 42 Urban Districts and Divisions.

Red Cliffs and Merbein Districts.

These Districts are administered from the Red Cliffs Centre. a branch office being maintained at Merbein.

Water is supplied from the River Murray by means of high lift pumping plants, the station at Red Cliffs having the largest capacity of any pumping station of its kind in Australia. From this station electric power is supplied for pumping at Merbein, some 13 miles distant. As mentioned elsewhere in this Report, progress is being made with the electrification of the Merbein Pumping Plant.

Irrigation demand was particularly heavy, the water pumped during the year for Red Cliffs District amounted to 43,139 acre feet and for Merbein District 32,466 acre feet, these volumes being 6,840 acre feet and 3,515 acre feet respectively greater than the previous year, and approximately 35 per cent. and 21 per cent. respectively greater than the averages for the past 12 years.

The 1938–39 season, which followed a comparatively dry one, was probably the hottest and driest on record. Although no serious damage from frost or hail was reported, considerable damage was caused to the ripening crops by extreme heat, and heavy rains in the late summer caused unsatisfactory drying conditions. This resulted in the dried fruits harvest being below average in quality and quantity, the total yield being some 26,700 tons, of which 15,350 tons were produced in Red Cliffs and 11,350 tons in Merbein, as against a total of 33,000 tons in the previous season.

Several thousands of cases of citrus and fresh fruits were also produced and consigned from these Districts.

Work during the year was confined chiefly to the maintenance and repair of the concrete lined channels and structures, which are essential for the efficient water distribution in this area. No extensions of any consequence were made to the channel system.

Maintenance of the recently installed subsurface drainage systems in Red Cliffs and Merbein was effectively carried out, and a number of short extensions was installed to provide drainage outfalls for blocks not previously connected, and to drain seepages from channels which were adversely affecting planted areas.

In the Red Cliffs Districts there are 125 miles of irrigation channels and 90 miles of drainage lines while in Merbein the figures are 54 miles and 60 miles respectively.

Proposals made by the First Mildura Irrigation Trust for the sub-surface drainage of its Koorlong and Irymple South areas have been approved, and the work is now being carried out by the Trust. The outfall for the latter area will be connected to the Commission's Red Cliffs Central Drainage System.

Further development in Red Cliffs and Merbein Urban Centres, by the erection of many new residences and business premises, necessitated the laying of 751 feet of new mains. The length of reticulation mains for the service of these towns now total 667 chains and 588 chains respectively, and full supplies were maintained in these systems throughout the year.

To improve the quality of the water a chlorinator was installed in the Red Cliffs Urban pumping plant, and arrangements are being made for a similar installation at Merbein.

Wimmera–Mallee Water Supply.

The Wimmera–Mallee domestic and stock water supply system is the most extensive of its kind in any part of the world. The water is supplied by gravitation from the Headworks Reservoirs, with a combined storage of 201,870 acre feet, on the Wimmera and Glenelg Rivers, with supplementary supplies, when available, from the Loddon and Goulburn Systems conveyed through the Waranga Western Extension Channel. The distribution system of this scheme comprises 6,468 miles of the Commission's channels as well as more than 3,000 miles of farmers' connecting channels, the area supplied being approximately 11,000 square miles.

The whole of the water supplies in the Wimmera–Mallee System is delivered in the winter and spring of each year, 94 per cent. of the area being supplied by gravitation from the headworks reservoirs. The remaining 6 per cent. comprises comparatively high country in 8 separate portions, situated in various sections of the system, with areas of from 30 to 300 square miles. These areas are supplied by means of 8 separate pumping plants which lift the water from the gravitation channels to channels on a higher level.

The **Waterworks Districts** served from this system are **Western Wimmera, Upper Western Wimmera, Wimmera United, Upper Wimmera United, Karkarooc, Hindmarsh, Birchip, Wycheproof, Long Lake, Sea Lake, Tyrrell, Tyrrell West, Tyntynder,** and, in addition to the five towns controlled by the **Charlton, Donald, Horsham, Murtoa,** and **Warracknabeal Waterworks Trusts,** the following 37 Urban Districts with pipe supply systems operated by the Commission are connected to this scheme, viz :—

Antwerp	**Dimboola**	**Marnoo**	**Quambatook**	**Waitchie**
Berriwillock	**Dooen**	**Minyip**	**Rainbow**	**Walpeup**
Beulah	**Hopetoun**	**Nandaly**	**Rupanyup**	**Watchem**
Birchip	**Jeparit**	**Natimuk**	**Sea Lake**	**Woomelang**
Brim	**Jung Jung**	**Nullawil**	**Speed**	**Woorinen**
Chillingollah	**Lalbert**	**Ouyen**	**Tempy**	**Wycheproof**
Chinkapook	**Lascelles**	**Patchewollock**	**Ultima**	**Yaapeet**
Culgoa	**Manangatang**			

The season under review was marked by one of the most severe droughts in the history of the settlement. This followed a season which was drier than the average and consequently sand drift, which must be removed from the channel system for each season's watering, reached colossal proportions, and the work thus required further emphasises the necessity for some form of control in the interests of the public utilities as well as those of the landholders themselves.

The cost of cleaning sand from the system amounted to £78,343 for the year, and it is estimated that the cost for the 1939–40 watering will reach £110,000.

The question of maintaining water supplies to certain lands which are badly affected with sand drift is one which merits serious consideration. The channels which supply these areas are extremely costly to maintain, the annual expenditure along certain channels being several times greater than the amount of the annual rates payable, quite apart from any contribution which might be expected from such revenue towards interest and redemption of the capital cost of the system. As an instance, the position in regard to the supply from the Boorong Channel to some 47 square miles in the Sea Lake and Tyrrell Districts may be cited. The average annual cost of maintaining and keeping this channel clear of drift sand is £900 (estimated at £1,700 for 1939) as against £423 payable for water rates.

It is considered that these areas should be the subject of special inquiries with a view to determining whether the continuance of the supply of water by channels is warranted.

During the winter and spring of 1938 there was practically no run-off from the Wimmera and Grampians catchments, and from the 1st June, 1937, to 30th June, 1939, only 14,000 acre feet have been stored in the headworks reservoirs, which have a combined capacity of 201,870 acre feet, whereas the annual requirements are from 80,000 to 90,000 acre feet. Had it not been for the supplementary supplies available from the Loddon and Waranga Systems, the Wimmera Mallee System would have been unable to meet the extraordinary demands made upon it. Full supplies to all dry areas were given and, with the exception of the rationing of water to the irrigated areas at Horsham and Murtoa, all requirements were met, although the watering season finished with the reservoirs depleted of all gravitation water and pumping had to be resorted to at Taylors Lake and Pine Lake to meet some irrigation requirements.

In an attempt to alleviate the position, should the forthcoming seasons be dry or winter rains be late in falling, it was also necessary to restrict supplies to all Urban Districts served by the system. Fortunately the present season opened with good autumn rains and it was possible to commence operations for the 1939–40 supply with a delay of only three or four weeks from the usual time. The autumn rains have been followed with further falls and the position at the moment, although far from satisfactory, is that sufficient water is in store for the current season with a possible carry-over of some 15,000 to 20,000 acre feet. This quantity will be required for irrigation and for the commencement of next season's domestic and stock supply.

The necessity for augmenting the headworks storages of the scheme is, therefore, more apparent than ever before, and should the provision of additional storage be unduly delayed, rural and urban development will inevitably be retarded. Even in the oldest Districts, which have been supplied for up to 50 years, demands are still increasing and consumption per head of population is becoming higher.

A proposal to utilize the catchment of the Glenelg River above Balmoral, involving the construction of a large reservoir at a site known as Rifle Butts, is at present being investigated by the Public Works Committee.

The work of enlarging the Taylors Lake Outlet Channel, 74 miles in length, which was referred to in last Report, was recommended by the Public Works Committee during the year. Funds amounting to £49,000 were provided by the Government and the work was put in hand without delay. Good progress was made and the greater portion of the work has been completed and in use since the commencement of the present season's watering. As a result, a marked improvement has been noted in the conveyance of main channel supplies to the northern Districts of the system.

Heavy autumn rains caused a record flood in the Avoca River and, to a lesser extent, in the Avon and Wimmera Rivers. As a result, the Waranga Western Extension Channel was breached in numerous places and extensive repairs, costing £3,400 in all, were necessary to the Charlton Main Channel and the Main Taylors Lake Inlet Channel.

Western Wimmera, Upper Western Wimmera, Wimmera United, Upper Wimmera United, Karkarooc, and Hindmarsh Districts.

Systematic remodelling and reconditioning of reticulation mains were undertaken in the Urban Districts of Beulah, Hopetoun, Jung, Marnoo, Minyip, Natimuk, Rainbow, Rupanyup, Watchem and Yaapeet, and in Jeparit 13 chains of new mains were laid for new services. Extensions to urban storages were completed for Beulah, Dimboola, Dooen and Jeparit Systems, while at Rainbow the construction of an additional storage of some 126,000 cubic yards capacity is in progress.

In the Western Wimmera District, the works for the supply of about 30 square miles of high country to the west of Pimpinio were completed, and water was supplied in the early summer to all tanks connected to the channel system, and the urban storages at Dimboola were connected and filled. These high lands at Pimpinio had been entirely dependent on local catchment since the inception of the Wimmera Schemes and, although many proposals had been made for their water supply, the present scheme was made possible only by assistance granted by the Government with Unemployment Relief Funds. The works involved the construction of a 24-inch diameter concrete pipe syphon, 2 miles long, across the Wimmera River, the provision of a fuel oil pumping plant at Vectis East and the excavation of 26 miles of earthen channels.

Other operations throughout the Districts were confined to maintenance and repairs of existing works.

In the Horsham and Murtoa irrigation areas, supplies of water were restricted to approximately 66 per cent. of the previous year's consumption and, other than those approved early in the year, no new extensions were permitted. The total area irrigated for the season amounted to 2,545 acres, comprising 1,187 acres of orchards, vineyards, and market gardens, and 1,358 acres of permanent pastures and fodder crops. Since the year 1932–33, when extensions for pasture irrigation were permitted, these areas at Horsham and Murtoa have increased by 11 acres and 1,178 acres respectively.

Birchip, Wycheproof, Long Lake, Sea Lake, Tyrrell, Tyrrell West, and Tyntynder Districts.

In the Urban Districts of Chinkapook, Ouyen, Speed, Tempy, Ultima, Woomelang, and Wycheproof, situated in the above-mentioned areas, systematic remodelling and reconditioning of reticulation pipes were undertaken, and at Ultima and Sea Lake 34 chains of new mains were laid to meet increasing requirements.

At Ouyen the enlargement of the No. 2 storage was completed, thus increasing the capacity of the local storages from 229 acre feet to 322 acre feet. This enlarged storage was filled with water during the general watering, and provided a valuable reserve supply in an area where the effects of the drought were most marked.

The asbestos cement flumes on the Burra channel in Tyntynder District, the first of their kind, which were installed in 1936–37 continue to function satisfactorily. This type of fluming, on account of its better efficiency, is being adopted for all replacements where conditions are suitable.

(Waterworks Districts Not Part of the Wimmera Mallee System.)

Normanville District.

This district, comprising an area of 190 square miles of wheat and stock raising country lying between Quambatook, Kerang, and Boort, was constituted during the year after representations extending over many years by the landowners.

The 109 miles of channels forming the system were run for the first time during the spring, and all tanks connected were filled. This supply provided relief during the drought to a large number of landholders who had been carting water for domestic and stock requirements for periods up to 18 months. The main channel commanding the District receives its supply from the Loddon River, supplemented from the Goulburn System through the Waranga Western Extension Channel, the offtake being midway between the Loddon and Avoca Rivers.

It is proposed to administer this new district from the Boort Centre.

Carwarp, Carwarp Central, Coreena, and Yelta Districts.

Supplies of water for domestic and stock purposes were distributed to all settlers in these Districts connected to the channel systems and, in addition, a number of grazing holdings leased from the Crown received stock supplies on a sales basis.

The supply for the **Coreena District** is pumped from the River Murray below Euston and, on account of the low level of the River, it was particularly difficult to provide water during the year. A temporary lift on the river bank was unable to keep the main plant fully supplied, and necessitated frequent stoppages. Consequently the watering period occupied more than double the normal period of approximately 55 days.

A new storage for **Carwarp Urban District** was constructed and filled with water to supplement the town supply.

The Carwarp Districts are administered from Werrimull, Coreena from Ouyen, and Yelta from Red Cliffs Centres.

Millewa and Millewa Central Districts.

These Districts are supplied by a series of pumps, with a total of 2,000 horsepower, from the River Murray at Lock 9. The highest level to which water is pumped is 280 feet above the river.

Full supplies were run to all settlers connected to the system, and a number of grazing holdings leased from the Crown were supplied with water on a sales basis.

No works of importance other than maintenance of the system were undertaken during the year.

In the **Werrimull** and **Meringur Urban Districts** full supplies of water were maintained throughout the period under review, and in Werrimull systematic remodelling and reconditioning of the reticulation mains were undertaken.

Walpeup West District.

This District is supplied with water from 109 public bores and by bores installed by landholders on their own holdings. The rating of allotments with bores is in a lower division than those depending on public bores which are maintained by the Commission in a reasonably efficient condition to meet all ordinary requirements. During the drought, however, extreme demands were greater than the capacity of a number of these bores, necessitating longer carting for some settlers.

Owing to the collapse of the No. 1 Mamengoroock Bore, which could not be reconditioned, it was found necessary to sink a new bore alongside with connexion to the existing equipment. This bore is situated in an area where private bores are not plentiful and public bores are fewer than in other parts of the district.

This District is attached to Ouyen Centre for administrative purposes.

TOWN SUPPLIES.

MAIN URBAN SUPPLIES DIVISION.

(W. F. Nevill, B.C.E., Divisional Engineer.)

The **Urban Supply Systems** serving the **Coliban, Mornington Peninsula, Wonthaggi, Bellarine Peninsula,** and **Otway Districts** are controlled under this Division. These systems, and the principal operations carried out during the year, are described in the following pages.

Coliban System.

The Coliban System, comprising two main storage reservoirs on the Coliban River, the Upper Coliban with a capacity of 25,700 acre feet and the Malmsbury with a capacity of 12,300 acre feet, together with 29 subsidiary reservoirs with a total capacity of 6,600 acre feet, and main and distributary channels of a total length of 389 miles and about 300 miles of urban pipe reticulation, provides a supply of water for the City of Bendigo, the important towns of Castlemaine, Eaglehawk, and Maldon, and 18 other townships. In addition, water is normally provided from the Coliban System for irrigating some 9,300 acres of orchards, market gardens, permanent pastures, and other crops, and for the mining industry throughout the district.

The failure of rainfall in 1937 and 1938 on the catchment was responsible for the most serious shortage of water experienced in the history of the Coliban System. In 1937, the rainfall was 65 per cent of the average, and in 1938 was only 61 per cent. The run-off in these two years respectively was as low as approximately 12 per cent and 8 per cent of the average. The main storages, in consequence, were depleted to such an extent that early in October, 1938, the quantity stored was not more than 3,600 acre feet—slightly less than one-tenth of the total full capacity of 38,000 acre feet. Only by imposing drastic restrictions on the use of the water available was it possible to maintain supplies for domestic, manufacturing, and mining purposes throughout the principal towns and areas served by the system.

To meet the contingency of a complete failure occurring in the System, provision was made for an emergency supply by installing 3 pumping stations and 24 miles of pipe line capable of conveying 2,000,000 gallons per day from the Waranga Western Channel to the Specimen Hill Reservoir at Bendigo. Fortunately, conditions on the catchment were so improved by particularly good autumn rains that it was not necessary to bring the scheme into operation.

Facilities for obtaining water for domestic and stock purposes were provided in a number of instances by installing stand pipes at convenient places. These were of real service to a large number of persons who, otherwise, would have suffered considerable loss.

The supply for the townships of Raywood, Sebastian, and Marong again completely failed, and to provide a service to the residents for a period of nine months, the Commission had water transported by rail from Kyneton, the maximum requirements being 28,000 gallons per week.

Drought conditions continued until April, 1939, when good rains began to fall but, although the position had become less acute, the storages did not improve substantially until June, when the restriction on the supply for all purposes except sluicing was lifted.

The problem of maintaining the works in a reasonably satisfactory condition has been a difficult one owing to lack of funds. With what funds were available, however, a number of important timber structures, which had fallen into a state of disrepair and in some instances had almost disappeared, has been replaced by modern designs in reinforced concrete. These structures include flumes, syphons, bridges, culverts, and overshoots on both main and branch channels.

In the year 1935–36, the Government approved of the provision of £200,000 from Unemployment Relief Funds, of which £50,000 was for channel lining and £150,000 for reticulation improvements at Bendigo and Castlemaine.

These works were continued during the year, the balance of money provided for channel lining being expended. An additional length of 71 chains of channel was reconditioned in either concrete ground fluming or cement lining. The total length now completed is 44 miles 7½ chains—17 miles 47½ chains of main channel and 26 miles 40 chains of branch channels. This work was carried out to reduce the heavy losses of water through seepage from the channels which traverse country generally of a porous nature. The results achieved have been entirely satisfactory, the increased efficiency of the carrying capacity of the main channel being particularly valuable during the period of drought.

During the year, work in connexion with the Bendigo and Castlemaine reticulation improvements was continued, 19¾ miles of pipes varying in diameter from 3 inches to 9 inches being laid at Bendigo, and 14 miles of pipes of similar sizes at Castlemaine, making the total lengths laid in these two centres 53 miles 17 chains and 20 miles 66¼ chains, respectively. The 27-inch diameter concrete lined steel supply pipe for Bendigo has been purchased but, as these pipes were used in the emergency pipe line from the Waranga Channel, the work of laying this line from the No. 7 Reservoir had to be deferred until the pipes could be released from that scheme.

Additional extensions to the pipe reticulation systems of Bendigo and Castlemaine, totalling in length 65½ chains, to provide supplies for new residential houses and factories, were approved and carried out during the year.

At 17½ miles on the Main Channel, the regulators and measuring weirs controlling the Bendigo, Castlemaine, and Harcourt supplies were remodelled, and the channels upstream and downstream were lined for lengths of about 4 chains. Work of a similar nature was carried out at 16½ miles at the offtake of Fryers Channel.

Extensive renewals of culverts and flumes on the Raywood and Sebastian race were carried out and, wherever practicable, flumes were replaced by reinforced concrete pipes.

With a view to effecting a saving in water distribution and providing more reliable supplies for the smaller towns of Raywood, Sebastian, and Marong, approval was obtained and funds provided for the construction of four new storages, and the remodelling of three existing basins near Bendigo. Together they will have a total capacity of 145 acre feet. These works have been put in hand and good progress has been made with their construction. The enlargement of Upper Grassy Flat Reservoir and the cleaning of Blue Jacket, Raywood, and Green Gully Reservoirs have been completed, while the basins at Cockatoo Hill, Lockwood, and Ironstone Hill are nearing completion.

For the purpose of safeguarding the Coliban System against any further increase in irrigation demand, a Register of all lands that have been irrigated in the past five years is being prepared. Forms of " Application for Authority to Purchase Water " have been obtained and completed by those irrigators concerned.

Newstead District.

The Jim Crow Creek from which the local basins at Newstead are filled ceased to flow early in the summer and the reservoirs as a consequence were depleted to a stage at which it became necessary to impose minor restrictions on the use of water for garden purposes for a period of about two months.

In Adair-street, the 3-inch diameter main was extended for a distance of 9 chains.

Mornington Peninsula District.

The supply for this District is drawn from a catchment of 30 square miles of forest country at the head waters of the Bunyip River. Water is conveyed mainly by pipes to service reservoirs having a total capacity of 5,260 acre feet, and thence by pipe lines to the Flinders Naval Depot and to the bayside resorts of Aspendale, Edithvale, Chelsea, Carrum, Seaford, Frankston, South Frankston, Mornington, and Mount Martha, and to the inland townships of Springvale, Noble Park, Dandenong, Berwick, Beaconsfield, Pakenham, Garfield, Bunyip, Longwarry, Cranbourne, Somerville, Hastings, Bittern, and Crib Point. In addition, ample supplies of water are available for market gardening in the vicinity of Dandenong.

Early this year the Mornington Peninsula Waterworks District was extended to include the whole of the southern portion of the Peninsula, containing the bayside towns from Dromana to Portsea. The District already contains 17 urban districts, all of which are supplied with water from the headworks on the Bunyip River. On completion of the extension of the system to supply Dromana, Rosebud, Rye, Portsea, and Sorrento, the number of urban Districts will be increased to 21.

In connexion with this extension, the new main pipe line from Cranbourne to the Bittern Reservoir has now been completed and placed in commission. From Bittern Reservoir to Dromana the water will be conveyed by a 27-inch diameter pipe line, with 21-inch diameter syphons across the gullies and depressions. Contracts have been entered into for the supply of the necessary pipes, and their manufacture has been practically completed. The 21-inch diameter pipes have been temporarily transferred to Bendigo to form part of the emergency pipe line constructed to supply that City from the Waranga Western Channel, if necessity arose during the critical period of the recent drought.

The Dromana–Portsea supply has consequently been seriously delayed on this account. The construction of the Dromana Reservoir has, however, proceeded, and this storage is almost completed.

Owing to the reconstruction of the Point Nepean-road bridge over the Kananook Creek at Frankston, it was necessary to re-locate the crossing of the Commission's 12-inch diameter supply main. The main carried across the old bridge has now been replaced by a cast-iron pipe laid in the bed of the creek.

To meet the increasing consumption in South Frankston, Mornington, and Mount Martha, it has been necessary to lay a new 15-inch diameter main from the Frankston Reservoir to serve the South Frankston Service Basin in Humphries-road. Pipes for this main were obtained from portion of the old Naval Depot line now superseded by the Cranbourne–Bittern line. The new line when completed will greatly relieve the existing Mornington supply main during the coming summer.

The construction of a 12-inch diameter main to connect the Hallam–Chelsea Pipe Line directly to the Dandenong reticulation has enabled the lower levels of this town to be supplied from the Lysterfield Reservoir, in which ample water is available.

Although the recent drought did not reduce the flow in the Bunyip River below the present capacity of the main supply line to the Beaconsfield Reservoir, the heavy demand throughout the district considerably exceeded the capacity of the line and was lowering the reservoirs so rapidly that, in order to safeguard the supply, it was considered advisable to impose restrictions on the use of water for the first time in the history of the Mornington Peninsula System. These restrictions came into operation on 20th January, 1939, and were continued until 24th May, when they were lifted, the critical period of the year having passed.

In order to meet the requirements of the existing urban districts and to make adequate provision for supply to the Dromana–Portsea extension, it is proposed to duplicate the 24-inch diameter syphons on the Bunyip Main Race. It is also proposed to replace about 7 miles of 18-inch diameter main in the Cranbourne Pipe Line with 24-inch diameter pipes. This work has all been approved and the required pipes purchased. These pipes are, however, also in use as part of the Bendigo Emergency Line. On the removal of this line, the work in the Mornington Peninsula District will be proceeded with. The completion of this programme will make adequate supplies available throughout the district for some years.

Extensions to the reticulations in almost every Urban District have been carried out during the year. A domestic supply has been made available to a large area north of the railway line at Noble Park, and the Springvale Urban District extended to include a further portion of Keysborough, which has also been served.

Wonthaggi District.

The towns of Wonthaggi, North Wonthaggi, and Hicksborough were satisfactorily supplied throughout the year with water conveyed by pipe line from the storage reservoir constructed on Lance Creek.

Although the recent drought caused severe water shortage in many parts, it was not necessary to impose any restrictions on the use of water in this district.

Work in the district was confined to the general maintenance of the system and some minor pipe replacements. No new works were carried out.

Bellarine Peninsula District.

In this District, water is supplied from the Wurdee Boluc Reservoir, capacity 10,000 acre feet, which is filled by an inlet channel from tributaries of the Upper Barwon River, to the townships of Drysdale, Portarlington, Queenscliff, Point Lonsdale, Ocean Grove, Barwon Heads, Torquay, and Anglesea. Despite severe drought conditions, it was not necessary to impose any restrictions on the use of water within this district, and supplies were satisfactorily maintained throughout the year.

A supplementary supply is also provided for the City of Geelong, and during this year sales of water to the Geelong Waterworks and Sewerage Trust amounted to 616,560,000 gallons, the largest quantity yet taken by the Trust in any year.

Early in the year both the Bellarine and Waurn Ponds Basins were cleaned out and improvements were made to the outlet towers of both storages.

A grant from Unemployment Relief Funds has now enabled the syphons of the Wurdee Boluc Outlet Channel to be duplicated, thus considerably increasing the capacity of the line.

The work of reconditioning the 54-inch diameter syphons on the main inlet line to Wurdee Boluc has been proceeded with; the syphons across Wormbete, Retreat, and Brickmakers Creeks being scraped and painted internally with tar enamel.

Owing to the increasing demand for water within the district and to safeguard the supply in times of inadequate rainfall on the catchment of the East Branch of the Barwon River, a tunnel is being constructed to divert the flow of the West Barwon into the Commission's works. This tunnel will be approximately 2,000 feet in length, of which a distance of 520 feet has already been driven. A grant for this work was made from Unemployment Relief Funds.

Minor extensions to the existing reticulation were carried out in the Urban Districts.

Great appreciation of the Commission's supply was shown in the rural areas, where the revenue from water sales amounted to £745, compared with £344 in the previous year. In many cases, water was carted for several miles from the Commission's works to replenish exhausted stock supplies.

Otway District.

The works in this District are being carried out to supply water to the City of Warrnambool and the important Western District towns of Camperdown, Cobden, and Terang. Supplies will be drawn from Arkins Creek in the Otway Ranges and conveyed by main pipe lines totalling 78 miles in length to local service basins.

These works are now nearing completion. The reticulation of the towns of Camperdown, Terang, and Cobden has been completed, and the residents supplied with water.

On 28th October, 1938, the scheme was officially opened by the Honorable F. E. Old, M.L.A., Minister of Water Supply, who was accompanied by the Chief Secretary, the Honorable H. S. Bailey, M.L.A. The ceremony of turning on the supply to the town of Camperdown was performed by Mrs. J. C. Manifold, in the presence of a large and representative gathering.

In order to relieve the severe conditions of the recent drought, an emergency supply was made available to Terang and Cobden, although the reservoirs and works were not, at the time, quite completed. This enabled a much appreciated supply to be provided considerably earlier than was expected.

All the main storages and service basins have been completed and are being rapidly filled. The main pipe line has been laid as far as the Warrnambool (Tank Hill) Reservoir, and the line from this reservoir to the City of Warrnambool is approaching completion.

During the year as many as 300 men have been employed on the works, but as the scheme approaches the final stages, this number has been considerably reduced. About 100 men are at present in employment.

Several extensions to the reticulations have already been requested and these are now being carried out.

To provide for future development and the consequent increased water supply requirements, the Commission considers that it may be necessary to construct, at a later date, a storage reservoir at Arkins Creek, from which the supply is at present obtained by diversion weirs. A site has been located near Wyelangta, and a storage could be constructed when required.

CHIEF MECHANICAL ENGINEER'S BRANCH.

(L. B. Barwick, A.M.I.E. Aust., Chief Mechanical Engineer.)

The work of this Branch covers the whole of the mechanical plant used by the Commission throughout the State. The main items include Irrigation and Domestic and Stock Supply Pumping Plants, Urban Water Supply Plants, Excavating Machinery, Motor Transport and General Construction Works Plant.

The main work now in progress is the electrification of the old steam-operated pumping plant for the Merbein Irrigation District near Mildura. It was arranged that the change over be carried out in three stages, or one unit at a time, so as to take full advantage of the old plant and replace it in order of its installation date. Further provision was made in the first stage for increased capacity to provide a reasonable reserve of water to meet unforeseen dry conditions.

As Merbein was a firewood burning station, consuming some 18,000 to 19,000 tons of wood fuel per annum, the question of continuation with this class of fuel, mainly because of the limited quantity available and long distance over which it had to be transported, became one of great concern both from a timber and economic point of view.

To overcome the difficulty, it was arranged that the pumping plant at Red Cliffs be made the main power centre, and as this station uses briquettes and/or Victorian black coal as fuel, the question of further denuding the timber areas was overcome.

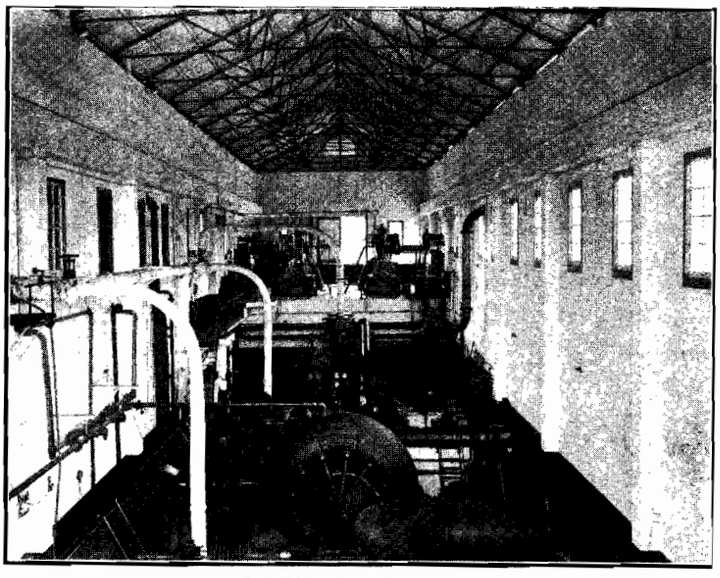
The centralization of power at Red Cliffs was commenced in 1936 when tenders were accepted for a 1,250 K.V.A. Turbo-Alternator, step-up Transformer to 22,000 volts, a Transmission Line of 13½ miles to Merbein and step-down Transformer, 2,200 volts, and a 50 cusec Pump and 600 horse-power Motor for Merbein.

The whole of this plant was installed and placed on load in September, 1937. This completed the first stage of conversion, or one-third of the quantity output for Merbein.

The second stage was commenced early in 1938 by the installation of a further Alternator at Red Cliffs. In this case the Alternator was purchased for connecting to No. 1 Turbine, an existing stand-by pumping unit. By this means the unit will ultimately serve the dual purpose of a stand-by unit as an Alternator of 1,400 K.V.A., or a pumping unit of 100 cusecs capacity. Also, in this stage, a further circuit was added to the Transmission Line with Transformers at each end. At Merbein, a 600 horse-power motor was connected to an existing pump, which was altered to accommodate the motor. Installation of this second stage was completed in April, 1939.

The third or final stage is now in hand, and this will include the installation of a Boiler and Turbo-alternator at Red Cliffs, and a 600 horse-power Motor at Merbein, as well as spare Transformers at each end. Installation of the Boiler is now in hand, and tenders have been invited for the Motor and Transformers. It is anticipated that Merbein will be wholly changed over to electric power by September, 1941.

The water pumped at Red Cliffs plant for 1938–39 was 45,470 acre feet and at Merbein 32,990 feet, while the total generation of electric current at Red Cliffs for the same year for Sub-stations and Merbein was 3,025,595 units.



Red Cliffs Pumping Station

Total water pumped for all of the Commission's pumping services throughout the State for Irrigation, Domestic and Stock, and Urban Supplies amounted to 172,310 acre feet.

The Mechanical Plant of the Commission comprises :—

Pumping Plants.—

Irrigation Plants	8	Installed Horse-power ..	9,868
Domestic and Stock Plants ..	13	Installed Horse-power ..	2,624
Urban Plants	38	Installed Horse-power ..	585
Total Plants ..	59	Total Horse-power	13,077

Mechanical Excavators.—($\frac{3}{8}$ to $1\frac{1}{4}$ cubic yard capacity)—24.

Motor Vehicles.—(Trucks and Cars).—61.

INVESTIGATION OF NEW IRRIGATION AND WATER SUPPLY PROPOSALS.

INVESTIGATIONS AND DESIGNS BRANCH.

(R. G. Knight, M.C.E., M.Inst.C.E., M.I.E. Aust., Chief Designing Engineer.)

The continued lack of rainfall during the recent watering season and the extreme drought conditions resulting therefrom re-directed attention to the necessity of further increase in water storages, and to the need for a comprehensive scientific investigation into, and development of, the water resources of the State.

Recognition of this urgent necessity has resulted in the activities of the Investigations and Designs Branch being greatly extended by the demand for investigation of new storage sites and for the further economic development of the existing systems, as well as for the completion of designs of storages and distributary works now in hand.

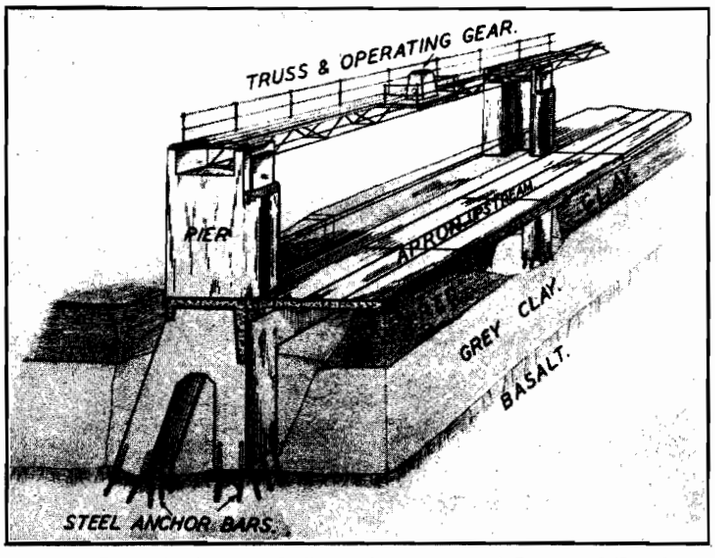
The following brief descriptions are given of the more important of these investigations.

Coliban Water Supply District.

Malmsbury Reservoir Enlargement.—This reservoir, one of the first large storages to be completed in the State, was constructed for the Coliban supply in 1870. Situated on the Coliban River about half a mile south-east of Malmsbury Railway Station, the dam is founded on red clay, overlying, at the western end, a deposit of grey ligneous clay 25 feet thick which, in turn, rests on a basalt flow. This basalt is the foundation rock for the western spillway, while the eastern structure rests on the ordovician sandstone. The raising of the crest of the embankment by some 4 feet to R.L. 1484.5, together with the installation of flood control gates, of which there are 6 on the western, and 3 on the eastern, bywashes, will increase the capacity of this reservoir by 2,100 acre feet to a total of 14,400 acre feet, the full supply level being raised from R.L. 1474 to R.L. 1477.

The designs for the bywash control works have been completed, thus permitting the concrete construction necessary for the installation of the sluice gates, which range in size from 36 feet by 5 feet to 38 feet by 7 feet.

Although a rock foundation was available at a shallow depth for the 3 gates on the eastern side, the western structure presented difficulties. On account of the thick layer of treacherous ligneous clay referred to above, the piers were carried down to the basalt as bifurcated units and anchored to the bed-rock by steel rods. The downstream leg of each pier is sloped, as shown in the accompanying sketch, to give increased stability.

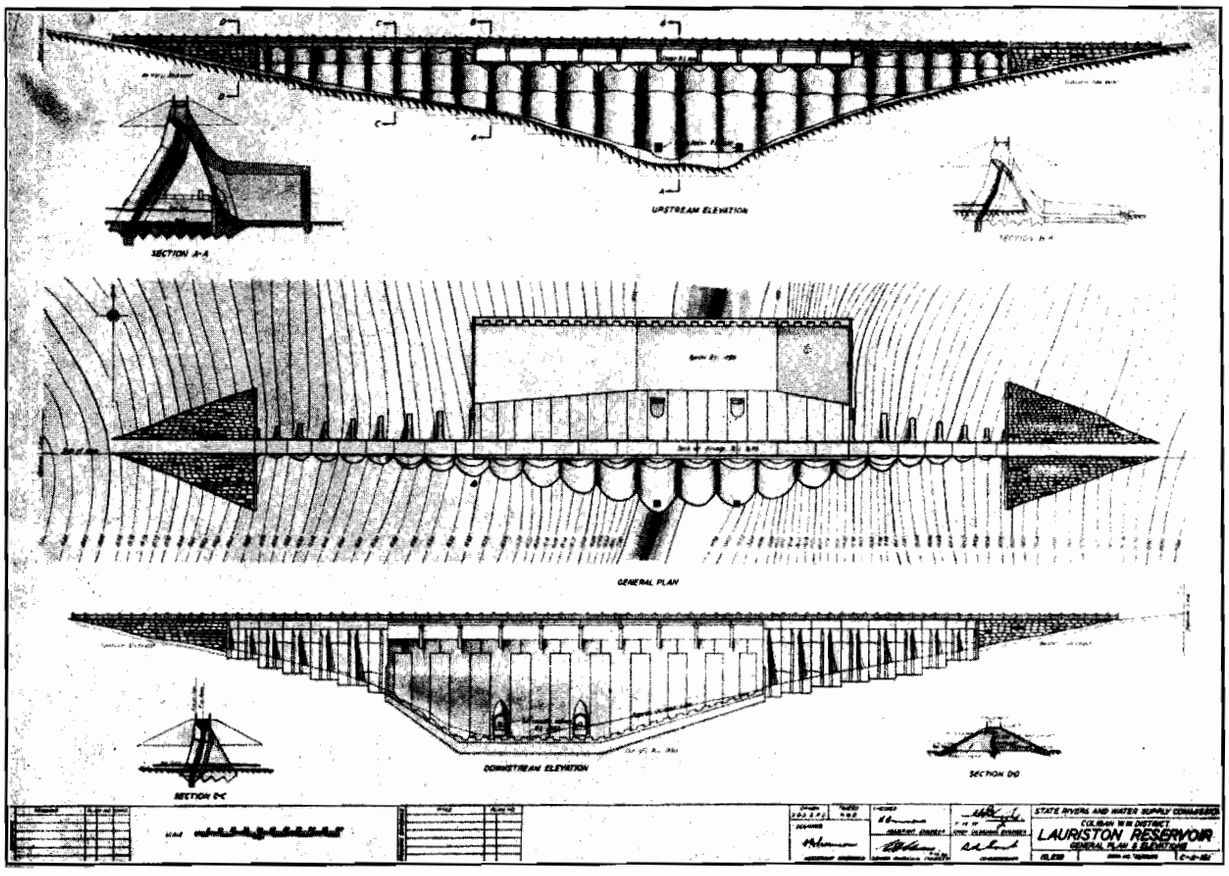


Malmsbury Reservoir—Western Spillway—Arrangement of Piers and Foundations.

The welded steel gates are to be hand-operated, with provision for electric operation in future if necessary, and individual roller wheels are provided to support the gate against the piers during operation. Designs and detailed plans of the gates and operating gear have been completed.

NEW RESERVOIR AT LAURISTON.—The Lauriston Reservoir under construction on the Coliban River immediately below the junction of the Shepherds Hut Creek with that river is about midway between the existing Malmsbury and Upper Coliban Reservoirs.

Preliminary estimates of various types of dam, including Earth, Rockfill, and Massive Buttress types, proved the latter to be most suitable for the site. The final design for this dam, which is of a type unique in this country, is now in an advanced stage.



Lauriston Reservoir—Proposed Design of Buttress Dam.

The foundations are ordovician shales and sandstones dipping almost vertically and striking north and south practically normal to the axis of the dam.

With the water level in the reservoir at R.L. 1566 feet, the storage capacity will be 16,000 acre feet, with a surface area of approximately 500 acres. The total length of the dam is 880 feet at deck level. Massive buttresses (23 in number) account for 580 feet of this length, the remainder of which will be of either a rock-fill or concrete gravity type. The spillway covers the central 300 feet and is composed of a concrete shell supported on the buttresses. The designed capacity of the spillway is 18,000 cusecs, with a flood water level 7 feet above the crest.

Plans were sufficiently advanced during the year to permit excavation for the buttress foundations, and to enable the design of the steel formwork to be commenced.

In impounding the waters of the Lauriston Reservoir, it has been found necessary to provide for the construction of an earthern embankment across a depression some 10 chains to the west of the main dam.

The design of this embankment follows the most recent practice overseas—principally in Europe and the United States of America—where, due to extensive research into the properties and behaviour of soils, the methods of design and construction of earthworks have shown a marked advance in recent years.

In the design of the Lauriston embankment, methods of construction found to be successful in the before-mentioned countries have been specified.

GOLDEN POINT RESERVOIR ENLARGEMENT—CASTLEMAINE.—The enlargement of this reservoir from 1,250,000 gallons to 9,250,000 gallons (new Full Supply Level 1,319 feet) was investigated. Shafts and bores were sunk in the vicinity of the dam and the alluvial deposits comprising the flats of Campbells Creek examined, with a view to designing an earthen dam for the storage, and utilizing this material in its construction.

Werribee and Bacchus Marsh Districts.

Investigations into the development of the water resources of these Districts received further attention. An exhaustive examination has been made of the gaugings of all streams which are capable of contributing to the water supply of the Werribee and Bacchus Marsh areas.

A comprehensive first progress report was prepared which traced the history of the water requirements of the District and indicated their relation to the resources of the Werribee Basin. This report also contained information concerning the suggested construction of additional storages of certain capacity, disposed in a manner to be decided upon after further investigation, to safeguard the Districts in their present state of development.

An extension of the surveys of storage sites was recommended and. funds having been made available for this purpose, the work is now proceeding.

Woolshed Swamp.

In order to further utilize the waters of the Loddon River, the conversion of Woolshed Swamp—a natural basin near the township of Boort—into a storage reservoir is being investigated. Such a storage could be filled by diversion from the Loddon River.

This depression is close to the existing Waranga Western Extension Channel, some 10 miles to the west of the Loddon River. Water might there be conserved at an elevation sufficient to command country at present being served by channels supplied from the Waranga Western Channel and from a diversion weir on the Kinypanial Creek. 14 miles from Boort.

Kerang North-West Lakes.

The possibility of greater economy in the use of water diverted from the River Murray at Torrumbarry Weir and distributed to the Swan Hill Irrigation District and other areas has been engaging the attention of the Commission for some time past. The diversion into New South Wales at Yarrawonga Weir and the prospect of controlled supplies in the future necessitates the reduction of water losses in these Districts to a minimum. Water for these areas at present passes through the Kerang Lakes—an extensive chain of large, shallow depressions. The evaporation and seepage losses from these lakes make this route extremely inefficient. Preliminary consideration has been given to a scheme to by-pass the water round the lakes. The investigation was carried to a stage where it was possible for arrangements to be made to obtain survey and other information necessary for a final determination of the most economical route which will retain command of the present irrigation areas and. if possible, eliminate pumping in certain parts of the District.

This investigation is. at present, held up owing to loss of staff.

Glenelg River Development—Rifle Butts Scheme.

The water requirements of the Wimmera and Mallee Districts steadily increase each season, and investigations have been carried out with a view to providing further supplies from the Glenelg River.

Preliminary surveys revealed the possibility of augmenting supplies by diversion from this river at Balmoral and of assuring such supplies by the construction of a storage reservoir in that locality.

Investigations have been completed and a progress report prepared on the first stage of the proposed works. This would involve the construction of a weir on the Glenelg River to divert water to a proposed storage reservoir of some 68,000 acre feet capacity at Bartons Swamp. A channel would convey water from this storage to Taylors Lake Storage in the Wimmera System by way of the Burnt Creek channel. which would need to be enlarged to 200 cusecs capacity.

This report was presented to the Public Works Committee, which requested the preparation of a further report dealing with the construction of the main storage reservoir on the Glenelg River itself near Balmoral, at a location known as the Rifle Butts site.

As the diversion was, in many respects, similar to those encountered on the Tasmanian hydro-electric schemes, the Honorable the Minister of Water Supply approved of a visit of inspection to that State for the purpose of obtaining information which has proved of the greatest value in the investigation of the Rifle Butts Scheme. Thanks are due to the Chairman of the Hydro-Electric Commission of Tasmania for having facilitated this inspection by the Commission's Engineers.

Core drilling at the Rifle Butts Dam site has disclosed good foundations of sound, micaceous schist at a moderate depth. An analysis of the economic capacity of the reservoir and preliminary steps in the design of the dam were instituted.

Further detailed engineering surveys and investigations are being carried out at the locations of structures and at junctions of the diversion channel with the existing system, so that detailed estimates of the whole scheme might be completed for presentation to the Public Works Committee.

Otway Waterworks District.

The Otway scheme is designed principally for urban water supply. Three collecting weirs on Arkins Creek in the Otway Ranges divert water from that creek into a 78 mile pipe line extending, via Camperdown and Terang, to Warrnambool.

This main includes 30 miles of 17 inch, 10 miles of 15 inch, and 15 miles of 12 inch diameter welded steel pipe and supplies the towns of Camperdown, Cobden, and Terang and the City of Warrnambool. This main also links the principal storages at—

Camperdown (30,000,000 gallons at full supply level 803 feet),
Cobden (5,860,000 gallons at full supply level 594 feet),
Mount Ewen (105,450,000 gallons at full supply level 641 feet), and
Tank Hill (150,600,000 gallons at full supply level 330 feet)—

as well as the service basins (1,500,000 gallons), and supplies a population of 16,500 people.

The City of Warrnambool is to be supplied from the Tank Hill Storage by means of a 15-inch diameter pipe, 13 miles in length, plans for which were completed.

Designs were completed for the Mount Ewen Storage Reservoir, comprising two embankments enclosing a natural depression on the eastern side of the hill known by that name, and outlet works, for the Terang service basin—a circular reinforced concrete tank of 750,000 gallons capacity, and for the Cobden Reservoir formed by the construction of an earthen embankment.

The design of the main storages of this scheme, in the volcanic country of the Western District, presented some unusual foundation conditions which required special treatment. They have proved particularly successful after some months of service.

Murray Valley Irrigation District.

In furtherance of the design of the channel system of the Murray Valley District, plans and longitudinal sections of the Cobram Main Channel and of the laterals in the district were completed.

The channel structures, including the regulators at the bifurcation of the No. 1 (Cobram) and No. 2 (Strathmerton) Main Channels, and the 500 cusecs escape, as well as a standardized system of separate and combined checks and drops, occupation crossings, &c., were designed and plans prepared to enable the construction to be well advanced for the forthcoming watering season.

Two drainage syphons under the Main Channel were designed to cope with the Yarrawonga town drainage, and at Cobram a 4-feet diameter syphon was provided to conduct the water of the main channel past the township.

The Cobram Irrigation Company's channel system, which was taken over by the Commission, was previously supplied by pumping, and the substitution of a gravitation supply to all parts of that area from the Murray Valley System has received special attention. This area, comprising 1,340 acres of orchards, includes some of the most productive land in the northern portion of the State.

With regard to the extension of the system, ownership determination of all allotments in the Strathmerton and Katamatite areas has been completed, and the surveys of No. 1 Area (Cobram, 26,000 acres) and No. 3 Area (Katamatite, 37,450 acres) were finished. The survey of No. 4, or Naringaningalook area of 15,850 acres, is now well in hand.

The preparation of designs provides for a scheme of progressive development in sections as far as the Strathmerton railway line and ultimately further afield to the western boundary of the system.

The Katamatite system will require approximately 60 miles of channel to serve its 32,850 acres of commandable land, while the Naringaningalook channels will command about 12,200 acres.

A soil survey conducted by the Department of Agriculture is progressing, about 45 per cent. of the area being completed. Information of a very full and precise nature has been obtained, and comprehensive soil survey charts prepared, which have already proved of great value in the investigation of the district.

Plans of the No. 2 Main Channel were prepared for a length of 1 mile 60 chains to the offtake of No. 3 Main Channel for the Katamatite area. Designs for a channel system with appurtenant structures for this latter area are proceeding slowly owing to shortage of staff.

Mornington Peninsula District.

The extension of the Mornington Peninsula Scheme is designed to supply water to the bayside towns from Dromana to Portsea. The main storage reservoir for the extension is the Bittern Reservoir, of 480 acre feet capacity, which is to be filled by means of a pipe line from the Cranbourne main, about 16 miles from the Beaconsfield Reservoir.

Two alternative lines were surveyed between this storage and the Dromana Basin, an earthen embankment on the "Racecourse Site" some 3 miles from Dromana, impounding 18,000,000 gallons at Full Supply Level, 227 feet.

The first alternative called for a box flume and syphons, while the second and adopted line was 2,000 feet shorter and provides for a pipe line throughout. The total length of this line is 44,000 feet, including 22,950 feet of 27-inch diameter reinforced concrete pipe, of which 2,000 feet will be laid in two tunnels. One of the tunnel sections is 1,430 feet long, with a maximum depth of 24 feet, while the other is 570 feet long with a maximum depth of 15 feet. The high-pressure sections, operating under a maximum head of 150 feet, consist of 21,050 feet of 21-inch diameter reinforced concrete pipe. Designs for this line were completed, enabling contracts to be let for the necessary pipes, valves, and fittings. The 21-inch diameter pipes were consigned to the Coliban District for use on the Tandarra–Specimen Hill emergency line for the Bendigo supply.

When the scheme was originally designed in 1933, allowance was made for an increase of 33 per cent. on the population of 1928—the latest figures then available. Since that time, the population of the towns between Dromana and Portsea has increased considerably. A revised design was, therefore, prepared, providing for an increase of 33 per cent over the present population. When future development overtakes this supply, provision has been made for the service to be supplemented during the summer months by pumping from a proposed low-level basin at Sorrento into the service basins there and at Portsea, which are incorporated in the present design.

Plans are now being prepared for the main pipe line from Dromana Storage to Dromana and thence along Point Nepean-road to Portsea, connecting with the Rosebud service basin *en route*.

Preliminary surveys for the service basins and reticulation at Sorrento and Portsea have been completed.

Yarrawonga Weir.

This weir was constructed to divert water from the River Murray to the irrigation districts on either side of the River Murray, viz., the Berriquin Scheme in New South Wales, and the Murray Valley Irrigation Scheme in Victoria. For flood control purposes, the main spillway of the weir is equipped with eight electrically-operated flood gates, 40 feet long and 20 feet high, designs for which were completed during the year. The North Gate structure, at the New South Wales end of the 1,120-feet embankment, is provided with two similar gates.

These gates are counterweighted, and are composed of steel plate supported on horizontal trusses, the whole running on roller trains at the pier supports—a type of gate which has been universally adopted for gates of this size, both in America and on the Continent. They are the largest of their kind that the Commission has so far constructed, and have quite satisfactorily undergone their preliminary tests.

The complete installation will shortly be subjected to a further extensive series of tests for the purpose of verifying the principles employed in their design and at the same time providing valuable information for future designs. The necessary testing apparatus has been completely designed and orders placed for its manufacture.

Designs for the offtake regulator of the Yarrawonga and Murray Valley Main Channel, including aprons for scour protection, have been completed. Alternative plans for access ladders to the operating platform for the gates have also been prepared.

Miscellaneous.

In addition to the foregoing schemes and proposals, other investigations were completed and plans or reports prepared. These included the following.—

Orbost Drainage—Bete Bolong Outfall.—Alternative designs for the reconstruction of the tunnel under the flood bank protecting the river flats of the Snowy River and methods of construction for the selected design reported upon.

Waranga-Deakin Channel.—A design for the remodelling of the drop at the offtake to the Waranga-Deakin Channel.

Swan Hill District.—Plans for the enlargement of existing bridges were prepared.

Hume Reservoir.

Investigations into the nature and behaviour of the earthen materials of which the Hume Dam was constructed have been carried out, in collaboration with the Commission's Superintendent of Testing, on the lines of the latest methods of investigation.

General Water Resources.

A report was prepared dealing with a proposed investigation into the general water resources of the State, giving details of the staff, equipment, and accommodation necessary for the execution of such an investigation. A scheme was outlined providing for the development, over a period of years, of this organization as a sub-branch of the Investigations and Designs Branch.

Staff and Accommodation.

The work of this Branch has been interrupted and seriously delayed by the resignation of members of the staff and the appointment, after unavoidable delay, of new Engineers, who have been able to continue the work only after the loss of valuable time in familiarizing themselves with the new conditions. In some instances designing engineers have been endeavouring to carry out work on a number of separate urgent undertakings at one time.

Accommodation and office equipment for the staff is inadequate. This deficiency is a serious handicap to efficient working which, under such conditions, is attained only with the greatest difficulty. Increased floor space and improved lighting and ventilation are essential in order to obtain the best results from the available staff.

MURRAY AND MAJOR WORKS DIVISION.

(E. D. Shaw, M.C.E., M.Inst.C.E., M.I.E. Aust., Senior Divisional Engineer.)

The work of this Division comprises the construction and maintenance of main storage reservoirs and diversion weirs controlled by the State Rivers and Water Supply Commission, including those authorized under the River Murray Waters Agreement. A description of these works was included in the Commission's Thirty-third Annual Report.

The main construction works in progress during the year included the Yarrawonga Weir, the Hume Reservoir (additional works), the Murray Valley Irrigation District Channels and Structures, the Malmsbury Reservoir Enlargement, and the new Lauriston Reservoir on the Coliban River.

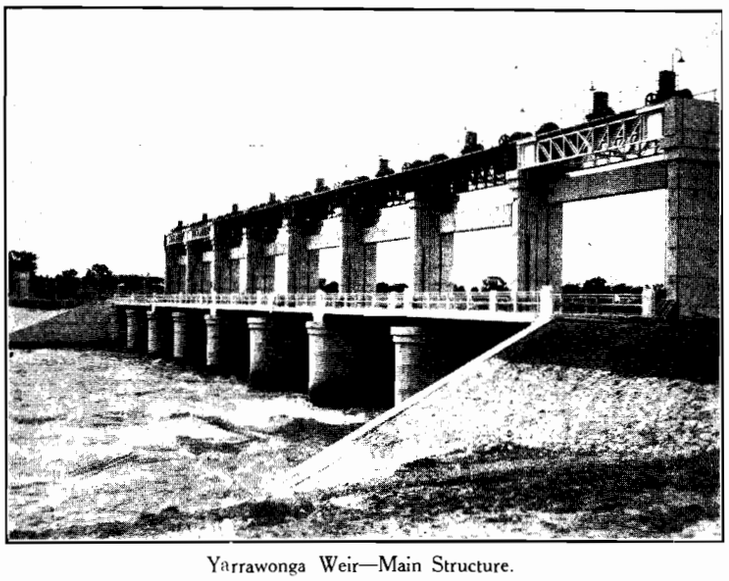
A detailed description of these operations and of additional works and maintenance carried out at numerous important storages and structures is set out in the following pages.

YARRAWONGA WEIR.

This weir is required in order to divert, for irrigation purposes, the water released from Hume Reservoir. The structure consists of three sections, a concrete weir 380 feet in length across the River Murray itself, an earthen dam 1,125 feet across the river flats, and a regulator 99 feet long across the flood channel on the New South Wales side of the river—a total length of 1,604 feet. In the weir across the river there are 8 moveable flood gates, each 40 feet long by 20 feet high, operated by electric winches, and a further 2 gates of similar construction in the regulator on the New South Wales side. The average height of the weir across the river is approximately 60 feet from the foundations to the crest of the flood gates, and 90 feet to the platform for operating the flood gates. The earthen dam over the flats is approximately 20 feet high with a crest width of 24 feet 6 inches. The area to be submerged in the basin at full supply level is 11,000 acres.

A roadway is provided across the structure for traffic between the two States. The construction of this roadway was agreed to by the Governments of New South Wales and Victoria, and the extra cost is being borne by the Road Authorities of those States.

Owing to the dry season and low river flow, the conditions at Yarrawonga were very favorable for construction during the year. Full advantage was taken of the situation and, by the end of June, 1939, the construction of the weir had been practically completed.

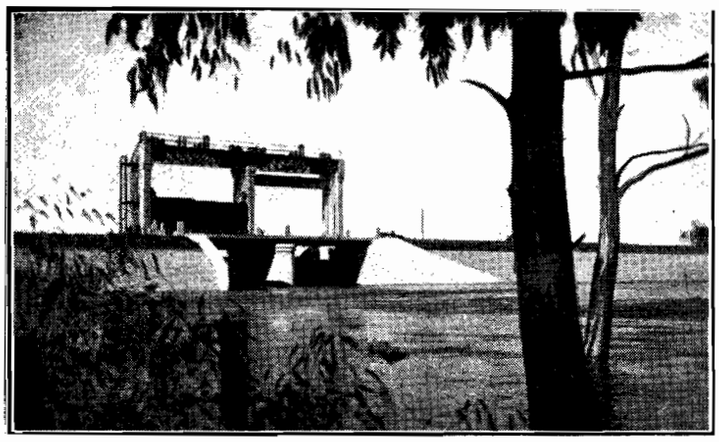


Yarrawonga Weir—Main Structure.

The structure will be available for the diversion of water to both New South Wales and Victoria during the coming spring.

The stone beaching of the embankment was completed, and the roadway along the crest was formed and made ready for the placing of road metal and the erection of fencing.

All work within the No. 3 Coffer Dam was completed and the coffer dam dismantled.



Yarrawonga Weir—Flood Regulator.

The piers to support the spillway gates were constructed to their full height, and all gate guides erected. The girders for the roadway were placed in position and the deck concreted. Contracts were let for the supply, delivery and erection of the spillway gates and operating gear and sluice valves, and the gates, valves and gearing are now in operation.

During the year 12,200 cubic yards of overburden and rock were excavated and 1,570 cubic yards of concrete placed.

As a protection against scour, both banks of the river were trimmed and stone beached for some distance below the structure.

Contracts for the deviations of the Mulwala–Corowa road were let and are approaching completion.

In the north-east portion of Yarrawonga Township several streets were regraded above the raised water level of the river, and the formed embankments were beached with stone.

In Mulwala Township, on the New South Wales side of the river, alterations to the drainage system, made necessary by the construction of the weir, were approved, and reconstruction under the direction of the Coreen Shire Engineer was commenced.

The Yarrawonga and Coreen Shire Councils carried out some clearing of the area to be submerged upstream of the road bridge between Mulwala and Yarrawonga, the funds being provided by the Governments of New South Wales and Victoria and the Shire Councils. The residents of Yarrawonga also cleared some of the area by volunteer labour.

The wet weather during the last quarter of the year considerably hampered these operations and prevented the burning of the fallen timber. The area cleared was approximately 500 acres.

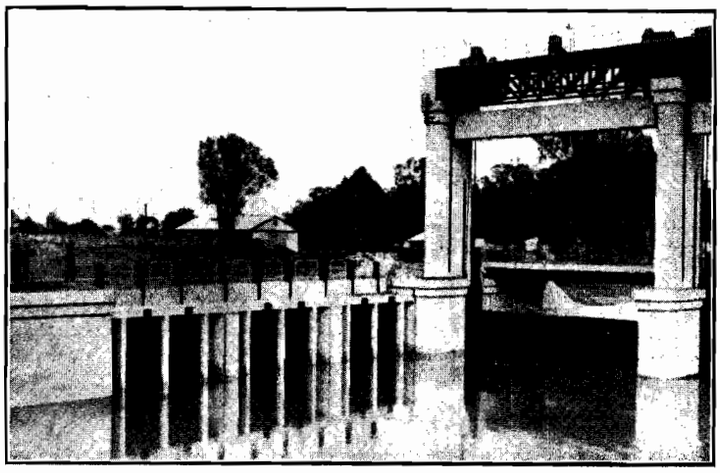
A residence was erected on the Victorian side adjacent to the weir for the use of the caretaker. A store-room and workshop for maintenance purposes were also erected.

A considerable quantity of plant and materials was transferred to Lauriston Reservoir construction works. All surplus plant, buildings, and materials were satisfactorily disposed of at an auction sale held at the works from 20th to 22nd June, 1939.

During the year all lands affected by the weir were resumed by the Victorian and New South Wales Constructing Authorities, and in many cases negotiations regarding compensation have been completed.

The average number of men employed was 98.

VICTORIAN OUTLET REGULATOR.—This structure, which consists of 9 "Butterfly" type steel gates each 7 feet 6 inches high and 7 feet wide, supported by a reinforced concrete structure, forms the offtake to the Yarrawonga Main Canal serving the new Murray Valley District.



Yarrawonga Weir—Victorian Offtake to Yarrawonga Canal.

The regulator has been completed and is ready for operation during the coming spring by the State Rivers and Water Supply Commission.

HUME RESERVOIR.

During the year both sides of the structure have been controlled by the officer in charge of the New South Wales side of the reservoir. Regular joint inspections by the engineers of the two Constructing Authorities have been made.

During January and February, 1939, the concrete slabs on the upstream face of the dam below R.L. 580 were disturbed over a length of 1,482 feet, due to a sliding of the clayey material immediately under the slabs. The clay was exposed for widths of 20 feet and there were subsidences up to 10 feet. These were repaired by depositing about 21,000 cubic yards of stony material in the area. Investigations are proceeding and arrangements are being made to place a heavy facing of rock-fill on the upstream slope of the embankment to prevent any extension of the trouble.

Scours on the downstream face of the embankment were filled and a further section of the face re-soiled.

About 500 ornamental trees were planted in the borrow pit area and around the works.

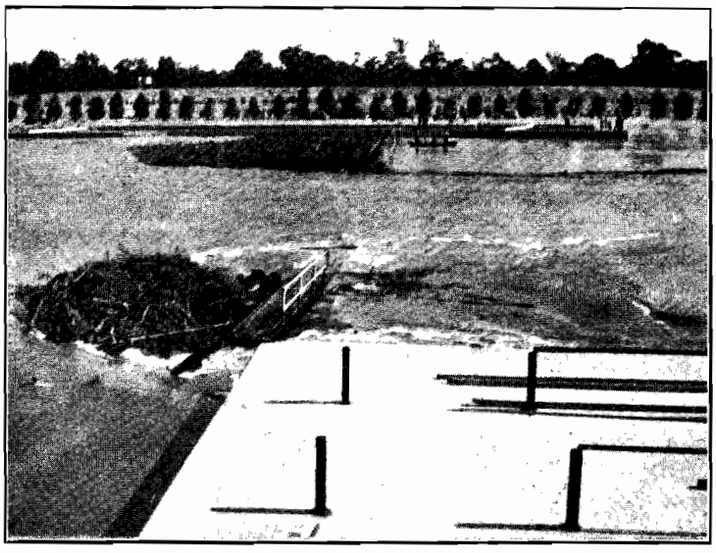
The drainage gallery was inspected regularly, the amount of drainage water noted being very small.

Owing to the drought conditions, the reservoir was not filled during the year to full supply level, R.L. 606, at which level the capacity is 1,250,000 acre feet. The maximum level at the beginning of the irrigation season was R.L. 584·4 feet on 11th October, 1938, and the minimum, R.L. 553·7 feet on 27th February, 1939.

WEIRS AND LOCKS—TORRUMBARRY AND MILDURA.

Both of these works, which were constructed by the State Rivers and Water Supply Commission under the River Murray Agreement, were operated successfully during the year, and proved most beneficial in connexion with the water supply to the important irrigation districts along the River Murray. At Torrumbarry, the weir remained in position until removed on 28th April, 1939. The removal was made under great difficulty, owing to the collection of a large quantity of drift timber against the steel trestle units. One of the trestles was carried downstream by the debris, and some minor damage was caused to the other trestles. The displaced trestle will be recovered during the summer months of low flow, a spare trestle having been put into service in the meantime. The other trestles have been repaired, scraped, and painted.

Considering that these trestles had been in the river continuously for a period of about 2½ years, from 19th October, 1936, to 28th April, 1939, their condition was excellent and they showed the benefit of efficient maintenance.



Torrumbarry Weir—Removal Trestles under Difficulties (Note debris.)

At Mildura, the trestles were placed in the river on 15th July, 1938, and remained in position until removed on 24th April, 1939. These trestles also proved to be in excellent condition. Minor repairs and painting were carried out, and the trestles are now ready for replacement when required.

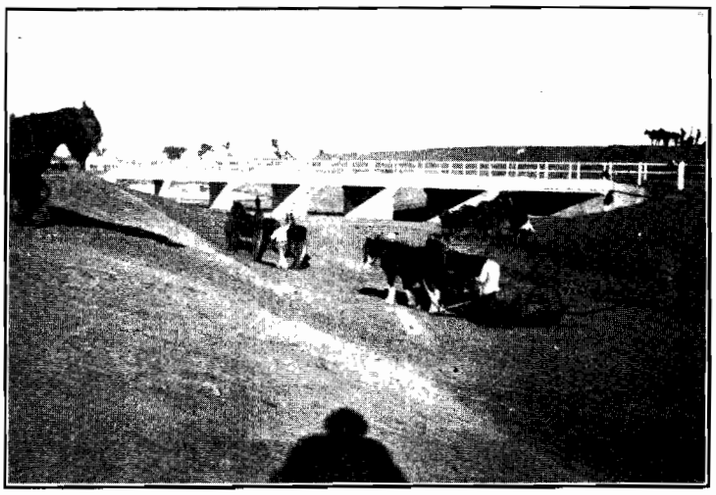
The locks at each place have been satisfactorily maintained, and the areas around the structures improved by regrading and planting of ornamental trees.

MURRAY VALLEY IRRIGATION DISTRICT.

The Murray Valley District will consist of an area of about 300,000 acres, extending from near Yarrawonga towards Cobram and Numurkah. The waters of the River Murray will be diverted immediately above the Yarrawonga Weir and thence conveyed to the District by means of the Yarrawonga Canal and main distributary channels, the length of all channels being approximately 500 miles.

The area to be served, the greater part of which is commanded by gravitation from the scheme, has a comparatively low and irregular rainfall varying from 15 to 20 inches annually, and at present is mainly devoted to wheat culture and sheep farming, a high standard of dry farming being evident.

It is expected that the Yarrawonga Weir will be brought into operation in July, 1939, when the winter waters will rapidly raise the pool behind the Weir to form an extensive lake covering some thousands of acres, extending from Yarrawonga to the Ovens River Junction upstream.



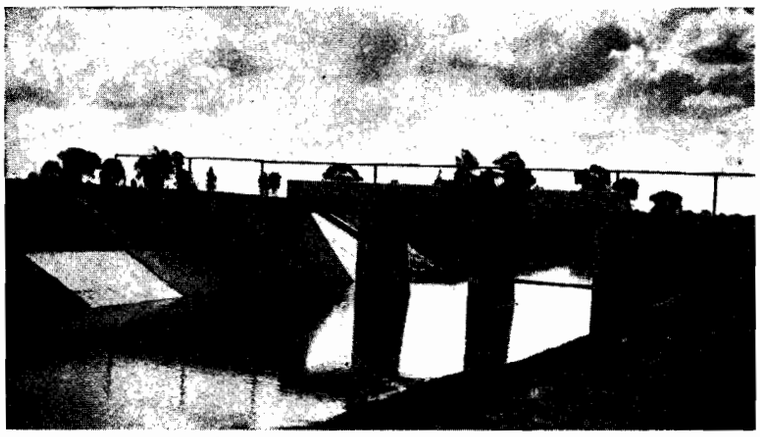
Yarrawonga Main Canal—Concrete Skew Bridge, Burley Road, Yarrawonga.

Water will be available by gravitation during the forthcoming irrigation season to lands previously supplied under the local pumping scheme in the Cobram District and will, in addition,

be available to thousands of acres not previously supplied. The Yarrawonga Main Canal, capacity 1,000 cusecs and length 5½ miles, has been completed with the exception of the portion of canal, now under construction, at the offtake from the Yarrawonga Weir.

The Murray Valley Main Channel, capacity 800 cusecs and length 6 miles, has been completed.

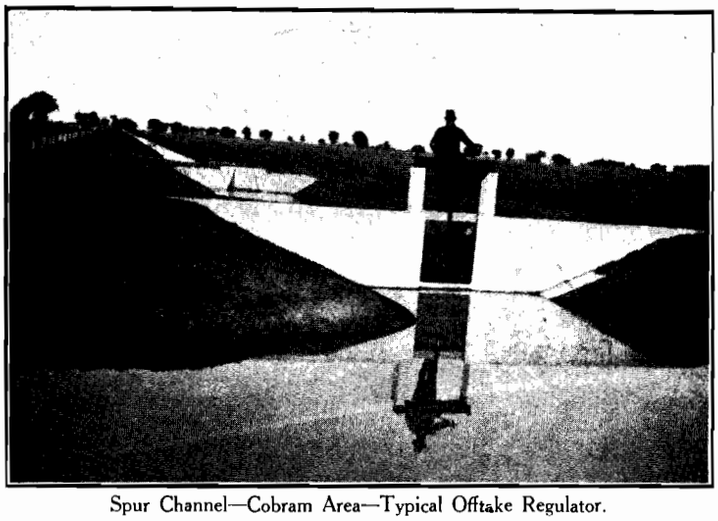
Works on the construction of the Cobram Main Channel, with a capacity varying from 90 to 30 cusecs and a length of 19½ miles, together with the distributary channels of No. 1, or Cobram system, of the scheme consisting of approximately 25,000 acres, has proceeded throughout the year under adverse weather conditions, and progress has been consistent with funds that have been provided for the work from time to time.



Cobram Main Channel—Typical Check.

The earthwork is being carried out by piecework contract and day labour; and the construction of the numerous culverts, checks, drops, syphons, and other structures, all of reinforced concrete design, together with drainage and other works, is being carried out under day labour conditions and is proceeding concurrently with the channel earthworks.

The total quantity of earth that has been excavated since the commencement of the works is 1,750,000 cubic yards, the expenditure to date on channels and structures being approximately £240,000.



Spur Channel—Cobram Area—Typical Offtake Regulator.

Cobram Main Channel—4 ft. Concrete Syphon—Cobram Township.

The average number of men employed and horses working throughout the year has been 212 and 209 respectively.

If funds are available it is expected that during the forthcoming season the whole of No. 1 area in the vicinity of Cobram will be reticulated, and that work will be commenced on No. 3 system, consisting of an area of about 37,000 acres immediately north of Katamatite.

GOULBURN STORAGES.

These works comprise the Eildon Reservoir, 306,000 acre feet capacity, on the Goulburn River about 18 miles above Alexandra, the Goulburn Weir, on the Goulburn River near Wahring, capacity 20,700 acre feet, and the Waranga Reservoir near Rushworth, 333,400 acre feet capacity. These storages supply an area of 1,330,000 acres of land with domestic and stock and irrigation water.

Eildon Reservoir.

The length of the dam is 3,000 feet, of which 2,300 feet consists of rock-fill bank about 140 feet high, with a reinforced concrete corewall. The spillway consists of a concrete weir 544 feet long, together with 6 flood gates, each 20 feet long by 15 feet high, operated by electricity.

Weekly measurements taken of the deflections of the corewall and of drainage flows from the bank have shown that there have been only minor alterations in these measurements during the year.

The highest level of the reservoir was R.L. 817·41 feet on 30th June, 1939, and its lowest level was R.L. 744·93 or 5,690 acre feet on 26th February, 1939; the full supply level being R.L. 823 feet, at which the capacity is 306,000 acre feet.

The works were carefully maintained, and portions of the spillway gates, buildings, water supply tanks, and pipes, were painted where necessary.

Goulburn Weir.

This structure is on the Goulburn River, near Nagambie, and consists of a concrete wall faced with granite blocks. Its total length with the channel regulators is 925 feet, and the weir raises the summer level of the river about 45 feet. Along its crest there are 21 flood gates, each 20 feet wide by 10 feet high, which can be lowered into the structure for regulating the water level. Water is diverted at this structure, on the east side, to Shepparton and District and, on the west side, to Rodney District and the Waranga Basin.

During the recent dry period, the greatest care was exercised to regulate the available water and reduce waste to a minimum, and the works functioned satisfactorily. The flood gates, turbines and gearing were carefully maintained, and are in good order. Some of the timber planking along the deck of the gangway was replaced where necessary.

Waranga Reservoir.

This reservoir, situated about 10 miles from Rushworth, has been formed by the construction of an earthen embankment, 4½ miles long and 40 feet high, faced with stone pitching set in concrete, the water surface of the reservoir being 23 square miles. Constant supervision of the embankment is essential owing to the prevalence of large waves which break on the stone pitching. During this year little trouble has been experienced from wave action, and minor faults in the pitching have been repaired with stone filling grouted in concrete.

A further 50 chains of tram line along the crest of the bank were relaid with heavier rails and new sleepers. The stone wall along the crest, used as a reserve for stone for repairs in cases of emergency, has been kept to full requirements and the quarry has been put in order.

A further section of the back face of the bank was trimmed, resoiled, and planted with grasses. This work will be continued as funds become available. Ornamental trees were planted in the neighbourhood of the caretaker's house, repairs were carried out to workshops and storerooms and the adjacent area was cleaned up. General maintenance was carried out.

The highest level of the reservoir was R.L. 396.8 feet representing a storage of 307,300 acre feet on 30th June, 1939, and the lowest R.L. 373.8 feet or 55,300 acre feet on 18th to 22nd February, 1939. The full supply level is 398 feet with a storage of 333,400 acre feet.

GLENMAGGIE RESERVOIR.

This reservoir is situated on the Macalister River, near Heyfield, and supplies some 44,000 acres of rich river flats near Maffra, Stratford and Sale.

The dam is a gravity section concrete structure, 1,000 feet in length, and raises the water to a maximum height of 100 feet above the foundations.

During the year the works were well maintained, and the area around the dam kept in a satisfactory condition. The highest level of the reservoir was R.L. 240 feet (90,900 acre feet) on 30th June, 1939, and its lowest level was R.L. 222.8 feet (41,200 acre feet) on 11th February, 1939, the full supply level being R.L. 244.0 feet (104,500 acre feet).

MALMSBURY RESERVOIR.

The Malmsbury Reservoir, on the Coliban River near Malmsbury, is one of the storages for the Coliban Water Supply Scheme. The dam consists of an earthen embankment, 1,730 feet long and 60 feet high, with flood spillways at each end of a total length of 360 feet. Its present capacity is 12,300 acre feet, and works to increase the capacity by approximately 2,100 acre feet have been put in hand. These additional works comprise the raising of the existing earthen bank by 4 feet 3 inches, and the installation of 9 steel regulator gates supported by concrete piers on both flood spillways.

During the year the earthen embankment was raised to its full height, the upstream stone facing was continued, and the downstream slope soiled and grassed. The foundations of the wing walls, corewall and concrete piers and aprons on the eastern and western bywashes were completed, the quantity of concrete placed being 1,130 cubic yards. The construction of the concrete piers is proceeding. Contracts were let for the supply, delivery and erection of the spillway gates and operating gear, and these contracts are well advanced. It is expected that this work will be completed during the spring of 1939.

Advantage was taken of the low stage in the reservoir to remove silt from the inlet, and to overhaul and repair the valves, gearing and gangway to the outlet tower.

The works were carried out under Unemployment Relief conditions, and the average number of men employed was 59.

LAURISTON RESERVOIR.

The Lauriston Reservoir is the new reservoir under construction to supplement existing storages of the Coliban Water Supply System. It is situated on the Coliban River, 4½ miles due west of Kyneton township, and will consist of a concrete dam of massive buttress type with a total length of 880 feet, maximum height 76 feet, maximum width of 100 feet, excluding the downstream concrete apron 50 feet wide. The two outlet pipes will be 2 feet in diameter, each controlled by two valves.

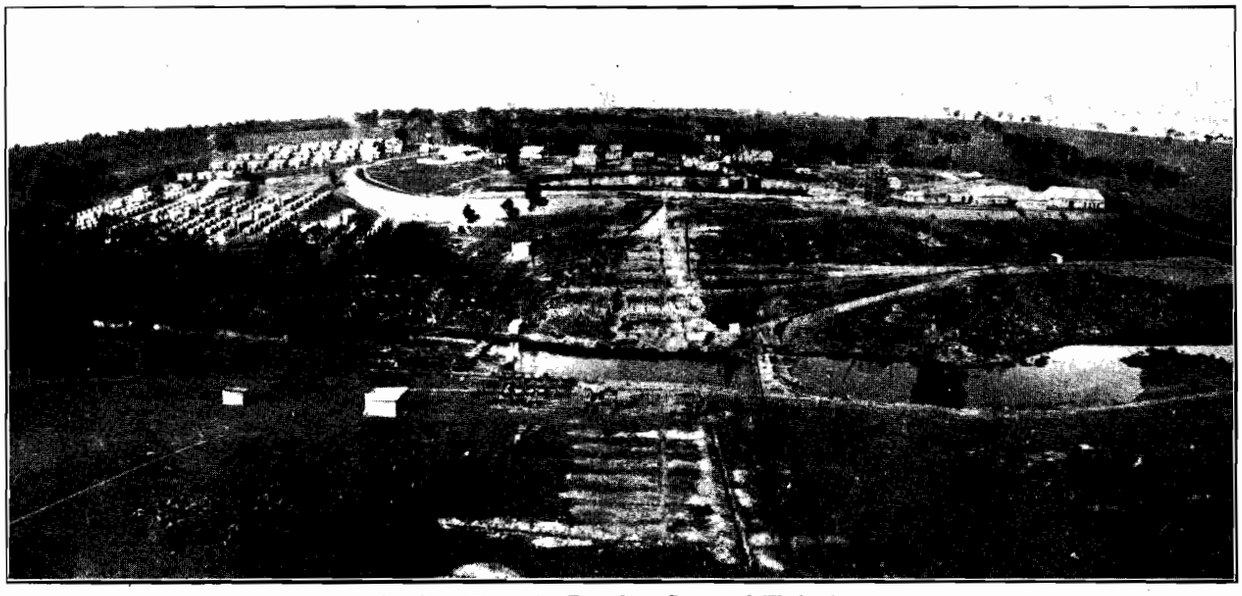
Floods will pass over the central portion of the structure, 290 feet long, and provision is to be made by concrete aprons and dissipator walls to reduce the scouring action of the falling water to reasonable limits.

In addition to the main concrete dam, there will be a small earth dam about 22 feet high on a saddle between two adjoining hills.

The total amount of concrete involved in the construction of the dam is estimated at 35,000 cubic yards, and provision has been made to ensure that a concrete of a particularly high quality will be obtained.

The capacity of the reservoir will be 16,000 acre feet or 4,352,000,000 gallons.

Construction work was officially inaugurated on 9th December, 1938, by the Premier of Victoria, the Honorable A. A. Dunstan, M.L.A. A large representative gathering of all sections of the community was present.



Lauriston Reservoir—Dam Site, Camp and Works Area.

Most of the plant required, together with quantities of stores and building materials, was obtained from the Yarrawonga Weir Works.

The necessary workshops, stores, camp buildings, and caretaker's residence were erected, and water supply, sanitation and drainage facilities installed. Arrangements were made for supplies of electricity to be obtained from the State Electricity Commission for power and lighting, and this was made available during December, 1938.

A metalled road, connecting with the Shire Road from Kyneton, was constructed to the works.

The excavation of foundations for the dam was commenced in January, 1939, and is proceeding, while the layout of the concreting plant was finalized and the necessary plant and buildings are being obtained. It is expected that concreting will commence by the end of 1939.

Since commencement, the works have been proceeding under Unemployment Relief conditions, the number of men employed on 30th June, 1939, being 227.

For general convenience, an office has been established in rooms at the Kyneton Railway Station, leased from the Victorian Railways Commissioners.

LAANECOORIE RESERVOIR.

This structure is on the Loddon River about half a mile above Laanecoorie township. It consists of an embankment, 700 feet long and 40 feet high, with a clay core, a concrete spillway 322 feet long with 5-feet automatic tilting gates on the eastern side, and a concrete-lined bywash 300 feet long on the western side. The storage, which has a capacity of 6,650 acre feet, is the headworks of the Loddon River System. During the year, two of the valves were overhauled and repairs are being carried out on two of the spillway gates. This latter work has been seriously impeded by flood waters, but will be completed so soon as conditions permit. The works were satisfactorily maintained throughout the year.

The storage was seriously affected by the recent dry weather conditions, the capacity on 1st October, 1938, being only 3,000 acre feet, and the reservoir was empty from 3rd December, 1938, to 17th February, 1939. Following the rains in March, the storage rose to full supply level on 27th March, 1939, and remained at that level until the end of June, 1939.

WIMMERA STORAGES.

The principal storages in this system are Wartook Reservoir, 23,800 acre feet, Lake Lonsdale, 53,300 acre feet, Fyans Lake, 17,100 acre feet, Taylors Lake, 30,000 acre feet, and Pine Lake, 52,000 acre feet. These storages are the main headworks for the Wimmera Mallee Water Supply System of 11,000 square miles.

Generally these storages were well maintained during the year, but additional funds are required at Pine Lake and Taylors Lake to bring them to a satisfactory standard.

WERRIBEE AND BACCHUS MARSH STORAGES.

These storages comprise the Melton Reservoir, 19,100 acre feet, on the Werribee River near Melton, and the Pykes Creek Reservoir, 21,000 acre feet, on Pykes Creek near Ballan, a tributary of the Werribee River, the latter storage being supplemented by the Pykes Creek tunnel diverting water from Werribee River into the Reservoir. Diversions of water are made to the irrigation districts supplied from the Werribee River by small weirs at Bacchus Marsh and Werribee.

Melton Reservoir.

This dam is situated on the Werribee River about 4 miles west of Melton township, and consists of an earth and rock-fill embankment, with a reinforced concrete corewall. The length of the embankment is 640 feet with a maximum height of 90 feet. The bywash consists of a concrete waste weir 120 feet long, together with five hand-operated flood gates, each 40 feet long by 5 feet high. The reservoir was at a very low level throughout the irrigation season. On 1st October, 1938, it held only 3,200 acre feet and on 19th January, 1939, 220 acre feet. Following heavy rains in February, 1939, the reservoir rose to full supply level on 1st March and was still at that level at the end of June, 1939. The new spillway flood gates proved very efficient during these floods.

Werribee Weir.

This diversion weir for the Werribee Irrigation District is situated on the Werribee River about 1 mile north of Werribee Township. During the year the weir was raised a further 4 feet in height, and new scour valves were installed. The outlet regulator was also altered to suit the new conditions. This addition to the weir will enable minor freshets down the river to be retained for the Werribee District, and will assist the regulation of the water released from the Melton Reservoir, thereby considerably reducing the losses in the system. The remodelled weir is of concrete and is 240 feet long and 13 feet high.

The number of men employed on the remodelling work was 22 and the work was carried out under Unemployment Relief conditions.

Pykes Creek Reservoir.

The Pykes Creek Reservoir is situated on Pykes Creek, a tributary of the Werribee River, about 4 miles from Ballan township. It consists of an earthen embankment with a pug clay corewall, and is 1,000 feet in length with a maximum height of 110 feet, the length of the concrete bywash being 294 feet.

The work was well maintained throughout the year, and the resoiling of the back of the bank was continued.

This reservoir was also at a very low level throughout the recent irrigation season, its storage on 1st October, 1938, being 3,530 acre feet and on 25th February, 1939, 1,480 acre feet. Following heavy rains from March to June, 1939, the level of the reservoir gradually rose to R.L. 1270 feet (6,830 acre feet), the full supply of the reservoir being R.L. 1306 feet (21,000 acre feet).

Pykes Creek Tunnel.

This tunnel extends from the Werribee River to Myers Creek about one mile from Pykes Creek dam. It is 74 chains long and 6 feet in diameter. At the entrance to the tunnel there is a low diversion weir across the Werribee River to divert the flow of that river into the tunnel. The water so diverted flows into the Pykes Creek Reservoir via Myers Creek.

During the past year, as a result of the improvements completed to date, the carrying capacity of the tunnel was increased considerably. Narrow sections were enlarged to full dimensions, a large quantity of debris was removed and a further section of concrete lining was placed. To date the length of tunnel fully or partially lined is 45 chains.

The work done during the year was carried out under Unemployment Relief conditions, the number of men employed being 48.

This work has so far proved very effective, and has resulted in the storing in the Pykes Creek Reservoir of additional water which would otherwise have flowed down the Werribee River.

The completion of this concrete lining and additions to the inlet weir would still further improve the system and add to the usefulness of the Pykes Creek Reservoir.

LITTLE MURRAY WEIR.

The Little Murray Weir is situated on the Little Murray River, about 4 miles from Swan Hill. It is the diversion weir for the supply of water to the Swan Hill and Woorinen irrigation areas.

General maintenance was carried out.

RIVERS AND RECLAMATION DIVISION.

(*H. G. Strom, B.C.E., A.M.I.E. Aust., Divisional Engineer.*)

DRAINAGE AND FLOOD PROTECTION SCHEMES.

Kooweerup and Cardinia.

Major works for the alleviation of flooding in the Cardinia and western portion of the Kooweerup Districts are approaching completion.

The large Cardinia Outfall and Catch Drain on the west side of the Toomuc–Cardinia Main Drain, and all appurtenant works including several large bridges, have been completed for a distance of 4 miles from Western Port Bay to the " V " Junction. The work of reconditioning the existing Cardinia and Toomuc Drains above the latter point is in progress.

In connexion with the proposed Yallock Outfall in the Kooweerup District, two large concrete bridges are in course of erection to provide the required waterway at the South Gippsland Highway. The construction of the western Levee Bank of this Outfall will be commenced next month.

During the year approximately 250,000 cubic yards of earthwork were removed, for the most part by four mechanical excavators, timber and steel bridges totalling 214 feet in length were constructed, fencing was erected for a distance of 6 miles, and other work including clearing, concrete work and roadwork was carried out.

Maintenance work in the two Districts has comprised repairs to 12 bridges totalling 600 feet in length, the cleaning and regrading of drains for a total distance of 116 miles, the treatment of noxious weeds and vermin along some 48 miles of drainage reserves, and the carrying out of minor flood repairs to embankments and structures.

Privately owned suction plants, operating under an arrangement with the Commission, have removed about 20,000 tons of coarse clean sand from the Kooweerup Main Canal and about 9,000 tons from the Cardinia Drain during the year. The total output of sand from the Kooweerup Canal to date is approximately 367,000 tons.

Carrum.

To resist erosive action by flood and tidal waters, the northern bank of the Patterson River at Carrum has been protected with timber sheet piling and stone beaching for an additional length of 660 feet on the upstream side of the Melbourne to Frankston Railway.

At the junction of the Dandenong Creek and Eumemmerring Creek Outfalls a concrete " Flood Inlet " with steel control doors has been installed to facilitate the escape of internal flood waters from Pillars Corner.

The embankments of the Dandenong Creek in the vicinity of Greens Lane have been raised about 2 feet for a distance of 60 chains. Repairs in concrete and stone have been effected to the spillway between the weirs on the Dandenong Creek Outfall above Pillars Crossing.

General maintenance has comprised the cleaning out of drains totalling about 40 miles in length.

Loch Garry, Kanyapella, and Echuca.

Throughout the year only necessary maintenance works were carried out in the Loch Garry Flood Protection District. The Goulburn River reached the high level of 34 feet 10 inches on the gauge at Shepparton on 10th April, 1939, but, as the level fell within 24 hours, no bars were removed from the Loch Regulator. The river did not again reach the flood stage but, towards the end of June, 1939, was rapidly rising, and it was expected that it would be necessary to remove a number of the regulating bars.

In the Kanyapella Flood Protection District, conditions throughout the year under review were such that no flooding took place in the Goulburn River adjacent to the regulator and levee bank. General maintenance works were carried out along the bank and at the structure.

The Echuca (High-street) Flood Protection District, having repaid all Capital expenditure, has been abolished and, in accordance with the provisions of the *Echuca (High-street) Flood Protection District Abolition Act* 1938 (No. 4552) the flood protection works were transferred to the Echuca Borough Council on 1st November, 1938.

RIVERS.

River Improvement.

Grants from the "Rivers and Streams Fund" to Municipalities and other authorities numbered 58 for the year, amounting to a total of £8,800. This expenditure has been applied towards the cost of the removal of obstructions from streams and of works designed to protect beds and banks of watercourses from erosion. Several new types of structures used in stream control have been tried out and generally found successful. From 1930, when the Rivers and Streams Fund was established, until 30th June, 1939, the number of grants approved was 423 and the total amount granted £67,700. Rentals received by the Crown for river frontage licences and paid into the Rivers and Streams Fund during the year amounted to £9,300.

Sufficient time has now elapsed since the construction of the earlier works subsidized from this small but valuable Fund to judge of their effect, and in the great majority of cases the works have been successful in their object.

It may be remarked that the attitude of municipal authorities towards works of stream improvement is very varied. Some Shire Councils, especially in Gippsland and the North-east, have taken an active interest in erosion prevention and flood control, and have thus greatly benefited their ratepayers in maintaining the values of the rated properties.

The Snowy River improvement works, authorized under the *Snowy River Works Act* 1938, were continued and are now nearing completion. The most difficult item of construction in these works, the strengthening and reconstruction of the tunnel under the Bete Bolong Embankment, has been successfully completed. Other works undertaken during the year have been the construction of embankments across Watts, Ashbys, and Lynn's Newmerella Gulches, improvement to the drainage system in the Orbost East and Bete Bolong areas, construction of "Growing Willow" groynes at the entrance to Lynn's Gulch and the continuation of the removal of false banks, willows and snags from the Snowy River. Expenditure so far has been £18,000 out of the total estimate of £23,000.

The improvement works on the Latrobe River have been continued and should be completed early next season. A total length of 73 miles has been cleared of snags and other obstructions and the river has been shortened in its lower reaches by the cutting of 9 bends. To complete the approved works, a further 13 miles of river remain to be cleared and 3 bends to be cut. Expenditure has been £36,000 out of the total of £46,000 approved for the whole scheme.

A further £9,000 was made available from Unemployment Relief Funds for the purpose of continuing the systematic snagging of the alluvial reaches of the rivers of the State. This brings the total amount expended on this work during the last four years to £60,500. This year work was carried out on the following streams—Yarra, Thomson, Tarwin, Snowy, Ovens, Loddon, King, Cann, and Barwon Rivers and Kennedy's Creek. Many additional letters of appreciation of the beneficial effects derived from this river improvement work and requests for further similar grants have been received by the Commission.

The policy of carrying out surveys of rivers where flood and erosion problems are acute has been continued. Surveys carried out this year include those of Ryan's Creek and part of the River Murray between Hume Reservoir and Wodonga, portions of Toomuc Creek, Cardinia Creek, Bunyip and Tarago Rivers, and a survey of the Thomson River is now in hand.

Since these surveys were first commenced, a total of 583 river-valley miles has been mapped, which corresponds to a much greater total of actual river-length. It is hoped to continue these surveys steadily until all the important streams of the State have been covered. The plans prepared from these surveys have already proved very useful in the design of various protective or corrective work on rivers. They will, in addition, have great value in years to come as a record of present conditions and as a basis for future improvements.

Copies of these river plans have also been made available to the Lands Department, to various Shire Councils, and to other public bodies, which have greatly appreciated the value of the information supplied.

Mining and Sludge Abatement.

Owing to the maintenance of activity in alluvial mining, it has been necessary for the Rivers and Reclamation Division to carry out investigations into the effect of existing and proposed mining operations on streams in various parts of the State. The Commission has maintained close touch with the Sludge Abatement Board in endeavouring to ensure that the methods used in mining shall be such that the streams do not suffer from undue pollution or siltation. Some 26 cases were investigated during the year, involving considerable travelling, mostly in the mountainous regions of the State, by the Commission's officers. Two interesting proposals which are under consideration are the complete deviation of short sections of two important rivers into new courses, to permit of dredging of their valleys without risk of erosion in floodtime and consequent siltation lower down.

Murray Levees.

Applications received during the year for permission to carry out works to protect lands from the effects of floods in the River Murray were dealt with by the Interstate Committee appointed for the purpose. Six applications were approved, and further investigation is being carried on in other cases. Out of the permissible total of 99,000 acre feet flood storage reclamation on the New South Wales side of the river, and of 33,000 on the Victorian side, 16,754 and 20,533 acre feet respectively have now been approved.

Soil Erosion and Siltation.

The growing acuteness of the erosion problem as affecting communications has been shown by the number of requests received from municipal authorities and other public bodies for advice as to methods of preventing damage to roads, bridges, and other structures from erosion of streambanks or by gullying, and for financial assistance for the necessary works. As an example of the economic waste due to this cause, it may be mentioned that in one District the authorities concerned have to expend, in the near future, a sum of at least £800 in one square mile alone for the protection of minor Shire roads from water scours.

Advantage was taken of the dry conditions to make a survey of the basin of Eildon Reservoir to determine the amount and distribution of the silt deposited in the storage since it was first filled. It was found that about 1,600 acre feet of silt had already been deposited, mainly on the Delatite arm. Reference marks were established for guidance in further similar surveys in the future.

The conditions this autumn were extremely favorable to erosion. Heavy rainfalls following the prolonged drought and the extensive bushfires of last January have in many places produced severe sheet erosion and gullying. In the Woods Point district, and in many other areas heavy rains on burnt country brought down huge quantities of soil and stones which blocked roads and choked streams, causing widespread damage. Siltation on river flats following floods was particularly marked. In the more undulating cultivated areas, particularly at Dookie, extensive damage was done to fallowed areas, the soil washed from the upper end of some paddocks piling up several feet deep against the fences at the lower end.

Water Distribution.

The Commission carried out a most difficult task in the face of the recent drought, which extended from the previous year until late February and which was unparalleled in the history of the State. The volume of water in the Commission's storages at the commencement of the irrigation season was far below requirements, and supplies were limited in several Irrigation and Water Supply Districts.

The difficulty of maintaining water supplies under extreme drought conditions may be exemplified by examining the extraordinary behaviour of certain main rivers forming important links in the water supply system of the State. The flows of these rivers for each of the two years to the 31st December, 1938, amounted to only a fraction of the yearly average over a period of nearly half a century.

A comparison of the respective figures for these two years with the yearly average flow is set out in the following statement.

River.	Flow in Acre Feet.		
	Year—1937.	Year—1938.	Yearly Average.
Coliban	7,000	4,000	53,000
Campaspe	4,000	2,000	186,000
Loddon	32,000	12,000	179,000
Lerderderg	9,000	2,000	31,000
Broken	60,000	23,000	211,000

The Goulburn River was not so seriously depleted, the position being that the flow in 1937 was 1,035,000 acre feet, and in 1938, 710,000 acre feet, compared with the average yearly flow of 2,293,000 acre feet. By careful apportionment of the depleted supplies, the Commission had, at the termination of the drought in February last, succeeded in delivering up to approximately 85 per cent. of Water Rights in addition to normal supplies for Domestic and Stock purposes, except in Bacchus Marsh and Werribee Districts, where, owing to failure of the streams supplying the storages, only a small proportion of Water Rights could be supplied. Additional supplies were made available in all districts following the general rainfall late in February.

The total area of land in Victoria supplied with water for domestic and stock purposes or for irrigation, excluding metropolitan areas, amounted to 15,083,000 acres.

The supply of gravitation water was commenced for some Districts during August, 1938, at which time the storages, including Victoria's half share of Hume Reservoir, contained 734,005 acre feet. The supply terminated about the 30th April, 1939, when, owing to the particularly heavy autumn rains, the volume in the storages amounted to 1,051,740 acre feet.

During the year a total of 495,827 acre feet of water, including 73,088 acre feet by pumping, was delivered from the Commission's channels to landholders in irrigation districts. In addition, 32,789 acre feet were delivered from the Torrumbarry and Maffra Systems to lands outside the boundaries of the Commission's Districts making a total delivery of 528,616 acre feet. This quantity was less than that delivered during the record season of 1937–38 when, in addition to 20,917 acre feet supplied to high level Waterworks Districts, irrigation deliveries for the period July, 1937, to May, 1938, were 672,782 acre feet of water, inclusive of 55,944 acre feet by pumping. The year under review shows a lesser delivery for all purposes than in the preceding year by 165,083 acre feet, but was actually 26,227 acre feet greater than the average for the previous 10 years.

The irrigation districts of Nyah, Red Cliffs, and Merbein received 50,185 acre feet pumped direct from the River Murray, while the high level Waterworks Districts of Millewa, Coreena, Carwarp, and Yelta, also involving pumping, received 22,903 acre feet for domestic and stock supplies. In addition 422 acre feet were delivered to lands outside these districts.

The general demand for irrigation water this season set in late in August, and continued unabated until 17th February when an interruption of delivery was caused by heavy rainfall. Thereafter, the demand was intermittent and the season terminated with slightly more than 86 per cent. of the water rights apportioned throughout all the gravitation systems being used, while in the three districts dependent upon pumped supplies, 89 per cent. of water rights was taken.

The Wimmera–Mallee Waterworks Districts also received some 29,048 acre feet from the Loddon and Goulburn Systems, in addition to their usual supplies from the Wimmera–Mallee storages in the vicinity of the Grampians.

The volume of water discharged from the Waranga Reservoir amounted to 385,383 acre feet. Of this quantity, 179,700 acre feet were delivered to users and, together with 14,382 acre feet passed on to the Wimmera–Mallee Waterworks Districts at the Loddon Weir, gave a delivery efficiency of about 50 per cent.

Diversion of Water.

The right of the State to the use and flow, and to the control of water in rivers, creeks, streams and watercourses, lakes, lagoons, swamps and marshes, has been strictly exercised. The extreme drought conditions resulted in a greatly increased demand by landholders outside irrigation districts for authority to divert water from streams and other natural sources of supply. During most of the summer months, it was found necessary to restrict irrigation supplies from nearly all streams owing to the necessity of safeguarding domestic and stock supplies. Nevertheless authorized diversions in force amounted to 2,648 compared with 2,278 for the previous year.

In a number of cases the Commission launched prosecutions for illegal appropriation of water from natural streams, and in all cases was successful in obtaining convictions.

Occupation of Commission Lands.

Again the Commission has been enabled to secure suitable tenants for lands not required in connexion with works, and has arranged in all 1,220 occupancy permits for periods up to fifteen years. Of this number, 1,014 permits are actually in force. Included in the number of existing permits are 113 in respect of River Murray Commission lands administered by this Commission, also 5 in the Carrum Trust area. In addition, 16 permits are in force for the right to remove sand and gravel from canalized waterways.

The matter of controlling boating on reservoirs and main channels throughout the State has been continued and, in the exercise of such control, 191 licences are now in force.

Crown Lands.

Numerous applications for alienation or occupation of Crown Lands, including water reserves and creek frontages, were referred by the Lands Department to this Commission for report as to whether such applications could be granted without injury to water supply interests. In dealing with these, it has been necessary for a number of inspections to be made in different parts of the State in order to ascertain for each area its value for water supply or its liability to erosion.

Numerous applications for the leasing of Crown lands in the catchment area of the Hume Reservoir on the River Murray have been referred by the Lands Department to this Commission for consideration.

As the granting of these applications would involve the ultimate alienation of the lands in question, and in view of the effect of occupation of catchment lands on erosion and siltation of reservoirs, the matter was referred to the River Murray Commission for consideration. That Commission replied that " in view of the tremendous national interests at stake and particularly in view of recent experience, the River Murray Commission is strongly of the opinion that no further alienation of lands or destruction of arboreal cover should be permitted in the Catchment of the Hume Reservoir, and that serious consideration should be given to the discontinuance of grazing in the mountainous areas." In this view, the State Rivers and Water Supply Commission concurs.

River Gauging.

As provided by section 32 of the *Water Act* 1928, the work of gauging and recording the flows of the principal rivers and streams of the State was continued. Weekly returns showing the volumes of water stored in reservoirs were made available for publication.

The drought conditions experienced during 1937–38 continued with increasing severity until 25th February, 1939, when rain extended to Victoria from the Interior of South Australia. This rainfall resulted in registrations ranging from 4 to 6 inches over most of the Central, North-eastern, and Gippsland districts, and some flooding occurred in North-eastern and Gippsland streams.

During the period August, 1938, to January, 1939, low flow records were established in the run-off from the principal storage catchments, the respective months in which these record low flows occurred being as follow:—Hume and Goulburn Catchments, December, 1938, and January, 1939; Coliban, October and December, 1938; Werribee, August, September, October, and December, 1938; and Lake Lonsdale, January, 1939. Details of the monthly gaugings in these catchments during the past three years, are shown in the statements (2) as an Appendix to this Report.

The severity of the recent drought is perhaps best illustrated in the following table, which shows a comparison with previous drought periods, and also the duration in months and the percentage of the average run-off discharged during the drought periods 1901-03, 1913–15, and 1937–39.

Catchment.	Column 1. Number of consecutive months during which the run-off was below average.			Column 2. Percentage of average run-off discharged during corresponding period in Column 1.		
	Years—1901–03.	Years—1913–15.	Years—1937–39.	Years—1901–03.	Years—1913–15.	Years—1937–39.
Hume	25	25	24	48	50	43
Goulburn	15	26	24	30	45	36
Coliban	33	20	26	39	19	10
Werribee	No Record	19	15	No Record	47	13

In contrast to the first eight months of the year, stream-flow from March to June was considerably above the average and, in some instances, exceeded the previous maximum for corresponding months. The most notable of these records occurred in the Campaspe River at Rochester, which discharged 104,000 acre feet during April, 1939, as against a previous maximum of 18,000 acre feet for that month.

Also as an Appendix to this Report a map of Victoria showing the location of gauging sites is included. In addition to the gauging sites, the principal storages and the average annual isohyets based on rainfall records to the end of 1938 are shown.

A statement showing the streams on which gaugings have been carried out, the sites of the gauging stations, and the periods for which gauging records are available was inserted in the last Annual Report.

A separate report showing river gaugings for the years 1925 to 1936 has been compiled for publication.

TOTAL STORAGES IN STATE.

In 1902 the total capacity of storages in the State was 172,000 acre feet. The present capacity is 1,950,960 acre feet. The Hume Reservoir, designed to contain 2,000,000 acre feet (half of which can, subject to the provisions of the River Murray Agreement, be credited to the State of Victoria) now has a capacity of 1,250,000 acre feet. When the final stage of this work has been completed (involving further approval of the interested State Governments), and the Lauriston, Glenmaggie, and other Reservoirs are completed, the combined capacities of Victoria's storages will be 2,390,100 acre feet.

EXISTING STORAGES.

	Capacities in Acre Feet.	
Goulburn System—		
Goulburn Weir	20,700	
Waranga	333,400	
Eildon	306,000	
		660,100
Murray-Loddon System—		
Hume Reservoir (part of 2,000,000 acre feet—half share)	625,000	
Yarrawonga Weir (half share of 100,000 acre feet)	50,000	
Torrumbarry (half share of 26,000 acre feet)	13,000	
Mildura (half share of 34,000 acre feet)	17,000	
Wentworth (half share of 20,000 acre feet)	10,000	
Euston Lock Weir (half share of 24,000 acre feet)	12,000	
Kow Swamp	40,860	
Laanecoorie	6,650	
Kerang North-West Lakes	69,400	
Lake Boga	29,650	
		873,560
Wimmera-Mallee System—		
Fyans Lake	17,100	
Lake Lonsdale	53,300	
Wartook	23,800	
Taylors Lake	30,000	
Pine Lake	52,000	
Green Lake	6,600	
Dock Lake	4,800	
Moora	5,100	
Lower Wimmera Weirs	2,870	
Batyo Catyo (Avon Regulator)	5,000	
Lake Whitton	1,300	
Earthen Storages, Township Reservoirs, and Mallee Tanks	6,320	
		208,190
Maffra-Sale System—		
Glenmaggie (part of 150,000 acre feet)		104,500
Coliban System—		
Upper Coliban	25,700	
Malmsbury (Enlargement to 14,400 acre feet in progress)	12,300	
Spring Gully	2,000	
Subsidiary Reservoirs	4,600	
		44,600
Werribee System—		
Pykes Creek	21,000	
Melton	19,100	
		40,100
Bellarine Peninsula System—		
Wurdee Boluc	10,000	
Service Basins	760	
		10,760
Mornington Peninsula System—		
Lysterfield	3,400	
Beaconsfield, Frankston, and Mornington	1,660	
Service Basins	200	
		5,260
Otway System—		
Service Reservoirs		1,080
Miscellaneous—		
Eppalock	1,200	
Wonthaggi	1,550	
Wonthaggi Service Basins	10	
Newstead	30	
Stratford Service Basins	20	
		2,810
Total capacity of existing Storages		**1,950,960**

ADDITIONAL STORAGE BEING PROVIDED BY WORKS IN COURSE OF CONSTRUCTION.

Coliban System—		
Malmsbury Enlargement	2,100	
Lauriston	16,000	
Mornington Peninsula System—		
Bittern	480	
Service Basin	60	
		18,640

FURTHER STORAGE WHICH COULD BE PROVIDED BY COMPLETION OF EXISTING WORKS.

Maffra-Sale System—Glenmaggie (balance of 150,000 acre feet)	45,500	
Murray System—Hume Reservoir (half-share of balance of 2,000,000 acre feet)	375,000	
		420,500
Total capacity of Storages when works are completed		**2,390,100**

WATERWORKS TRUSTS AND SEWERAGE AUTHORITIES DIVISION.

(H. W. McCay, B.C.E., A.M.I.E. Aust., Divisional Engineer.)

Water supply systems and sewerage works in many country towns are controlled by Local Authorities under the general supervision of the Commission.

Country Water Supplies.

Under the provisions of the Water Acts, when the Council of any Municipality desires to have waterworks constructed and maintained in the municipal district, it first employs a qualified water supply engineer to prepare a report on the proposal, together with general plans and estimates of capital cost, annual expenditure involved, and rating necessary to finance the undertaking. Should the engineer's report indicate that a scheme within the means of the ratepayers could be devised, copies of the report, plans and estimates are submitted to the Commission for examination.

The proposals are carefully reviewed both technically and financially and if approved as feasible and satisfactory, the Council then gives public notice of its intention to seek the constitution of a Waterworks Trust to construct and maintain the proposed works. Interested persons may lodge objections to the proposal within one month and, on the expiry of a further month, consideration is given to the question of constituting a Waterworks Trust.

In addition to one or more Government nominees, the Trust Commissioners may be the whole of the Councillors of the Municipality, the Riding Councillors concerned, or be elected directly by the ratepayers of the waterworks district, or, where the waterworks district is in two or more municipalities, be elected by the Councils concerned.

In special cases Municipal Councils may be constituted Local Governing Bodies under the Water Acts, and these bodies act in all respects as a Waterworks Trust, in so far as water supply activities are concerned.

A Waterworks Trust or Local Governing Body under the Water Acts can borrow from Government sources only, and loans are advanced by the Treasury on very long terms, the redemption payments being equivalent to a sinking fund of only $\frac{1}{4}$ per cent. per annum.

There are now 17 Local Governing Bodies and 116 Waterworks Trusts, including 3 constituted under special legislation, namely, First Mildura Irrigation Trust, Mildura Urban Water Trust, and Geelong Waterworks and Sewerage Trust.

During the year under review Waterworks Trusts were constituted at Foster and Lismore, while the Bet Bet Shire Waterworks Trust and the Keilor and St. Albans Waterworks Trust were abolished following receipt of petitions by majorities of the ratepayers concerned and after liquidation of their liabilities.

Details of the capital liability to the State by these Local Governing Bodies and Waterworks Trusts are set out in the accompanying schedules.

Following the announcement by the Government of the adoption of a liberal basis for granting financial assistance to enable desirable improvements and extensions to be made to existing town water supply schemes and to facilitate the installation of new schemes, many local Authorities have carried out the necessary engineering investigations. Grants totalling £82,720 under the scheme have been allocated in the case of 48 Waterworks Trusts and Local Governing Bodies, and in 25 of these towns works have been commenced or completed, while in many of the remaining towns construction of the works will shortly be commenced.

The past year has been marked by considerable activity in the construction of waterworks, many important works and numerous minor works being carried out.

The **First Mildura Irrigation Trust** carried out renewals of pumping plant and rising mains, and continued to line with concrete further lengths of the main channels to reduce leakage losses and damage to lands.

The **Mildura Urban** Water Trust carried out improvements and extensions to the city reticulation.

The **Avoca Township** Waterworks Trust installed pipe mains and other works to augment the existing service by utilizing the supply from a new catchment.

The **Ballarat** Water Commissioners are installing new pipe mains to provide an increased supply to the higher portions of the city.

The **Bright** Waterworks Trust installed a pumping plant and a rising main to enable the existing supply by gravitation to be supplemented by pumping from the Ovens River.

The **Chiltern** Shire Council has enlarged portion of its main pipe line and installed a concrete tank to provide an improved service to the town.

The **Creswick** Shire Council is enlarging portion of its main pipe line and substituting a pipe main for an open race to improve the supply.

The **Hamilton** Waterworks Trust has constructed a diversion weir and pipe main to utilize the flow from a second catchment, near the existing headworks, to increase the supply brought to the town by the main pipe line during summer periods.

The **Kilmore** Waterworks Trust has carried out improvements to its main pipe line and is constructing a new reservoir near its headworks to enable an increased supply to be maintained.

The Shire of **Kaniva** (formerly Lawloit) Waterworks Trust has installed additional borehole pumping equipment and new mains to improve the Kaniva town supply.

The **Morwell** Waterworks Trust is enlarging the major portion of its main pipe line to provide for development which is taking place.

The **Port Fairy** Waterworks Trust has completed the construction of works for the town supply and it is anticipated water will be supplied during the coming year.

The **Romsey** Waterworks Trust is installing a pipe main to replace the open race in order to reduce losses and to improve the quality of water supplied.

The **Seymour** Waterworks Trust has installed a new pumping plant to improve the supply.

The **Tallangatta** Waterworks Trust commenced the installation of a new pumping plant, rising main and improvements to the reticulation.

The **Traralgon** Waterworks Trust is enlarging portion of its main pipe line and carrying out improvements to the reticulation to enable the increasing demand to be met.

The **Warracknabeal** Waterworks Trust commenced the renewal of the main pipe line from the pumping station to the storage tank.

The **Wodonga** Waterworks Trust is removing its pumping plant to a new site and installing a new and larger pump to reduce operating costs.

The **Yarram** Waterworks Trust is carrying out the renewal and enlargement of the remaining portion of its main pipe line.

Pipe extensions and other works were carried out at **Bairnsdale, Casterton, Daylesford, Dunolly, Echuca, Horsham, Kooweerup, Kyabram, Lancefield, Leongatha, Lorne, Mortlake, Murtoa, Omeo, Rushworth, Shepparton, Stawell, Sunbury, Talbot, Toora, Tungamah, Wangaratta, Wedderburn, Werribee and Yea.**

Investigations were made into proposed improvements to works at **Beaufort, Boort, Charlton, Cobram, Colac, Corryong, Drouin, Dunolly, Euroa, Hepburn, Kerang, Korumburra, Lorne, Macedon, Maffra, Maryborough, Marysville, Merrigum, Moe, Mount Macedon, Murchison, Nathalia, Orbost, Portland, Rochester, Rutherglen, Shepparton, Tarnagulla, Trafalgar, Trentham, Violet Town, Warburton and Warrnambool.**

WATERWORKS TRUSTS.

Name of Trust.	Capital Liability to the State as at 30th June, 1939.	Rate in £1 made for the Year Ending 31st December, 1939.
	£ s. d.	s. d.
Alexandra	4,343 7 0	2 0
Apollo Bay	5,557 17 0	2 3
Avenel	4,530 9 10	3 0
Avoca Township	14,583 18 2	2 3
Bairnsdale	26,552 12 10	1 0
*Ballan	..	2 0 up to £75 net annual valuation
		1 0 over £75 ,, ,,
Bealiba	1,086 12 3	1 6
Benalla	10,519 16 6	1 2
Boort	4,416 9 3	2 6 up to £50 net annual valuation
		2 0 £51 to £100 ,, ,,
		1 9 over £100 ,, ,,
Bridgewater	2,361 13 8	1 5
Bright	4,979 8 3	1 6
Broadford	13,334 0 4	2 8
*Bruthen	..	..
Carisbrook	4,409 8 4	3 0 up to £25 net annual valuation
		2 9 £26 to £36 ,, ,,
		2 6 over £36 ,, ,,
Carrum	24,937 6 0	(Rates made by the Commission, see page 68)
Charlton	7,433 12 5	2 6 up to £640 net annual valuation (Over £640—£80)
Cobram	8,434 15 11	2 3
Colac	64,127 17 11	1 2
Colbinabbin	864 4 7	3 6
Coleraine and Casterton	60,800 15 6	2 9 Coleraine
		2 6 Casterton
Corryong	13,395 7 3	3 0
Daylesford Borough	15,902 0 6	1 0 up to £200 net annual valuation
		0 11 over £200 ,, ,,
Devenish	2,277 10 10	4 0 up to £30 ,, ,,
		3 0 £31 to £75 ,, ,,
		1 0 over £75 ,, ,,
Donald	10,126 14 6	1 9
Drouin	17,430 0 5	2 7
Echuca Borough	22,861 0 6	1 6
Elmore	3,653 3 11	2 3
Euroa	22,644 0 9	2 0
*Foster	..	..
†Geelong	..	..
Gisborne	4,827 2 0	1 9
Glenrowan	1,740 6 1	2 6
Hamilton	59,702 10 2	1 6
Healesville	20,809 17 5	0 9½
Heathcote	10,607 19 3	2 0
Hepburn	6,834 14 7	1 0
Horsham Town	10,976 2 10	1 3
Kaniva Shire	15,291 12 11	0 4 Rural
		2 9 Urban
Kara Kara Shire	2,398 0 10	0 2
Kerang	9,745 6 0	1 3
Kerang Shire	815 7 11	(No rate made)
Kilmore	17,995 1 2	2 3 Kilmore
		2 6 Wandong
Kooweerup	8,326 2 10	1 10
Koroit	2,041 8 2	1 6
Korumburra	18,728 16 7	1 0
Kyabram	14,193 4 9	1 6
Kyneton Shire	12,089 6 9	0 6
Lancefield	7,174 19 11	3 6
Leongatha	24,407 15 9	1 10
Lilydale	5,064 1 7	1 3
*Lismore	..	..
Loddon United	6,456 18 5	(Rates made by the Commission, see page 68)
Longwood	1,942 2 7	3 0
Lorne	10,163 6 8	1 6
Lowan Shire	8,840 14 6	0 3
Carried forward	652,737 4 1	

WATERWORKS TRUSTS—*continued.*

Name of Trust.	Capital Liability to the State as at 30th June, 1939.	Rate in £1 made for the Year Ending 31st December, 1939.	
	£ s. d.	s. d.	
Brought forward ..	652,737 4 1		
Macedon	9,399 14 0	2 4	
Maffra	13,715 7 4	1 4	
Malmsbury	3,159 12 4	3 0	
Mansfield	9,541 9 9	2 0	
Maryborough	83,114 5 11	2 3	
Marysville	2,219 19 11	2 6	
Merrigum	1,891 10 4	3 6	
Moe	9,964 18 1	2 0	
Mooroopna	8,939 2 4	1 11	
Mortlake	3,879 9 0	1 6	
Morwell	14,931 16 5	1 3	
Mount Macedon	5,456 13 1	1 9	
Murchison	4,512 5 6	2 3	
Murtoa	4,092 1 10	1 6	
Myrtleford	11,444 15 4	2 6	
Nagambie	4,640 1 2	2 0	
Nhill	20,102 11 5	2 6	
Numurkah Shire	12,676 9 1	0 1	Numurkah Rural
		1 11	Numurkah Urban
		3 6	Wunghnu Urban
		3 0	Strathmerton Urban
		2 3	Nathalia Urban
Omeo	3,584 6 5	2 6	
Orbost	16,599 12 8	2 6	
Port Fairy	20,754 1 11	(No rate yet made)	
Portland	22,806 13 1	1 2	
Riddell's Creek	2,622 12 4	2 4	
Rochester	10,959 14 10	1 3	
Romsey	3,200 0 5	2 0	
Rosedale	3,073 14 2	2 3	
Rushworth	8,468 3 2	2 6	
Rutherglen	21,831 5 1	3 6	
Seymour	23,419 15 11	1 0	
Shepparton Shire	809 0 9	0 9	
Shepparton Urban	24,521 4 3	1 3	
St. Arnaud Borough	45,853 5 9	3 0	
*Stawell Shire	..	..	
Stratford	3,435 5 11	2 8	
Sunbury	18,109 18 11	1 3	
Swan Hill	27,024 8 3	1 3	
Tallangatta	3,209 17 0	2 0	
Tatura	6,070 0 6	1 7	
Tongala	3,191 17 11	1 3	
Toora	13,805 6 0	2 3	up to £75 net annual valuation
		1 6	over £75 ,, ,, ,,
Trafalgar	16,015 9 7	1 9	
Traralgon	37,412 17 2	1 10	
Trentham	4,081 8 4	2 0	
Tungamah Shire	11,014 1 9	2 6	Tungamah Urban
		2 0	St. James Urban
		2 0	Katamatite Urban
		Tungamah Rural—	
		0 6	Divisions 1 and 2
		0 4	Division 3
		0 3	Division 4
Violet Town	7,283 2 2	3 0	
Wahgunyah	2,689 19 2	1 6	
Wangaratta	30,957 1 11	1 3	
Warburton	1,939 6 7	1 0	
Warracknabeal	14,429 17 8	1 9	
Warragul	20,555 16 4	1 0	
Winchelsea	3,532 11 6	1 9	
Wodonga	24,044 12 0	1 9	
Woodend	20,094 3 6	1 9	
Yackandandah	4,028 5 5	2 6	
Yarra Junction	11,417 19 5	2 6	
Yarram	14,891 0 5	1 6	
Carried forward ..	1,384,157 5 1		

WATERWORKS TRUSTS—*continued.*

Name of Trust.	Capital Liability to the State as at 30th June, 1939.	Rate in £1 made for the Year Ending 31st December, 1939.
	£ s. d.	s. d.
Brought forward ..	1,384,157 5 1	
Yarrawonga Urban	8,046 1 3	1 4
Yatchaw	3,615 4 0	4 0
Yea	5,554 7 4	1 10½
†First Mildura Irrigation ..	47,322 12 10	(Special Rating)
Mildura Urban	10,644 16 5	(Special Rating)
Total ..	1,459,340 6 11	

* The Ballan and Stawell Shire Waterworks Trusts have liquidated their liabilities, and the Bruthen, Foster and Lismore Waterworks Trusts have not yet incurred any Capital Liability.

† In addition, the First Mildura Irrigation Trust has borrowed further amounts, and the Geelong Waterworks and Sewerage Trust has borrowed the whole of its funds, from other than Government sources.

	£ s. d.	£ s. d.
Total Capital Liability of Waterworks Trusts		**1,459,340 6 11**
Less Liability to Unemployment Relief Funds	55,162 8 7	
Advances from Surplus Revenue	28,496 18 11	
Capitalized Interest	6,870 16 9	
		90,530 4 3
Net Interest Bearing Loan Liability of Waterworks Trusts		**£1,368,810 2 8**

LOCAL GOVERNING BODIES.

Authority.	Capital Liability to the State as at 30th June, 1939.	Rate in £1 made for the Year Ending 31st December, 1939.
	£ s. d.	s. d.
*Arapiles Shire	..	(No rate made)
Ararat Borough	92,896 5 2	2 0
Ballarat Water Commissioners ..	285,125 8 5	5 per cent. up to £300 net annual valuation
		4½ per cent. £301 to £500 ,, ,,
		4 per cent. £501 to £1,000 ,, ,,
		3½ per cent. over £1,000 ,, ,,
Beechworth Shire	20,694 17 4	1 6
Bet Bet (Dunolly) Shire ..	5,366 18 1	1 6
Bet Bet (Tarnagulla) Shire ..	2,235 11 6	1 6
Chiltern Shire	2,698 2 1	1 9
Clunes Borough	9,650 7 0	2 0 up to £80 net annual valuation
		1 0 over £80 ,, ,,
Creswick Borough	916 15 6	1 3 up to £45 ,, ,,
		1 0 £46 to £99 ,, ,,
		0 10 over £99 ,, ,,
Inglewood Borough	12,886 7 4	1 9 (Nine months only)
Korong Shire	13,721 14 10	2 3 Wedderburn
		3 6 Korong Vale
Ripon (Beaufort) Shire ..	16,689 0 2	2 6
Stawell Borough	61,651 15 4	2 6
Talbot Borough	1,840 10 5	1 6
Warrnambool City	27,975 0 1	1 0
Werribee Shire	14,540 15 7	2 0
Wimmera Shire	1,906 8 4	(No rate made)
Total ..	570,795 17 2	

* The Arapiles Shire Council has liquidated its liability.

	£ s. d.	£ s. d.
Total Capital Liability of Local Governing Bodies		**570,795 17 2**
Less Liability to Unemployment Relief Funds	9,385 1 11	
Advances from Surplus Revenue	4,000 0 0	
Capitalized Interest	3,874 11 6	
		17,259 13 5
Net Interest Bearing Loan Liability of Local Governing Bodies		**553,536 3 9**

Sewerage in Country Districts.

Under the provisions of the Sewerage Districts Acts, when the Council of any Municipality or any Waterworks Trust desires to have sewerage works constructed and maintained within its district, it firsts employs a qualified engineer to prepare a report on the proposal with plans of a tentative undertaking and estimates of capital cost, annual expenditure involved and rating necessary to meet this annual expenditure. Should the engineer's report indicate that a scheme within the means of the ratepayers could be devised, copies of the report, plans, and estimates are submitted to this Commission and the Commission of Public Health for examination.

The proposals are carefully reviewed by this Commission both technically and financially, consideration being given to any representations made by the Commission of Public Health. Should the proposed sewerage undertaking be approved as feasible and satisfactory, the Council or Waterworks Trust then gives public notice of its intention to seek the constitution of a Sewerage Authority to construct and maintain the proposed sewerage works.

Interested persons may, within one month, lodge objections to the proposals and, on the expiry of a further month, consideration is given to the question of constituting a Sewerage Authority.

A Sewerage Authority may consist of the whole of the Councillors of the Municipality, or the Councillors of a Riding or Ridings together with not more than three Government nominees, or the whole of the Commissioners of a Waterworks Trust, or the whole of the members of a Local Governing Body, within whose district the sewerage district is situated, or, if the sewerage district is not wholly within one municipal district, the members of the Sewerage Authority may be elected by the ratepayers within the sewerage district.

A Sewerage Authority may be granted a loan by the Government, but more usually borrows on the open market by the issue of its own debentures.

There are now 38 Sewerage Authorities in country centres as set out in the accompanying schedule.

Schedule of Sewerage Authorities.

Authority.	Date of Constituting Order in Council.	Remarks.
Bendigo	20th November, 1916	Works in operation.
Ballarat	30th November, 1920	
Colac	13th November, 1923	
Horsham	22nd June, 1926	
Swan Hill	8th November, 1926	
Echuca	18th October, 1927	
Mildura	12th June, 1928	
Warrnambool	26th November, 1929	
Bairnsdale	24th October, 1932	
Kerang	19th December, 1932	
Wangaratta	11th April, 1933	
Kyneton	4th December, 1933	Construction commenced 6th April, 1939.
Benalla	16th January, 1934	Construction completed. Houses being connected.
Shepparton	2nd July, 1934	Works in operation.
Castlemaine	18th December, 1934	Construction completed. Houses being connected.
Hamilton	28th February, 1935	Construction completed. Houses being connected.
Dandenong	27th May, 1935	Construction completed. Houses being connected.
Warragul	1st July, 1935	Construction commenced 15th March, 1939.
Ararat	21st October, 1935	Construction completed. Houses being connected.
Sale	16th June, 1936	Final plans being prepared.
Warracknabeal	24th May, 1938	Construction commenced 17th April, 1939.
Portland	21st June, 1938	Final plans being prepared.
Maffra	6th September, 1938	Final plans being prepared.
Murtoa	26th September, 1938	Final plans being prepared.
Kyabram	11th October, 1938	Final plans being prepared.
Nhill	17th October, 1938	Plans prepared and tenders invited.
Lorne	17th October, 1938	Detail survey in progress.
Yarrawonga	28th November, 1938	Detail survey in progress.
Dimboola	12th December, 1938	Final plans being prepared.
Wodonga	10th January, 1939	Detail survey in progress.
Morwell	31st January, 1939	Final plans being prepared.
Euroa	31st January, 1939	Detail survey in progress.
Traralgon	21st February, 1939	Detail survey in progress.
Werribee	21st February, 1939	Detail survey about to be commenced.
Mornington	21st March, 1939	Detail survey in progress.
Leongatha	27th March, 1939	Detail survey in progress.
Yarram	24th April, 1939	Detail survey about to be commenced.
Beechworth	24th April, 1939	Detail survey about to be commenced.

The 5 sewerage schemes under construction at the beginning of the year have been completed and the connexion of house drains to the sewers is well advanced and in three of these towns is nearing completion.

As a result of the adoption by the Government of a liberal basis for granting financial assistance to faciliate the installation of sewerage schemes in the smaller country centres, the construction of sewerage works has now been commenced in 3 towns where Sewerage Authorities had already been constituted, and 16 new Sewerage Authorities have been constituted during the year. Good progress has been made by recently constituted Authorities in carrying out detail surveys and the preparation of final plans for works. In 1 case tenders have been invited, in 7 centres final plans are in course of preparation and the detail surveys are in progress in 7 other centres.

Grants approved during the financial year 1938–39 amounted to £145,742.

The **Ballarat** Sewerage Authority has undertaken further extensions of the sewer reticulation to serve additional outer areas.

The **Bendigo** Sewerage Authority also carried out extensions to the sewer reticulation in the outer areas and has constructed additions to the treatment works necessitated by the extensions of the scheme.

The **Ararat, Benalla, Castlemaine, Dandenong,** and **Hamilton** Sewerage Authorities completed the construction of the main sewerage schemes and the work of connecting the houses to the sewers is in progress in all these centres and is nearing completion at Benalla, Castlemaine and Hamilton.

At **Kyneton, Warracknabeal** and **Warragul** the sewerage schemes are now under construction.

Sewerage Authorities were constituted at 16 centres, namely, **Beechworth, Dimboola, Euroa, Kyabram, Leongatha, Lorne, Maffra, Mornington, Morwell, Murtoa, Nhill, Traralgon, Werribee, Wodonga, Yarram** and **Yarrawonga.**

The **Nhill** Sewerage Authority carried out the detail survey of the Sewerage District, prepared final plans for works and invited tenders for their construction.

The **Dimboola, Kyabram, Maffra, Morwell, Murtoa, Portland** and **Sale** Sewerage Authorities carried out detail surveys and final plans are being prepared in all these cases.

At **Euroa, Leongatha, Lorne, Mornington, Traralgon, Wodonga** and **Yarrawonga** detail surveys are being carried out and it is anticipated that at **Beechworth, Werribee,** and **Yarram,** the detail surveys will shortly be undertaken.

Proposed sewerage schemes at **Bacchus Marsh** and **St. Arnaud** were generally approved but the constitution of Sewerage Authorities has not been sought at these centres.

Proposals for the sewering of **Beulah, Charlton, Cohuna, Hopetoun, Jeparit, Minyip, Noble Park, Sea Lake, Spring Vale** and **Wycheproof** were examined, but could not be approved as these 10 schemes were financially impracticable.

RESEARCH AND TESTING BRANCH.

(J. M. Mathew, B.M.E., A.M.I.E. Aust., Superintendent.)

A large volume of work was handled during the year, particularly in the inspection and testing of pipes and fittings. This was due in a considerable measure to the constructional activities in the Otway Waterworks District and the Bendigo Emergency Supply pipe line. Much of the work was in welded steel, designed to carry high pressures, and in such case not only is it necessary to check the true shaping of the plates into pipes and the quality of the welding with hydraulic pressure and other tests, but also a close watch must be kept on the placing of the specified external protective coating of tar and pitch and the internal cement mortar lining.

A new feature now being introduced is the more extensive and exact study of the engineering constructional properties of soils and clays. During the last 10 years or so the study of Soil Mechanics, as it is termed, has been greatly advanced. Standard lines of investigation are recognized by leading engineering authorities and various forms of apparatus have been devised, and perfected, for carrying out what may be regarded as fundamental tests. Accordingly, the Commission has decided to establish a Soil Mechanics Laboratory which, while of necessity small, will be reasonably complete in its scope for the investigation of the characteristics of soils and clays with special reference to their use in reservoir banks and analagous structures. Most of the equipment has been ordered, and it is expected that the laboratory will soon be in operation.

As the initial investigation is for the River Murray Commission in connexion with the Hume Reservoir bank, the laboratory will, in the first instance, be located at Hume Reservoir.

In summarizing the work of the Research and Testing Branch, the main items are presented in a tabulated form, as far as possible, under sub-headings as follow :—

(1) Routine Laboratory Tests.

—	Portland Cement.	Concrete Specimens.
	Tons.	
For the Commission	3,100	210
For other Departments	5,300	500
Totals	8,400	710

(2) Routine Outside Tests.

As already pointed out, much of this testing was undertaken in connexion with constructional work in the Otway Waterworks District and Coliban District. However, a quantity of constructional material was handled also for Mornington Peninsula Extension, and in fact most of the Commission's constructional activities participated in some degree.

Although the pipes tested represented many different diameters and pressure heads, for the sake of brevity, no differentiation has been made in the following summarized statement.

Material.	Length.	Number.
	Feet.	
Welded Steel Cement Lined Pipes	131,269	..
Cast Iron Pipes	1,128	..
Asbestos Cement Pipes	95,000	..
Cement Concrete Pipes (High Pressure)	114,744	..
Sluice Valves	..	193
Special High Pressure Scour Valves	..	26
Air Valves	..	41
Totals	342,141	260

(3) Inspection of Materials.

Owing to the nature of the raw or fabricated material, routine testing is not always applicable, and careful inspection is made prior to acceptance. In detail, materials inspected in this way consisted of—

Material.	Lineal Feet.	Super Feet.	Number.
Wood Pipes	66,946	..	..
Cement Concrete Pipes (Low Pressure)	18,548	..	..
Concrete Culverts and Inverts	525	..	..
Cast Iron Gibault Joints (for Asbestos Cement Pipes)	..	..	4,101
Fire Plugs	..	..	64
Fire Plug Covers	..	..	202
Valve Covers	..	..	68
Castings, such as Bends, Tees, &c.	..	..	2,255
Meter Covers	..	..	1,200
Steel Joists	1,712	..	..
Steel Channel Wheel Doors	..	..	290
Lifting Gear	..	..	(sets) 28
Rubber Rings (for Asbestos Cement Pipes)	..	..	2,368
Oregon	..	56,000	..
Red Gum, Jarrah, and Hardwood	..	3,200	..
Totals	87,731	59,200	10,576

In addition, many other items such as joinery, scoops, pipe laying gear, and steel reinforcement, were inspected.

(4) Chemical and Physical Examinations of Materials.

Water samples to the number of 130 were examined, mainly with reference to mineral content. The samples were derived from many different areas in the State, one series of special interest being obtained from a number of bores in the Werribee area.

The water from many of these bores was too highly mineralized for general use for irrigation, but was successfully employed as a temporary expedient during the acute shortage of irrigation water which prevailed last summer.

Approximately 60 soil and clay samples from reservoir banks, channels and elsewhere were examined.

As previously indicated, full equipment was not available for such purpose, and the examinations were in general limited in character.

(5) Research.

Experimental work for the design of concrete mixtures for various works claimed a good deal of attention, particularly with reference to the construction of the proposed Lauriston Reservoir.

Further tests will be required in this connexion, however, as it is apparent that special features in the design of the reservoir wall will make the use of " low heat cement " desirable. This form of Portland cement has not as yet been manufactured or used in Victoria. Its special features are that contraction of the concrete during hardening is reduced and the concrete is more resistant to minor corrosive agencies.

(6) Miscellaneous.

Other materials have been subjected to test, including paints, pitch and other protective coverings for steel and iron pipes, and water measuring devices.

The number of cases of algal infestation of reservoirs contributing disagreeable conditions of taste and smell has been less than usual. No trouble was reported from Hume Reservoir or lower down the River Murray.

At Lance Creek Reservoir, Wonthaggi, which seems particularly susceptible to algal growths, copper sulphate treatment was applied, with beneficial results, at times when microscopic examination of the water demonstrated the presence of an incipient algal growth.

VALUATIONS BRANCH.

(H. C. Valentine, A.M.I.E. Aust., Sworn Valuator Under Transfer of Land Act, 1928, Chief Valuer.)

The newly constituted Maffra–Sale Drainage District was valued for rating purposes. This District comprises 24,330 acres and includes 217 separate assessments of a Net Annual Value of £26,402.

Twenty-six supplementary valuations of Irrigation and Waterworks Districts were returned. This work involved valuing some 77,459 acres of a total net annual value of £17,710.

One hundred and twelve claims for compensation for land required for the Commission's works were settled for £8,479, the amount claimed having been £14,959.

IRRIGATION BRANCH.

(J. A. Aird, B.Sc., B.Ag.Sc., Dip. Com., Chief Irrigation Officer.)

Introduction.

The Commission, in accordance with Section 32 of the *Water Act* 1928, is required to to make provision, as far as such moneys as are legally available enable it to do (*inter alia*), to—

(1) instruct the occupiers of lands in irrigation and water supply districts in the best methods of irrigated culture of the utilization of water in agricultural and in general rural economy;

(2) ascertain and record the extent of land from time to time under irrigation in the several irrigation and water supply districts and the nature of the crops grown in and the products of such districts; and

(3) promote the discussion of matters of general interest among the settlers in the irrigation and water supply districts.

These functions have, since the inception of the Commission, formed part of the general duties of a number of the branches of the Commission. This year, in order to give a more efficient service, the Commission has transferred such duties to a new Branch termed the Irrigation Branch.

The Benefits of Irrigation.

The year just passed has been one of the most difficult in the history of irrigation in Victoria. Commencing the winter with the reservoirs already depleted after the heavy call made by the dry summer and autumn of the year 1937–38, the usual rains of July, August, and September did not fall over the catchment areas in 1938. These rains are depended on for replenishment of the reservoirs, and, after allotment to Victoria of half the water in the Hume Reservoir, the Commission commenced the 1938–39 irrigation season with only 734,005 acre-feet in the Hume, Eildon, Waranga and the other Reservoirs, as compared with the then total capacity of 1,903,450 acre feet.

As stated elsewhere in the Report, restrictions were imposed, and the area irrigated throughout the State was consequently smaller than in the previous year, the total area irrigated being 515,357 acres as compared with 590,112 acres in the record year 1937–38. This figure, however, compares most favorably with the area of 324,000 acres irrigated in the drought year of 1914–15, when the rainfall on the catchments was, if anything, more than this year.

On the other hand, the heavy rains which fell in the Goulburn Valley since the break in the weather in February, 1939, caused local flooding. This resulted in the " killing out " of lucerne and pastures and may have a deleterious effect in the orchard areas.

During the drought, the benefits of the irrigation system to the State were evident to all. In the dry period of 1937 and 1938 large quantities of lucerne and hay were sent to all northern areas and to New South Wales and, in addition, sheep and cattle were brought into the irrigation areas for agistment. The exact benefits are most difficult to determine, sheep and cattle being brought in and taken out of the irrigation areas by road. However, the effect of irrigation on the general economy of the State is clearly shown by the reduction in the mortality of stock during 1937–38 as compared with the 1914–15 drought. During 1914 and 1915 the losses of sheep, cattle and horses were 16 per cent., 14 per cent. and 12 per cent. respectively, compared with 9 per cent., 4 per cent. and 7 per cent. in 1937 and 1938. As the average biennial loss of sheep, cattle and horses, amounts to approximately 8 per cent., 4 per cent. and 6 per cent. respectively, the actual losses due to the 1937–38 drought represented only 1 per cent. of sheep, none of cattle and 1 per cent. of horses. There is no doubt that this reduced mortality is the result of the development of irrigation.

In addition, the total number of stock in the State has increased considerably since 1915, the figures for sheep, cattle and horses in 1915 being 12,000,000, 1,500,000 and 550,000 compared with 19,000,000, 1,900.000 and 350,000 in 1938. Although top-dressing of pastures and other improved methods of agriculture are largely responsible for these increases, irrigation development must be credited as a considerable factor.

The following statistics showing the development of the Cohuna District since 1908 are indicative of the progress resultant from irrigation, and are illustrative of the progress generally throughout the Irrigation Areas :—

	1908.	1938.
Population	2,300	3,900
Area of Lucerne and Pastures	1,525 acres	24,728 acres
Number of Dairy Cows	5,419	15,549
Number of other Cattle	6,885	10,732
Number of Sheep	38,123	72,533

It is very difficult, in view of the change in prices, to express in pounds, shillings and pence, the increased annual production as a result of this development, but, assuming the production in 1908 to have been sold at the prices current in the last five years, the comparative values of the annual production would have been £95,000 in 1908, and £275,000 in 1938. These figures show that, in this comparatively small area of 70,000 acres, production due to irrigation development has increased by £180,000 (approximately 200 per cent.). In addition, there is the additional return from business, transport and the professions in the district, so that the increase in the national dividend in the Cohuna District alone, as a result of irrigation, would be approaching £250,000 per annum. This is, of course, after allowing for fodder grown and used on the farms which, although part of the production, does not represent "cash received" to the farmer. To obtain this production some 55,000 acre feet of water were used in 1938.

The benefits of irrigation in maintaining production during comparatively dry years is shown by the analysis of the Herd Testing Association's results for 1937–38, which have been published since the issue of the last Annual Report. In these tests the average production of butter-fat per cow in the Goulburn Valley, which includes most of the irrigation areas of the State where dairying is a leading industry, was 252 lb. per cow, as compared with 224 lb. in the rest of the dairying areas of the State. In the report of these results, the Rochester Association is specially eulogized as being the only Association in Australasia which has averaged over 300 lb. per cow per annum for seven years. Herds from this Association occupied first and second places in the list of high-producing herds under 20 cows, second and third in the corresponding list for 20 to 39 cows, and first in the list for herds of 40 to 59 cows.

In the competition for the Best Dairy Farm of the State, the first prize was won by Mr. Freestone, of Murchison, a closer settler in the Rodney Irrigation District, and he was also successful, together with Messrs. Bullingham, of Tongala, Watson, of Shepparton, and Neilson, of Tatura, in winning the District Shield for the Goulburn Valley Area. As the economical production of butter-fat enters largely into the judging of this competition, the winning of it is a further indication of the suitability of the irrigation areas for dairying.

The drought was associated with extremely high temperatures throughout the State, and these particularly affected the vineyards in the Mildura area, with the result that the average yield was reduced. In addition, the early break in the weather, while of incalculable benefit to the rest of the State, made conditions most difficult during harvesting, with the result that there was a fall in the grade of the crop by at least one crown, and some fruit was spoiled beyond harvesting. The total crop of currants, sultanas and lexias, as compared with 56,750 tons the previous year, was approximately 47,000 tons, which figure, however, is higher than the average of 44,000 tons for the previous five years. This result indicates that, notwithstanding the weather conditions, the general improvement in crop yields attributed to the drainage schemes inaugurated by the Commission was maintained.

Canned fruit production, particularly of early and mid-season crops, such as apricots and peaches, was affected by the drought, but the resultant Australian pack of 2,708,195 cases was still higher than that of any season prior to 1937–38. The Shepparton, Ardmona, and Kyabram Co-operative Canneries, in packing 1,251,341 cases, maintained their last year's percentage—65 per cent.—of the Victorian pack of 1,919,793 cases. At one stage it appeared as if the late peaches and pears would be seriously affected, but the timely rains on 25th and 26th February, 1939, obviated such a happening. As stated previously, the heavy rains of April and May caused a certain amount of waterlogging, and prevented the usual autumn cultural operations in the orchards, and it remains to be seen whether there has been any permanent damage and whether the 1939–40 crop in the Irrigation Areas at Shepparton, Ardmona, and Kyabram will be affected to any extent.

Improvement of Irrigation Methods.

During the year the Commission continued its policy of co-operating with the Commonwealth Council for Scientific and Industrial Research, the Victorian Department of Agriculture, and the District Agricultural Societies in the improvement of irrigation methods. Representatives of the Commission are members of the Committees of the Merbein Research Station, the Nyah–Woorinen Dried Fruit Inquiry Committee, and the Kerang Drainage Committee. During the year the Council for Scientific and Industrial Research and the Department of Agriculture completed the Soil Survey of the Kerang District, which will be of material assistance to the farmers and business men of the district. The same bodies are also proceeding with the Soil Survey of the Murray Valley District.

The Commission during the year gave prizes for competitions organized by the District Agricultural Societies for pasture improvement, lucerne growing, and fodder conservation. It is considered that these competitions are an invaluable method of disseminating the knowledge obtained by the Department of Agriculture as the result of experiments at the Werribee Research Station and at other experimental areas throughout the State.

District Advisory Boards.

The Commission is still continuing its co-operation with associations of irrigators in the administration of local matters, and Advisory Boards have been elected by the irrigators in the majority of districts. These Advisory Boards, together with such bodies as the Northern Fruitgrowers' Association, were of material assistance to the Commission in deciding upon and carrying out the methods of distribution of water during the shortage of supplies in the spring and summer months.

In the Dried Fruit Areas the Advisory Boards, in addition to co-operating in other ways, make recommendations to the Commission as to the dates on which irrigation should commence.

The districts in which these Boards are functioning are Bacchus Marsh, Boort, Calivil, Cohuna, Dingee, Katandra, Koondrook, Leitchville, Merbein, Mystic Park, North Shepparton, Nyah, Red Cliffs, Rochester, Rodney, Shepparton, South Shepparton, Swan Hill, Tongala, Tragowel Plains, Tresco, and Werribee.

Subdivision of Irrigated Lands.

In the early days of water supply development in Victoria, there was no control of private land subdivisions and it was frequently found that no provision was made by the subdividors for satisfactory water supplies to resultant individual holdings. The purchasers of the land, therefore, had to carry on with poor services, or, at a considerable cost to themselves, arrange with the Commission for the supplies to be improved. In view also of the fact that the subdivisions were usually made with little thought as to water supply, the cost of channels and other water supply works to the several holdings was comparatively high.

In order to overcome these difficulties, a provision was added to the Water Act in 1916, requiring every person who intended to subdivide lands to which a water right had been apportioned to give notice to the Commission of such intention and to submit a plan showing the proposed subdivisions and all works constructed or to be constructed by him for the supply of water to each portion of the land when subdivided and for the drainage of any surplus water therefrom.

The operation of this provision protects intending purchasers who, as stated above, might find that they had purchased irrigable lands for which inadequate or, in certain cases, no arrangement had been made for the necessary water supply works.

In many cases the subdivision of land within irrigation districts, whilst increasing the annual costs of the Commission for maintenance and general administration, provides little or no increase in revenue and the Commission, therefore, requires that the subdividor should, in addition to paying for the necessary water supply works, pay a further sum to reimburse it for the additional annual costs involved.

The number of subdivisions approved last year was 36.

LANDS UNDER IRRIGATED CULTURE.

The two Statements hereunder show the extent of Areas Irrigated—(A) during last year in detail, and (B) during the last five years totalled for purposes of comparison.

(A) STATEMENT OF THE EXTENT OF IRRIGATION AND OF AREAS OF DIFFERENT KINDS OF CROPS WATERED —YEAR 1938–39.

Name of District.	Area Irrigated (Acres).								
	Cereals.	Lucerne grown for Pasture and Hay.	Sorghum and other Annual Fodder Crops.	Pastures, Native and Sown.	Vineyards.	Orchards or Gardens.	Fallow.	Miscellaneous.	Total.
Supplied from Goulburn State Works.									
Katandra	700	2,535	128	1,469	8	30	21	..	4,891
North Shepparton	3,809	2,005	162	4,374	..	129	5	..	10,484
Shepparton	994	364	270	4,091	24	8,274	34	18	14,069
South Shepparton	1,234	1,126	72	2,441	1	169	..	..	5,043
Rodney	14,373	18,181	712	21,531	233	7,984	160	..	63,174
Stanhope	1,670	3,677	306	6,011	..	527	9	..	12,200
Tongala	3,467	5,272	375	10,206	27	1,199	251	..	20,797
Rochester	6,746	10,264	605	28,710	17	1,727	169	27	48,265
Echuca North	962	1,039	201	2,686	..	1	160	..	5,049
Dingee	433	87	44	3,365	..	22	13	..	3,964
Calivil	3,771	1,541	316	4,708	..	130	..	..	10,466
Tragowel Plains	9,788	1,643	2,934	26,132	..	26	147	664	41,334
Deakin	1,732	1,548	79	1,523	..	20	..	..	4,902
Boort	3,882	1,494	1,939	7,604	..	..	119	..	15,038
Totals	53,561	50,776	8,143	124,851	310	20,238	1,088	709	259,676
Supplied from River Murray State Works.									
(a) Torrumbarry Weir.									
Leitchville	608	744	254	5,561	..	38	20	..	7,225
Cohuna	3,133	3,066	1,789	32,944	..	163	262	10	41,367
Koondrook	4,005	1,760	3,226	15,253	10	769	130	542	25,695
Swan Hill	3,818	4,888	2,361	10,905	3,358	965	369	..	26,664
Third Lake	526	97	328	1,893	..	5	..	6	2,855
Mystic Park	1,142	248	365	2,365	8	..	..	45	4,173
Tresco	13	37	..	8	783	298	..	..	1,139
Fish Point	28	210	228	2,108	..	..	..	..	2,574
Kerang	5,118	948	5,576	22,405	8	..	70	420	34,545
Dry Lake	22	..	150	520	..	..	..	..	692
Kerang North-West Lakes	875	261	182	1,488	92	500	..	52	3,450
Lands supplied direct (outside Districts)	1,901	2,261	790	5,741	..	103	71	33	10,900
Totals	21,189	14,520	15,249	101,191	4,259	2,841	922	1,108	161,279
(b) Direct from River.									
Nyah	54	207	64	25	2,481	126	20	10	2,987
Red Cliffs	..	156	24	159	10,447	580	..	16	11,382
Merbein	..	77	56	312	6,821	592	..	67	7,925
Totals	54	440	144	496	19,749	1,298	20	93	22,294
Totals (River Murray State Works)	21,243	14,960	15,393	101,687	24,008	4,139	942	1,201	183,573
Supplied from Loddon and other Northern State Works.									
Boort	..	..	40	851	..	..	..	..	891
Coliban	..	..	..	..	..	..	..	..	..
Campaspe	250	154	..	154	..	..	..	..	558
Western Wimmera	22	313	93	805	66	1,116	..	5	2,420
Wimmera United	..	32	58	35	..	..	..	..	125
Totals	272	499	191	1,845	66	1,116	..	5	3,994
Supplied from Southern State Works.									
Bacchus Marsh	2	607	47	393	..	143	29	..	1,221
Werribee	122	1,073	254	3,860	..	1,593	305	..	7,207
Maffra–Sale	1,374	1,567	1,095	16,069	..	..	2,762	1,392	24,259
Totals	1,498	3,247	1,396	20,322	..	1,736	3,096	1,392	32,687
Supplied from other Works.									
First Mildura District	..	480	132	..	10,172	981	..	158	11,923
Private Diversions—Kerang (outside Districts)	238	15	399	1,341	..	..	..	..	1,993
Other Private Diversions throughout the State	7,567	6,171	1,288	1,583	569	1,802	..	2,531	21,511
Totals	7,805	6,666	1,819	2,924	10,741	2,783	..	2,689	35,427
Grand Tota's 1938–39	**84,379**	**76,148**	**26,942**	**251,629**	**35,125**	**30,012**	**5,126**	**5,996**	**515,357**
Grand Totals, 1937–38	65,466	87,655	26,548	326,518	34,314	32,103	7,342	10,166	590,112

(B) COMPARATIVE STATEMENT OF THE EXTENT OF IRRIGATION 1934–35 TO 1938–39.

Source of Supply.	Area under Irrigation (Acres).				
	1934–35.	1935–36.	1936–37.	1937–38.	1938–39.
Goulburn State Works	266,331	256,184	267,830	311,059	**259,676**
River Murray State Works	163,547	172,037	176,370	210,084	**183,573**
Loddon and Other Northern State Works	18,844	14,707	14,671	7,315	**3,994**
Southern State Works	18,294	24,060	29,043	31,444	**32,687**
Mildura and Private Diversions	27,210	28,847	30,913	30,210	**35,427**
Totals	494,226	495,835	518,827	590,112	**515,357**

PART III.—ADMINISTRATION AND FINANCE.

COMMISSION.

During the year Mr. W. A. Robertson, M.C.E., M.Inst.C.E., M.I.E.Aust., Commissioner, visited America, Great Britain and the Continent to investigate overseas developments in dam design and construction and in irrigation practice. He left Victoria on 31st August, 1938, and returned on 5th March, 1939.

A considerable amount of technical data in relation to engineering practice as applied to water supply activities in other countries was obtained by Mr. Commissioner Robertson during his visit abroad, and this information has been made available to the Commission's Officers.

Mr. P. J. O'Malley, Secretary of the Commission, was appointed as Acting Commissioner during the period of Mr. Robertson's absence.

INTERSTATE CONFERENCE ON WATER CONSERVATION AND IRRIGATION.

A conference of representatives of the States of New South Wales, Victoria, South Australia, Western Australia, Queensland, and Tasmania was held in Sydney from 24th to 27th April, 1939, to discuss questions relating to water conservation and irrigation.

At this conference the State of Victoria was represented by the Chairman of the State Rivers and Water Supply Commission, Mr. L. R. East, M.C.E., M.Inst.C.E., M.Am.Soc.C.E., M.I.E.Aust., the Director of Geological Survey, Mr. W. Baragwanath, and by Mr. J. A. Aird, B.Sc., B.Ag.Sc., Dip. Com., Chief Irrigation Officer of the State Rivers and Water Supply Commission.

The following resolutions were carried at this Conference :—

RESOLUTION 1.

National Investigation into Underground Water Supplies.

1. (*a*) That it is desirable that a national investigation be made into the question of underground water supplies and matters relating thereto.

(*b*) That the States and the Commonwealth participate in the investigation.

(*c*) That the investigation be carried out by an expert or experts.

2. That Conference recommends to the Commonwealth and each State Government accordingly.

RESOLUTION 2.

Use of Border Rivers.

The utilization of the waters in any border stream in which more than one State is concerned should be preceded by an inquiry by representatives of the States concerned.

RESOLUTION 3.

Supply of Headworks and Main Supply Works Free of Charge to Settlers.

The Conference expressed the opinion that in developing many water conservation and irrigation schemes, it will become necessary for the Government to supply the whole or part of the headworks and main supply works free of any charge against the settlers directly benefiting. A precedent for this nationalization of headworks is found in the case of the Murray, the Lachlan and the Murrumbidgee Rivers, and in the case of certain headworks in Victoria.

RESOLUTION 4.

Financial Assistance by Commonwealth.

That this Conference is of the opinion that there are a number of schemes of water conservation, supply, irrigation, and hydro-electricity in certain States which are beyond the financial resources of such States and recommends that the question of financial assistance from the Commonwealth on a basis to be determined by negotiation should be discussed at a subsequent Conference to be held with Commonwealth representatives.

RESOLUTION 5.

Permanent Advisory Council.

That, having in mind the important part which the conservation and utilization of water has played, and is destined to play in the development of Australia, Conference is of the opinion that a permanent advisory committee or council, consisting of representatives from each State and from the Commonwealth, should be formed to consider and advise on those problems relating to the conservation and utilization of water, which are of national or interstate interest and importance, and further, that Conference recommends to State Governments that the formation of such a committee or council be referred to the proposed further conference of interstate water conservation and irrigation authorities and Federal representatives for recommendations as to the constitution, powers, and duties of such committee or council.

RESOLUTION 6.

Priority of Use of Water for Water Supply Purposes.

In Water Conservation schemes primarily established for water supply purposes the welfare of the water users should not be endangered by the commitments for hydro-electricity. In cases where the dual purpose exists it should be established that water supply requirements should have priority in times of shortage.

RESOLUTION 7.

Nation-wide Survey of Natural Resources.

Having regard to the necessity for examination of all available facts before decisions of State or national importance are reached, this Conference recommends that steps be taken to inaugurate a nation-wide survey of natural resources—land, water, and minerals. That steps be first taken to assemble, collate, and present in a uniform manner facts now available.

RESOLUTION 8.

National Topographical Survey of Australia.

That this Conference is of the opinion that the development of the natural resources of Australia has been and is being seriously handicapped owing to the insufficiency or absence of accurate topographical maps, and urges the Commonwealth and State Governments to proceed as rapidly as possible with the completion of a comprehensive national topographical survey of Australia, which is urgently required not only for developmental purposes, but also for defence.

RESOLUTION 9.

Irrigation Productions and Markets.

That this Conference is of the opinion that one of the subjects for periodical consideration by the proposed Water Conservation and Irrigation Council should be the type of production to be encouraged or avoided as the case may be—this involving consideration of markets for irrigation products generally. The Council should co-operate with other authorities in examining the possibilities of products now imported, such as tung oil, flax, &c.

RESOLUTION 10.

Collection of Rainfall Data.

In the opinion of this Conference the collection of rainfall data should be extended so as to ensure the fuller coverage of certain areas and fuller information as to duration and intensity. To this end the installation of pluviometers as giving a continuous record of all rainfall is recommended in selected townships situated on catchment areas likely to be the subject of investigation for development.

RESOLUTION 11.

Legislation and Regulations re Issue of Water Licences.

That for the information of a proposed Water Conservation and Irrigation Council the various State authorities be requested to prepare a statement showing the legislation and regulations used in the issue of licences, permits, and other methods of using water for irrigation purposes.

RESOLUTION 12.

Home Maintenance Areas.

This Conference is of the opinion that in any subdivision of irrigated land, either by State authorities or private persons, areas should not be smaller than the accepted home maintenance areas (or living areas) for the various types of farms in those States.

RESOLUTION 13.

Preservation of Catchment Areas.

That Conference is of the opinion that in view of the importance of water supply development the attention of State Governments should be drawn to the problem of catchment preservation in order to safeguard the water resources which are of paramount importance to Australia.

RESOLUTION 14.

Diversions from Darling River.

The Conference decided that the matter was a local one and that it was not necessary to obtain an opinion from the Conference.

RESOLUTION 15.

Conferences and Interstate Visits of Technical Officers.

That this Conference is of opinion that it is desirable to encourage Conferences and interstate visits of Technical Officers.

RESOLUTION 16.

Establishment of Laboratory.

That this Conference is of opinion that the establishment of an hydraulic and soils mechanics laboratory in each State is a necessary factor for the proper development of the water resources of the State. These facilities might eventually be supplied in conjunction with the State Universities.

STAFF.

During the year under review the State of Victoria experienced one of the most severe droughts on record. The distribution of water to water users on an equitable basis was, therefore, one of extreme importance. The officers of the Commission were consequently called upon to perform many additional duties, and the Commission desires to record its appreciation of their special efforts in this regard.

In other respects, the year has been a most difficult one as far as staff is concerned, and many works of national importance have been delayed or interrupted owing to loss of professional engineers, surveyors and draughtsmen, of whom no less than thirteen have resigned during the last six months from January to June, 1939. Further resignations are expected.

The Commission's operations have long been understaffed, even prior to the transfer of its officers to the control of the Public Service Commissioner, and the loss of officers of recent months, who were mostly engaged on investigations, designs, and construction, has been particularly serious. Important investigations have been delayed, design work has been interrupted, and hundreds of workmen have lost their employment owing to lack of draughtsmen for the preparation of plans for works which had been approved and for which funds had been provided by Parliament.

On the Murray Valley channel works alone it is estimated that at least 150 workmen will lose their employment in this way.

Of the engineers and draughtsmen who have resigned, several were being specially trained in the special work of the Investigations and Designs Branch for the very important State-wide investigation of the Water Resources of Victoria which the Commission had put in hand.

This work has been seriously delayed and at the end of the period covered by this Report, very slow progress was being made in connexion with the investigation of the Glenelg River–Rifle Butts Scheme for which the Public Works Committee has been awaiting further particulars for several months, and with the investigations of the Werribee River resources and the Loddon–Woolshed Swamp proposal. No progress at all has been possible in connexion with the investigation of additional storage proposals on the Goulburn River, or of the Torrumbarry System where water losses in distribution are causing serious concern. All other investigation work in connexion with water resources has been held up indefinitely, as the remaining staff is unable to maintain reasonable progress with designs and plans for works already approved. The completion of both the Yarrawonga Weir and the Malmsbury Reservoir enlargement was delayed for months pending completion of plans, and in the case of the Malmsbury Reservoir, this delay will probably mean that the works will be completed too late for the enlarged storage to be filled by the spring rains of 1939.

It is the considered opinion of the Commission that the State of Victoria has paid very dearly indeed over many years owing to an attempt to design and carry out a vast programme of water supply development involving the expenditure of many millions of pounds with an inadequate and rapidly changing design and construction staff. This also was the opinion expressed by the recent Royal Commission on Water Supply.

The position has since become even more acute.

From the Lauriston Reservoir construction works, estimated to cost £280,000, there have been no less than four resignations of engineers in six months.

The position in regard to engineers, surveyors, and draughtsmen, has repeatedly been brought before the attention of the Public Service Commissioner, who has been advised of the disastrous effect of resignations of officers who are specially trained for water supply works. The Commission is of the opinion that a comprehensive reclassification of the lower-paid professional officers is essential if a complete breakdown of investigation and construction work is to be avoided.

The Commission desires to report also that the present accommodation available for its investigation and design staff is quite inadequate and unsuitable for the important and responsible work carried out by this staff, which, although small, is engaged on the design of works estimated to cost several millions of pounds.

The responsibilities of the Commission have increased very considerably during recent years. Since 1926, the capacity of storages controlled by the Commission has been increased by 106 per cent., the area supplied with water by 50 per cent., and the revenue collected from all sources by 39 per cent. Owing to retrenchment policy during the period of financial emergency and to resignations during recent years, the number of officers employed on the Permanent Staff

has actually been reduced by 140. There has, however, been a marked increase in the "Temporary" Staff, mostly owing to the practice of appointing water bailiffs on a temporary basis upon death or retirement of water bailiffs on the Permanent Staff and to Unemployment Relief Works, but including Temporary officers the total number employed is only 17 per cent. above the number employed in 1926, at which time the Commission was not responsible for any relief works at all.

The Commission strongly urges that consideration be given to the appointment of the Temporary Bailiffs to the Permanent Staff of the Public Service as provided for in Section 6 (2) of the *Public Service (Transfer of Officers) Act* 1937, No. 4511, which provides that such appointment can be effected only during a limited period after the proclamation of the Act.

A comparison of the position in regard to staff in 1926 and 1939 is of interest, the former date being selected for comparison as it was then that the Superannuation Act came into operation.

	1926.			1939.		
	Permanent.	Temporary.	Total.	Permanent.	Temporary.	Total.
Professional Officers	148	10	158	126	50	176
Clerical Officers	113	8	121	99	58	157
General	240	51	291	136	211	347
Totals	501	69	570	361	319	680
Percentage employed on "Temporary" basis	12 per cent.			47 per cent.		

The Commission records, with deep regret, the deaths during the year of Mr. P. J. Descrimes (Chief Clerk and Acting Secretary of the Commission), Mr. F. P. Naughton (Assistant Valuer, Head Office), Mr. P. H. Davies (Works Supervisor, Werribee District), and Mr. W. H. Laughton (Head Water Ranger, Wimmera United District).

The following officers have retired from the Commission's service during the year:—Mr. J. R. Kemp (Engineer in Charge, Merbein Pumping Station), and Mr. H. F. McAsey, Mr. T. S. Fairbairn, Mr. G. C. Hazlett and Mr. J. McNamara (Water Bailiffs). In addition, Mr. G. W. Webb (Engineer in Charge, Red Cliffs Pumping Station), Mr. C. T. Stafford (Assistant Resident Engineer, Lauriston Reservoir), and a number of other officers have resigned.

To facilitate administration, a re-arrangement of the districts controlled from Swan Hill has been made in connexion with the payment of water rates and charges at the Commission's Revenue Offices at Swan Hill and Nyahwest.

The revenue work of the Merbein Irrigation District, Merbein Urban District, Merbein Drainage District, and the Yelta Waterworks District is now carried out from the Commission's Office at Red Cliffs, Mr. J. R. Moore being appointed District Secretary and Collector of those districts in addition to the districts already administered from Red Cliffs. Mr. L. R. Jenkin, District Secretary and Collector at Merbein, was transferred to Head Office.

In connexion with the establishment of an Irrigation Branch, Mr. J. A. Aird, B.Sc., B.Ag.Sc., Dip. Com., was appointed as Chief Irrigation Officer.

Mr. L. J. Duggan has been appointed Chief Clerk, and for a period during the year, was Acting Secretary of the Commission.

In addition to his duties in connexion with Yarrawonga Weir, Mr. H. H. C. Williams, B.M.E., A.M.Inst.C.E., A.M.I.E.Aust., was appointed as Executive Engineer for the new Lauriston Reservoir and the enlargement of the Malmsbury Reservoir in the Coliban District.

To take charge of the construction of the emergency pipe line for the City of Bendigo, Mr. B. W. Scharp, B.C.E., Assistant Engineer, was transferred from the Mornington Peninsula Extension works.

Mr. H. E. Harding, B.Sc., C.E., District Engineer at Rochester, has been appointed to the position of District Engineer, Secretary, and Collector for the new Murray Valley Irrigation District, with headquarters at Cobram.

Consequent on this appointment several transfers were made, viz.:—Mr. J. W. Moore, C.E., A.M.I.E.Aust., from Pyramid Hill to Rochester as District Engineer, Mr. L. J. Scott, from Boort to Pyramid Hill as District Officer, Secretary, and Collector, and Mr. C. Gallop, Woorinen Drainage Works to Boort as District Officer, Secretary, and Collector.

Following the retirement of Mr. T. Purton, the position of District Officer, Secretary, and Collector, Long Lake and Tyntynder Districts was filled by the appointment of Mr. W. H. E. Bentley, previously District Officer and Collector at Werrimull, and, to fill the vacancy so caused, Mr. H. L. Credlin, C.E., was appointed as District Engineer, Secretary, and Collector at Werrimull.

Mr. C. L. Sanders, C.E., L.S., A.M.Inst.C.E., previously Resident Engineer for the Otway scheme, has been appointed to the position of District Engineer, Secretary, and Collector for the Otway and Bellarine Peninsula Waterworks Districts, with headquarters at Camperdown.

At Red Cliffs and Merbein Pumping Stations, where the officers in charge had resigned and retired respectively, Mr. F. C. Hodgson was appointed Engineer in Charge.

Mr. R. I. Walsh, C.E., previously of Head Office, has been appointed Acting District Engineer, Secretary, and Collector for Bacchus Marsh District, in place of Mr. F. M. Engel, who has been on extended sick leave.

The Commission having decided to open for full time its part-time office at Chelsea for the collection of water rates for the Carrum Urban District, Mr. T. A. Roberts, Clerk, Dandenong Office, was appointed as Revenue Officer at Chelsea.

Mr. E. M. Hopkins has been transferred from Nyahwest to Tongala, and Mr. D. A. Buchanan from Yarrawonga Weir to Nyahwest, both as Revenue Officers.

Mr. E. P. Watson, Clerk, was transferred from Head Office to Yarrawonga and then to Cobram to take charge of the clerical work in connexion with the construction of channels for the Murray Valley District.

Mr. T. A. Lang, B.C.E., one of the Commission's Assistant Engineers, who was carrying out hydraulic research work at the Melbourne University, has been released on loan to the Marine Board of Launceston, Tasmania, to undertake for that Board hydraulic investigations of the conditions affecting the flows and floods in the Tamar River, Tasmania. This work is one of great importance and it was an honour for Mr. Lang to be selected to carry out these investigations.

Since the publication of the last Annual Report the Commission's Officers have been transferred to the Public Service. A provisional classification was issued by the Public Service Commissioner on 20th February, 1939, and the Final Return was gazetted on 28th June, 1939.

By proclamation of His Excellency the Lieutenant-Governor in Council the *Public Service (Transfer of Officers) Act* 1937, No. 4511, authorizing this transfer came into operation on 28th June, 1939.

DISTRICT EXTENSIONS AND EXCISIONS.

The boundaries of the Frankston and Somerville Urban Districts and the Cohuna Urban Division were amended to include urban lands served by extensions of the respective reticulation systems.

The North Shepparton Irrigation District was extended to include an area of 755 acres commanded by new irrigation channels. Of this area 75 acres were transferred from the Shire of Numurkah Waterworks Trust District.

An area of 80 acres supplied from the works of the Tongala Irrigation District was excised from the Rodney Irrigation District and added to the former District.

An area of 30 acres was excised from the Campaspe Irrigation District and added to the Rochester Waterworks Trust District.

Three allotments, containing a total area of 40 acres, were added to the Merbein Irrigation District.

The Maffra–Sale Irrigation District was extended to include an area of 420 acres commanded by new irrigation works.

It is proposed to include in the Rochester Irrigation District portion of the area comprising the Echuca North District, and to amalgamate the remaining portion of this District with the Tongala and Stanhope Irrigation Districts to form one district, to be known as the Tongala–Stanhope Irrigation District.

The Narre Warren and Mornington Peninsula Waterworks Districts were united to form one district, now known as the Mornington Peninsula Waterworks District.

The Tyrrell and Eureka Waterworks Districts were united to form one district, now known as the Tyrrell Waterworks District.

The Tyrrell West, Dering, and Walpeup Central Waterworks Districts were united to form the Tyrrell West Waterworks District. An area of some 52,300 acres of land not supplied was subsequently excised.

Areas of 51,400 acres, 31,430 acres, 44,140 acres, and 18,250 acres leased in large areas for grazing and formerly devoted to wheat growing were excised from the Tyntynder, Coreena, Carwarp, and Yelta Waterworks Districts respectively.

An area of 920 acres supplied from the works of the Yelta Waterworks District was transferred from the Millewa Waterworks District and added to the former district.

The Rochester, Rodney, and Cohuna Drainage Districts were extended to include areas of 2,180 acres, 4,780 acres, and 190 acres respectively of lands benefited by drainage works.

An area of 2,355 acres, including the Girgarre and Koyuga Townships, was added to the Tongala–Stanhope Drainage District.

NEW DISTRICTS.

An area of approximately 26,660 acres was constituted the Murray Valley Irrigation District on 17th October, 1938, and will receive its supply from Yarrawonga Weir.

The Normanville Waterworks District was constituted on 22nd August, 1938, and comprises some 121,320 acres. Part of this area was excised from the Waterworks District of the Loddon United Waterworks Trust.

The reticulation works for the supply of the towns of Camperdown, Cobden, and Terang have been completed and the towns proclaimed Urban Districts within the Otway Waterworks District.

Maffra–Sale and Woorinen Drainage Districts were constituted to embrace those portions of the Maffra–Sale and Swan Hill Irrigation Districts respectively, benefited by the works of the drainage schemes recently carried out.

VALUATIONS, RATES, FLOOD PROTECTION CHARGES, AND COMPULSORY IRRIGATION CHARGES.

The statements which follow set forth the whole of the Districts supplied by the Commission with water for domestic and ordinary use and for watering cattle or other stock, together with the annual value of the lands and tenements in such Districts, and the general rates, drainage rates, flood protection charges, and compulsory irrigation charges made in all Districts. An estimate of the number of persons dwelling in such Districts is also appended.

During the year rates were, for the first time, made in the Maffra–Sale Drainage District, the Normanville Waterworks District, and the Urban Waterworks Districts of Camperdown and Cobden. Irrigation charges were also made for the first time in the Boort, Calivil, Katandra, Kerang, and North Shepparton Irrigation and Water Supply Districts.

The Eureka Waterworks District was included in the Tyrrell Waterworks District, the Dering and Walpeup Central Waterworks Districts were included in the Tyrrell West Waterworks District, and the Narre Warren Waterworks District was included in the Mornington Peninsula Waterworks District.

In 48 Districts the lands were, for the purpose of making and levying rates, arranged in divisions (not more than three in number), in accordance with the relative benefits derived by such lands from the works. The Lower Kooweerup, Cardinia, and Kanyapella Flood Protection Districts, where the charging is on an acreage basis, were similarly divided into divisions. As heretofore in the Urban portion of the Coliban System, a minimum and tapering rate was made, while the Carrum Waterworks Trust District was, as in past years, arranged in five rating divisions in accordance with the relative benefits derived by such lands from the works.

The rates and irrigation charges in respect of the Irrigation and Water Supply Districts were made on the basis approved by the Government in connexion with the adjustment of capital liabilities in accordance with the provisions of the *Water Act* 1937.

By direction of the Government, the temporary reduction by 10 per cent. in all rates in respect of domestic and stock supplies in the Waterworks Districts, which has operated for the past three years, was continued, except in the new district of Normanville and in the Carwarp, Carwarp Central, Coreena, Hindmarsh, Millewa, Millewa Central, and Yelta Districts in which adjustments in rates had previously been made and approved by the Government.

Under the powers conferred by Section 62 of the *Water Act* 1928, a minimum annual rate on the basis of £9 12s. per 640 acres was fixed by the Commission on the first division lands of the Birchip, Karkarooc, Long Lake, Sea Lake, Tyntynder, Tyrrell, Tyrrell West, Upper Western Wimmera, Upper Wimmera United, Wimmera United, and Wycheproof Waterworks Districts, and in the Walpeup West (Bore) Waterworks District at £4 16s. per 640 acres, in all of which Districts the temporary reduction by 10 per cent. operated; while in the Carwarp, Carwarp Central, Coreena, Hindmarsh, Millewa, Millewa Central, Normanville, and Yelta Waterworks Districts the minimum was fixed at £10 13s. 4d. per 640 acres.

In 27 Districts the Commission made and levied compulsory irrigation charges, in 4 Flood Protection Districts a charge was made, and in 3 Waterworks Trusts Districts, taken over by the Commission, rates were also made.

Details of all rates and charges made are set out hereunder:—

A.—VALUATIONS, RATES, AND FLOOD PROTECTION CHARGES.

Districts Supplied with Water for Domestic and Ordinary Use and for Watering Cattle or other Stock.	Annual Value of Lands and Tenements.	Rate in the £1 made during Year ended 30th June, 1939.	Period of Rate.	Estimated Number of Persons dwelling in District.
IRRIGATION AND WATER SUPPLY DISTRICTS.				
	Valuation by Commission.	Divisions. 1st. / 2nd. / 3rd.		
	£	s. d. / s. d. / s. d.		
1. Bacchus Marsh ..	15,039	1 0 / 0 6 / ..	1st July, 1938, to 30th June, 1939	650
2. Boort	18,390	1 0 / 0 6 / ..	,, ,, ,,	587
3. Calivil	16,666	1 0 / .. / ..	,, ,, ,,	604
4. Campaspe	8,891	2 0 / 1 0 / 0 6	,, ,, ,,	576
5. Cohuna	37,322	1 9 / 0 10½ / 0 5¼	,, ,, ,,	1,445
6. Deakin	46,773	1 8 / 0 10 / 0 5	,, ,, ,,	1,575
7. Dingee	3,371	1 0 / .. / ..	,, ,, ,,	260
8. Dry Lake	279	(No rate made)	.. .. ..	12
Totals (carried forward)	£146,731			5,709

A —VALUATIONS, RATES, AND FLOOD PROTECTION CHARGES—*continued*

Districts Supplied with Water for Domestic and Ordinary Use and for Watering Cattle or other Stock.	Annual Value of Lands and Tenements.	Rate in the £1 made during year ended 30th June, 1939.	Period of Rate.	Estimated Number of Persons dwelling in District.

IRRIGATION AND WATER SUPPLY DISTRICTS—*continued.*

	Valuation by Commission.	Divisions. 1st.	2nd.	3rd		
	£	s. d.	s. d.	s. d.		
Brought forward ..	146,731	..	..	..	.. .. ..	5,709
9. ECHUCA NORTH ..	5,319	1 0	0 6	..	1st July, 1938, to 30th June, 1939	568
10. FISH POINT	1,533	1 0	..	..	,, ,, ,,	58
11. KATANDRA	8,148	1 0	..	..	,, ,, ,,	460
12. KERANG	17,634	1 9	0 10½	0 5¼	,, ,, ,,	790
13. KOONDROOK ..	23,600	1 9	0 10½	..	,, ,, ,,	1,150
14. LEITCHVILLE ..	9,440	1 9	0 10½	..	,, ,, ,,	257
15. MAFFRA-SALE ..	52,079	1 0	0 6	..	,, ,, ,,	2,260
16. MERBEIN	49,502	0 6	..	..	,, ,, ,,	3,000
17. MYSTIC PARK ..	3,337	1 0	..	..	,, ,, ,,	107
18. NORTH SHEPPARTON ..	53,768	1 0	0 6	..	,, ,, ,,	1,290
19. NYAH	8,688	0 6	..	..	,, ,, ,,	900
20. RED CLIFFS ..	81,404	0 6	..	..	,, ,, ,,	3,150
21. ROCHESTER ..	63,812	1 0	0 6	0 3	,, ,, ,,	4,190
22. RODNEY	133,693	1 0	0 6	0 3	,, ,, ,,	5,360
23. SHEPPARTON ..	35,962	1 0	..	..	,, ,, ,,	2,495
24. SOUTH SHEPPARTON ..	15,362	1 0	0 6	..	,, ,, ,,	425
25. STANHOPE	16,769	1 0	..	..	,, ,, ,,	945
26. SWAN HILL ..	30,631	1 0	..	..	,, ,, ,,	1,906
27. THIRD LAKE ..	2,156	1 9	..	..	,, ,, ,,	90
28. TONGALA	29,562	1 0	..	..	,, ,, ,,	1,694
29. TRAGOWEL PLAINS ..	44,125	1 0	0 6	0 3	,, ,, ,,	1,202
30. TRESCO	3,577	2 6	1 3	..	,, ,, ,,	220
31. WERRIBEE	21,090	1 0	0 6	..	,, ,, ,,	1,347
Totals (Irrigation) ..	£857,922					39,573

WATERWORKS DISTRICTS.

32. AXE CREEK ..	1,689	1 9½	..	..	1st July, 1938, to 30th June, 1939	255
33. BIRCHIP	41,964	2 1	1 0½	0 6¼	,, ,, ,,	2,673
34. CARWARP	4,799	3 4	1 8	0 10	,, ,, ,,	520
35. CARWARP CENTRAL ..	790	3 4	1 8	0 10	,, ,, ,,	100
36. COREENA	7,186	3 4	1 8	0 10	,, ,, ,,	250
37. HARCOURT	6,652	1 4	..	..	,, ,, ,,	600
38. HINDMARSH ..	8,598	2 8	1 4	0 8	,, ,, ,,	240
39. KARKAROOC ..	129,635	1 11	0 11½	0 5¾	,, ,, ,,	4,750
40. KERANG N.W. LAKES	7,400	0 5	..	..	,, ,, ,,	370
41. LONG LAKE ..	72,333	2 6½	1 3¼	0 7⅝	,, ,, ,,	2,290
42. MILLEWA	19,226	3 4	1 8	0 10	,, ,, ,,	1,295
43. MILLEWA CENTRAL ..	11,733	3 4	1 8	0 10	,, ,, ,,	705
44. NORMANVILLE ..	26,752	1 10	..	..	1st Jan., 1939, to 30th June, 1939	520
45. SEA LAKE	63,852	2 5	1 2½	0 7¼	1st July, 1938, to 30th June, 1939	2,443
46. TYNTYNDER ..	51,424	3 0	1 6	0 9	,, ,, ,,	2,400
47. TYRRELL	46,553	3 0	1 6	0 9	,, ,, ,,	2,840
48. TYRRELL WEST ..	69,536	3 0	1 6	0 9	,, ,, ,,	3,545
49. UPPER WESTERN WIMMERA ..	63,788	1 4	0 8	0 4	,, ,, ,,	1,720
50. UPPER WIMMERA UNITED ..	106,319	1 4	0 8	0 4	,, ,, ,,	2,750
51. WALPEUP WEST ..	54,232	0 8	0 4	..	,, ,, ,,	2,130
52. WERRIBEE	6,569	1 9½	0 10¾	..	,, ,, ,,	165
53. WESTERN WIMMERA	279,217	1 0½	0 6¼	0 3⅛	,, ,, ,,	8,840
54. WIMMERA UNITED ..	313,746	1 0½	0 6¼	0 3⅛	,, ,, ,,	7,800
55. WYCHEPROOF ..	76,119	2 1	1 0½	0 6¼	,, ,, ,,	2,972
56. YELTA	2,059	3 4	1 8	0 10	,, ,, ,,	50
Totals (Waterworks)	£1,472,171					52,223

A.—VALUATIONS, RATES, AND FLOOD PROTECTION CHARGES—*continued.*

Districts Supplied with Water for Domestic and Ordinary Use and for Watering Cattle or other Stock.	Annual Value of Lands and Tenements.	Rate in the £1 made for year ending 31st December, 1939.	Period of Rate.	Estimated Number of Persons dwelling in District.
WATERWORKS TRUSTS.				
	Valuation by Commission.	Division. 1st. / 2nd. / 3rd.		
	£	s. d. / s. d. / s. d.		
57. LODDON UNITED ..	69,822	0 8 / 0 4 / 0 2	1st January, 1939, to 31st December, 1939	3,046
	Municipal Valuation £	s. d.		
58. CARRUM	21,581	1st Division 3 8 2nd Division 1 10 3rd Division 1 0 4th Division 0 10 5th Division 0 3	,, ,, ,,	1,455
59. MITIAMO (Urban) ..	926	.. .. 4 0	.. ,, ,,	190
Totals (Trusts) ..	£92,329	.. .. ..	.. .. ..	4,691

Districts Supplied with Water for Domestic and Ordinary Use and for Watering Cattle or other Stock.	Annual Value of Lands and Tenements.	Rate in the £1 made during year ended 30th June, 1939.	Sales of Water Charge per 1,000 gallons.	Period of Rate.	Estimated Number of Persons dwelling in District.
URBAN DIVISIONS AND DISTRICTS.					
	Municipal Valuation. £	s. d.	s. d.		
60. ANGLESEA	2,796	2 6	1 0	1st July, 1938, to 30th June, 1939	250
61. ANTWERP	200	4 0	2 0	,, ,, ,,	74
62. BACCHUS MARSH ..	16,480	1 6	1 6	,, ,, ,,	1,785
63. BARWON HEADS AND OCEAN GROVE ..	11,020	2 6	1 0	,, ,, ,,	1,200
64. BERRIWILLOCK ..	1,410	3 6	1 6	,, ,, ,,	154
65. BERWICK	6,248	2 1	1 0	,, ,, ,,	1,000
66. BEULAH	2,810	3 0	1 3	,, ,, ,,	450
67. BIRCHIP	6,074	1 8	1 3	,, ,, ,,	856
68. BITTERN	623	3 1	1 0	,, ,, ,,	90
69. BRIM	1,096	4 6	1 6	,, ,, ,,	180
70. BUNYIP	2,866	2 4	1 0	,, ,, ,,	430
71. CAMPERDOWN ..	30,075	1 6	1 3	1st Jan., 1939, to 30th June, 1939	3,600
72. CARRUM	78,090	1 5	1 0	1st July, 1938, to 30th June, 1939	7,100
73. CARWARP	189	5 0	2 0	,, ,, ,,	20
74. CHILLINGOLLAH ..	394	5 0	2 0	,, ,, ,,	70
75. CHINKAPOOK ..	624	5 0	2 0	,, ,, ,,	120
76. COBDEN	8,887	0 9	1 3	22nd April, 1939, to 30th June, 1939	850
77. COHUNA	9,403	2 0	1 3	1st July, 1938, to 30th June, 1939	1,050
78. COROP	190	2 0	1 0	,, ,, ,,	85
79. CRANBOURNE ..	3,474	2 0	1 0	,, ,, ,,	300
80. CRIB POINT	3,397	3 1	1 6	,, ,, ,,	565
81. CULGOA	1,328	3 6	1 6	,, ,, ,,	152
82. DANDENONG ..	62,692	1 3	1 0	,, ,, ,,	4,998
83. DIMBOOLA	16,132	1 8	1 0	,, ,, ,,	1,706
84. DINGEE	363	4 0	1 3	,, ,, ,,	90
85. DOOEN	169	2 0	1 6	,, ,, ,,	30
86. DRYSDALE	2,789	2 6	1 0	,, ,, ,,	336
Totals (carried forward)	£269,819	..	..	.. .. ..	27,541

A. VALUATIONS, RATES, AND FLOOD PROTECTION CHARGES—*continued.*

Districts Supplied with Water for Domestic and Ordinary Use and for Watering Cattle or other Stock.	Annual Value of Lands and Tenements.	Rate in the £1 made during year ended 30th June, 1939.	Sales of Water Charge per 1,000 gallons.	Period of Rate.	Estimated Number of Persons dwelling in District.

URBAN DIVISIONS AND DISTRICTS—*continued.*

	Municipal Valuation. £	s. d.	s. d.		
Brought forward ..	269,819	..	..	.. .. ..	27,541
87. FRANKSTON ..	63,045	1 4	1 0	1st July, 1938, to 30th June, 1939	5,778
88. GARFIELD	2,374	2 4	1 0	,, ,, ,,	300
89. HASTINGS	2,157	3 0	1 0	,, ,, ,,	488
90. HEYFIELD	4,339	2 6	1 0	,, ,, ,,	550
91. HICKSBOROUGH ..	427	3 9	1 6	,, ,, ,,	100
92. HOPETOUN	5,236	3 0	1 3	,, ,, ,,	800
93. JEPARIT	8,715	2 1	1 3	,, ,, ,,	876
94. JUNG JUNG ..	929	3 0	1 6	,, ,, ,,	174
95. KOONDROOK ..	3,130	2 9	1 3	,, ,, ,,	600
96. LAKE BOGA ..	2,160	3 0	1 3	,, ,, ,,	383
97. LALBERT	827	5 0	1 6	,, ,, ,,	149
98. LASCELLES	707	5 0	1 6	,, ,, ,,	150
99. LEITCHVILLE ..	1,893	3 7	1 6	,, ,, ,,	250
100. LOCKINGTON ..	1,727	2 9	1 6	,, ,, ,,	240
101. LONGWARRY ..	1,772	2 6	1 0	,, ,, ,,	240
102. MANANGATANG ..	2,280	3 6	2 0	,, ,, ,,	310
103. MARNOO	1,220	5 0	1 3	,, ,, ,,	250
104. MARONG	892	3 0	1 0	,, ,, ,,	310
105. MERBEIN	10,923	2 9	1 0	,, ,, ,,	1,500
106. MERINGUR	327	5 0	2 6	,, ,, ,,	70
107. MINYIP	6,101	2 10	1 6	,, ,, ,,	750
108. MORNINGTON ..	37,057	1 6	1 0	,, ,, ,,	2,275
109. MOUNT MARTHA ..	7,503	2 1	1 3	,, ,, ,,	230
110. MURRABIT	255	5 0	2 0	,, ,, ,,	60
111. NANDALY	339	5 0	2 0	,, ,, ,,	114
112. NATIMUK	3,293	1 6	1 0	,, ,, ,,	580
113. NEWSTEAD	2,819	3 0	1 0	,, ,, ,,	400
114. NORTH WONTHAGGI ..	3,702	2 0	1 6	,, ,, ,,	1,000
115. NULLAWIL	816	5 0	2 0	,, ,, ,,	100
116. NYAH	648	2 6	1 3	,, ,, ,,	140
117. NYAH WEST ..	3,960	2 9	1 6	,, ,, ,,	350
118. OUYEN	9,672	3 0	2 0	,, ,, ,,	1,083
119. PAKENHAM	5,325	2 1	1 0	,, ,, ,,	750
120. PATCHEWOLLOCK ..	438	5 0	2 0	,, ,, ,,	165
121. PIANGIL	1,132	3 6	1 6	,, ,, ,,	220
122. PORTARLINGTON ..	3,374	2 6	1 0	,, ,, ,,	550
123. PYRAMID HILL ..	3,426	2 9	1 6	,, ,, ,,	520
124. QUAMBATOOK ..	3,289	2 10	1 3	,, ,, ,,	405
125. QUEENSCLIFF AND POINT LONSDALE ..	21,859	2 6	1 0	,, ,, ,,	3,100
126. RAINBOW	9,193	1 9	1 3	,, ,, ,,	1,004
127. RED CLIFFS ..	15,599	2 3	1 0	,, ,, ,,	1,200
128. RUPANYUP	5,625	2 10	1 6	,, ,, ,,	650
129. SEA LAKE	7,488	2 0	1 3	,, ,, ,,	705
130. SOMERVILLE ..	2,100	2 6	1 0	,, ,, ,,	304
131. SOUTH FRANKSTON ..	15,013	2 6	1 0	,, ,, ,,	815
132. SPEED	324	5 0	2 0	,, ,, ,,	60
133. SPRING VALE ..	35,887	1 6	1 0	,, ,, ,,	3,219
134. STANHOPE	1,371	3 9	1 3	,, ,, ,,	300
135. TEMPY	275	5 0	2 0	,, ,, ,,	90
136. TORQUAY	5,975	2 6	1 0	,, ,, ,,	820
137. ULTIMA	2,387	3 0	1 3	,, ,, ,,	348
138. WAITCHIE	350	5 0	2 0	,, ,, ,,	80
139. WALPEUP	893	4 6	2 0	,, ,, ,,	165
140. WATCHEM	1,805	3 3	1 6	,, ,, ,,	319
141. WERRIMULL ..	746	5 0	2 6	,, ,, ,,	135
142. WONTHAGGI ..	31,567	1 6	1 6	,, ,, ,,	8,000
143. WOOMELANG ..	1,741	3 6	1 3	,, ,, ,,	405
144. WOORINEN	596	4 0	1 6	,, ,, ,,	82
145. WYCHEPROOF ..	7,549	2 0	1 3	,, ,, ,,	768
146. YAAPEET	237	5 0	2 0	,, ,, ,,	70
Totals	£646,628	..	..	.. .. ..	73,390

A. VALUATIONS, RATES, AND FLOOD PROTECTION CHARGES—*continued.*

Districts Supplied with Water for Domestic and Ordinary Use and for Watering Cattle or other Stock.	Annual Value of Lands and Tenements.	Rate in the £1 made during Year ended 30th June, 1939.	Period of Rate.	Estimated Number of Persons dwelling in District.
		COLIBAN SYSTEM.		
	Municipal Valuation. £	s. d.		
147. COLIBAN	398,923	On Valuations up to £300 .. 1 6 (Minimum 20s.) From £301 up to £700 .. 1 3 From £701 on .. 1 0 Vacant lands .. 1 6	1st July, 1938, to 30th June, 1939	60,500
Totals (Urban) ..	£1,045,551	.. ..	.. .. ..	133,890
Grand Totals ..	**£3,467,973**	.. ..	.. .. ..	**230,377**

DRAINAGE DISTRICTS.

District.	Valuation by Commission.	Divisions— 1st.	2nd.	3rd.	Period of Rate.	Estimated Number of Persons dwelling in District.
	£	s. d.	s. d.	s. d.		
148. COHUNA	34,698	1 6	0 9	0 4½	1st July, 1938, to 30th June, 1939	1,229
149. KERANG EAST ..	17,330	1 8	0 10	0 5	,, ,, ,,	760
150. MAFFRA-SALE ..	26,402	0 6	0 3	0 1½	1st January, 1939, to 30th June, 1939	1,075
151. MERBEIN	43,608	0 9	0 4½	..	1st July, 1938, to 30th June, 1939	3,000
152. RED CLIFFS ..	71,575	0 9	..	..	,, ,, ,,	2,750
153. ROCHESTER ..	24,456	1 6	0 9	0 4½	,, ,, ,,	1,608
154. RODNEY	15,944	1 3	0 7½	0 3¾	,, ,, ,,	630
155. SHEPPARTON ..	56,792	1 2	0 7	0 3½	,, ,, ,,	3,490
156. TONGALA-STANHOPE	48,814	1 6	0 9	0 4½	,, ,, ,,	2,674
157. WERRIBEE ..	21,664	0 8	0 4	..	,, ,, ,,	1,261
Totals (Drainage) ..	£361,283	..	..	..	.. .. ..	18,477

FLOOD PROTECTION DISTRICTS.

District.	Acres.	Flood Protection Charge per Acre made during year ended 30th June, 1939. Divisions— 1st.	2nd	3rd.	Period of Charge.	Estimated Number of Persons dwelling in District.
		s. d.	s. d.	s. d.		
158. CARDINIA	34,552	3 0	1 6	0 9	1st July, 1938, to 30th June, 1939	885
159. KANYAPELLA ..	14,494	0 6	0 3	..	,, ,, ,,	74
160. LOCH GARRY ..	41,631	0 5	..	..	,, ,, ,,	200
161. LOWER KOOWEERUP	56,446	2 0	1 0	0 6	,, ,, ,,	2,855
Totals (Flood Protection) ..	147,123	..	..	..	.. .. ..	4,014

B.—COMPULSORY IRRIGATION CHARGES.

Irrigation and Water Supply District.	Area of District in Acres.	Area at present Irrigable in Acres.	Water Rights Apportioned (including Extra Rights) in Acre feet	Compulsory Charge per Acre foot of Water Right.	Period of Charge.
Supplied from Goulburn System.					
1. Boort	79,458	54,749	10,943	7s.	1st September, 1938, to 30th April, 1939
2. Calivil	61,142	30,432	6,086	7s.	" " " "
3. Dingee	8,878	4,262	4,262	7s.	" " " "
4. Echuca North ..	13,795	5,380	5,431	6s.	" " " "
5. Katandra ..	14,171	11,370	5,704	7s.	" " " "
6. North Shepparton	121,485	59,342	11,874	7s.	" " " "
7. Rochester ..	172,209	54,391	54,621	6s.	" " " "
8. Rodney ..	267,911	190,783	61,085	6s.	" " " "
9. Shepparton ..	24,488	21,424	21,424	6s.	" " " "
10. South Shepparton	33,615	17,955	4,393	6s.	" " " "
11. Stanhope ..	25,912	17,673	17,791	6s.	" " " "
12. Tongala ..	45,552	27,164	27,308	6s.	" " " "
13. Tragowel Plains	217,369	148,211	31,124	7s.	" " " "
Totals ..	1,085,985	643,136	262,046		
Supplied from Torrumbarry System.					
14. Cohuna ..	71,912	35,458	35,572	6s.	" " " "
15. Fish Point ..	6,327	3,834	1,884	6s.	" " " "
16. Kerang ..	85,230	55,528	18,531	5s.	" " " "
17. Koondrook ..	81,329	23,072	23,072	6s.	" " " "
18. Leitchville ..	13,800	11,979	4,201	6s.	" " " "
19. Mystic Park ..	20,260	7,759	2,634	6s.	" " " "
20. Swan Hill ..	36,471	21,843	21,848	6s.	" " " "
21. Third Lake ..	11,482	3,816	2,543	6s.	" " " "
Totals ..	326,811	163,289	110,285		
Supplied from Southern State Works.					
22. Maffra-Sale ..	44,074	19,087	19,087	10s.	" " " "
23. Bacchus Marsh ..	6,656	3,332	3,332	22s. 6d.	1st October, 1938, to 30th April, 1939
24. Werribee ..	10,152	8,174	8,175	12s.	" " " "
Totals ..	60,882	30,593	30,594		
Supplied direct from River Murray.				For each $2\frac{1}{2}$ acre feet delivered in six waterings.	
25. Merbein ..	10,169	7,767	19,418	62s. 6d.	1st August, 1938, to 30th April, 1939
26. Nyah	3,837	2,845	7,425	53s. 4d.	" " " "
27. Red Cliffs ..	30,960	11,234	28,085	70s.	" " " "
Totals ..	44,966	21,846	54,928		
Grand Totals ..	**1,518,644**	**858,864**	**457,853**		

C.—SALES OF WATER CHARGES.

Irrigation and Water Supply District.	Area of District in Acres.	Unit Charge per Acre foot for Water Supplied as Sales.	Period of Charge.
1. Campaspe	19,767	6s.	1st. July 1938, to 30th June, 1939
2. Deakin	163,970	6s.	" " " "
3. Tresco	3,482	20s.	" " " "
Total	**187,219**		

FINANCE.

(W. Lambert, B.Com., D.P.A., A.F.I.A., Accountant.)

REVENUE.

The Revenue Collections for the financial year 1938–39 were in excess of the previous year. The respective amounts collected during the past three years were £549,785 for 1936–37, £560,241 for 1937–38, and £560,679 for 1938–39.

Revenue was received during the year for the first time from the Normanville Waterworks District, Camperdown Urban District, and Cobden Urban District.

Owing to the prolonged drought the Commission was unable to provide full deliveries to water-users in some areas, and concessions in rates and water charges were, with the concurrence of the Government, made to water-users in the Districts supplied by the Goulburn System, and in the Bacchus Marsh, Werribee, Harcourt, and Axe Creek Districts.

The loss in Revenue represented by these concessions is estimated at over £20,000, excluding the additional revenue that would have been received from extra sales had adequate supplies of water been available. This loss was partly offset by the extra sales in the Districts supplied from the River Murray and in the Maffra–Sale District. Ample supplies were available in these areas and record supplies of water were delivered.

An amount of £101,540 was written off the books of the Commission for the financial year 1938–39 as compared with £46,295 for the previous year. The increased amount written off was due to the inclusion of a sum of £45,774 written off in adjustment of arrears of rates and charges pursuant to *Water Act* 1937, No. 4513, and £18,233 under the provisions of the Farmers Debts Adjustment Act, the latter amount being £8,394 in excess of the previous year. The loss attributable to writing off rates and charges on Crown lands which lessees vacated leaving no assets, amounted to £24,070.

Total adjustment of water-users' accounts under the provisions of the Farmers Debts Adjustment Act involved, as at 30th June, 1939, a remission of £65,420 representing 1,012 individual cases. A total of 3,363 applications was received for adjustment of arrears of rates and charges pursuant to the *Water Act* 1937, No. 4513. Of these applications, adjustments were approved as at 30th June, 1939, in 1,157 cases involving the waiving of a sum of £50,980. In addition to the amounts waived under the provisions of the Farmers Debts Adjustment Act and the *Water Act* 1937, No. 4513, water-users have been given extended time (in some cases up to ten years) to pay the indebtedness as adjusted—the amounts involved being £58,006 (Farmers Debts Adjustment Act) and £94,515 (Adjustment of Arrears—*Water Act* 1937, No. 4513).

EXPENDITURE.

The Vote Estimates for 1938–39 submitted by the Commission would have required an appropriation of £484,404. The amount included in the Parliamentary Vote Appropriation, however, was £358,120. Approved Supplementary Estimates increased the amount actually expended from Vote Funds to a total of £428,864.

In addition to the expenditure from Vote Funds, an amount of £43,724 has been expended on Maintenance Works from grants made available from Unemployment Relief (Taxation) Funds.

The expenditure for the year on maintenance, water distribution, and management, including £25,374, from Revenue, being administrative charges on Unemployment Relief Loan Works, and the comparative figures for 1937–38 are set out hereunder :—

	1938–39	1937–38
	£	£
From Annual Vote Appropriation	428,864	357,373
From Unemployment Relief (Taxation) Funds ..	43,724	55,831
	472,588	413,204

The total expenditure for the year on capital construction works, reconstructions and replacements, and river improvements, was £992,993 from funds provided as under :—

	£
Ordinary Loan Funds (Acts Nos. 4503, 4612, and including Treasurer's Advance £24,194)	582,327
Unemployment Relief Loan Funds (Act 4097)	410,666
	992,993

The total expenditure by the Commission for the year 1938–39 from all sources is listed hereunder :—

	£	£	£
Vote Funds	428,864		
Unemployment Relief (Taxation) Funds	43,724		
		472,588	
Ordinary Loan Funds—			
Commission Works	533,731		
Waterworks Trusts and Local Bodies	48,596		
		582,327	
Unemployment Relief Loan Funds (Act 4097)		410,666	
Drainage Trust Funds		11,627	
Water Supply Works Depreciation Fund		246	
Special Appropriation		3,498	
Total Expenditure for Year			**1,480,952**

The total financial operations for the financial year amounted to £2,041,631, representing Expenditure (£1,480,952), and Revenue (£560,679). These amounts are exclusive of payments direct to State Loans Repayment Fund, Trust Funds, Suspense Account, Interest and Redemption Payments by Waterworks Trusts, and Local Governing Bodies and other repayments.

CAPITAL LIABILITY.

The Capital Loan Liability of the State for Works of Water Supply at 30th June, 1939, was £26,852,297, of which amount £21,161,347 is charged to the " Capital Expenditure borne by the State Account," £1,923,187 is charged to Waterworks Trusts and Local Governing Bodies, and the balance £3,767,763 debited to Districts directly under the control of the Commission. These figures are exclusive of an equity of £1,243,147 in the National Debt Sinking Fund.

INTEREST.

An amount of £1,173,019 was involved in the payment of interest, including exchange on overseas interest, on the total Capital Liability as at 30th June, 1939. Interest amounting to £145,104 was paid in respect of districts the Capital Liability of which has been adjusted.

Payments to the Treasury as interest for loans for water supply purposes by Waterworks Trusts and Local Governing Bodies amounted to £84,446.

The cost to the State for interest, exchange, and services not directly chargeable to water-users was £1,048,179. This amount was offset by a sum of £73,977 representing revenue in excess of disbursements in respect of districts operated by the Commission. The net cost to the State on water supply operations for the year was, therefore, £974,202.

Of the excess of revenue (£73,977) an amount of £27,552 has been credited in the Commission's books to Depreciation Account, and £4,922 to Redemption. The balance £41,503 represents revenue in excess of disbursements in respect of districts other than those showing losses, and being operated by direction of Order in Council.

The following statement shows the approximate Interest payment for 1938–39 in relation to the Capital Liability.

Capital Debited to—	Capital Liability as at 30th June, 1939.	Interest and Exchange Actually Paid 1938–39.
	£	£
Waterworks Trusts and Local Governing Bodies	1,923,187	84,446
Districts under direct control of Commission	3,767,763	145,104
Capital Expenditure borne by the State Account	21,161,347	943,469
	26,852,297	1,173,019

DEPRECIATION.

In accordance with the provisions of the *Water Act* 1937, No. 4513, a sum of £27,552 was raised by means of water rates and charges during 1938–39 for purposes of depreciation and paid to Consolidated Revenue. This amount has been credited in the books of the Commission to the Depreciation Account of the respective Districts. No portion of the payment in respect of depreciation for 1938–39 has yet been paid by the Treasury to the credit of the Water Supply Works Depreciation Fund.

The amount at credit of the Depreciation Fund as at 30th June, 1939, was £13,923, representing £9,833, non-interest bearing, being the balance of amount at credit of the Fund on 1st July, 1937, £4,000 (interest bearing) paid to credit of account at 30th June, 1938, and £90 9s. interest credited by the Treasury to the Fund to 30th June, 1939.

The amount standing at credit of the Depreciation Account in the Commission's books as at 30th June, 1939, including interest, was £45,336. The balance not yet credited to the Fund by the Treasury is, therefore, £31,413.

Details of the Water Supply Works Depreciation Account are set out on pages 95-97 of this Report.

PLANT AND MACHINERY ACCOUNT.

Steps are being taken to establish a Plant and Machinery Account—approval for which will be sought in the 1939 Water Supply Loans Application Bill.

Liability in respect of the plant and machinery possessed by the Commission is at present either held in the Stores Suspense Account, authorized under Public Account Advances Act, No. 3341, or charged direct to the Capital Account of the works on which the respective items of plant are in use.

Under the proposed system the respective items of plant in use will be transferred to the Plant and Machinery Account when established, and will be hired to the particular works on which any of the plant is engaged, at rates sufficient to provide a reserve fund for major overhauls, a depreciation fund adequate to renew the plant when it has reached the end of its useful life, and interest and redemption on the Capital cost of the plant.

The proportion of the hire rate representing depreciation will be paid to the credit of a Water Supply Plant and Machinery Depreciation Fund which will be kept in the Treasury—this Fund will be interest bearing. The provision for major repairs will be placed to the credit of the Public Account Advances Act, No. 3341 (Stores Suspense Account), as at present.

FINANCIAL STATEMENTS.

The Commission has completed a comprehensive revision of the basis for the allocation of administrative management and general charges to the respective Districts under its control.

The revised basis has, where practicable, also been applied to the expenditure for the previous year, and the accounts for that year have been amended accordingly in the books of the Commission.

REVENUE EXPENDITURE CHARGEABLE TO THE STATE ACCOUNT.

The Commission by direction of the Governor in Council has, throughout 1938–39, continued the water supply to 15 Waterworks Districts, 2 Irrigation Districts, 3 Urban Divisions, and 15 Urban Districts, in respect of which Districts the works would not produce sufficient revenue to cover the expenses of maintenance and management. Section 6 of the *Water Act* 1937, No. 4513, provides that the annual amount of the loss resulting from the maintenance and management of such works shall be transferred in the books of the Commission to the "Revenue Expenditure Chargeable to the State Account." The amount so transferred in respect of the above Districts for the financial year 1938–39 was £57,185.

ESTIMATES 1939–40.

The Estimates submitted to the Treasury by the Commission for the financial year 1939–40 amounted to £499,176. The amount, however, included in the Budget Estimate was £447,176—a reduction of £52,000.

This reduction will necessitate a curtailment of urgent maintenance work. Lack of appropriation of sufficient Vote Funds over a number of years has made it impossible for the Commission adequately to maintain works and structures. The unsatisfactory condition of water supply structures is embarrassing both to the Commission and water-users as it involves a wastage of supplies and an increased cost of water distribution.

The accumulation of drift sand in channels in the Wimmera–Mallee Districts this year has been exceptionally heavy as a result of the severe drought. Subsequent to the preparation of the Commission's Estimates for 1939–40, heavy rains have soaked drift sand in the channels, and the cost of removal, this coming season, will be much in excess of the provision that has been made in the Estimates. It is considered that it would be advantageous to the State if a Sand Drift Removal Fund, as recommended by the Royal Commission on Water Supply, were established. Such a fund would equalize the cost over a spread of years and provide funds to meet additional expenditure, such as will be involved in the 1939–40 financial year, following a period of very dry and drought conditions.

RESULT OF OPERATIONS IN DISTRICTS

Disbursements, 1938–39.

	Operating Expenses.	Interest on Capital Allotted.	Depreciation Charged.	Redemption Charged.	Total Disbursements.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Coliban Works	21,971 12 10	16,087 1 4	2,838 7 11	..	40,897 2 1
Irrigation Districts	181,329 16 5	68,311 3 0	8,529 12 6	3,046 19 7	261,217 11 6
Irrigation Urban Divisions ..	2,974 0 11	1,537 13 4	913 5 4	31 0 4	5,455 19 11
Waterworks Districts	167,405 3 6	37,486 11 2	336 8 5	259 10 10	205,487 13 11
Waterworks Urban Districts ..	27,927 17 11	21,192 0 6	14,365 13 7	1,213 13 0	64,699 5 0
Flood Protection Districts ..	4,912 5 2	490 1 2	..	370 17 0	5,773 3 4
Drainage Districts	16,028 14 1	..	569 7 6	..	16,598 1 7
	422,549 10 10	145,104 10 6	27,552 15 3	4,922 0 9	600,128 17 4
Expenditure not chargeable to Districts—					
Free Headworks	6,307 7 11	..	..	..	6,307 7 11
Other	47,228 7 7	..	..	..	47,228 7 7
	476,085 6 4	145,104 10 6	27,552 15 3	4,922 0 9	653,664 12 10

SUMMARY OF OPERATIONS FOR YEAR 1938-39.

	£ s. d.	£ s. d.		£ s. d.	£ s. d.
REVENUE, 1938–39—			EXPENDITURE, 1938–39—		
From Districts and other activities under the control of the Commission	560,679 11 1		From—		
Less transfer to State Loans Repayment Fund	361 0 0		Annual Votes ..	428,863 13 11	
		560,318 11 1	Special Appropriations	3,497 11 10	
Add amount made available from Unemployment Relief Fund towards maintenance		43,724 0 7		432,361 5 9	
			Unemployment Relief Fund	43,724 0 7	
					476,085 6 4
			Surplus carried down		127,957 5 4
		604,042 11 8			604,042 11 8
Surplus brought down		127,957 5 4	Amount debited by Treasury for Pensions and Gratuities		13,586 6 1
Interest on Loans paid to Treasury by Waterworks Trusts and Local Bodies		84,446 1 5	Balance available towards payments of Interest and Exchange, Depreciation and Redemption carried down		198,817 0 8
		212,403 6 9			212,403 6 9
Balance available towards Interest and Exchange Depreciation and Redemption brought down		198,817 0 8	Interest on total Loan Liability		1,069,029 12 11
Balance being deficiency borne by Treasury		974,202 2 2	Exchange on Interest payments		103,989 9 11
		1,173,019 2 10			1,173,019 2 10

ANALYSIS OF COST TO STATE, 1938-39.

	£ s. d.	£ s. d.		£ s. d.
Loss resulting from operation of Districts administered under Order in Council unable to produce revenue to cover maintenance and management expenses ..		57,185 7 0	Deficiency on operations borne by Treasury ..	974,202 2 2
Maintenance and Management of Free Headworks	4,977 12 7			
Less Revenue received	3,370 7 9			
		1,607 4 10		
Expenditure on Services of a national character	21,854 2 3			
Less Revenue received	14,896 0 11			
		6,958 1 4		
Administration and General Expenditure in respect to expenditure from Unemployment Relief Loan Funds ..		25,374 5 4		
Amount debited by Treasury for Pensions and Gratuities ..		13,586 6 1		
Exchange on overseas interest payments not debited to Districts ..		103,989 9 11		
Interest payable in respect to amounts charged to Capital Expenditure borne by the State Account	839,479 1 0			
Less Surplus on operations of Commission Districts	73,977 13 4*			
		765,501 7 8		
		974,202 2 2		974,202 2 2

* Of the gain of £73,977 13s. 4d., an amount of £27,552 15s. 3d. has been credited to Depreciation Account and £4,922 0s. 9d. to Redemption. The balance, £41,502 17s. 4d., represents excess revenue over disbursements in respect of Districts other than those showing losses and being operated by direction of Order in Council.

UNDER CONTROL OF COMMISSION.

Receipts, 1938–39.

	Total Receipts.	Less Transfers to State Loans Repayment Fund.	Total Collections Paid to Consolidated Revenue.	Excess. Receipts over Disbursements.	Excess. Disbursements over Receipts.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Coliban Works	39,388 12 0	..	39,388 12 0	..	1,508 10 1
Irrigation Districts	280,940 0 3	..	280,940 0 3	19,722 8 9	..
Irrigation Urban Divisions ..	6,921 4 7	..	6,921 4 7	1,465 4 8	..
Waterworks Districts	112,773 16 9	..	112,773 16 9	..	92,713 17 2
Waterworks Urban Districts ..	80,396 8 4	..	80,396 8 4	15,697 3 4	..
Flood Protection Districts ..	8,063 2 7	361 0 0	7,702 2 7	2,289 19 3	..
Drainage Districts	13,929 17 11	..	13,929 17 11	..	2,668 3 8
	542,413 2 5	361 0 0	542,052 2 5	39,174 16 0	96,890 10 11
Free Headworks	3,370 7 9	..	3,370 7 9	..	..
Miscellaneous	14,896 0 11	..	14,896 0 11	..	..
	560,679 11 1	361 0 0	560,318 11 1	..	..

Capital Expenditure 1938-39—

	£ s. d.	£ s. d.
Expenditure during year on Capital Works of Water Supply—		
From Loan Funds		582,327 3 5
From Unemployment Relief Funds		411,803 10 10
		994,130 14 3

Loan Capital Liability—

Net Loan Liability of State for Works of Water Supply at 30th June, 1939			25,609,149 19 6
Represented by—			
Works at Debit of Authorities—			
Commission Districts	3,767,763 2 2		
Waterworks Trusts, and Local Governing Bodies	1,923,187 9 7		
			5,690,950 11 9
Capital Expenditure borne by the State—			
Free Headworks	1,226,321 1 2		
Capital Works and Charges not apportionable to Districts ..	1,305,217 6 7		
Headworks and Distributary Works	17,386,446 12 10		
Waterworks Trusts and Local Governing Bodies	1,101,005 10 9		
Free Grants to Local Authorities in early years	142,356 4 11		
			21,161,346 16 3
			26,852,297 8 0
Less net amount from National Debt Sinking Fund			1,243,147 8 6
Net Loan Liability			25,609,149 19 6

Interest and Exchange—

The Total Interest due on the Loan Liability for 1938–39 is			1,069,029 12 11
To which is to be added Exchange payable on overseas Interest			103,989 9 11
			1,173,019 2 10
Interest Debitable to—			
Works at Debit of Authorities—			
Commission (allotted to Districts)	145,104 10 6		
Trusts	84,446 1 5		
			229,550 11 11
Capital Expenditure borne by the State—			
Free Headworks	48,716 17 6		
Capital works and charges not apportionable to Districts ..	51,822 2 9		
Headworks and Distributary works not debited to Districts ..	689,546 19 6		
Free Grants to Local Authorities and amounts written off over 40 years ago	49,393 1 3		
			839,479 1 0
			1,069,029 12 11
Exchange not apportioned			103,989 9 11
			1,173,019 2 10

RECEIPTS AND DISBURSEMENTS.

STATEMENT of Moneys received and disbursed during the year ended 30th June, 1939.

Works.	Receipts (Exclusive of Credits for Urban Water).			Disbursements (exclusive of Interest, Redemption, and Depreciation Charges, and Charges for Rural Water).		
	Total.	Paid to— (a) Depreciation Fund; (b) State Loans Repayment Fund.	Paid to Consolidated Revenue.	From Annual Votes and Special Appropriation.	From Unemployment Relief (Taxation) Fund.	Total.
District Works.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Coliban Works	39,388 12 0	..	39,388 12 0	21,469 0 8	502 12 2	21,971 12 10
Free Headworks—						
Broken River Works ..	..	..	..	27 2 1	323 11 2	350 13 3
Goulburn River Works ..	659 10 7	..	659 10 7	2,594 5 1	596 9 9	3,190 14 10
Kow Swamp Works ..	1,645 13 8	..	1,645 13 8	1,903 7 10	409 14 5	2,313 2 3
Lake Lonsdale Reservoir ..	145 0 0	..	145 0 0	116 7 5	..	116 7 5
Loddon River Works ..	232 14 3	..	232 14 3	166 17 1	..	166 17 1
Kerang N.W. Lakes Works	687 9 3	..	687 9 3	169 13 1	..	169 13 1
Irrigation Districts ..	280,940 0 3	..	280,940 0 3	163,718 9 4	17,611 7 1	181,329 16 5
Irrigation Urban Divisions ..	6,921 4 7	..	6,921 4 7	2,974 0 11	..	2,974 0 11
Waterworks Districts ..	112,773 16 9	..	112,773 16 9	144,452 9 5	22,952 14 1	167,405 3 6
Waterworks Urban Districts	80,396 8 4	..	80,396 8 4	27,009 19 2	917 18 9	27,927 17 11
Flood Protection Districts ..	8,063 2 7	(b) 361 0 0	7,702 2 7	4,610 5 7	301 19 7	4,912 5 2
Drainage Districts	13,929 17 11	..	13,929 17 11	15,921 0 6	107 13 7	16,028 14 1
Miscellaneous Expenditure (not directly chargeable to Districts)—						
Loch Garry (proportion of maintenance borne by State)	..	..	..	120 14 11	..	120 14 11
Irrigation Branch ..	..	..	..	519 4 4	..	519 4 4
Soil Erosion	..	..	..	1 10 0	..	1 10 0
Waterworks Trusts and Sewerage Authorities ..	..	..	..	2,286 12 2	..	2,286 12 2
Cobungi and Water Weed Research—State Grant to Council for Scientific and Industrial Research ..	..	..	..	250 0 0	..	250 0 0
Special supplies during drought (outside Districts)	..	..	..	272 15 0	..	272 15 0
Rivers and Reclamation Division—Surveys, Investigations, &c. ..	..	..	..	5,722 5 11	..	5,722 5 11
Compensation	..	..	..	200 0 0	..	200 0 0
River Murray Commission—State contribution towards maintenance River Murray Works ..	..	..	..	7,450 0 0	..	7,450 0 0
Administration of Unemployment Relief Loan Works	..	..	..	25,374 5 4	..	25,374 5 4
Investigations and Research defrayed from Revenue	..	..	..	1,533 8 1	..	1,533 8 1
Special Appropriation Act, No. 3801, sections 19, 20, Administration	..	..	..	3,497 11 10	..	3,497 11 10
Miscellaneous Collections—(Diversion Permits, Rents, &c.)	14,896 0 11	..	14,896 0 11	..	..	..
Totals	560,679 11 1	(b) 361 0 0	560,318 11 1	432,361 5 9	43,724 0 7	476,085 6 4

	£ s. d.
Net Receipts paid to Consolidated Revenue	560,318 11 1
Total Disbursements from Votes and Special Appropriation	432,361 5 9
Surplus available towards meeting Interest and other Treasury Charges ..	127,957 5 4

Included in the above figures is an amount of £25,374 5s. 4d., being Administration and General Expenditure Charges, in connexion with Unemployment Relief Loan Works, not directly chargeable to water users.

In addition, the expenditure on services of a national character, not directly chargeable to water users, was £17,539 1s. 2d. This sum is comprised of:—Administration charges under Special Appropriation (£3,497 11s. 10d.); Administration of Waterworks Trusts and Sewerage Authorities (£2,286 12s. 2d.); Maintenance of Free Headworks (£1,607 4s. 10d.); Proportion of Loch Garry Flood Protection District borne by State under Agreement (£120 14s. 11d.); Contribution by State towards maintenance River Murray Works (£7,450); Other Expenditure (£2,576 17s. 5d.).

COLIBAN SYSTEM.

STATEMENT of Moneys received and disbursed during the year ended 30th June, 1939, and of Interest charged at the rate of 3·978 per cent. on Capital Debits.

District.	Receipts.	Disbursements.				Excess Disbursements Over Receipts.
		Operating Costs.	Depreciation.	Interest.	Total.	
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1. Coliban	39,216 15 6	21,078 8 10	2,838 7 11	15,299 18 9	39,216 15 6	..
2. Axe Creek	8 4 0	119 8 1	..	124 9 5	243 17 6	235 13 6
3. Harcourt	24 17 2	503 8 7	..	617 14 11	1,121 3 6	1,096 6 4
4. Marong	138 15 4	270 7 4	..	44 18 3	315 5 7	176 10 3
Totals	39,388 12 0	21,971 12 10	2,838 7 11	16,087 1 4	40,897 2 1	1,508 10 1

DISTRICTS HELD IN TRUST BY THE COMMISSION.

STATEMENT of Receipts and Disbursements for the year ended 31st December, 1938.

Receipts.

Name of Trust.	Bank Balance at 1st January, 1938.	1938. Rates.	Water Sales.	Interest and Miscellaneous.	Total.	Grand Total for Year 1938.
	£	£	£	£	£	£
Carrum	*Cr.* 8	1,772	..	564	2,336	2,344
Loddon United	*Cr.* 359	1,797	421	79	2,297	2,656
Loddon United (Mitiamo Urban)	*Cr.* 39	192	..	256	448	487
Totals	*Cr.* 406	3,761	421	899	5,081	5,487

Disbursements.

Name of Trust.	Capital Debit, 31st December, 1938.	1938. Maintenance and Water Distribution.	Management.	Total.	Interest.	(A) Depreciation: (B) Redemption.	Grand Total for Year 1938.	Bank Balance Carried Forward 1st January, 1939.
	£	£	£	£	£	£	£	£
Carrum	24,937	444	110	554	1,750	..	2,304	*Cr.* 40
Loddon United	1,892	1,372	167	1,539	94	(B) 439	2,072	*Cr.* 584
Loddon United (Mitiamo Urban)	4,805	210	17	227	205	(A) 28 (B) 27	487	..
Totals	31,634	2,026	294	2,320	2,049	(A) 28 (B) 466	4,863	*Cr.* 624

FLOOD PROTECTION DISTRICTS.

STATEMENT of Moneys received and disbursed from 1st July, 1920, to 30th June, 1939, and of Interest charged at the rate of 3·978 per cent on Capital Debits, and also of Redemption charged as at 30th June, 1939.

RECEIPTS.

District.	1st July, 1920 to 30th June, 1938.	1938–39. Charge.	Interest and Miscellaneous.	Total.	**Grand Total at 30th June, 1939.**
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1. Cardinia	25,562 19 4	2,683 5 4	200 3 10	2,883 9 2	28,446 8 6
2. Kanyapella	3,513 13 7	302 7 0	55 17 10	358 4 10	3,871 18 5
3. Koowecrup Lower	57,809 6 11	4,185 11 6	204 15 8	4,390 7 2	62,199 14 1
4. Loch Garry	11,683 16 3	421 16 6	9 4 11	431 1 5	12,114 17 8
Totals	98,569 16 1	7,593 0 4	470 2 3	8,063 2 7	106,632 18 8

DISBURSEMENTS, AND INTEREST, AND REDEMPTION CHARGED.

District.	Disbursements. 1st July, 1920, to 30th June, 1938.	1938–39. Repairs and Maintenance.	Administration.	Total.	**Total at 30th June, 1939.**	Interest Charged. 1st July, 1920, to 30th June, 1938.	1st July, 1938, to 30th June, 1939.	**Total at 30th June, 1939.**	Redemption paid to— (A) Redemption Funds; (B) Revenue.	**Grand Total at 30th June, 1939.**
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1. Cardinia ..	7,442 2 10	1,194 15 8	482 8 5	1,677 4 1	9,119 6 11	26,429 1 2	..	26,429 1 2	..	35,548 8 1
2. Kanyapella ..	1,183 7 9	2 13 2	10 16 4	13 9 6	1,196 17 3	1,961 9 11	156 14 1	2,118 4 0	(B) 19 17 0	3,334 18 3
3. Koowecrup Lower	13,597 3 10	2,168 16 2	932 0 7	3,100 16 9	16,698 0 7	58,969 3 2	..	58,969 3 2	..	75,667 3 9
4. Loch Garry	1,122 8 11	80 9 5	40 5 5	120 14 10	1,243 3 9	5,949 7 11	333 7 1	6,282 15 0	(A) 3,910 5 9	11,436 4 6
Totals ..	23,345 3 4	3,446 14 5	1,465 10 9	4,912 5 2	28,257 8 6	93,309 2 2	490 1 2	93,799 3 4	(A) 3,910 5 9 (B) 19 17 0	125,986 14 7

IRRIGATION AND WATER SUPPLY DISTRICTS.

STATEMENT of Moneys received from 1st May, 1906, to 30th June, 1939.

RECEIPTS.

District.	1st May, 1906, to 30th June, 1938.	1938–39.						Grand Total at 30th June, 1939.
		Rates	Compulsory Irrigation Charge.	Water Sales.	Interest and Miscellaneous.	Total.	Urban Water.	
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1. Bacchus Marsh	134,099 18 9	703 2 10	861 4 5	74 11 3	60 17 4	1,699 15 10	545 0 0	136,344 14 7
2. Boort	105,418 11 2	908 10 1	2,595 3 0	1,958 9 1	136 1 8	5,598 3 10	..	111,016 15 0
3. Calivil	26,633 3 8	910 6 9	1,551 5 7	1,727 11 11	72 4 9	4,261 9 0	..	30,894 12 8
4. Campaspe	23,892 13 9	581 1 1	..	36 16 0	23 12 2	641 9 3	..	24,534 3 0
5. Cohuna	404,599 13 7	3,398 12 6	11,507 19 3	3,956 4 8	340 5 6	19,203 1 11	76 0 0	423,878 15 6
6. Deakin	132,199 17 0	2,678 9 2	2,114 19 5	..	203 1 3	4,996 9 10	3 0 0	137,199 6 10
7. Dingee	42,264 8 0	158 13 0	1,028 17 9	348 6 11	39 16 8	1,575 14 4	5 0 0	43,845 2 4
8. Dry Lake	955 10 6	..	..	..	28 15 3	28 15 3	..	984 5 9
9. Echuca North	30,889 17 3	194 12 1	1,346 12 10	363 19 1	142 17 6	2,048 1 6	..	32,937 18 9
10. Fish Point	9,219 9 0	74 2 5	682 6 5	126 5 9	62 11 10	945 6 5	..	10,164 15 5
11. Katandra	14,340 0 2	389 5 7	1,764 18 0	1,126 10 0	24 19 9	3,305 13 4	..	17,645 13 6
12. Kerang	171,240 1 4	1,465 8 1	3,799 19 0	4,363 18 6	120 2 3	9,749 7 10	..	180,989 9 2
13. Koondrook	232,885 8 6	2,235 10 1	6,366 6 5	2,041 19 7	388 18 0	11,032 14 1	84 0 0	244,002 2 7
14. Leitchville	31,189 7 7	789 18 2	1,309 10 4	1,538 13 1	87 8 3	3,725 9 10	..	34,914 17 5
15. Maffra–Sale	109,870 7 6	2,370 1 0	8,924 8 8	5,076 8 3	446 11 6	16,817 9 5	100 0 0	126,787 16 11
16. Merbein	524,687 16 8	1,186 9 10	23,625 19 11	287 13 6	624 6 7	25,724 9 10	520 0 0	550,932 6 6
17. Mystic Park	16,691 5 5	165 2 8	627 11 3	104 16 1	49 2 1	946 12 1	..	17,637 17 6
18. North Shepparton	35,414 8 9	2,009 14 3	3,073 7 11	1,730 17 0	90 2 9	6,904 1 11	..	42,318 10 8
19. Nyah	160,484 1 11	211 4 7	6,771 2 11	258 15 3	264 9 11	7,505 12 8	187 0 0	168,176 14 7
20. Red Cliffs	504,476 17 10	1,872 16 10	37,527 15 8	308 16 8	1,036 10 7	40,745 19 9	598 0 0	545,820 17 7
21. Rochester	403,568 19 0	2,662 13 3	12,950 13 4	5,078 7 9	658 6 3	21,350 6 7	15 0 0	424,933 19 7
22. Rodney	724,110 14 0	6,204 7 0	17,325 5 8	6,523 19 11	822 5 2	30,875 17 9	..	754,986 11 9
23. Shepparton	177,768 7 1	1,754 14 11	6,369 18 2	345 11 2	211 5 0	8,681 9 3	..	186,449 16 4
24. South Shepparton	30,768 1 11	808 0 0	1,812 4 7	155 19 8	204 8 7	2,980 12 10	..	33,748 14 9
25. Stanhope	84,658 15 9	606 12 4	4,172 0 7	746 8 6	349 9 7	5,874 11 0	20 0 0	90,553 6 9
26. Swan Hill	205,015 5 8	1,536 11 2	6,809 6 1	3,812 5 6	498 14 4	12,656 17 1	..	217,672 2 9
27. Third Lake	12,136 0 1	183 6 5	787 3 10	104 6 11	30 10 5	1,105 7 7	..	13,241 7 8
28. Tongala	168,095 10 2	1,243 6 6	7,679 5 3	1,981 2 0	247 9 2	11,151 2 11	..	179,246 13 1
29. Tragowel Plains	335,049 16 0	1,670 6 7	8,636 6 0	2,602 4 0	337 16 4	13,246 12 11	42 0 0	348,338 8 11
30. Tresco	30,186 10 2	382 1 11	..	1,727 19 1	60 12 7	2,170 13 7	..	32,357 3 9
31. Werribee	137,472 9 1	884 16 7	1,629 8 0	664 17 5	211 14 10	3,390 16 10	..	140,863 5 11
Totals	5,020,283 7 3	40,239 17 8	183,651 0 3	49,173 14 6	7,875 7 10	280,940 0 3	2,195 0 0	5,303,418 7 6

11047/39.—6

IRRIGATION AND WATER SUPPLY DISTRICTS.

STATEMENT of Moneys disbursed from 1st May, 1906, to 30th June, 1939, and of Interest charged at the rate of 3·978 per cent. on Capital Debits, and also of Depreciation and Redemption charged as at 30th June, 1939. (Free Headworks excluded.)

DISBURSEMENTS AND INTEREST, DEPRECIATION, AND REDEMPTION CHARGED.

District.	Disbursements.						Interest Charged.			Depreciation.	Redemption Paid to— (A) Redemption Funds. (B) Revenue.	Grand Total at 30th June, 1939.
	1st May, 1906, to 30th June, 1938.	1938–39.				Total at 30th June, 1939.	1st May, 1906, to 30th June, 1938.	1st July, 1938, to 30th June, 1939.	Total at 30th June, 1939.			
		Repairs and Maintenance.	Water Distribution.	Administration.	Total.							
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1. Bacchus Marsh ..	34,210 18 7	1,930 16 9	337 19 0	1,140 14 9	3,409 10 6	37,620 9 1	121,687 17 10	3,852 1 3	125,539 19 1	..	..	163,160 8 2
2. Boort	51,728 13 2	1,828 6 4	1,111 13 6	1,121 16 9	4,061 16 7	55,790 9 9	57,581 19 7	570 14 2	58,102 13 9	54 0 0	(A) 1,400 0 0 (B) 71 17 2	115,419 0 8
3. Calivil	11,676 13 0	735 11 8	659 12 3	370 18 0	1,766 1 11	13,442 14 11	39,424 18 0	331 9 10	39,756 7 10	26 0 0	(B) 41 16 8	53,266 19 5
4. Campaspe	14,066 4 1	413 15 2	56 8 5	135 15 5	605 19 0	14,672 3 1	13,769 9 4	..	13,769 9 4	..	..	28,441 12 5
5. Cohuna	217,024 18 2	3,938 9 2	1,829 17 1	2,042 14 9	7,811 1 0	224,835 19 2	203,294 17 0	7,720 16 6	211,015 13 6	13,045 0 0	(B) 970 2 9	449,866 15 5
6. Deakin	48,935 15 1	1,560 16 1	537 3 5	565 15 2	2,663 14 8	51,599 9 9	91,071 11 10	1,153 17 8	92,225 9 6	..	(B) 145 10 4	143,970 9 7
7. Dingee	21,425 12 9	332 15 8	389 13 11	205 11 5	928 1 0	22,353 13 9	27,721 6 7	450 0 8	28,171 7 3	20 0 0	(B) 56 5 8	50,601 6 8
8. Dry Lake	1 0 0	..	..	..	..	1 0 0	955 3 10	28 12 0	983 15 10	..	(B) 0 3 3	984 19 1
9. Echuca North ..	13,226 7 10	610 9 2	325 4 3	260 18 5	1,196 11 10	14,422 19 8	21,624 14 5	..	21,624 14 5	24 0 0	..	36,071 14 1
10. Fish Point	6,526 17 11	180 18 11	115 3 1	194 8 2	490 10 2	7,017 8 1	6,734 11 6	..	6,734 11 6	..	..	13,751 19 7
11. Katandra	8,845 5 8	552 17 0	427 4 9	319 0 2	1,299 1 11	10,144 7 7	39,889 4 6	572 16 9	40,462 1 3	24 0 0	(B) 35 19 10	50,666 8 8
12. Kerang	92,230 11 8	3,293 19 9	918 3 9	1,525 6 8	5,737 10 2	97,968 1 10	86,556 10 11	2,487 18 4	89,044 9 3	450 0 0	(A) 2,700 0 0 (B) 311 5 6	190,473 16 7
13. Koondrook	126,109 0 2	2,036 16 9	1,397 18 5	1,430 1 9	4,864 16 11	130,973 17 1	166,885 2 10	3,448 18 1	170,334 0 11	6,160 0 0	(B) 433 15 8	307,901 13 8
14. Leitchville	9,237 5 0	406 18 2	282 2 2	296 14 9	985 15 1	10,223 0 1	18,406 13 2	1,230 14 5	19,637 7 7	..	(B) 154 4 7	30,014 12 3
15. Maffra–Sale ..	52,266 1 0	2,622 19 7	1,358 0 1	1,917 19 5	5,898 19 1	58,165 0 1	69,274 16 9	3,844 9 11	73,119 6 8	260 0 0	(B) 479 11 11	132,023 18 8
16. Merbein	387,623 8 11	9,992 16 2	18,796 14 4	3,269 18 2	32,059 8 8	419,682 17 7	161,794 14 4	2,076 5 1	163,870 19 5	20,353 0 0	..	603,906 17 0
17. Mystic Park ..	10,987 0 11	413 3 4	207 12 9	389 12 5	1,010 8 6	11,997 9 5	9,188 1 9	268 3 3	9,456 5 0	..	(B) 17 0 0	21,470 14 5
18. North Shepparton ..	14,908 8 1	1,245 2 9	893 12 11	723 6 9	2,862 2 5	17,770 10 6	67,431 1 9	2,749 7 2	70,180 8 11	52 0 0	(B) 170 15 3	88,173 14 8
19. Nyah	122,584 5 5	767 4 9	5,797 7 8	836 10 8	7,401 3 1	129,985 8 6	75,253 4 4	175 2 5	75,428 6 9	5,388 7 2	..	210,802 2 5
20. Red Cliffs	311,109 12 7	3,067 11 10	26,461 1 7	2,821 19 9	32,350 13 2	343,460 5 9	209,974 10 10	1,816 1 3	211,790 12 1	31,603 5 4	..	586,854 3 2
21. Rochester	174,695 10 2	4,265 3 7	3,963 14 10	2,173 2 2	10,402 0 7	185,097 10 9	290,847 13 0	7,728 15 0	298,576 8 0	222 0 0	(B) 971 11 9	484,867 10 6
22. Rodney	301,900 1 2	9,585 1 5	4,399 15 1	3,365 17 3	17,350 13 9	319,250 14 11	526,103 0 2	6,196 15 1	532,299 15 3	256 0 0	(B) 777 0 0	852,583 10 2
23. Shepparton ..	70,591 11 4	1,746 7 7	1,234 3 5	1,042 8 2	4,022 19 2	74,614 10 6	173,018 19 5	2,824 11 9	175,843 11 2	94 0 0	(B) 177 10 0	250,729 11 8
24. South Shepparton ..	7,379 0 9	382 10 4	336 19 6	269 12 6	989 2 4	8,368 3 1	28,101 14 9	702 18 10	28,804 13 7	20 0 0	(B) 88 3 6	37,281 0 2
25. Stanhope	44,222 1 4	2,102 5 3	859 17 8	815 4 0	3,777 6 11	47,999 8 3	72,027 2 6	2,157 16 5	74,184 18 11	..	(B) 135 0 0	122,319 7 2
26. Swan Hill	106,762 4 7	3,568 9 2	1,581 19 2	1,653 1 2	6,803 9 6	113,565 14 1	109,788 3 11	2,729 6 7	112,517 10 6	5,448 0 0	(B) 343 9 0	231,874 13 7
27. Third Lake ..	4,077 17 3	162 10 4	204 4 10	140 11 3	507 6 5	4,585 3 8	12,320 17 7	185 15 6	12,506 13 1	..	(B) 23 13 6	17,115 10 3
28. Tongala	77,125 18 11	2,645 14 9	1,304 9 8	1,129 2 1	5,079 6 6	82,205 5 5	160,866 12 9	3,614 7 4	164,481 0 1	122 0 0	(B) 453 3 3	247,261 8 9
29. Tragowel Plains ..	135,585 18 3	5,426 16 3	2,012 14 8	1,916 6 10	9,355 17 9	144,941 16 0	257,394 17 8	4,648 9 5	262,043 7 1	..	..	406,985 3 1
30. Tresco	44,602 5 1	290 14 8	2,155 13 1	540 5 4	2,986 13 1	47,588 18 2	56,656 18 3	..	50,656 18 3	..	..	98,245 16 5
31. Werribee	26,313 14 6	1,320 16 1	673 2 8	657 16 0	2,651 14 9	28,965 9 3	130,704 8 1	4,744 18 4	135,449 6 5	..	..	164,414 15 8
Totals	2,547,980 3 4	67,427 18 5	80,629 7 11	33,272 10 1	181,329 16 5	2,729,309 19 9	3,300,300 19 2	68,311 3 0	3,368,612 2 2	83 621 12 6	(A) 4,100 0 0 (B) 5,857 19 7	6,191,501 14 0

WATERWORKS DISTRICTS.

STATEMENT of Moneys received from 1st May, 1906, to 30th June, 1939.

RECEIPTS.

District.	1st May, 1906, to 30th June, 1938.	1938–39. Rates.	Water Sales.	Interest and Miscellaneous.	Total.	Urban Water.	Grand Total at 30th June, 1939.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1. Bellarine Peninsula	27,587 7 2	..	6,785 6 0	46 13 0	6,831 19 0	..	34,419 6 2
2. Birchip	696,835 9 7	3,554 7 2	..	80 13 5	3,635 0 7	185 0 0	725,879 8 7
3. Sea Lake		5,361 3 3	..	187 5 3	5,548 8 6	287 0 0	
4. Tyrrell		4,163 11 6	55 15 0	136 14 8	4,356 1 2	86 0 0	
5. Tyrrell West		6,621 0 2	156 14 1	344 6 1	7,122 0 4	1,027 0 0	
6. Wycheproof		6,433 19 9	..	156 8 8	6,590 8 5	207 0 0	
7. Carwarp	16,000 2 3	484 1 6	495 9 6	62 0 7	1,041 11 7	..	17,041 13 10
8. Carwarp Central	1,746 2 0	33 7 0	48 18 4	2 5 4	84 10 8	16 0 0	1,846 12 8
9. Coreena	3,058 18 0	404 13 3	97 17 2	10 19 8	513 10 1	..	3,572 8 1
10. Hindmarsh	12,247 10 10	1,038 3 10	..	38 9 0	1,076 12 10	..	13,324 3 8
11. Karkarooc	274,199 14 8	10,766 16 4	25 0 7	556 9 7	11,348 6 6	551 0 0	286,099 1 2
12. Kerang North-West Lakes	4,108 6 4	126 10 5	..	5 3 10	131 14 3	..	4,240 0 7
13. Long Lake	211,174 18 5	5,636 11 4	..	175 16 8	5,812 8 0	228 0 0	217,215 6 5
14. Millewa	24,474 7 1	1,499 4 4	1,260 15 8	196 10 3	2,956 10 3	50 0 0	27,480 17 4
15. Millewa Central	12,880 8 6	630 15 2	276 5 10	48 15 5	955 16 5	36 0 0	13,872 4 11
16. Mornington Peninsula	65,014 11 5	190 9 8	3,641 12 10	148 14 2	3,980 16 8	..	68,995 8 1
17. Newstead	15 0 0	..	15 0 0	..	15 0 0	..	30 0 0
18. Normanville	..	575 3 8	56 8 5	..	631 12 1	..	631 12 1
19. Otway	..	..	99 18 9	54 4 9	154 3 6	..	154 3 6
20. Tyntynder	121,842 15 9	4,488 17 6	207 16 11	373 5 10	5,070 0 3	193 0 0	127,105 16 0
21. Upper Western Wimmera	100,501 15 0	4,432 9 1	..	152 10 10	4,584 19 11	120 0 0	105,206 14 11
22. Upper Wimmera United	166,287 11 8	5,710 9 1	6 10 0	150 18 0	5,867 17 1	62 0 0	172,217 8 9
23. Walpeup West	35,293 8 5	1,326 14 3	20 0 0	103 4 4	1,449 18 7	..	36,743 7 0
24. Werribee	12,492 1 1	625 9 4	15 0 0	11 4 9	651 14 1	..	13,143 15 2
25. Western Wimmera	356,231 4 4	12,375 10 7	4,109 4 7	331 19 3	16,816 14 5	481 0 0	373,528 18 9
26. Wimmera United	397,752 7 1	13,279 3 7	1,273 8 8	266 0 1	14,818 12 4	145 0 0	412,715 19 5
27. Yelta	6,917 18 2	574 7 2	21 8 4	131 13 9	727 9 3	..	7,645 7 5
Totals	2,546,661 17 9	90,332 18 11	18,668 10 8	3,772 7 2	112,773 16 9	3,674 0 0	2,663,109 14 6

WATERWORKS DISTRICTS.

STATEMENT of Moneys disbursed from 1st May, 1906, to 30th June, 1939; and of Interest charged at the rate of 3·978 per cent on Capital Debits; and also Depreciation and Redemption charged as at 30th June, 1939. (Free Headworks excluded).

DISBURSEMENTS AND INTEREST, DEPRECIATION, AND REDEMPTION CHARGED.

District.	Disbursements.							Interest Charged.			Depreciation.	Redemption Paid to— (A) Redemption Funds. (B) Revenue.	Grand Total at 30th June, 1939.
	1st May, 1906, to 30th June, 1938.	1938–39.				Rural Water.	Total at 30th June, 1939.	1st May, 1906 to 30th June, 1938.	1st July, 1938 to 30th June, 1939.	Total at 30th June, 1939.			
		Repairs and Maintenance.	Water Distribution.	Administration	Total.								
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1. Bellarine Peninsula ..	7,167 4 5	1,887 4 6	..	204 18 7	2,092 3 1	..	9,259 7 6	30,354 3 1	3,280 3 5	33,634 6 6	..	(B) 206 2 9	43,099 16 9
2. Birchip		3,768 2 8	417 14 7	856 5 5	5,042 2 8				1,012 3 0				
3. Sea Lake		5,401 2 4	604 15 3	1,178 15 0	7,184 12 7				0 4 1				
4. Tyrrell	459,524 17 5	9,772 8 0	979 10 1	1,160 15 5	11,912 13 6		517,678 19 11	544,862 5 0	0 0 9	548,987 0 3	..	..	1,066,666 0 2
5. Tyrrell West ..		23,976 3 9	2,255 1 7	2,673 6 6	28,904 11 10				0 1 5				
6. Wycheproof ..		3,433 7 2	791 9 6	885 5 3	5,110 1 11				3,112 6 0				
7. Carwarp	50,272 10 11	1,299 9 1	2,040 2 0	429 15 4	3,769 6 5	250 0 0	54,291 17 4	22,227 18 10	..	22,227 18 10	586 0 0	..	77,105 16 2
8. Carwarp Central ..	2,636 5 0	116 6 9	109 19 3	36 9 5	262 15 5	..	2,899 0 5	1,275 1 2	..	1,275 1 2	25 0 0	..	4,199 1 7
9. Corcena	14,690 8 8	1,012 12 7	2,227 17 6	295 12 3	3,536 2 4	..	18,226 11 0	16,742 19 8	..	16,742 19 8	..	..	34,969 10 8
10. Hindmarsh ..	3,787 5 2	469 1 6	19 5 3	123 17 2	612 3 11	..	4,399 9 1	7,814 7 1	233 9 4	8,047 16 5	978 0 0	(B) 29 13 5	13,454 18 11
11. Karkarooc ..	128,865 16 11	15,048 15 9	787 19 0	2,157 7 10	17,994 2 7	..	146,859 19 6	199,777 19 4	13 11 7	199,791 10 11	..	..	346,651 10 5
12. Kerang North-West Lakes	3,080 13 9	77 9 8	110 6 7	99 9 3	287 5 6	..	3,367 19 3	1,942 6 9	..	1,942 6 9	..	..	5,310 6 0
13. Long Lake ..	131,232 10 3	7,275 13 9	1,398 3 10	1,392 1 6	10,065 19 1	..	141,298 9 4	108,345 12 4	331 10 6	108,677 2 10	8,305 0 0	..	258,280 12 2
14. Millewa	90,908 8 3	4,266 19 1	7,914 3 5	1,223 13 2	13,404 15 8	..	104,313 3 11	35,423 13 7	..	35,423 13 7	..	..	139,736 17 6
15. Millewa Central ..	42,769 17 9	1,757 17 1	6,444 1 7	791 13 3	8,993 11 11	..	51,763 9 8	26,013 19 7	..	26,013 19 7	..	..	77,777 9 3
16. Mornington Peninsula	10,057 5 3	604 0 1	..	322 12 6	926 12 7	..	10,983 17 10	54,818 6 3	2,496 13 10	57,315 0 1	372 0 0	..	68,670 17 11
17. Newstead	15 0 0	..	..	..	..	..	15 0 0	..	..	..	..	..	15 0 0
18. Normanville ..	..	27 10 2	22 6 8	118 0 0	167 16 10	..	167 16 10	..	400 9 0	400 9 0	..	(B) 25 1 3	593 7 1
19. Otway	..	..	..	..	..	..	..	..	7,234 9 5	7,234 9 5	..	..	7,234 9 5
20. Tyntynder ..	111,300 14 10	10,823 13 4	1,048 11 11	1,734 17 2	13,607 2 5	..	124,907 17 3	145,523 4 6	7 6 11	145,530 11 5	..	..	270,438 8 8
21. Upper Western Wimmera ..	40,417 7 1	1,461 9 1	123 16 10	465 17 5	2,051 3 4	..	42,468 10 5	58,125 6 0	0 0 10	58,125 6 10	606 0 0	(A) 1,500 0 0 (B) 48 10 5	102,699 17 3
22. Upper Wimmera United	53,440 12 9	4,399 4 11	464 8 6	913 18 1	5,777 11 6	..	59,218 4 3	110,654 15 3	2,528 15 2	113,183 10 5	..	(A) 2,390 0 0	174,840 5 1
23. Walpeup West ..	25,363 5 0	1,225 4 9	..	213 5 5	1,438 10 2	..	26,801 15 2	21,698 18 0	..	21,698 18 0	1,216 11 0	..	49,717 4 2
24. Werribee	3,958 6 0	0 5 7	46 11 1	62 13 5	109 10 1	..	4,067 16 1	11,196 5 3	217 10 4	11,413 15 7	..	(B) 27 13 5	15,509 5 1
25. Western Wimmera ..	161,957 10 7	6,764 3 8	2,468 12 0	2,237 13 3	11,470 8 11	..	173,427 19 6	204,792 5 6	6,212 1 2	211,004 6 8	2,422 0 0	(A) 5,400 0 0	392,254 6 2
26. Wimmera United ..	130,282 7 3	8,879 15 4	1,033 17 10	1,976 3 11	11,889 17 1	..	142,172 4 4	254,307 5 2	10,405 14 5	264,712 19 7	..	(A) 5,310 0 0	412,195 3 11
27. Yelta	8,172 7 1	204 5 6	463 18 6	125 18 2	794 2 2	120 0 0	9,086 9 3	3,898 17 10	..	3,898 17 10	..	..	12,985 7 1
Totals ..	1,479,900 14 4	113,952 6 1	31,772 12 9	21,680 4 8	167,405 3 6	370 0 0	1,647,675 17 10	1,859,795 10 2	37,486 11 2	1,897,282 1 4	14,510 11 0	(A) 14,600 0 0 (B) 337 1 3	3,574,405 11 5

URBAN DISTRICTS.

STATEMENT of Moneys received from 1st May, 1906, to 30th June, 1939.

RECEIPTS.

	District.	1st May, 1906, to 30th June, 1938.	1938-39.				Grand Total at 30th June, 1939.
			Rates.	Water Sales.	Interest and Miscellaneous.	Total.	
		£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1.	Anglesea	1,355 17 5	417 8 9	21 3 0	10 13 10	449 5 7	1,805 3 0
2.	Antwerp	721 14 0	59 9 7	12 4 0	7 0 11	78 14 6	800 8 6
3.	Barwon Heads and Ocean Grove	8,584 15 5	1,590 2 0	164 9 6	37 11 5	1,792 2 11	10,376 18 4
4.	Berriwillock	5,651 11 1	234 10 5	43 7 3	24 13 2	302 10 10	5,954 1 11
5.	Berwick	9,803 10 9	707 1 1	178 12 10	34 15 1	920 9 0	10,723 19 9
6.	Beulah	13,574 7 0	431 19 4	97 19 0	41 19 2	571 17 6	14,146 4 6
7.	Birchip	27,358 9 8	495 10 0	356 14 0	78 3 1	930 7 1	28,288 16 9
8.	Bittern	2,051 15 8	89 10 6	61 12 1	0 17 4	151 19 11	2,203 15 7
9.	Brim	4,213 4 2	239 1 10	11 4 6	17 6 10	267 13 2	4,480 17 4
10.	Bunyip	2,777 10 7	372 19 9	22 13 8	22 6 10	418 0 3	3,195 10 10
11.	Camperdown	..	1,896 1 0	56 10 5	213 13 8	2,166 5 1	2,166 5 1
12.	Carrum	103,292 1 6	6,358 1 9	1,342 18 10	453 19 8	8,155 0 3	111,447 1 9
13.	Carwarp	408 0 0	46 1 4	..	5 14 2	51 15 6	459 15 6
14.	Chillingollah	1,712 13 6	55 0 3	35 14 0	9 12 1	100 6 4	1,812 19 10
15.	Chinkapook	2,023 14 2	169 5 0	..	0 15 6	170 0 6	2,193 14 8
16.	Cobden	..	132 16 9	..	47 1 10	179 18 7	179 18 7
17.	Cranbourne	8,564 18 10	393 2 3	84 8 0	27 16 6	505 6 9	9,070 5 7
18.	Crib Point	4,359 0 0	533 11 0	30 0 0	11 18 2	575 9 2	4,934 9 2
19.	Culgoa	6,308 11 4	280 2 9	24 15 6	12 8 2	317 6 5	6,625 17 9
20.	Dandenong	80,342 2 1	4,553 18 8	978 4 8	419 13 9	5,951 17 1	86,293 19 2
21.	Dimboola	49,271 1 3	1,479 12 4	566 10 1	158 5 3	2,204 7 8	51,475 8 11
22.	Dooen	294 6 11	15 18 0	17 17 2	3 7 0	37 2 2	331 9 1
23.	Drysdale	1,598 13 4	387 0 9	27 16 9	17 18 4	432 15 10	2,031 9 2
24.	Frankston	68,212 5 1	4,714 9 5	1,359 3 9	327 6 1	6,400 19 3	74,613 4 4
25.	Garfield	2,300 0 8	284 5 6	9 1 0	12 14 6	306 1 0	2,606 1 8
26.	Hastings	3,970 3 0	391 15 11	29 0 5	12 10 11	433 7 3	4,403 10 3
27.	Hicksborough	705 7 6	75 13 3	..	6 10 3	82 3 6	787 11 0
28.	Hopetoun	18,587 3 3	816 3 1	147 9 0	80 8 3	1,044 0 4	19,631 3 7
29.	Jeparit	20,343 13 7	970 13 1	136 3 3	59 12 5	1,166 8 9	21,510 2 4
30.	Jung Jung	3,089 8 9	183 19 2	20 17 6	9 5 1	214 1 9	3,303 10 6
31.	Koondrook	10,221 14 10	366 19 11	22 15 0	9 16 5	399 11 4	10,621 6 2
32.	Lake Boga	8,891 2 9	308 11 6	20 19 9	39 1 1	368 12 4	9,259 15 1
33.	Lalbert	4,720 11 8	210 4 5	77 0 0	7 9 10	294 14 3	5,015 5 11
34.	Lascelles	4,008 5 2	185 7 11	15 8 11	12 0 4	212 17 2	4,221 2 4
35.	Longwarry	2,878 4 5	236 8 10	647 10 8	38 12 0	922 11 6	3,800 15 11
36.	Manangatang	7,919 13 7	433 0 5	120 17 4	6 6 8	560 4 5	8,479 18 0
37.	Marnoo	4,450 18 0	262 12 11	88 6 5	11 9 0	362 8 4	4,813 6 4
38.	Merbein	22,799 13 9	1,300 13 9	280 14 9	100 16 10	1,682 5 4	24,481 19 1

39. Meringur	1,435 8 5	95 18 0	12 7 6	6 1 10	114 7 4	1,549 15 9
40. Minyip	21,143 0 7	834 12 3	57 16 10	64 1 11	956 11 0	22,099 11 7
41. Mornington	46,288 9 10	2,693 9 9	483 19 6	120 6 5	3,297 15 8	49,586 5 6
42. Mount Martha	7,020 6 3	786 4 11	200 3 6	32 14 5	1,019 2 10	8,039 9 1
43. Nandaly	1,716 7 7	64 17 5	19 4 0	4 19 10	89 1 3	1,805 8 10
44. Natimuk	14,150 15 1	280 9 6	177 18 7	56 10 1	514 18 2	14,665 13 3
45. Newstead	2,549 15 10	447 8 6	116 3 3	19 16 4	583 8 1	3,133 3 11
46. North Wonthaggi	4,508 3 8	419 17 11	..	20 0 6	439 18 5	4,948 2 1
47. Nullawil	2,837 13 11	260 16 8	1 0 0	21 5 8	283 2 4	3,120 16 3
48. Nyah	1,828 9 4	82 15 3	1 10 0	32 0 0	116 5 3	1,944 14 7
49. Nyahwest	9,940 14 2	626 4 10	91 13 5	19 2 11	737 1 2	10,677 15 4
50. Ouyen	33,757 0 11	1,415 16 0	704 8 1	102 3 8	2,222 7 9	35,979 8 8
51. Pakenham	10,770 2 4	578 4 2	488 7 2	32 6 11	1,098 18 3	11,869 0 7
52. Patchewollock	1,731 14 10	241 17 11	15 3 0	37 9 1	294 10 0	2,026 4 10
53. Piangil	6,524 3 11	186 12 11	135 11 0	2 16 9	325 0 8	6,849 4 7
54. Portarlington	2,154 3 10	510 2 9	26 5 6	21 16 5	558 4 8	2,712 8 6
55. Pyramid Hill	7,471 4 5	514 10 1	67 3 7	61 4 8	642 18 4	8,114 2 9
56. Quambatook	2,428 0 3	459 18 9	70 13 3	31 13 10	562 5 10	2,990 6 1
57. Queenscliff and Point Lonsdale	19,060 15 5	2,947 5 7	498 1 5	54 0 11	3,499 7 11	22,560 3 4
58. Rainbow	26,200 11 4	767 1 8	350 13 5	60 12 9	1,178 7 10	27,378 19 2
59. Rupanyup	18,591 3 0	836 11 0	74 9 9	59 16 7	970 17 4	19,562 0 4
60. Sea Lake	22,139 3 5	800 5 2	177 17 3	101 18 7	1,080 1 0	23,219 4 5
61. Somerville	4,343 16 8	281 11 8	176 14 0	44 8 3	502 13 11	4,846 10 7
62. South Frankston	22,950 19 2	2,112 5 11	495 7 9	91 7 3	2,699 0 11	25,650 0 1
63. Speed	1,802 5 5	94 5 0	19 17 6	7 12 2	121 14 8	1,924 0 1
64. Springvale	35,207 0 4	3,198 2 7	3,487 8 6	311 19 7	6,997 10 8	42,204 11 0
65. Tempy	1,653 13 4	135 2 10	1 8 0	15 6 10	151 17 8	1,805 11 0
66. Terang	..	..	..	95 12 6	95 12 6	95 12 6
67. Torquay	2,976 6 11	825 4 6	64 14 0	26 14 0	916 12 6	3,892 19 5
68. Ultima	10,329 15 4	292 4 2	29 16 9	31 11 9	353 12 8	10,683 8 0
79. Waitchie	1,067 19 6	79 18 0	1 0 0	1 13 5	82 11 5	1,150 10 11
70. Walpeup	549 1 1	163 16 8	0 8 0	5 16 6	170 1 2	719 2 3
71. Watchem	7,894 1 2	283 2 9	44 13 7	41 7 10	369 4 2	8,263 5 4
72. Werrimull	3,493 0 9	270 3 9	39 0 0	28 9 11	337 13 8	3,830 14 5
73. Wonthaggi	108,965 13 0	2,319 7 7	1,664 14 11	85 16 11	4,069 19 5	113,035 12 5
74. Woomelang	17,140 18 6	278 15 6	205 11 2	28 1 7	512 8 3	17,653 6 9
75. Woorinen	1,616 14 5	156 18 10	12 8 0	7 9 3	176 16 1	1,793 10 6
76. Wycheproof	22,015 4 9	719 9 1	189 9 8	62 1 3	971 0 0	22,986 4 9
77. Yaapeet	1,345 15 3	90 5 7	0 13 0	11 10 5	102 9 0	1,448 4 3
Totals	1,024,965 18 7	58,830 19 7	17,313 17 10	4,251 10 11	80,396 8 4	1,105,362 6 11

URBAN DISTRICTS.

STATEMENT of Moneys disbursed from 1st May, 1906, to 30th June, 1939; and of Interest charged at the rate of 3·978 per cent on Capital Debits; and also of Depreciation and Redemption charged as at 30th June, 1939 (Free Headworks excluded).

DISBURSEMENTS AND INTEREST, DEPRECIATION, AND REDEMPTION CHARGED.

District.	Disbursements.							Interest Charged.			Depreciation.	Redemption Paid to— (A) Redemption Funds; (B) Revenue.		Grand Total at 30th June, 1939.
	1st May, 1906, to 30th June, 1938.	1938-39.					Total at 30th June, 1939.	1st May, 1906, to 30th June, 1938.	1st July, 1938, to 30th June, 1939.	Grand Total at 30th June, 1939.				
		Repairs and Maintenance.	Water Distribution.	Administration.	Total.	Rural Water.								
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.		£ s. d.	£ s. d.
1. Anglesea	767 13 9	269 8 4	..	69 8 3	338 16 7	..	1,106 10 4	2,237 3 0	2 5 2	2,239 8 2	108 1 0	(B)	0 2 10	3,454 2 4
2. Antwerp	243 18 9	6 14 10	..	6 13 0	13 7 10	9 0 0	266 6 7	343 9 0	28 6 0	371 15 0	22 0 0	(B)	3 15 7	663 17 2
3. Barwon Heads and Ocean Grove	2,044 16 10	391 7 1	..	191 2 5	582 9 6	..	2,627 6 4	6,323 2 3	630 14 1	6,953 16 4	558 0 0	(B)	39 5 2	10,178 7 10
4. Berriwillock	2,646 6 9	31 8 11	20 11 10	22 6 6	74 7 3	29 0 0	2,749 14 0	3,174 18 11	77 13 10	3,252 12 9	145 0 0	(B)	4 17 8	6,152 4 5
5. Berwick	1,842 14 2	200 18 3	43 13 7	87 6 9	331 18 7	..	2,174 12 9	8,278 10 6	79 16 1	8,358 6 7	526 0 0	(B)	4 19 6	11,063 18 10
6. Beulah	6,143 12 8	53 18 3	137 14 11	50 19 11	242 13 1	100 0 0	6,486 5 9	7,551 11 4	..	7,551 11 4	204 0 0	..	..	14,241 17 1
7. Birchip	12,513 14 3	220 17 1	231 9 2	126 10 9	578 17 0	185 0 0	13,277 11 3	14,736 3 7	66 9 5	14,802 13 0	905 0 8	(A)	300 0 0	29,375 4 11
8. Bittern	336 0 2	40 10 4	..	16 15 0	57 5 4	..	393 5 6	1,764 0 0	..	1,764 0 0	68 0 0	..	..	2,225 5 6
9. Brim	989 2 2	47 1 2	1 7 8	17 13 11	66 2 9	35 0 0	1,090 4 11	2,657 15 2	120 8 3	2,778 3 5	286 0 0	(B)	15 11 4	4,169 19 8
10. Bunyip	627 15 0	50 10 2	..	32 10 0	83 0 2	..	710 15 2	2,701 2 0	3 9 5	2,704 11 5	288 0 0	(B)	0 4 4	3,703 10 11
11. Camperdown	..	..	..	..	..	..	..	..	..	..	..	..	..	..
12. Carrum	21,248 9 2	2,502 4 11	..	901 4 1	3,403 9 0	..	24,651 18 2	92,777 7 3	1,648 5 7	94,425 12 10	3,099 12 9	(B)	102 12 11	122,180 16 8
13. Carwarp	278 11 6	13 5 2	..	6 14 2	19 19 4	16 0 0	314 10 10	273 16 5	..	273 16 5	186 0 0	..	..	774 7 3
14. Chillingollah	788 6 10	70 6 0	15 2 1	20 18 1	106 6 2	40 0 0	934 13 0	1,652 0 9	60 16 4	1,712 17 1	185 0 0	..	..	2,832 10 1
15. Chinkapook	651 2 1	96 1 2	1 9 0	15 5 6	112 15 8	44 0 0	807 17 9	1,259 14 7	23 7 10	1,283 2 5	318 0 0	..	..	2,409 0 2
16. Cobden	..	..	..	..	..	..	..	..	1 5 1	1 5 1	..	(B)	0 1 7	1 6 8
17. Cranbourne	1,456 6 11	66 7 0	..	35 9 0	101 16 0	..	1,558 2 11	7,697 17 2	136 4 4	7,834 1 6	202 0 0	(B)	16 4 5	9,610 8 10
18. Crib Point	889 19 11	175 17 0	..	69 19 1	245 16 1	..	1,135 16 0	3,023 15 11	259 6 7	3,283 2 6	430 10 8	..	..	4,849 9 2
19. Culgoa	2,403 4 2	40 4 6	27 19 5	24 18 8	93 2 7	29 0 0	2,525 6 9	3,783 16 3	161 18 11	3,945 15 2	138 0 0	(B)	10 3 7	6,619 5 6
20. Dandenong	15,203 14 11	1,781 10 7	..	634 13 8	2,416 4 3	..	17,619 19 2	67,438 7 9	1,594 15 9	69,033 3 6	3,304 12 2	(B)	100 4 4	90,057 19 2
21. Dimboola	26,757 8 3	286 5 3	83 13 9	146 5 3	516 4 3	340 0 0	27,613 12 6	19,641 16 9	714 2 3	20,355 19 0	1,930 0 0	(A)	1,230 0 0	51,174 9 9
												(B)	44 18 3	
22. Dooen	153 14 10	3 19 6	15 18 0	3 13 1	23 10 7	6 0 0	183 5 5	261 19 8	..	261 19 8	33 11 7	..	..	478 16 8
23. Drysdale	595 12 6	188 11 2	..	59 1 10	247 13 0	..	843 5 6	1,387 4 4	1 3 5	1,388 7 9	166 0 0	(B)	0 1 6	2,397 14 9
24. Frankston	11,625 2 3	1,236 11 10	..	544 11 10	1,781 3 8	..	13,406 5 11	56,037 2 9	2,904 11 6	58,941 14 3	2,164 13 6	(B)	362 10 8	74,875 4 4
25. Garfield	532 1 8	46 17 9	..	22 7 0	69 4 9	..	601 6 5	2,256 11 0	36 10 9	2,293 1 9	222 0 0	(B)	2 5 11	3,118 14 1
26. Hastings	894 10 9	113 11 5	..	43 16 2	157 7 7	..	1,051 18 4	3,571 17 2	34 1 8	3,605 18 10	253 19 0	(B)	1 14 1	4,913 10 3
27. Hicksborough	264 13 1	14 13 5	4 12 0	6 8 9	25 14 2	..	290 7 3	375 6 3	13 2 4	388 8 7	62 0 0	(B)	1 16 5	742 12 3
28. Hopetoun	9,962 0 4	75 17 2	240 3 8	80 4 7	396 5 5	204 0 0	10,562 5 9	9,241 10 8	76 10 9	9,318 1 5	224 0 0	(A)	150 0 0	20,264 3 4
												(B)	9 16 2	
29. Jeparit	4,025 16 3	89 17 1	..	60 10 9	150 7 10	175 0 0	4,351 4 1	15,122 6 0	532 3 10	15,654 9 10	186 0 0	(A)	800 0 0	21,039 19 11
												(B)	48 6 0	
30. Jung Jung	1,944 13 1	39 4 5	33 6 1	15 8 6	87 19 0	15 0 0	2,047 12 1	1,642 19 7	..	1,642 19 7	204 0 0	..	..	3,894 11 8
31. Koondrook	5,943 12 10	79 12 4	243 8 8	74 13 1	397 14 1	79 0 0	6,420 6 11	4,537 2 0	..	4,537 2 0	345 0 0	..	..	11,302 8 11
32. Lake Boga	4,946 18 3	29 5 11	201 6 3	61 9 1	292 1 3	79 0 0	5,317 19 6	4,552 6 5	..	4,552 6 5	205 0 0	(A)	150 0 0	10,225 5 11
33. Lalbert	1,027 9 4	99 8 1	..	31 19 0	131 7 1	28 0 0	1,186 16 5	3,224 14 7	172 4 2	3,396 18 9	658 7 9	..	..	5,242 2 11
34. Lascelles	1,802 4 7	87 18 1	16 18 6	27 11 2	132 7 9	25 0 0	1,959 12 4	2,451 6 4	42 2 6	2,493 8 10	207 6 11	..	..	4,660 8 1
35. Longwarry	415 1 1	69 5 7	..	42 0 5	111 6 0	..	526 7 1	1,631 16 10	467 16 1	2,099 12 11	226 0 0	(B)	51 4 0	2,903 4 0
36. Manangatang	1,759 10 9	118 8 10	..	39 14 0	158 2 10	113 0 0	2,030 13 7	4,757 9 8	203 15 2	4,961 4 10	716 0 0	(B)	24 16 1	7,732 14 6
37. Marnoo	746 1 2	58 4 1	..	18 17 4	77 1 5	23 0 0	846 2 7	2,985 9 6	162 13 5	3,148 2 11	633 0 0	(B)	20 4 5	4,647 9 11
38. Merbein	10,575 7 4	99 17 7	4 16 0	92 0 0	196 13 7	400 0 0	11,172 0 11	12,093 14 1	655 10 5	12,749 4 6	924 0 0	(B)	78 1 5	24,923 6 10
39. Meringur	542 19 1	23 8 5	4 16 5	13 13 11	41 18 9	36 0 0	620 17 10	874 4 10	..	874 4 10	176 0 0	..	..	1,671 2 8
40. Minyip	6,498 18 1	114 2 4	120 11 10	70 7 5	305 1 7	58 0 0	6,861 19 8	13,302 17 9	411 5 2	13,714 2 11	896 0 0	(A)	424 0 0	21,922 2 7
												(B)	26 0 0	
41. Mornington	7,654 9 1	579 10 7	..	266 15 4	846 5 11	..	8,500 15 0	37,349 15 8	1,693 7 9	39,043 3 5	1,639 12 0	(B)	185 15 1	49,369 5 6
42. Mount Martha	1,170 16 2	189 16 0	..	72 14 0	262 10 0	..	1,433 6 2	5,254 11 1	363 13 6	5,618 4 7	326 0 0	(B)	45 16 10	7,423 7 7
43. Nandaly	560 5 11	20 16 11	..	6 13 10	27 10 9	42 0 0	629 16 8	1,004 2 0	..	1,004 2 0	234 0 0	..	..	1,867 18 8

44. Natimuk	3,474 4 5	41 16 8	..	29 6 11	71 3 7	56 0 0	3,601 8 0	9,819 8 7	158 17 0	9,978 5 7	149 0 0	(A) 750 0 0 (B) 19 19 8	14,498 13 3
45. Newstead	910 0 8	136 17 7	20 7 8	54 15 4	212 0 7	..	1,122 1 3	1,419 0 2	234 2 10	1,653 3 0	102 0 0	(B) 28 12 8	2,905 16 11
46. North Wonthaggi ..	1,460 3 4	145 19 1	28 10 0	35 0 6	209 9 7	..	1,669 12 11	2,823 3 6	47 13 11	2,870 17 5	408 0 0	(B) 5 19 10	4,954 10 2
47. Nullawil	775 8 3	27 15 5	42 1 10	19 8 6	89 5 9	22 0 0	886 14 0	1,996 10 5	125 2 2	2,121 12 7	117 0 0	(B) 15 17 3	3,141 3 10
48. Nyah	889 16 4	19 5 11	12 2 6	14 17 7	46 6 0	10 0 0	946 2 4	905 2 0	6 11 3	911 13 3	94 0 0	(B) 0 8 3	1,952 3 10
49. Nyah West	3,101 10 6	32 15 1	343 6 8	91 11 0	467 12 9	177 0 0	3,746 3 3	6,098 16 10	0 8 6	6,099 5 4	987 19 11	..	10,833 8 6
50. Ouyen	12,735 6 9	355 5 5	398 7 1	140 17 6	894 10 0	807 0 0	14,436 16 9	20,323 6 9	224 12 2	20,547 18 11	1,015 0 0	(B) 26 19 2	36,026 14 10
51. Pakenham	1,453 14 8	313 1 11	..	91 10 7	404 12 6	..	1,858 7 2	8,242 18 2	586 17 11	8,829 16 1	1,084 17 4	(B) 37 0 0	11,810 0 7
52. Patchewollock	560 0 8	10 11 9	..	16 4 0	26 15 9	60 0 0	646 16 5	1,379 11 7	..	1,379 11 7	310 0 0	..	2,336 8 0
53. Piangil	2,194 1 8	96 12 10	183 15 7	57 11 11	338 0 4	31 0 0	2,563 2 0	3,527 17 0	..	3,527 17 0	680 0 0	..	6,770 19 0
54. Portarlington	1,092 19 5	335 5 2	..	93 15 10	429 1 0	..	1,522 0 5	2,887 6 6	4 3 6	2,891 10 0	125 0 2	..	4,538 10 7
55. Pyramid Hill	2,919 10 7	76 11 6	116 5 11	51 13 3	244 10 8	42 0 0	3,206 1 3	3,858 19 8	201 14 9	4,060 14 5	618 0 0	(B) 25 4 5	7,910 0 1
56. Quambatook	1,323 6 8	24 0 1	160 17 10	48 6 4	233 4 3	74 0 0	1,630 10 11	1,202 7 1	125 19 7	1,328 6 8	176 0 0	(B) 11 18 4	3,146 15 11
57. Queenscliff and Point Lonsdale	4,212 16 8	915 0 9	..	357 14 5	1,272 15 2	..	5,485 11 10	14,444 2 5	1,265 10 1	15,709 12 6	1,028 0 0	(B) 79 4 11	22,302 9 3
58. Rainbow	4,436 16 2	62 15 11	..	52 6 11	115 2 10	202 0 0	4.753 19 0	18,119 4 2	363 2 1	18,482 6 3	1,177 0 0	(A) 800 0 0 (B) 43 16 2	25,257 1 5
59. Rupanyup	6,151 1 6	132 9 2	86 8 10	65 4 11	284 2 11	49 0 0	6,484 4 5	11,501 11 0	360 8 6	11,861 19 6	743 0 0	(A) 400 0 0 (B) 27 13 9	19,516 17 8
60. Sea Lake	9,893 5 9	77 14 7	119 7 6	75 3 0	272 5 1	125 0 0	10,290 10 10	9,828 10 8	309 13 10	10,138 4 6	1,574 0 0	(B) 38 8 9	22,041 4 1
61. Somerville	697 17 6	75 10 1	..	29 9 0	104 19 1	..	802 16 7	3,546 3 6	173 1 11	3,719 5 5	118 0 0	(B) 20 17 7	4,660 19 7
62. South Frankston ..	3,541 1 7	353 18 9	62 2 0	141 4 4	557 5 1	..	4,098 6 8	16,547 9 8	1,018 1 9	17,565 11 5	1,124 0 0	(B) 126 5 2	22,914 3 3
63. Speed	630 12 4	59 11 5	1 18 4	11 2 3	72 12 0	33 0 0	736 4 4	1,131 0 8	..	1,131 0 8	376 2 8	..	2,243 7 8
64. Springvale	6,628 10 5	1,046 5 2	..	464 15 3	1,511 0 5	..	8,139 10 10	27,960 19 9	1,456 5 3	29,417 5 0	1,730 0 0	(B) 171 10 2	39,458 6 0
65. Tempy	551 11 4	74 7 11	..	13 10 0	87 17 11	47 0 0	686 9 3	1,042 8 10	..	1,042 8 10	336 12 11	..	2,065 11 0
66. Terang	..	..	..	..	..	..	..	..	0 0 6	0 0 6	..	..	0 0 6
67. Torquay	1,143 2 7	328 13 5	..	113 12 8	442 6 1	..	1,585 8 8	3,654 17 5	123 0 6	3,777 17 11	194 0 0	(B) 7 12 11	5,564 19 6
68. Ultima	3,491 16 9	123 13 2	73 2 6	63 7 9	260 3 5	95 0 0	3,847 0 2	6,808 8 10	..	6,808 8 10	275 0 0	..	10,930 9 0
69. Waitchie	598 1 5	76 9 10	..	14 7 0	90 16 10	40 0 0	728 18 3	1,198 15 7	..	1,198 15 7	288 0 0	..	2,215 13 10
70. Walpeup	252 8 8	80 8 6	29 18 11	20 4 9	130 12 2	80 0 0	463 0 10	321 0 1	31 14 11	352 15 0	..	(B) 2 0 0	817 15 10
71. Watchem	2,572 3 8	103 1 3	22 0 4	38 18 3	163 19 10	42 0 0	2,778 3 6	5,264 13 0	110 8 7	5,375 1 7	311 0 0	(B) 6 18 10	8,471 3 11
72. Werrimull	1,339 17 9	110 6 2	22 5 7	36 10 4	169 2 1	50 0 0	1,558 19 10	2,314 12 11	25 5 2	2,339 18 1	449 0 0	(B) 1 11 9	4,349 9 8
73. Wonthaggi	26,874 8 3	330 19 7	1,586 6 9	473 2 0	2,390 8 4	..	29,264 16 7	64,810 8 8	633 16 6	65,444 5 2	6,728 0 0	(A) 9,000 0 0 (B) 39 16 6	110,476 18 3
74. Woomelang	5,617 18 2	103 19 8	56 7 9	50 2 2	210 9 7	104 0 0	5,932 7 9	11,621 4 2	116 19 10	11,738 4 0	643 0 0	(A) 200 0 0 (B) 2 18 10	18,516 10 7
75. Woorinen	555 19 7	145 2 10	..	30 6 0	175 8 10	31 0 0	762 8 5	1,113 1 7	51 8 1	1,164 9 8	136 0 0	(B) 1 16 6	2,064 14 7
76. Wycheproof	10,330 5 5	281 0 2	214 14 9	114 2 4	609 17 3	185 0 0	11,125 2 8	10,679 10 3	27 3 0	10,706 13 3	1,201 0 0	(B) 1 14 2	23,034 10 1
77. Yaapeet	376 8 7	27 5 8	..	8 16 2	36 1 10	20 0 0	432 10 5	885 13 5	29 19 1	915 12 6	294 8 1	..	1,642 11 0
TOTALS	294,261 4 8	15,848 6 11	5,029 7 2	7,050 3 10	27,927 17 11	4,492 0 0	326,681 2 7	708,511 1 7	21,192 0 6	729,703 2 1	48,190 9 1	(A) 14,204 0 0 (B) 1,945 15 8	1,120,724 9 5

URBAN DIVISIONS.

STATEMENT of Moneys received and disbursed from 1st May, 1906, to 30th June, 1939; and of Interest charged at the rate of 3·978 per cent on Capital Debits; and also of Depreciation and Redemption charged as at 30th June, 1939 (Free Headworks excluded).

RECEIPTS.

Division.	1st May, 1906, to 30th June, 1938.	1938-39. Rates.	1938-39. Water Sales.	1938-39. Interest and Miscellaneous.	1938-39. Total.	Grand Total at 30th June, 1939.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1. Bacchus Marsh	40,710 17 9	1,238 9 5	299 4 8	211 9 6	1,749 3 7	42,460 1 4
2. Cohuna	19,641 17 4	920 17 2	241 11 10	91 6 1	1,253 15 1	20,895 12 5
3. Corop	807 14 1	19 0 0	..	0 2 2	19 2 2	826 16 3
4. Dingee	1,183 4 11	78 12 0	..	0 15 6	79 7 6	1,262 12 5
5. Heyfield	3,966 12 2	548 17 0	..	6 19 11	555 16 11	4,522 9 1
6. Leitchville	4,972 9 0	338 14 5	11 13 4	25 16 10	376 4 7	5,348 13 7
7. Lockington	4,038 13 6	229 0 5	9 19 6	27 16 6	266 16 5	4,305 9 11
8. Murrabit	551 4 9	77 14 0	..	4 11 11	82 5 11	633 10 8
9. Red Cliffs	22,788 10 1	1,645 18 9	423 3 10	131 13 10	2,200 16 5	24,989 6 6
10. Stanhope	2,895 3 4	318 7 9	3 15 0	15 13 3	337 16 0	3,232 19 4
Totals	101,556 6 11	5,415 10 11	989 8 2	516 5 6	6,921 4 7	108,477 11 6

Disbursements and Interest, Depreciation and Redemption Charged.

Division.	1st May, 1906, to 30th June, 1938.	Disbursements. 1938-39. Repairs and Maintenance.	Water Distribution.	Administration.	Total.	Rural Water.	Total at 30th June, 1939.	Interest. 1st May, 1906, to 30th June, 1938.	1st July, 1938, to 30th June, 1939.	Total at 30th June, 1939.	Depreciation.	Redemption Paid to— (A) Redemption Funds, (B) Revenue.	Grand Total at 30th June, 1939.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1. Bacchus Marsh ..	9,682 6 8	183 3 9	..	172 4 1	355 7 10	545 0 0	10,582 14 6	31,405 9 5	436 3 9	31,841 13 2	688 0 0	(A) 250 0 0 (B) 27 8 2	43,389 15 10
2. Cohuna	5,645 2 8	91 4 10	335 18 11	151 2 9	578 6 6	51 0 0	6,274 9 2	12,703 7 1	353 6 3	13,056 13 4	914 2 4	(A) 350 0 0 (B) 22 0 0	20,617 4 10
3. Corop	397 7 6	..	..	5 0 0	5 0 0	3 0 0	405 7 6	419 12 10	..	419 12 10	72 0 0	..	897 0 4
4. Dingee	471 6 0	5 6 7	14 5 3	13 13 10	33 5 8	5 0 0	509 11 8	744 0 5	..	744 0 5	154 0 0	..	1,407 12 1
5. Heyfield ..	1,901 8 10	83 4 5	92 4 7	61 6 8	236 15 8	100 0 0	2,238 4 6	2,178 18 0	..	2,178 18 0	300 0 0	..	4,717 2 6
6. Leitchville ..	2,305 17 4	5 6 11	225 9 6	61 15 5	292 11 10	25 0 0	2,623 9 2	2,176 14 10	70 5 10	2,247 0 8	297 0 0	(B) 4 0 0	5,171 9 10
7. Lockington ..	804 18 4	58 13 0	32 9 8	24 6 10	115 9 6	15 0 0	935 7 10	2,399 8 0	90 19 5	2,490 7 5	511 7 6	(B) 5 0 0	3,942 2 9
8. Murrabit ..	336 12 9	1 3 3	40 5 1	10 7 4	51 15 8	5 0 0	393 8 5	337 10 0	..	337 10 0	25 10 3	..	756 8 8
9. Red Cliffs ..	9,632 3 10	274 9 10	728 1 10	210 4 3	1,212 15 11	348 0 0	11,192 19 9	10,524 11 4	529 9 11	11,054 1 3	1,123 10 7	(B) 33 0 0	23,403 11 7
10. Stanhope ..	883 16 3	8 11 4	61 15 0	22 6 0	92 12 4	20 0 0	996 8 7	1,569 13 5	57 8 2	1,627 1 7	358 0 0	(B) 6 12 2	2,988 2 4
Totals ..	32,061 0 2	711 3 11	1,530 9 10	732 7 2	2,974 0 11	1,117 0 0	36,152 1 1	64,459 5 4	1,537 13 4	65,996 18 8	4,443 10 8	(A) 600 0 0 (B) 98 0 4	107,290 10 9

DRAINAGE DISTRICTS.

STATEMENT of Moneys received and disbursed from 1st July, 1937, to 30th June, 1939; and of Depreciation charged as at 30th June, 1939.

RECEIPTS.

District.	1st January, 1938, to 30th June, 1938.	1938-39.			Grand Total at 30th June, 1939.
		Rates.	Interest and Miscellaneous.	Total.	
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1. Cohuna	141 19 10	1,802 0 0	211 4 3	2,013 4 3	2,155 4 1
2. Kerang East	59 3 9	1,064 17 5	106 4 11	1,171 2 4	1,230 6 1
3. Maffra–Sale	..	68 17 9	44 17 4	113 15 1	113 15 1
4. Merbein	116 18 0	1,680 13 10	9 19 10	1,690 13 8	1,807 11 8
5. Red Cliffs	113 8 0	1,718 11 4	39 8 10	1,758 0 2	1,871 8 2
6. Rochester	71 14 2	1,126 10 9	304 12 2	1,431 2 11	1,502 17 1
7. Rodney	38 10 10	333 2 7	187 7 3	520 9 10	559 0 8
8. Shepparton	241 7 6	3,244 14 9	124 5 4	3,369 0 1	3,610 7 7
9. Tongala–Stanhope	38 12 6	1,181 12 1	81 19 4	1,263 11 5	1,302 3 11
10. Werribee	165 15 2	591 2 5	7 15 9	598 18 2	764 13 4
Totals	987 9 9	12,812 2 11	1,117 15 0	13,929 17 11	14,917 7 8

DISBURSEMENTS.

District.	1st July, 1937, to 30th June, 1938.	1938-39.			Total at 30th June, 1939.	Depreciation.	Grand Total at 30th June, 1939.
		Repairs and Maintenance.	Administration.	Total.			
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1. Cohuna	1,282 6 3	976 8 5	398 6 4	1,374 14 9	2,657 1 0	..	2,657 1 0
2. Kerang East	956 11 7	890 3 8	366 11 8	1,256 15 4	2,213 6 11	..	2,213 6 11
3. Maffra–Sale	..	1,138 6 3	459 1 11	1,597 8 2	1,597 8 2	..	1,597 8 2
4. Merbein	1,003 4 6	916 18 2	310 12 11	1,221 11 1	2,224 15 7	469 2 7	2,693 18 2
5. Red Cliffs	1,307 0 9	1,175 15 3	482 0 0	1,657 15 3	2,964 16 0	100 4 11	3,065 0 11
6. Rochester	1,540 16 9	1,621 19 10	359 14 6	1,981 14 4	3,522 11 1	..	3,522 11 1
7. Rodney	673 2 6	1,036 2 6	163 7 2	1,199 9 8	1,872 12 2	..	1,872 12 2
8. Shepparton	1,599 15 10	1,999 14 9	591 0 10	2,590 15 7	4,190 11 5	..	4,190 11 5
9. Tongala–Stanhope	1,837 3 10	2,123 1 8	576 8 0	2,699 9 8	4,536 13 6	..	4,536 13 6
10. Werribee	362 2 1	318 0 6	130 19 9	449 0 3	811 2 4	..	811 2 4
Totals	10,562 4 1	12,190 11 0	3,838 3 1	16,028 14 1	26,590 18 2	569 7 6	27,160 5 8

SUB-SURFACE DRAINAGE WORKS.

Extensive Sub-surface Drainage Works have been constructed in the important dried fruit centres of Red Cliffs, Merbein, and Mildura. The cost of the works has been met by grants approved from Unemployment Relief Loan Funds, supplemented by contributions from growers.

A condition of the grants was that settlers would contribute £5 per irrigable acre towards the cost of the respective schemes. Such portion of the contributions, as required, was to be applied to supplement the grants from Unemployment Relief Funds and the balance paid to State Loans Repayment Fund (Unemployment Relief) as part recoup of the moneys made available by the State to carry out the works.

The expenditure to 30th June, 1939, in the respective areas is set out hereunder :—

Area.	Source of Funds.		Total Cost of Scheme to 30th June, 1939.
	Unemployment Relief Loan Funds.	Growers' Contributions during Construction.	
	£ s. d.	£ s. d.	£ s. d.
Red Cliffs Irrigation and Water Supply District ..	155,309 17 7	18,245 4 11	173,555 2 6
Merbein Irrigation and Water Supply District ..	109,956 6 6	9,730 3 7	119,686 10 1
First Mildura Irrigation Trust	211,145 9 10	52,856 0 8	264,001 10 6
Totals	476,411 13 11	80,831 9 2	557,243 3 1

In addition, Sub-surface Drainage Works are now under construction in the Woorinen area. The cost of the work is being met from Unemployment Relief Loan Funds. The expenditure to 30th June, 1939 was £36,014. No contributions have yet been made by growers in respect of these works.

The following statement shows the position of the payments in respect of growers' contributions to the respective sub-surface drainage schemes.

Area.	Total Amount of Contributions.	Instalments due to 30th June, 1939.	Payments made as at 30th June, 1939.	Arrears of Contributions as at 30th June, 1939.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Red Cliffs Irrigation and Water Supply District	41,424 6 8	33,035 7 4	27,242 14 10	5,792 12 6
Merbein Irrigation and Water Supply District	31,347 10 0	21,380 0 0	20,568 2 6	811 17 6
First Mildura Irrigation Trust	53,398 3 9	53,398 3 9	53,398 3 9	..
Totals	126,170 0 5	107,813 11 1	101,209 1 1	6,604 10 0

The First Mildura Irrigation Trust raised the equivalent of the growers' contributions by means of a loan from outside sources. The Trust will recoup itself from the contributions by local growers.

CAPITAL EXPENDITURE.

STATEMENT OF MONEYS EXPENDED FROM WATER SUPPLY LOANS AND UNEMPLOYMENT RELIEF FUNDS FOR THE YEAR ENDED 30TH JUNE, 1939.

Works.	Water Supply Loan Funds.				Unemployment Relief Funds Act 4097, £410,666 2s. 11d.; Other Funds, £1,137 7s. 11d.
	Act 4503.	Act 4612.	Total Ordinary Loan Funds.	Treasurer's Advance.	
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Free Headworks.					
Kow Swamp Works	..	..	..	..	73 16 2
Goulburn—Waranga Channel	..	..	..	..	5 13 11
Loddon Weir	..	..	..	..	390 8 1
Lake Lonsdale Reservoir	..	2 9 0	2 9 0	..	..
River Murray Waters Acts.—Works	9,500 0 0	80,000 0 0	89,500 0 0	500 0 0	..
Main Supply Works.					
Eildon Reservoir	..	119 0 0	119 0 0	..	..
Waranga Reservoir Enlargement	12 9 2	626 6 4	638 15 6	..	6 9 5
East Goulburn Main Channel	12 0 10	44 14 4	56 15 2	..	1 0 0
Waranga Western Main Channel	..	2 9 0	2 9 0	..	..
Waranga Western Extension Channel	..	0 10 0	0 10 0	..	..
Melton Reservoir	50 19 8	1,054 17 0	1,105 16 8	..	..
Pykes Creek Reservoir	..	..	..	..	5,653 2 10
Wimmera Main Channels	17 19 8	23,821 3 6	23,839 3 2	..	17,016 6 1
Wimmera Storages	..	14,020 4 4	14,020 4 4	..	..
Glenmaggie Reservoir	..	4 2 6	4 2 6	..	..
Lauriston Reservoir	..	..	..	..	62,112 9 6
Surveys and Investigations	..	911 6 1	911 6 1	..	..
Plant Suspense	..	..	..	5,166 12 11	..
Irrigation and Water Supply Districts.					
Bacchus Marsh	..	97 14 2	97 14 2	..	3 10 0
Boort	..	..	..	..	0 15 0
Calivil	..	174 3 6	174 3 6	..	..
Campaspe	..	..	..	..	4 13 4
Cohuna	164 9 8	313 15 3	478 4 11	..	*Cr.* 41 12 3
Echuca North	..	..	..	..	*Cr.* 10 17 4
Katandra	..	934 17 6	934 17 6	..	21 12 10
Kerang	50 6 9	256 7 4	306 14 1	..	5 10 0
Koondrook	..	0 19 6	0 19 6	..	1,812 3 10
Leitchville	..	91 15 6	91 15 6	..	..
Maffra-Sale	..	2,616 5 2	2,616 5 2	..	5,517 5 1
Merbein	200 1 4	6 5 9	206 7 1	..	*Cr.*1,850 15 9
Murray Valley (under construction)	18,347 10 8	24,958 1 7	43,305 12 3	18,527 11 0	28,468 9 11
Mystic Park	..	0 10 0	0 10 0	..	..
North Shepparton	1,021 10 9	1,211 1 7	2,232 12 4	..	1,554 16 1
Nyah	*Cr.* 10 0 0	..	*Cr.* 10 0 0	..	..
Red Cliffs	112 14 4	346 0 5	458 14 9	..	18 15 0
Rochester	74 0 10	179 10 1	253 10 11	..	*Cr.* 13 16 0
Roduey	331 12 11	625 10 6	957 3 5	..	926 13 8
Shepparton	122 10 4	869 9 2	991 19 6	..	292 15 3
South Shepparton	..	1 11 6	1 11 6	..	22 18 11
Stanhope	15 6 9	14 18 0	30 4 9	..	169 10 1
Swan Hill	60 16 7	18 4 7	79 1 2	..	2,170 9 6
Tongala	..	792 19 6	792 19 6	..	315 14 4
Tragowel Plains	5 15 10	0 14 6	6 10 4	..	506 3 0
Werribee	43 1 1	553 5 0	596 6 1	..	5,220 0 3
Urban Divisions of Irrigation and Water Supply Districts.					
Bacchus Marsh	..	..	..	..	1,574 1 7
Cohuna	222 11 11	47 9 7	270 1 6	..	*Cr.* 16 5 11
Murrabit	..	..	..	..	81 5 3
Red Cliffs	..	..	..	..	2 0 0
Waterworks Districts.					
Bellarine Peninsula (including Headworks)	481 19 4	1,757 1 5	2,239 0 9	..	3,507 8 11
Birchip	4 10 0	2 0 0	6 10 0	..	..
Carwarp	..	407 18 3	407 18 3	..	..
Hindmarsh	..	0 10 0	0 10 0	..	..
Karkarooc	6 0 0	725 9 0	731 9 0	..	..
Kerang North-West Lakes	*Cr.* 109 13 1	9 18 0	*Cr.* 99 15 1	..	..
Long Lake	0 10 0	192 12 0	193 2 0	..	..
Mornington Peninsula (including Headworks)	22,117 16 3	84,282 0 11	106,399 17 2	..	14,667 9 4
Narre Warren	0 10 0	..	0 10 0	..	..
Normanville	7,955 16 10	6,644 19 11	14,600 16 9	..	..
Otway (under construction)	47,479 18 7	101,896 5 6	149,376 4 1	..	696 4 4
Sea Lake	9 6 5	36 14 11	46 1 4	..	..
Tyntynder	27 6 5	354 1 4	381 7 9	..	..
Carried forward	108,329 19 10	351,028 3 0	459,358 2 10	24,194 3 11	150,886 4 3

CAPITAL EXPENDITURE—*continued.*

STATEMENT OF MONEYS EXPENDED FROM WATER SUPPLY LOANS AND UNEMPLOYMENT RELIEF FUNDS FOR THE YEAR ENDED 30TH JUNE, 1939—*continued.*

Works.	Water Supply Loan Funds.				Unemployment Relief Funds Act 4097, £410,666 2s. 11d.; Other Funds, £1,137 7s. 11d.
	Act 4503.	Act 4612.	Total Ordinary Loan Funds.	Treasurer's Advance.	
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Brought forward	108,329 19 10	351,028 3 0	459,358 2 10	24,194 3 11	150,886 4 3
Waterworks Districts—continued.					
Tyrrell	..	13 10 0	13 10 0	..	..
Tyrrell West	0 10 0	2 10 0	3 0 0	..	..
Upper Western Wimmera	1 0 0	26 17 4	27 17 4	..	7 10 0
Upper Wimmera United	..	1 10 0	1 10 0	..	..
Western Wimmera	1,450 5 5	2,078 18 10	3,529 4 3	..	6,615 4 11
Wimmera United	..	23 5 5	23 5 5	..	1,296 12 4
Wycheproof	0 10 0	14 2 10	14 12 10	..	..
Yelta..	..	8 11 4	8 11 4	..	..
Urban Districts of Waterworks Districts.					
Antwerp	..	86 14 2	86 14 2	..	..
Barwon Heads and Ocean Grove	34 13 8	165 10 9	200 4 5	..	..
Berwick	..	29 1 9	29 1 9	..	..
Beulah	..	..	..	..	1,718 4 7
Bunyip	..	172 2 3	172 2 3	..	..
Carrum	139 6 4	562 19 7	702 5 11	..	..
Carwarp	..	..	..	..	619 17 4
Chillingollah	..	..	..	..	1 10 0
Chinkapook	..	..	..	..	43 17 9
Cobden	..	62 15 2	62 15 2	..	..
Coliban	210 7 5	25,332 4 4	25,542 11 9	..	122,259 10 5
Cranbourne	203 5 2	66 4 9	269 9 11	..	..
Dandenong	311 3 11	1,750 9 7	2,061 13 6	..	..
Dimboola	..	29 9 10	29 9 10	..	4,046 1 9
Dooen	..	..	..	..	473 11 10
Drysdale	1 5 8	33 6 1	34 11 9	..	..
Frankston	333 4 11	815 18 4	1,149 3 3	..	..
Hastings	..	345 14 7	345 14 7	..	..
Hicksborough	..	3 12 4	3 12 4	..	..
Hopetoun	..	0 1 0	0 1 0	..	360 16 9
Jeparit	..	..	..	..	1,348 10 2
Jung Jung	..	..	..	..	147 19 10
Lalbert	..	..	..	..	2 5 0
Lascelles	..	..	..	..	2 10 0
Longwarry	*Cr.* 482 17 5	184 18 4	*Cr.* 297 19 1	..	..
Murnoo	..	..	..	..	723 2 2
Morbein	41 5 1	60 5 3	101 10 4	..	..
Moringur	..	..	..	..	117 3 8
Minyip	*Cr.* 7 0 4	..	*Cr.* 7 0 4	..	3 13 6
Mornington	..	61 2 4	61 2 4	..	..
Mount Martha	9 9 11	..	9 9 11	..	..
Natimuk	0 1 6	..	0 1 6	..	425 1 10
Newstead	5 3 5	68 19 5	74 2 10	..	..
North Wonthaggi	..	3 18 10	3 18 10	..	..
Nyah	..	..	..	..	1,353 16 11
Nyah West	..	21 4 6	21 4 6	..	310 18 2
Ouyen	66 13 8	68 19 4	135 13 0	..	1,192 7 11
Pakenham	..	25 18 0	25 18 0	..	..
Piangil	..	..	..	..	6 5 0
Portarlington	..	137 13 4	137 13 4	..	..
Pyramid Hill	..	..	..	..	767 3 8
Queenscliff and Point Lonsdale	..	35 18 6	35 18 6	..	..
Rainbow	..	1,828 11 3	1,828 11 3	..	1,903 16 1
Rupanyup	..	..	..	..	250 16 4
Sea Lake	7 3 7	12 18 2	20 1 9	..	..
Somerville	0 5 8	904 8 11	904 14 7	..	..
South Frankston	414 6 8	3,003 8 10	3,417 15 6	..	..
Speed	..	..	..	..	454 3 8
Springvale	945 3 4	1,654 6 5	2,599 9 9	..	..
Tempy	..	..	..	..	17 5 2
Terang	..	1 5 5	1 5 5	..	..
Ultima	..	..	..	..	256 4 6
Waitchie	..	..	..	..	2 15 0
Walpeup	..	0 10 0	0 10 0	..	..
Watchem	..	..	..	..	637 10 2
Werrimull	..	..	..	..	775 18 5
Wonthaggi	..	7 14 2	7 14 2	..	..
Woomelang	..	..	..	..	142 16 10
Woorinen	..	..	..	..	5 0 0
Wycheproof	..	2 11 0	2 11 0	..	405 17 7
Yaapeet	..	..	..	..	306 8 5
Carried forward	112,015 7 5	390,738 5 3	502,753 12 8	24,194 3 11	299,888 11 11

CAPITAL EXPENDITURE—*continued.*

STATEMENT OF MONEYS EXPENDED FROM WATER SUPPLY LOANS AND UNEMPLOYMENT RELIEF FUNDS FOR THE YEAR ENDED 30TH JUNE, 1939—*continued.*

Works.	Water Supply Loan Funds.				Unemployment Relief Funds Act 4097, £410,666 2s. 11d.; Other Funds, £1,137 7s. 11d.
	Act 4503.	Act 4612.	Total Ordinary Loan Funds.	Treasurer's Advance.	
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Brought forward	112,015 7 5	390,738 5 3	502,753 12 8	24,194 3 11	299,888 11 11
Flood Protection Districts.					
Cardinia	50 0 0	1,110 14 3	1,160 14 3	..	3,270 8 4
Kooweerup Lower	10 0 0	2,072 3 4	2,082 3 4	..	1,368 12 11
Drainage Districts.					
Cohuna	..	610 3 8	610 3 8	..	14,590 8 1
Kerang East	..	83 16 0	83 16 0	..	5,404 13 5
Maffra-Sale	..	159 5 9	159 5 9	..	1,083 6 10
Merbein	..	267 4 11	267 4 11	..	15 0 0
Red Cliffs	..	68 18 9	68 18 9	..	804 7 11*
Rochester	..	680 13 8	680 13 8	..	7,843 9 8
Rodney	57 10 0	851 10 8	909 0 8	..	7,151 5 11
Shepparton	..	390 18 5	390 18 5	..	5,994 3 2
Tongala-Stanhope	110 9 9	248 8 9	358 18 6	..	..
Werribee	..	11 5 6	11 5 6	..	..
Proposed Drainage District.					
Nyah	..	..	..	..	3,731 9 4
Tresco	..	..	..	..	3,755 15 1
Woorinen	..	..	..	..	27,986 15 8
First Mildura Irrigation Trust Sub-surface Drainage	..	..	..	..	*Cr.*9,213 5 1
Waterworks Trusts and Local Governing Bodies ..	15,977 13 5	32,618 10 0	48,596 3 5	..	..
Apollo Bay Waterworks Trust Grant	..	..	..	..	350 0 0†
Miscellaneous.					
Carrum	..	..	..	..	2,717 11 4
River Improvements	..	..	..	..	35,060 16 4
TOTALS	**128,221 0 7**	**429,911 18 11**	**558,132 19 6**	**24,194 3 11**	**411,803 10 10**

* Includes £787 7s. 11d.
† Includes £350 .. } £1,137 7s. 11d. from Unemployment Relief (Taxation) Fund.

SUMMARY.

	£ s. d.
Ordinary Loan Funds (Acts 4503 and 4612)	558,132 19 6
Treasurer's Advance	24,194 3 11
Unemployment Relief Funds	411,803 10 10
Total Capital Expenditure for 1938-39	**994,130 14 3**

CONTRACTS.

STATEMENT OF CONTRACTS ENTERED INTO DURING THE YEAR ENDED 30TH JUNE, 1939.

No.	Name of Contractor.	Work or Supply.	Amount (Loan and Vote).		
			£	s.	d.
3090	James Hardie and Co. Pty. Ltd. ..	Fibrolite pipes, Camperdown Reticulation	682	5	6
3091	J. R. McDonald	Stone spalls, Terang and Cobden Storages	1,958	18	5
3092	Cowley's Eureka Ironworks Pty. Ltd. ..	Concrete lined steel pipes, Main Pipe Line—Tank Hill to Warrnambool	23,405	15	8
3093	A. T. Harman and Son Pty. Ltd. ..	Five excavators, Works Generally	13,075	0	0
3094	Ruston and Hornsby Pty. Ltd. ..	One excavator, Works Generally	2,107	10	0
3095	Hume Pipe Co. (Aust.) Ltd.	Reinforced concrete pipes, Main Pipe Line—Terang and Cobden Branches	3,331	7	0
3096	Rocla Ltd.	Reinforced concrete pipes, Woorinen Drainage	10,546	19	7
3097	G. D. Guthrie and Co. Pty. Ltd. ..	Salt-glazed ware pipes, Woorinen Drainage	1,120	6	1
3098	Hume Steel Ltd.	Concrete lined steel pipes, Water Supply to Bendigo	30,561	2	6
3099	Hume Pipe Co. (Aust.) Ltd.	Reinforced concrete pipes, Bittern-Dromana Pipe Line	7,418	6	7
3100	Hume Pipe Co. (Aust.) Ltd. ..	Reinforced concrete pipes, Main Pipe Line—Tank Hill to Warrnambool	5,052	2	8
3101	Hume Steel Ltd.	Mild steel pipes, Cranbourne Pipe Line and Bunyip Syphons ..	15,102	9	0
3102	Hume Pipe Co. (Aust.) Ltd.	Reinforced concrete pipes, Cranbourne Pipe Line and Bunyip Syphons	24,916	6	5
3103	Australian Wood Pipe Co. Ltd. ..	Wood-stave pipes, Cranbourne Pipe Line and Bunyip Syphons ..	22,648	9	9
3104	Jaques Bros. Pty. Ltd.	Operating gear for spillway gates, Yarrawonga Weir	22,847	18	4
3105	Australian Cement Ltd.	3,000 tons cement, Works Generally	12,125	0	0
3106	G. W. Kelly and Lewis Pty. Ltd. ..	Motor driven pumps, Bendigo Emergency Supply	3,240	18	0
3107	Hume Pipe Co. (Aust.) Ltd.	Reinforced concrete pipes, Bittern-Dromana Pipe Line	13,915	0	0
3108	A. Challingsworth Pty. Ltd.	Mild steel spillway gates, Malmsbury Reservoir	3,614	12	0
3109	Rocla Ltd.	Reinforced drainage pipes, Woorinen Drainage	2,885	10	5
3110	Aggregate Contracting Co. Pty. Ltd. ..	Stone spalls, Yarrawonga Weir	1,420	16	8
3111	Jaques Bros. Pty. Ltd.	Operating gear for spillway gates, Malmsbury Reservoir	5,887	4	0
3112	Babcock and Wilcox Ltd.	Water-tube boiler, Merbein Pumping Plant	9,693	0	0
3113	G. H. Reid and Son	Stone spalls, Dromana Reservoir	1,394	18	9
3114	Marfleet and Weight Pty. Ltd. ..	Operating gear for sluice gates, Yarrawonga Weir	1,364	11	0
	Contracts at Piecework Rates—				
	Channel Construction	Murray Valley District	6,600	0	0
	Firewood Supplies	Pumping Plants and Excavators	12,300	0	0
	Miscellaneous	.. ..	5,100	0	0
			264,316	8	4

DIRECT LABOUR 1938-39.

The construction of the larger works is still being mainly carried out by "Direct Labour," and the Statement hereunder shows the respective Funds from which this expenditure has been met. The principal payments during the year were :—

Works.	Loan Funds.		Unemployment Relief Funds.
	£		£
River Murray Storages	41,671	..	..
Western District Towns (Camperdown, Terang, Warrnambool, Cobden) ..	48,022	..	..
Lauriston Reservoir	..	..	23,258
Coliban System	210	..	26,097
Coliban Emergency Supply	1,345	..	18,092
Murray Valley District	36,329	..	19,941
Wimmera Mallee System	15,366	..	20,704
Merbein, Mildura, and Red Cliffs Districts	376	..	..
Rivers and Reclamation Division—			
River Improvements	..	..	32,064
Kooweerup and Cardinia Flood Protection Works	34	..	4,959
Main Urban Division—			
Mornington Peninsula District	4,239	..	16,618
Bellarine Peninsula District	1,094	..	1,852
Gippsland and Goulburn Division—			
Deakin, Rochester, Rodney, Shepparton, Stanhope, and Tongala Districts	2,028	..	17,316
Maffra-Sale District	1,293	..	2,573
Bacchus Marsh and Werribee Districts	57	..	3,513
Loddon Division—			
Boort, Tragowel Plains, Nyah, and Swan Hill Districts	..	..	20,344
Cohuna, Kerang, Kerang Lakes, Koondrook, Mystic Park, and Tresco Districts	878	..	11,385
Miscellaneous	415	..	1,015
	153,357	..	219,731
Grand Total	£373,088		

WATER SUPPLY WORKS DEPRECIATION ACCOUNTS AS AT 30TH JUNE, 1939.

Name of District.	Balance at 1st July, 1938.	Amounts Paid to Revenue 1938–39.	Interest Credited 1938–39.	Total.	Expenditure 1938–39.	Balance 30th June, 1939.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
IRRIGATION AND WATER SUPPLY DISTRICTS.						
Boort	27 0 0	27 0 0	0 16 3	54 16 3	..	54 16 3
Calivil	..	26 0 0	..	26 0 0	..	26 0 0
Cohuna	193 0 11	..	..	193 0 11	..	193 0 11
Dingee	10 0 0	10 0 0	0 6 0	20 6 0	..	20 6 0
Echuca North	..	24 0 0	..	24 0 0	..	24 0 0
Katandra	..	24 0 0	..	24 0 0	..	24 0 0
Maffra-Sale	130 0 0	130 0 0	3 18 0	263 18 0	..	263 18 0
Merbein	123 11 9	..	..	123 11 9	..	123 11 9
North Shepparton	..	52 0 0	..	52 0 0	..	52 0 0
Nyah	..	116 7 2	..	116 7 2	..	116 7 2
Red Cliffs	4,441 14 0	7,177 5 4	..	11,618 19 4	..	11,618 19 4
Rochester	111 0 0	111 0 0	3 6 8	225 6 8	..	225 6 8
Rodney	..	256 0 0	..	256 0 0	..	256 0 0
Shepparton	..	94 0 0	..	94 0 0	..	94 0 0
South Shepparton	..	20 0 0	..	20 0 0	..	20 0 0
Swan Hill	846 6 6	340 0 0	10 4 0	1,196 10 6	..	1,196 10 6
Tongala	..	122 0 0	..	122 0 0	..	122 0 0
Totals	5,882 13 2	8,529 12 6	18 10 11	14,430 16 7	..	14,430 16 7
URBAN DIVISIONS OF IRRIGATION AND WATER SUPPLY DISTRICTS.						
Bacchus Marsh	..	252 0 0	..	252 0 0	..	252 0 0
Cohuna	*Cr.* 210 7 11	271 2 4	..	60 14 5	*Dr.* 24 14 7	85 9 0
Corop	6 0 0	6 0 0	0 3 7	12 3 7	..	12 3 7
Dingee	20 19 5	14 0 0	0 8 5	35 7 10	..	35 7 10
Heyfield	76 5 4	153 14 8	2 5 7	232 5 7	..	232 5 7
Leitchville	113 19 6	..	1 7 0	115 6 6	30 13 6	84 13 0
Lockington	173 19 8	45 7 6	1 16 7	221 3 9	..	221 3 9
Murrabit	..	25 10 3	..	25 10 3	..	25 10 3
Red Cliffs	421 15 0	110 10 7	5 15 9	538 1 4	135 0 0	403 1 4
Stanhope	115 6 11	35 0 0	1 1 0	151 7 11	23 7 5	128 0 6
Totals	717 17 11	913 5 4	12 17 11	1,644 1 2	164 6 4	1,479 14 10
WATERWORKS DISTRICTS.						
Carwarp Central	6 19 7	..	..	6 19 7	..	6 19 7
Hindmarsh	334 5 7	139 0 0	4 3 5	477 9 0	..	477 9 0
Mornington	186 0 0	186 0 0	5 11 7	377 11 7	..	377 11 7
Upper Western Wimmera	169 1 2	..	..	169 1 2	..	169 1 2
Walpeup West	5 2 7	11 8 5	..	16 11 0	16 11 0	..
Totals	701 8 11	336 8 5	9 15 0	1,047 12 4	16 11 0	1,031 1 4
URBAN DISTRICTS OF WATERWORKS DISTRICTS.						
Anglesea	..	108 1 0	..	108 1 0	..	108 1 0
Antwerp	7 0 5	2 0 0	0 1 3	9 1 8	..	9 1 8
Barwon Heads and Ocean Grove	129 16 4	428 3 8	1 18 2	559 18 2	66 4 5	493 13 9
Berriwillock	16 0 0	16 0 0	0 9 7	32 9 7	..	32 9 7
Berwick	69 6 1	456 13 11	2 1 7	528 1 7	..	528 1 7
Beulah	45 11 11	23 0 0	0 13 10	69 5 9	..	69 5 9
Birchip	27 17 10	100 0 8	..	127 18 6	..	127 18 6
Bittern	34 0 0	34 0 0	1 0 5	69 0 5	..	69 0 5
Brim	93 9 9	31 0 0	0 18 7	125 8 4	..	125 8 4
Carried forward	423 2 4	1,198 19 3	7 3 5	1,629 5 0	66 4 5	1,563 0 7

WATER SUPPLY WORKS DEPRECIATION ACCOUNTS AS AT 30TH JUNE, 1939—*continued.*

Name of District.	Balance at 1st July, 1938.	Amounts Paid to Revenue 1938–39.	Interest Credited 1938–39.	Total.	Expenditure 1938–39.	Balance 30th June, 1939.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
URBAN DISTRICTS OF WATERWORKS DISTRICTS—*continued.*						
Brought forward ..	423 2 4	1,198 19 3	7 3 5	1,629 5 0	66 4 5	1,563 0 7
Bunyip	88 13 7	199 6 5	2 13 3	290 13 3	..	290 13 3
Carwarp	48 10 10	12 0 0	..	60 10 10	..	60 10 10
Carrum	..	3,000 12 9	..	3,000 12 9	..	3,000 12 9
Chillingollah	22 11 11	..	..	22 11 11	..	22 11 11
Chinkapook	63 0 11	..	..	63 0 11	..	63 0 11
Coliban	..	2,838 7 11	..	2,838 7 11	..	2,838 7 11
Cranbourne	101 0 0	101 0 0	3 0 7	205 0 7	..	205 0 7
Crib Point	151 2 3	70 6 6	2 2 1	223 10 10	..	223 10 10
Culgoa	46 9 1	18 0 0	0 10 10	64 19 11	..	64 19 11
Dandenong	963 19 5	1,840 12 9	28 18 5	2,833 10 7	..	2,833 10 7
Dimboola	*Cr.* 209 13 2	305 3 9	..	95 10 7	..	95 10 7
Dooen	11 0 0	7 11 7	0 6 7	18 18 2	..	18 18 2
Drysdale	..	166 0 0	..	166 0 0	..	166 0 0
Frankston	632 0 1	1,532 13 5	18 19 2	2,183 12 8	..	2,183 12 8
Garfield	88 8 0	133 12 0	2 13 0	224 13 0	..	224 13 0
Hastings	13 15 1	240 3 11	0 8 3	254 7 3	..	254 7 3
Hicksborough	19 19 0	6 0 0	0 3 7	26 2 7	..	26 2 7
Hopetoun	61 0 0	61 0 0	1 16 7	123 16 7	..	123 16 7
Jeparit	31 16 11	76 5 7	..	108 2 6	..	108 2 6
Jung Jung	..	90 0 0	..	90 0 0	..	90 0 0
Koondrook	37 18 10	..	..	37 18 10	..	37 18 10
Lake Boga	165 8 6	..	..	165 8 6	..	165 8 6
Lalbert	1 7 9	..	..	1 7 9	..	1 7 9
Lascelles	..	13 6 11	..	13 6 11	..	13 6 11
Longwarry	113 0 0	113 0 0	3 7 10	229 7 10	..	229 7 10
Manangatang	214 6 7	33 0 0	0 19 10	248 6 5	..	248 6 5
Marnoo	191 3 6	33 0 0	0 19 10	225 3 4	..	225 3 4
Marong	7 2 0	..	..	7 2 0	..	7 2 0
Merbein	142 6 0	137 0 0	4 2 2	283 8 2	..	283 8 2
Meringur	41 16 11	26 0 0	..	67 16 11	..	67 16 11
Minyip	*Cr.* 192 3 8	182 4 3	..	*Cr.* 9 19 5	*Dr.* 9 19 5	..
Mornington	627 6 3	651 15 5	14 12 8	1,293 14 4	..	1,293 14 4
Mount Martha ..	163 0 0	163 0 0	4 17 10	330 17 10	..	330 17 10
Nandaly	69 5 2	9 0 0	0 5 5	78 10 7	..	78 10 7
Natimuk	50 0 0	50 0 0	1 10 0	101 10 0	..	101 10 0
Newstead	51 0 0	51 0 0	1 10 7	103 10 7	..	103 10 7
North Wonthaggi ..	133 5 5	44 0 0	1 6 5	178 11 10	..	178 11 10
Nullawil	37 1 2	10 0 0	0 6 0	47 7 2	..	47 7 2
Nyah	12 16 2	5 0 0	0 3 0	17 19 2	..	17 19 2
Nyah West	333 11 11	91 19 11	3 9 7	429 1 5	..	429 1 5
Ouyen	332 4 5	111 0 0	3 6 7	446 11 0	..	446 11 0
Pakenham	404 19 6	107 7 10	5 10 0	517 17 4	..	517 17 4
Patchewollock ..	76 19 10	34 0 0	..	110 19 10	..	110 19 10
Piangil	189 13 11	..	..	189 13 11	..	189 13 11
Portarlington	..	125 0 2	..	125 0 2	..	125 0 2
Pyramid Hill	177 10 6	39 0 0	1 3 5	217 13 11	..	217 13 11
Quambatook	44 18 1	43 0 0	1 5 9	89 3 10	..	89 3 10
Queenscliff and Point Lonsdale	259 16 4	768 3 8	7 15 11	1,035 15 11	..	1,035 15 11
Rainbow	48 0 0	48 0 0	1 8 10	97 8 10	..	97 8 10
Rupanyup	107 16 11	57 0 0	1 14 2	166 11 1	..	166 11 1
Sea Lake	472 4 11	75 0 0	2 5 0	549 9 11	..	549 9 11
Somerville	59 0 0	59 0 0	1 15 5	119 15 5	..	119 15 5
South Frankston ..	451 9 8	312 0 0	9 7 2	772 16 10	..	772 16 10
Speed	100 8 4	16 2 8	..	116 11 0	..	116 11 0
Springvale	865 0 0	865 0 0	25 19 0	1,755 19 0	..	1,755 19 0
Tempy	90 4 9	16 19 9	0 4 7	107 9 1	..	107 9 1
Torquay	12 6 11	181 13 1	0 7 5	194 7 5	..	194 7 5
Ultima	76 14 2	..	..	76 14 2	..	76 14 2
Watchem	65 13 9	35 0 0	1 1 0	101 14 9	..	101 14 9
Werrimull	61 7 5	84 0 0	..	145 7 5	..	145 7 5
Wonthaggi	1,278 11 5	491 3 11	7 2 1	1,776 17 5	8 10 0	1,768 7 5
Woomelang	65 0 0	65 0 0	1 19 0	131 19 0	..	131 19 0
Woorinen	37 18 11	..	..	37 18 11	..	37 18 11
Wycheproof	377 12 2	143 0 0	4 5 10	524 18 0	..	524 18 0
Yaapeet	90 10 8	16 8 1	0 10 10	107 9 7	..	107 9 7
Totals	10,502 11 4	17,204 1 6	183 8 11	27,890 1 9	64 15 0	27,825 6 9

WATER SUPPLY WORKS DEPRECIATION ACCOUNTS AS AT 30TH JUNE, 1939—*continued.*

Name of District.	Balance at 1st July, 1938.	Amounts Paid to Revenue 1938–39.	Interest Credited 1938–39.	Total.	Expenditure 1938–39.	Balance 30th June, 1939.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
DRAINAGE DISTRICTS.						
Merbein	..	469 2 7	..	469 2 7	..	469 2 7
Red Cliffs	..	100 4 11	..	100 4 11	..	100 4 11
Totals	..	569 7 6	..	569 7 6	..	569 7 6
Grand Totals ..	**17,804 11 4**	**27,552 15 3**	**224 12 9**	**45,581 19 4**	**245 12 4**	**45,336 7 0**

RECONCILIATION OF WATER SUPPLY WORKS DEPRECIATION ACCOUNT WITH WATER SUPPLY WORKS DEPRECIATION FUND (ACT 3801) AS AMENDED BY ACT 4513.

Water Supply Works Depreciation Account.

	£ s. d.	£ s. d.
Balance from 1937–38	17,804 11 4	
Paid into Account 1938–39	27,552 15 3	
	45,357 6 7	
Interest Credited ..	224 12 9	
	45,581 19 4	
Less Expenditure 1938–39	245 12 4	
Balance in Account 30th June, 1939 ..		45,336 7 0
		45,336 7 0

Water Supply Works Depreciation Fund (In Treasury).

	£ s. d.	£ s. d.
Credit Balance as at 30th June, 1938	10,078 5 11	
Less Expenditure 1938–39	245 12 4	
		9,832 13 7
Amount invested in Sundry Investments Account	4,000 0 0	
Interest earned 1938–39 ..	90 9 0	
		4,090 9 0
Balance amount paid to Consolidated Revenue, but not yet transferred to Fund		31,413 4 5
		45,336 7 0

LOAN CAPITAL LIABILITY.

WORKS UNDER CONTROL OF COMMISSION.

The following statement gives a brief description, summary of Loan Liability for expenditure under Loan Application Acts, and other particulars relative to the undermentioned works.

A.—FREE HEADWORKS.	Expenditure. £ s. d.	Net Loan Capital Liability at 30th June, 1939. £ s. d.
Broken River Works.—Casey's Weir and offtake, with about 59 chains of channel to the Broken Creek; Gowangardie Weir with offtake sluice ..	14,852 15 0	
Goulburn River Works.—Weir on the Goulburn River, about 9 miles above Murchison; channel therefrom, about 23½ miles, to Waranga Reservoir; and that Reservoir (but exclusive of the work of its enlargement)	739,525 8 1	
Kerang North-West Lakes Works.—Weir on the Loddon River at its confluence with the Pyramid Creek; regulating weirs at the effluence from the Loddon of the Sheepwash and Washpen Creeks; channel from the Washpen Creek regulator to Reedy Lake, Middle Lake, Third Lake, Lake Charm, Racecourse Lake, Cullen's Lake, Kangaroo Lake, and Lake Tutchewop, and to the Little Murray River, with water storage works at these lakes	26,619 17 3	
Kow Swamp Works.—Intake from the River Murray with regulator, at the effluence of the Gunbower Creek; channel thence to the Kow Swamp Reservoir; and that Reservoir; channel along the northern side of the reservoir; channel from the outlet of the reservoir, about 23½ miles, to the left bank of the Loddon River	187,944 11 9	
Lake Lonsdale Reservoir.—Reservoir at Lake Lonsdale, on the Little Wimmera River, near Ledcourt	49,057 4 2	
Loddon River Works.—Laanecoorie Weir, on the Loddon; Bridgewater Weir, on the Loddon; Kinypanial Weir, on the Loddon	172,351 14 3	
Long Lake Pumping Works.—Inlet to Lake Baker, from the Little Murray River; water storage works at Lake Baker and Long Lake, with channel connecting these lakes; pumping plant at Long Lake, with rising main thence about 7 miles to allotment 10M, parish of Kooem; system of main distributary channels, about 85 miles in length	27,305 18 5	
Lower Wimmera Compensation Works.—Drung Drung Weir, on the Wimmera, near allotment 29, parish of Longerenong; Dimboola Weir, on the Wimmera, near Dimboola township: Antwerp Weir, on the Wimmera, at Antwerp Station homestead: Jeparit Weir, on the Wimmera, near Jeparit township	8,663 12 3	
		1,226,321 1 2
B.—CAPITAL WORKS AND CHARGES NOT APPORTIONABLE TO DISTRICTS.		
Geelong (inclusive of Loan Flotation Expenses)	160,621 17 10	
Eppalock Reservoir	111,707 1 4	
Goulburn Levees	30,797 0 4	
Lang Lang River Works	48,543 8 9	
Surveys and Preliminary Investigations	195,918 2 9	
Loan Flotation Expenses	757,629 15 7	
Plant Suspense	5,166 12 11	
Less Treasurer's Advance (Plant Suspense)	Cr. 5,166 12 11	
		1,305,217 6 7

C.—HEADWORKS (Exclusive of Free Headworks).

Costs Apportioned to Irrigation and Water Supply Districts and Waterworks Districts.

	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Goulburn Storages—				
Investigations	6,534 7 4			
Eildon Reservoir	1,894,257 3 4			
Waranga Reservoir Enlargement	609,654 14 5			
Laanecoorie Weir	2,509 9 3			
		2,512,955 14 4		
Goulburn Main Channels—				
East Goulburn Main	363,963 11 1			
Goulburn–Waranga	6,922 8 4			
Waranga–Western Channel	1,047,486 14 6			
Main Distributaries	10,635 13 0			
		1,429,008 6 11		
Total Goulburn Works	..	3,941,964 1 3		
Less Transferred to Wimmera–Mallee	..	99,978 10 6		
			3,841,985 10 9	
Bacchus Marsh and Werribee Schemes—				
Ballan Tunnel	..	21,677 14 8		
Pykes Creek Reservoir	..	142,224 8 6		
Melton Reservoir	..	99,145 12 10		
Lerderderg River Flats	..	330 0 8		
			263,377 16 8	
Bellarine Peninsula Waterworks District (exclusive of cost of Urban Reticulation, £40,385 6s. 11d.)	..	446,233 10 4		
Less Redemption paid to Revenue	..	206 2 9		
			446,027 7 7	
Mornington Peninsula Waterworks District (exclusive of cost of Urban Reticulation, £210,770 9s. 0d.)	..	..	936,006 5 2	
Maffra-Sale Scheme—Glenmaggie Reservoir	..	..	678,357 6 11	
River Murray Agreement Works (Contributions under River Murray Water Acts)	..	2,911,745 13 8		
Less Treasurer's Advance	..	500 0 0		
			2,911,245 13 8	
River Murray State Works	..	..	7,506 18 7	
Otway Waterworks District (under Construction)	..	..	310,298 5 3	
Wimmera–Mallee—Main Channels and Storages inclusive of £99,978 10s. 6d. from Goulburn Works	..	..	938,834 4 1	
				10,333,639 8 8
Carried forward	..			**12,865,177 16 5**

LOAN CAPITAL LIABILITY—*continued.*

Name of District.	Loan Liability (including Treasurer's Advance, £19,027 11s. 0d.). Headworks. £ s. d.	Distributary Works. £ s. d.	Total. £ s. d.	Allotted to District. £ s. d.	Capital Expenditure Borne by the State Account. Headworks. £ s. d.	Distributary Works. £ s. d.	Total. £ s. d.	Net Loan Capital Liability at 30th June, 1939. £ s. d.
Brought forward ..								12,865,177 16 5
D.—IRRIGATION AND WATER SUPPLY DISTRICTS.								
1. Bacchus Marsh	82,638 9 8	96,361 6 0	178,999 15 8	96,841 12 8	82,158 3 0	..	82,158 3 0	
2. Boort	170,482 0 0	79,675 14 0	250,157 14 0	14,311 14 11	170,481 0 0	65,364 19 1	235,845 19 1	
3. Calivil	81,744 0 0	112,360 8 0	194,104 8 0	8,313 5 10	81,743 0 0	104,048 2 2	185,791 2 2	
4. Campaspe	5,037 0 0	12,263 7 0	17,300 7 0	..	5,037 0 0	12,263 7 0	17,300 7 0	
5. Cohuna	420,512 0 0	285,127 18 11	705,639 18 11	193,634 13 11	420,512 0 0	91,493 5 0	512,005 5 0	
6. Deakin	37,258 19 8	58,827 5 11	96,086 5 7	28,934 2 7	37,258 19 8	29,893 3 4	67,152 3 0	
7. Dingee	58,344 0 0	15,503 1 9	73,847 1 9	11,284 14 4	58,344 0 0	4,218 7 5	62,562 7 5	
8. Dry Lake	1,934 0 0	718 16 9	2,652 16 9	718 16 9	1,934 0 0	..	1,934 0 0	
9. Echuca North	72,945 0 0	24,423 13 11	97,368 13 11	..	72,945 0 0	24,423 13 11	97,368 13 11	
10. Fish Point	21,135 0 0	15,793 13 5	36,928 13 5	..	21,135 0 0	15,793 13 5	36,928 13 5	
11. Katandra	76,356 0 0	107,417 14 5	183,773 14 5	14,829 7 8	76,355 0 0	92,589 6 9	168,944 6 9	
12. Kerang	242,955 0 0	127,224 9 4	370,179 9 4	62,415 16 2	242,955 0 0	64,808 13 2	307,763 13 2	
13. Koondrook	241,333 0 0	217,877 17 10	459,210 17 10	86,468 8 4	235,836 0 0	136,906 9 6	372,742 9 6	
14. Leitchville	66,800 8 1	42,829 17 1	109,630 5 2	30,906 12 5	66,800 8 1	11,923 4 8	78,723 12 9	
15. Maffra-Sale	678,357 6 11	576,136 19 3	1,254,494 6 2	97,512 8 0	678,352 6 9	478,629 11 5	1,156,981 18 2	
16. Merbein	190,602 0 0	250,660 5 11	441,262 5 11	52,292 19 6	190,602 0 0	198,367 6 5	388,969 6 5	
17. Mystic Park	38,380 19 8	17,384 19 4	55,765 19 0	6,741 3 0	38,380 19 8	10,643 16 4	49,024 16 0	
18. North Shepparton ..	157,333 0 0	197,906 3 10	355,239 3 10	70,035 2 6	157,332 0 0	127,872 1 4	285,204 1 4	
19. Nyah	72,885 0 0	111,313 0 3	184,198 0 3	4,397 4 1	72,885 0 0	106,915 16 2	179,800 16 2	
20. Red Cliffs	275,691 0 0	776,693 16 11	1,052,384 16 11	45,708 15 4	275,691 0 0	730,985 1 7	1,006,676 1 7	
21. Rochester	812,840 1 3	330,229 5 2	1,143,069 6 5	193,853 2 7	812,835 1 3	136,381 2 7	949,216 3 10	
22. Rodney	908,982 0 0	575,774 2 8	1,484,756 2 8	155,557 11 0	908,976 0 0	420,222 11 8	1,329,198 11 8	
23. Shepparton	287,750 0 0	197,035 8 10	484,785 8 10	71,279 19 5	287,748 0 0	125,757 9 5	413,505 9 5	
24. South Shepparton ..	59,001 19 10	59,598 12 9	118,600 12 7	17,626 11 4	59,001 19 10	41,972 1 5	100,974 1 3	
25. Stanhope	238,953 10 0	120,058 17 1	359,012 7 1	54,252 6 7	238,952 0 0	65,808 0 6	304,760 0 6	
26. Swan Hill	285,705 0 0	185,053 13 1	470,758 13 1	68,469 7 11	285,705 0 0	116,584 5 2	402,289 5 2	
27. Third Lake	24,962 0 0	25,212 15 4	50,174 15 4	4,658 6 6	24,962 0 0	20,554 8 10	45,516 8 10	
28. Tongala	366,777 0 0	159,555 3 6	526,332 3 6	91,021 12 0	366,775 0 0	68,535 11 6	435,310 11 6	
29. Tragowel Plains	508,181 0 0	259,816 11 11	767,997 11 11	116,858 15 10	508,178 0 0	142,960 16 1	651,138 16 1	
30. Tresco	25,277 0 0	90,888 18 0	116,165 18 0	..	25,277 0 0	90,888 18 0	116,165 18 0	
31. Werribee	180,739 7 0	119,789 18 7	300,529 5 7	119,318 6 4	180,703 7 4	507 11 11	181,210 19 3	
	6,691,893 2 1	5,249,513 16 9	11,941,406 18 10	1,718,242 17 6	6,685,851 5 7	3,537,312 15 9	10,223,164 1 4	
Under Construction								
32. Murray Valley	873,651 4 6	202,761 4 3	1,076,412 8 9	26,392 12 3	873,651 4 6	176,368 12 0	1,050,019 16 6	
Totals	7,565,544 6 7	5,452,275 1 0	13,017,819 7 7	1,744,635 9 9	7,559,502 10 1	3,713,681 7 9	11,273,183 17 10	
Less Treasurer's Advance ..	477 0 0	18,527 11 0	19,004 11 0	..	477 0 0	18,527 11 0	19,004 11 0	
Loan Liability	7,565,067 6 7	5,433,747 10 0	12,998,814 16 7	1,744,635 9 9	7,559,025 10 1	3,695,153 16 9	11,254,179 6 10	5,433,747 10 0

E.—URBAN DIVISIONS OF IRRIGATION AND WATER SUPPLY DISTRICTS.

1. Bacchus Marsh	..	14,059 8 3	14,059 8 3	10,937 11 10	..	3,121 16 5	3,121 16 5	
2. Cohuna	..	8,944 11 10	8,944 11 10	8,944 11 10	..	..	..	
3. Corop	..	231 15 6	231 15 6	..	..	231 15 6	231 15 6	
4. Dingee	..	1,452 4 5	1,452 4 5	..	..	1,452 4 5	1,452 4 5	
5. Heyfield	..	12,244 18 4	12,244 18 4	..	..	12,244 18 4	12,244 18 4	
6. Leitchville	..	3,922 1 5	3,922 1 5	1,767 0 0	..	2,155 1 5	2,155 1 5	
7. Lockington	..	2,286 16 1	2,286 16 1	2,286 16 1	..	..	..	
8. Murrabit	..	1,024 19 11	1,024 19 11	..	..	1,024 19 11	1,024 19 11	
9. Red Cliffs	..	16,419 15 6	16,419 15 6	13,310 12 6	..	3,109 3 0	3,109 3 0	
10. Stanhope	..	1,439 10 10	1,439 10 10	1,439 10 10	..	..	..	
Totals, Loan Liability	..	62,026 2 1	62,026 2 1	38,686 3 1	..	23,339 19 0	23,339 19 0	62,026 2 1

F.—WATERWORKS DISTRICTS.

1. Axe Creek	..	4,894 0 0	4,894 0 0	3,129 0 0	..	1,765 0 0	1,765 0 0	
2. Bellarine Peninsula	280,156 9 3	..	280,156 9 3	82,680 17 3	197,475 12 0	..	197,475 12 0	
3. Birchip	37,841 18 0	102,848 15 4	140,690 13 4	25,446 10 0	37,840 18 0	77,403 5 4	115,244 3 4	
4. Carwarp	..	41,404 8 9	41,404 8 9	..	..	41,404 8 9	41,404 8 9	
5. Carwarp Central	..	2,353 10 2	2,353 10 2	..	..	2,353 10 2	2,353 10 2	
6. Coreena	..	45,916 11 10	45,916 11 10	..	..	45,916 11 10	45,916 11 10	
7. Harcourt	..	17,223 0 0	17,223 0 0	15,529 0 0	..	1,694 0 0	1,694 0 0	
8. Hindmarsh	4,085 10 8	15,474 12 8	19,560 3 4	5,854 6 7	4,085 10 8	9,620 6 1	13,705 16 9	
9. Karkarooc	95,356 18 2	218,890 17 11	314,247 16 1	678 18 2	94,683 0 0	218,885 17 11	313,568 17 11	
10. Kerang North-West Lakes	..	2,316 14 4	2,316 14 4	..	..	2,316 14 4	2,316 14 4	
11. Long Lake	63,008 0 0	106,250 2 5	169,258 2 5	8,425 3 3	62,825 0 0	98,007 19 2	160,832 19 2	
12. Millewa	101,642 0 0	379,496 14 0	481,138 14 0	..	101,642 0 0	379,496 14 0	481,138 14 0	
13. Millewa Central	35,787 0 0	133,892 0 0	169,679 0 0	..	35,787 0 0	133,892 0 0	169,679 0 0	
14. Mornington Peninsula	300,982 3 10	10,281 0 3	311,263 4 1	62,655 10 0	238,327 3 10	10,280 10 3	248,607 14 1	
15. Newstead	..	4,636 6 10	4,636 6 10	..	..	4,636 6 10	4,636 6 10	
16. Normanville	..	17,301 11 9	17,301 11 9	17,301 11 9	..	..	..	
17. Sea Lake	46,048 0 0	143,636 1 5	189,684 1 5	10 6 5	46,053 0 0	143,620 15 0	189,673 15 0	
18. Tyntynder	116,981 0 0	257,078 3 4	374,059 3 4	367 6 5	116,641 0 0	257,050 16 11	373,691 16 11	
19. Tyrrell	83,622 0 0	165,545 18 4	249,167 18 4	2 0 0	83,620 0 0	165,545 18 4	249,165 18 4	
20. Tyrrell West	146,900 0 0	279,228 0 2	426,128 0 2	3 10 0	146,897 0 0	279,227 10 2	426,124 10 2	
21. Upper Western Wimmera	27,779 18 2	57,770 13 1	85,550 11 3	1 19 8	27,778 18 6	57,769 13 1	85,548 11 7	
22. Upper Wimmera United	43,668 0 0	75,865 5 9	119,533 5 9	63,569 1 7	43,667 0 0	12,297 4 2	55,964 4 2	
23. Walpeup West	..	35,881 19 11	35,881 19 11	..	..	35,881 19 11	35,881 19 11	
24. Werribee	..	11,568 5 5	11,568 5 5	5,454 6 7	..	6,113 18 10	6,113 18 10	
25. Western Wimmera	114,503 6 9	236,350 4 9	350,853 11 6	157,824 3 11	114,501 6 9	78,528 0 10	193,029 7 7	
26. Wimmera United	96,259 2 8	177,158 19 4	273,418 2 0	261,582 13 8	12,115 10 4	*Cr.* 280 2 0	11,835 8 4	
27. Wycheproof	62,780 9 8	167,446 12 1	230,227 1 9	78,238 12 6	62,779 9 8	89,208 19 7	151,988 9 3	
28. Yelta	..	6,152 7 2	6,152 7 2	..	..	6,152 7 2	6,152 7 2	
	1,657,401 17 2	2,716,862 17 0	4,374,264 14 2	788,754 17 9	1,426,719 9 9	2,158,790 6 8	3,585,509 16 5	
Under Construction—								
29. Otway	310,298 5 3	..	310,298 5 3	181,862 3 7	128,436 1 8	..	128,436 1 8	
30. Mornington Peninsula Extension (Additional to amount debited to Mornington Peninsula Works.)	77,826 19 9	..	77,826 19 9	77,826 19 9	..	..	..	
Totals	2,045,527 2 2	2,716,862 17 0	4,762,389 19 2	1,048,444 1 1	1,555,155 11 5	2,158,790 6 8	3,713,945 18 1	
Less Treasurer's Advance	23 0 0	..	23 0 0	..	23 0 0	..	23 0 0	
Loan Liability	2,045,504 2 2	2,716,862 17 0	4,762,366 19 2	1,048,444 1 1	1,555,132 11 5	2,158,790 6 8	3,713,922 18 1	2,716,862 17 0

Carried forward .. **21,077,814 5 6**

LOAN CAPITAL LIABILITY—*continued.*

Net Loan Capital Liability at 30th June, 1939.		
£	*s.*	*d.*
Brought forward .. 21,077,814	5	6

Name of District.	Loan Liability.			Allotted to District.	Capital Expenditure Borne by the State Account.		
	Headworks.	Distributary Works.	Total.		Headworks.	Distributary Works.	Total.
	£ *s.* *d.*	£ *s.* *d.*	£ *s.* *d.*	£ *s.* *d.*	£ *s.* *d.*	£ *s.* *d.*	£ *s.* *d.*
G.—URBAN DISTRICTS OF WATERWORKS DISTRICTS.							
1. Anglesea	8,451 15 11	9,741 2 9	18,192 18 8	112 19 1	8,425 8 2	9,654 11 5	18,079 19 7
2. Antwerp	..	709 12 0	709 12 0	709 12 0	..	..	..
3. Barwon Heads and Ocean Grove	31,452 17 1	7,171 16 8	38,624 13 9	15,964 18 11	22,657 12 10	2 2 0	22,659 14 10
4. Berriwillock	..	5,201 1 10	5,201 1 10	1,948 2 4	..	3,252 19 6	3,252 19 6
5. Berwick	13,727 1 8	8,657 8 5	22,384 10 1	2,017 12 10	13,723 1 8	6,643 15 7	20,366 17 3
6. Beulah	..	7,578 4 5	7,578 4 5	..	..	7,578 4 5	7,578 4 5
7. Birchip	..	12,498 1 9	12,498 1 9	1,671 0 0	..	10,827 1 9	10,827 1 9
8. Bittern	1,670 1 8	1,207 0 0	2,877 1 8	..	1,670 1 8	1,207 0 0	2,877 1 8
9. Brim	..	3,505 11 7	3,505 11 7	3,019 8 8	..	486 2 11	486 2 11
10. Bunyip	5,380 2 7	5,891 9 5	11,271 12 0	173 0 11	5,378 19 7	5,719 11 6	11,098 11 1
11. Camperdown (capital unalloted)	..	..	..	..	..	..	..
12. Carrum	170,577 5 4	43,360 5 0	213,937 10 4	41,705 6 6	170,529 5 4	1,702 18 6	172,232 3 10
13. Carwarp	..	633 3 6	633 3 6	..	..	633 3 6	633 3 6
14. Chillingollah	..	2,482 3 1	2,482 3 1	1,529 0 0	..	953 3 1	953 3 1
15. Chinkapook	..	2,551 11 7	2,551 11 7	588 0 0	..	1,963 11 7	1,963 11 7
16. Cobden	..	62 13 7	62 13 7	62 13 7	..	..	..
17. Coliban	..	1,623,176 18 1	1,623,176 18 1	385,179 6 0	..	1,237,997 12 1	1,237,997 12 1
18. Cranbourne	6,611 0 11	2,759 11 0	9,370 11 11	3,551 0 4	5,819 11 7	..	5,819 11 7
19. Crib Point	8,762 18 0	3,029 0 0	11,791 18 0	6,520 0 0	5,271 18 0	..	5,271 18 0
20. Culgoa	..	4,432 10 5	4,432 10 5	4,060 16 5	..	371 14 0	371 14 0
21. Dandenong	95,823 11 3	39,754 3 3	135,577 14 6	40,703 17 0	94,223 5 6	650 12 0	94,873 17 6
22. Dimboola	..	17,892 17 7	17,892 17 7	17,892 17 7	..	..	..
23. Dooen	..	698 9 5	698 9 5	..	..	698 9 5	698 9 5
24. Drysdale	11,063 8 1	1,366 12 1	12,430 0 2	58 9 10	11,028 8 1	1,343 2 3	12,371 10 4
25. Frankston	92,826 19 10	15,495 1 4	108,322 1 2	73,416 16 10	34,905 4 4	..	34,905 4 4
26. Garfield	4,186 16 4	4,490 4 1	8,677 0 5	916 14 1	4,185 16 4	3,574 10 0	7,760 6 4
27. Hastings	7,399 4 5	6,276 0 6	13,675 4 11	1,028 0 6	7,397 4 5	5,250 0 0	12,647 4 5
28. Hicksborough	..	989 18 8	989 18 8	330 15 11	..	659 2 9	659 2 9
29. Hopetoun	..	10,298 8 3	10,298 8 3	1,919 3 10	..	8,379 4 5	8,379 4 5
30. Jeparit	..	13,341 9 6	13,341 9 6	13,341 9 6	..	..	..
31. Jung Jung	..	3,348 12 8	3,348 12 8	..	..	3,348 12 8	3,348 12 8
32. Koondrook	..	5,606 2 7	5,606 2 7	..	..	5,606 2 7	5,606 2 7
33. Lake Boga	..	5,517 1 2	5,517 1 2	..	..	5,517 1 2	5,517 1 2
34. Lalbert	..	4,582 15 1	4,582 15 1	4,329 0 0	..	253 15 1	253 15 1
35. Lascelles	..	4,263 3 4	4,263 3 4	1,059 0 0	..	3,204 3 4	3,204 3 4
36. Longwarry	6,737 15 11	5,072 8 5	11,810 4 4	11,810 4 4	..	..	..
37. Manangatang	..	5,109 6 3	5,109 6 3	5,109 6 3	..	..	..
38. Marnoo	..	4,079 0 7	4,079 0 7	4,079 0 7	..	..	..
39. Marong	..	2,100 0 0	2,100 0 0	1,129 0 0	..	971 0 0	971 0 0

40. Merbein	..	18,292 14 10	18,292 14 10	16,488 8 11	..	1,804 5 11	1,804 5 11	
41. Meringur	..	1,782 17 0	1,782 17 0	..	..	1,782 17 0	1,782 17 0	
42. Minyip	..	10,334 6 2	10,331 6 2	10,334 6 2	..	..	..	
43. Mornington	43,061 2 5	15,863 0 7	58,924 3 0	42,498 7 3	16,425 15 9	..	16,425 15 9	
44. Mount Martha	4,853 8 0	9,375 7 0	14,228 15 0	9,124 11 1	4,852 8 0	251 15 11	5,104 3 11	
45. Nandaly	..	1,749 13 11	1,749 13 11	..	..	1,749 13 11	1,749 13 11	
46. Natimuk	..	4,937 17 7	4,937 17 7	3,983 6 8	..	954 10 11	954 10 11	
47. Newstead	..	7,592 1 5	7,592 1 5	5,901 6 5	..	1,690 15 0	1,690 15 0	
48. North Wonthaggi	..	4,158 9 0	4,158 9 0	1,197 19 0	..	2,960 10 0	2,960 10 0	
49. Nullawil	..	3,675 17 5	3,675 17 5	3,137 2 9	..	538 14 8	538 14 8	
50. Nyah	..	340 3 5	340 3 5	164 11 9	..	175 11 8	175 11 8	
51. Nyah West	..	5,713 11 6	5,713 11 6	21 4 6	..	5,692 7 0	5,692 7 0	
52. Ouyen	..	20,722 16 3	20,722 16 3	5,693 10 3	..	15,029 6 0	15,029 6 0	
53. Pakenham	10,537 18 9	7,990 18 0	18,528 16 9	14,767 18 0	3,760 18 9	..	3,760 18 9	
54. Patchewollock	..	3,628 19 0	3,628 19 0	..	..	3,628 19 0	3,628 19 0	
55. Piangil	..	6,042 13 7	6,042 13 7	..	..	6,042 13 7	6,042 13 7	
56. Portarlington	22,314 10 11	2,543 9 6	24,858 0 5	208 13 4	22,243 10 11	2,405 16 2	24,649 7 1	
57. Pyramid Hill	..	5,041 15 11	5,041 15 11	5,041 15 11	..	..	..	
58. Quambatook	..	4,841 7 3	4,841 7 3	3,159 1 8	..	1,682 5 7	1,682 5 7	
59. Queenscliff and Point Lonsdale	71,338 5 1	9,821 16 4	81,160 1 5	31,896 2 3	49,263 19 2	..	49,263 19 2	
60. Rainbow	..	10,014 11 2	10,014 11 2	10,014 11 2	..	..	..	
61. Rupanyup	..	10,645 5 4	10,645 5 4	9,037 15 6	..	1,607 9 10	1,607 9 10	
62. Sea Lake	..	7,775 14 10	7,775 14 10	7,775 14 10	..	..	..	
63. Somerville	3,332 10 8	2,773 0 8	6,105 11 4	4,792 0 10	1,313 10 6	..	1,313 10 6	
64. South Frankston	13,735 4 0	14,873 5 9	28,608 9 9	25,816 8 11	..	2,792 0 10	2,792 0 10	
65. Speed	..	2,834 5 8	2,834 5 8	..	..	2,834 5 8	2,834 5 8	
66. Springvale	67,973 19 10	23,902 5 7	91,876 5 5	37,814 13 8	54,061 11 9	..	54,061 11 9	
67. Tempy	..	2,609 11 10	2,609 11 10	..	..	2,609 11 10	2,609 11 10	
68. Terang	..	1 5 5	1 5 5	1 5 5	..	..	..	
69. Torquay	21,250 1 3	9,740 9 7	30,990 10 10	3,118 7 1	21,183 1 3	6,689 2 6	27,872 3 9	
70. Ultima	..	6,571 9 3	6,571 9 3	..	..	6,571 9 3	6,571 9 3	
71. Waitchie	..	2,539 5 6	2,539 5 6	..	..	2,539 5 6	2,539 5 6	
72. Walpeup	..	1,991 3 2	1,991 3 2	798 0 0	..	1,193 3 2	1,193 3 2	
73. Watchem	..	5,116 6 3	5,116 6 3	2,769 1 2	..	2,347 5 1	2,347 5 1	
74. Werrimull	..	4,860 15 9	4,860 15 9	633 8 3	..	4,227 7 6	4,227 7 6	
75. Wonthaggi	..	67,577 11 5	67,577 11 5	15,897 14 0	..	51,679 17 5	51,679 17 5	
76. Woomelang	..	9,283 0 9	9,283 0 9	2,938 1 2	..	6,344 19 7	6,344 19 7	
77. Woorinen	..	1,964 18 11	1,964 18 11	1,292 3 6	..	672 15 5	672 15 5	
78. Wycheproof	..	10,898 17 11	10,898 17 11	680 15 10	..	10,218 2 1	10,218 2 1	
79. Yaapeet	..	2,285 6 8	2,285 6 8	753 0 0	..	1,532 6 8	1,532 6 8	
Totals, Loan Liability ..	723,067 19 11	2,237,639 6 11	2,960,707 6 10	923,688 1 1	558,320 13 7	1,478,698 12 2	2,037,019 5 9	**2,237,639 6 11**

H.—FLOOD PROTECTION DISTRICTS.

1. Cardinia	..	100,953 4 9	100,953 4 9	..	..	100,953 4 9	100,953 4 9	
2. Kanyapella	..	3,929 8 7	3,929 8 7	3,929 8 7	..	..	..	
3. Kooweerup Lower	..	241,200 19 11	241,200 19 11	..	..	241,200 19 11	241,200 19 11	
4. Loch Garry	..	20,670 11 3	20,670 11 3	8,379 18 7	..	12,290 12 8	12,290 12 8	
Totals, Loan Liability ..	..	366,754 4 6	366,754 4 6	12,309 7 2	..	354,444 17 4	354,444 17 4	**366,754 4 6**
Carried forward ..								**23,682,207 16 11**

LOAN CAPITAL LIABILITY—*continued.*

Name of District.	Loan Liability.			Allotted to District.	Capital Expenditure Borne by the State Account.			Net Loan Capital Liability at 30th June, 1939.
	Headworks.	Distributary Works.	Total.		Headworks.	Distributary Works.	Total.	
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Brought forward ..								23,682,207 16 11
I.—DRAINAGE DISTRICTS.								
EXPENDITURE IN RESPECT TO ACQUISITION OF LAND FOR DRAINAGE WORKS. CONSTRUCTION CARRIED OUT FROM UNEMPLOYMENT RELIEF LOAN FUNDS.								
1. Cohuna	..	610 3 8	610 3 8	..	..	610 3 8	610 3 8	
2. Kerang East	..	83 16 0	83 16 0	..	..	83 16 0	83 16 0	
3. Maffra-Sale	..	159 5 9	159 5 9	..	..	159 5 9	159 5 9	
4. Merbein	..	267 4 11	267 4 11	..	..	267 4 11	267 4 11	
5. Red Cliffs	..	68 18 9	68 18 9	..	..	68 18 9	68 18 9	
6. Rochester	..	680 13 8	680 13 8	..	..	680 13 8	680 13 8	
7. Rodney	..	909 0 8	909 0 8	..	..	909 0 8	909 0 8	
8. Shepparton	..	390 18 5	390 18 5	..	..	390 18 5	390 18 5	
9. Tongala-Stanhope ..	..	358 18 6	358 18 6	..	..	358 18 6	358 18 6	
10. Werribee	..	11 5 6	11 5 6	..	..	11 5 6	11 5 6	
Totals, Loan Liability ..	..	3,540 5 10	3,540 5 10	..	..	3,540 5 10	3,540 5 10	3,540 5 10
Totals, Commission's Districts (Statements D, E, F, G, H, and I.)	**10,333,639 8 8**	**10,820,570 6 4**	**21,154,209 15 0**	**3,767,763 2 2**	**9,672,478 15 1**	**7,713,967 17 9**	**17,386,446 12 10**	

WORKS UNDER GENERAL SUPERVISION OF COMMISSION.

J.—WATERWORKS TRUSTS AND LOCAL GOVERNING BODIES.

	£ s. d.	£ s. d.
Waterworks Trusts and First Mildura Irrigation Trust	1,368,810 2 8	
Local Governing Bodies for Construction of Mallee Tanks	841 3 2	
Local Governing Bodies for Construction of Other Waterworks	553,536 3 9	
Total Loan Liability on which Interest is payable by Trusts and Local Bodies	..	1,923,187 9 7
Amounts Written Off (Acts Nos. 1625, 1651, 2016, 4002, 4175, 4176).		
Trusts prior to absorption in Commission Irrigation Districts	575,152 0 0	
Trusts prior to absorption in Commission Waterworks Districts	175,055 0 0	
Existing Trusts including First Mildura Irrigation Trust	111,489 15 11	
Waterworks Trusts Abolished and Advances Completed	73,438 16 2	
Existing Local Governing Bodies	164,884 16 0	
Local Governing Bodies Advances Completed	985 2 8	
Total Amount Written Off	..	1,101,005 10 9
Free Grants to Local Authorities	..	142,356 4 11
		3,166,549 5 3
Grand Total Net Loan Capital Liability (Exclusive of Equity in National Debt Sinking Fund) ..	..	**26,852,297 8 0**

SUMMARY STATEMENT OF LOAN LIABILITY AS AT 30th JUNE, 1939.

Reference to Preceding Statements.	Works.	Total Loan Capital Expenditure.	Deduct Redemption Paid.	Net Loan Capital Liability.	At Debit of Authorities and Allotted to Districts.	Capital Expenditure Borne by the State.
		£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
A	Free Headworks	1,226,811 19 2	490 18 0	1,226,321 1 2	..	1,226,321 1 2
B	Capital Works and Charges not Apportionable to Districts	1,625,170 15 0	319,953 8 5	1,305,217 6 7	..	1,305,217 6 7
C	Headworks Costs Apportioned to Districts	10,397,068 12 4	63,429 3 8	10,333,639 8 8	661,160 13 7	9,672,478 15 1
D	Irrigation and Water Supply Districts, exclusive of Headworks Costs ..	5,511,762 12 3	78,015 2 3	5,433,747 10 0	1,738,593 13 3	3,695,153 16 9
E	Urban Divisions of Irrigation Districts	63,266 1 6	1,239 19 5	62,026 2 1	38,686 3 1	23,339 19 0
F	Waterworks Districts, exclusive of Headworks Costs	2,761,132 8 6	44,269 11 6	2,716,862 17 0	558,072 10 4	2,158,790 6 8
G	Urban Districts of Waterworks Districts, exclusive of Headworks Costs	2,261,918 15 9	24,279 8 10	2,237,639 6 11	758,940 14 9	1,478,698 12 2
H	Flood Protection Districts	372,365 3 8	5,610 19 2	366,754 4 6	12,309 7 2	354,444 17 4
I	Drainage Districts	3,540 5 10	..	3,540 5 10	..	3,540 5 10
J	Waterworks Trusts and Local Governing Bodies	3,793,701 17 5	627,152 12 2	3,166,549 5 3	1,923,187 9 7	1,243,361 15 8
		28,016,738 11 5	1,164,441 3 5	26,852,297 8 0	5,690,950 11 9	21,161,346 16 3
	Deduct National Debt Sinking Fund	..	1,465,799 5 1			
	Less Redemption credited to Revenue	..	222,651 16 7	1,243,147 8 6		
	Net Loan Liability of State for Works of Country Water Supply ..	..	..	**25,609,149 19 6**		

STATEMENT OF REVENUE SETTING OUT ARREARS AS AT 1ST JULY, 1938, AND AS AT 30TH JUNE, 1939, RESPECTIVELY.

—	Total.	General Rate.		Irrigation Charge.		Drainage Rate.		Flood Protection Charge.		Sales of Water.	Meter Rent.	Miscellaneous.
		Rate.	Interest.	Charge.	Interest.	Rate.	Interest.	Charge.	Interest.			
1	2	3	4	5	6	7	8	9	10	11	12	13
	£	£	£	£	£	£	£	£	£	£	£	£
Arrears at 1st July, 1938 ..	788,541	350,355	85,181	197,443	35,662	7,131	..	16,294	4,059	85,783	758	5,875
Assessments, 1938–39	492,909	272,515	..	195,229	..	16,990	..	8,175	..	..	..	..
Additional Water Sales, Meter Rents, and Interest Charges to 30th June, 1939	125,651	..	20,989	..	11,361	..	517	..	911	63,404	3,242	25,227
Total Amount Collectable 1938–39	1,407,101	622,870	106,170	392,672	47,023	24,121	517	24,469	4,970	149,187	4,000	31,102
Deduct—												
(i) Revenue Collected 1938–39	560,680	234,465	4,606	180,459	3,631	12,812	62	7,592	422	88,277	3,398	24,956
(ii) Credits Absorbed ..	1,128	180	3	46	..	2	..	..	..	49	9	839
Balance	845,293	388,225	101,561	212,167	43,392	11,307	455	16,877	4,548	60,861	593	5,307
Add Amounts Overpaid ..	5,790	256	..	4,414	12	26	..	4	..	118	250	710
Total=Gross Arrears at 30th June, 1939 ..	851,083	388,481	101,561	216,581	43,404	11,333	455	16,881	4,548	60,979	843	6,017
Deduct Amounts recommended for Writing Off, 1938–39 ..	101,540	39,335	18,678	22,202	12,803	130	..	1,310	1,091	5,377	28	586
Net Arrears as at 30th June, 1939	749,543	349,146	82,883	194,379	30,601	11,203	455	15,571	3,457	55,602	815	5,431

This Statement is subject to Audit and minor adjustments.

ESTIMATES 1939–40.

PROPOSED DISBURSEMENTS.

	Estimated Requirements. £	Amount provided in Budget. £
Coliban Works	6,390	5,643
Free Headworks	3,959	2,962
Irrigation Districts	93,702	73,806
Waterworks Districts	151,792	127,985
Flood Protection Districts	4,006	3,246
Drainage Districts	12,188	11,395
Administration*	183,237	178,237
General Expenditure*	34,102	34,102
River Murray Works—Contribution by State	9,800	9,800
	499,176	447,176

* To be apportioned over the above Districts.

ESTIMATED RECEIPTS.

		£
Coliban Works		46,000
Waterworks Districts		224,000
Irrigation Districts		279,000
Flood Protection and Drainage Districts		23,000
Other		16,000
		588,000
Estimated amount available to meet Interest on basis of Budget provision ..		140,824
Add estimated Revenues from Other Authorities—		
Waterworks Trusts	57,300	
Local Bodies	23,000	
		80,300
Total Estimated amount available from Revenues of all Authorities to meet Interest		221,124

Dated at the Office of the State Rivers and Water Supply Commission, Treasury Gardens, Melbourne, the 22nd day of November, 1939.

L. R. EAST, Chairman.

W. A. ROBERTSON, Commissioner.

H. HANSLOW, Commissioner.

P. J. O'MALLEY, Secretary.

APPENDIX A.

SCHEDULE OF UNEMPLOYMENT RELIEF GRANTS TO 30TH JUNE, 1939.

Since the commencement of Relief Works in 1930, a total amount of £2,778,168 has been made available to this Commission from Unemployment Relief Funds for expenditure on works providing employment in country districts. Of this amount, £166,035 was allocated prior to the constitution of the Employment Council in July, 1932. Details are as follow :—

SCHEDULE OF GRANTS, 1ST JUNE, 1930, TO 11TH JULY, 1932.

Locality.	Works.	Grant.	
	HEADWORKS.	£	£
Goulburn Main Channels	East Goulburn	6,000	
	West Goulburn	5,000	
	East and West Goulburn	5,100	
Mornington Peninsula	Lysterfield Reservoir	12,400	
Campaspe River	Eppalock Weir	6,000	
Wimmera Mallee	Lake Lonsdale Reservoir	5,000	
			39,500
	IRRIGATION DISTRICTS.		
Maffra-Sale	Channel Lining	15,000	
Bacchus Marsh	Channel Lining	19,000	
Cohuna	Channel Construction	5,665	
Kerang	Channel Construction	4,575	
Tragowel Plains	Channel Construction	2,260	
			46,500
	WATERWORKS DISTRICTS.		
Coliban	Channel Lining	20,000	
Millewa	Channel Lining	10,000	
Northern Mallee	Channel Construction	14,000	
	Ironclad Catchments	5,000	
Bellarine Peninsula	Town Supplies	10,000	
			59,000
	FLOOD PROTECTION DISTRICTS.		
Kooweerup	Drains	15,000	
Carrum	Drains and Banks	2,000	
			17,000
	MISCELLANEOUS.		
Canned Fruits	Shepparton—Processing	4,035	
			4,035
	Total of Grants from 1.6.30 to 11.7.32 ..		**166,035**

SCHEDULE OF GRANTS, 12TH JULY, 1932, TO 30TH JUNE, 1939.

Locality	Works.		Grant.	
	HEADWORKS.		£	£
Wimmera-Mallee	Lake Lonsdale—Increased Storage ..	1932-33	2,500	
	Mt. Zero Channel and Basin ..	1932-33	6,000	
	Fyans Lake—Tree planting	1932-33	350	
	Longerenong Weir	1933-34	700	
	Moora Reservoir—Construction ..	1934-35	4,750	
	Pine Lake, Taylors Lake, &c. ..	1936-37	5,000	
				19,300
Loddon River	Laanecoorie Weir	1933-34	1,250	
	Serpentine Weir—Reconstruction ..	1935-36	800	
				2,050
Goulburn River	Goulburn - Waranga Channel—Re-conditioning	1934-35	5,000	
				5,000
Campaspe River	Eppalock Weir	1932-33	4,500	
				4,500
Werribee River	Melton Dam—Raising	1934-35	3,500	
	Raising Diversion Weir	1938-39	6,500	
				10,000
Kerang North-West Lakes	Main Channels, Swan Hill and Kerang	1932-33	14,500	
	Main Channels, Kerang and Kerang North-West Lakes	1933-34	10,350	
	Tutchewop Channel	1934-35	3,000	
				27,850
Pykes Creek Reservoir	Lining Tunnel	1937-38	5,000	
	Lining Tunnel and Raising Weir ..	1938-39	3,500	
				8,500
	Total (Headworks)		..	**77,200**

SCHEDULE OF GRANTS 12TH JULY, 1932, TO 30TH JUNE, 1939—*continued.*

Locality.	Works.		Grant.	
	IRRIGATION DISTRICTS—WATER SUPPLY.		£	£
Bacchus Marsh	Channel Lining	1932–35	31,350	
				31,350
Werribee	Channel Lining	1932–35	38,700	
				38,700
Mystic Park and Tresco	Channels (also £2,000 for Tresco drains, q.v.)	1933–34	2,500	
				2,500
Red Cliffs and Merbein	Channel Construction, Red Cliffs and Merbein	1932–35	15,000	
				15,000
Maffra Sale	Channel Construction	1932–34	7,850	
	Riverslea Extension	1938–39	7,000	
				14,850
Rodney	Channel Construction	1932–33	7,000	
				7,000
Cohuna	Channel Cleaning	1932–33	300	
	Channel Syphon	1933–34	1,000	
	Channel Construction	1933–34	1,500	
				2,800
Deakin	Channel Construction	1934–35	2,405	
				2,405
Nyah	Channel Lining	1934–35	540	
				540
Swan Hill	Channel Lining, Woorinen	1935–36	650	
				650
Shepparton	Channel Construction—Bunbartha ..	1938–39	1,500	
				1,500
Murray Valley	Channel Construction	1938–39	35,000	
				35,000
Koondrook	Channels	1938–39	1,000	
				1,000
Districts Generally	Reconditioning Works	1934–38	100,000	
	Reconditioning Works	1938–39	25,000	
				125,000
	Total (Irrigation Supply Works) ..			**278,295**
	IRRIGATION DISTRICTS—DRAINAGE.			
Maffra–Sale	Drainage	1933–38	28,300	
	Drainage	1938–39	2,000	
				30,300
Cohuna	Drainage, Leitchville and Cohuna ..	1932–37	30,500	
	Drainage, Cohuna	1937–38	12,000	
	Drainage, Cohuna and Leitchville ..	1937–38	5,000	
	Drainage, Cohuna	1938–39	13,000	
				60,500
	Barr Creek, Enlargement	1932–37	24,280	
				24,280
Swan Hill	Drainage, Woorinen, and Swan Hill ..	1933–36	10,095	
	Drainage, Woorinen	1937–38	10,000	
	Drainage, Woorinen	1938–39	20,000	
				40,095
Rodney	Drainage	1933–38	68,455	
	Drainage	1938–39	5,000	
				73,455
Deakin	Drainage	1934–35	5,060	
				5,060
Tongala–Stanhope	Drainage	1932–36	69,500	
				69,500
Nyah	Drainage	1933–38	6,300	
				6,300
Shepparton	Drainage	1932–38	70,575	
	Drainage	1938–39	8,000	
				78,575
Werribee	Drainage	1933–37	3,750	
				3,750
Bacchus Marsh	Drainage	1936–37	1,250	
				1,250
Mildura	Subsurface Drainage	1934–38	208,541	
				208,541
	Carried forward			601,606

SCHEDULE OF GRANTS 12TH JULY, 1932, TO 30TH JUNE, 1939—*continued.*

Locality.	Works.		Grant.	
	IRRIGATION DISTRICTS—DRAINAGE—*continued.*		£	£
	Brought forward			601,606
Red Cliffs and Merbein	Subsurface Drainage, Red Cliffs, Merbein, and Mildura—Surveys, &c. ..	1933–34	10,000	
	Red Cliffs and Merbein Subsurface Drainage	1933–37	234,653	
	Merbein, Subsurface Drainage ..	1937–38	12,000	
				256,653
Tragowel Plains	Drainage	1933–38	17,000	
	Drainage	1938–39	5,000	
				22,000
Rochester	Drainage	1933–38	66,420	
	Drainage	1938–39	5,000	
				71,420
Kerang	Drainage, Kerang East	1934–36	77,436	
				77,436
Tresco	Drainage, see under Water Supply, £2,000 for drainage out of £4,500 ..	1933–34	2,000	
	Drainage	1937–38	1,240	
	Drainage	1938–39	4,760	
				8,000
	Total (Irrigation Drainage Works) ..			**1,037,115**
	WATERWORKS DISTRICTS.			
Wimmera–Mallee	Channel Construction	1932–33	15,000	
	Tanks and Bores	1932–33	3,000	
	Mt. Zero Channel Construction ..	1932–33	9,000	
	Channels and tanks	1932–33	1,250	
	Channels—Sand Drift	1933–38	112,000	
	Channels—Sand Drift	1938–39	22,000	
	Enlargement and Lining of Channels	1936–37	6,000	
	Urban Storages	1936–37	4,500	
	Mallee Towns—Improvement ..	1937–38	3,000	
	Mallee Towns—Improvement ..	1938–39	21,000	
	Donald East Channel	1937–38	780	
	Pimpinio High Lands	1937–38	8,400	
	Murtoa—Channel Construction ..	1938–39	1,000	
	Taylors Lake Outlet Channel ..	1938–39	19,000	
				225,930
Millewa	Outlets, Clay Lining Channels ..	1932–33	4,000	
				4,000
Coreena	Clay Lining Channels	1932–33	800	
				800
Yelta	Watering	1933–34	500	
				500
Long Lake	Channel Construction	1934–35	1,230	
				1,230
Tyrrell West	Ironclad Catchments, Baring North and Patchewollock	1933–34	3,500	
				3,500
Tyrrell West	Road Construction, Patchewollock North	1933–34	300	
				300
Loddon United	Serpentine Weir	1933–34	765	
				765
	Total (Rural Works)			**237,025**
	WATERWORKS DISTRICTS—URBAN.			
Newstead	Channel Construction	1932–33	2,000	
				2,000
Walpeup	Water Tower	1933–34	1,250	
				1,250
Nyah	Reticulation Improvements	1933–34	1,000	
				1,000
Koondrook	Reticulation Improvements	1935–36	230	
				230
	Carried forward			4,480

APPENDIX A—*continued.*

SCHEDULE OF GRANTS 12TH JULY, 1932, TO 30TH JUNE, 1939—*continued.*

Locality.	Works.		Grant.	
	WATERWORKS DISTRICTS—URBAN—*continued.*		£	£
	Brought forward			4,480
Leitchville	Storage and Reticulation	1935–36	1,000	
				1,000
Lake Boga	Improved Supply	1935–36	1,500	
				1,500
Jeparit	Reticulation Improvements	1935–36	2,500	
				2,500
Rainbow	Reticulation Improvements	1935–36	500	
				500
Mornington Peninsula	Channel (Dromana–Sorrento) ..	1932–33	10,000	
	Lysterfield Reservoir	1932–33	7,800	
	Service Basin, Garfield	1932–33	2,300	
	Cranbourne–Bittern Channel	1932–33	9,000	
	Beaching Mornington Reservoir ..	1932–33	2,080	
	Enlargement of Mornington Reservoir	1933–34	3,200	
	Lysterfield Reservoir, Raising ..	1934–35	4,000	
				38,380
Dromana–Sorrento Extension ..	Instalment of £55,000	1935–36	5,000	
	Instalment of £55,000	1937–38	25,000	
				30,000
Bellarine Peninsula	Urban Supplies	1932–35	29,050	
	Barwon River Tunnel	1938–39	7,500	
				36,550
Western District Scheme	Instalment of £93,700	1935–37	62,750	
	Instalment of £93,700	1937–38	30,950	
				93,700
Coliban	Channel Lining	1932–36	96,468	
	River Diversion (Ashbourne) ..	1934–35	7,950	
	Eaglehawk Main	1935–36	12,000	
	Bendigo and Castlemaine Reticulation Improvements and Channel Lining			
	(1st and 2nd Instalments, £200,000)	1936–38	132,000	
	(3rd and 4th Instalments, £200,000)	1938–39	57,000	
	Malmsbury Reservoir—Enlargement ..	1937–38	26,500	
		1938–39	5,000	
	New Storages	1937–38	15,000	
	Bendigo Emergency Supply	1938–39	25,000	
	Lauriston Reservoir	1938–39	60,000	
				436,918
	Total (Urban Works)			**645,528**
	FLOOD PROTECTION.			
Kooweerup and Cardinia	Drains and Levees	1932–33	22,000	
	Drains and Levees	1934–35	65,000	
	(Includes £25,000 from Commonwealth)	..		
	Cardinia Outfall	1936–37	10,000	
		1938–39	10,000	
	Yallock Outfall	1936–37	5,000	
		1937–38	10,000	
	Flood Relief	1937–38	2,000	
				124,000
Lake Meering	Levees	1933–34	790	
				790
Various Districts	1934 Flood Damage—Repairs ..	1933–34	20,000	
	1939 Flood Damage—Repairs ..	1938–39	5,000	
				25,000
Carrum	Eastern Contour Drain	1932–33	8,000	
	Drains and Levees	1933–36	17,450	
	Pillars Bridge—Flooding	1936–37	2,000	
	Flood Relief	1937–38	4,500	
				31,950
Swan Hill and Kerang	Pental Island	1932–33	170	
	Little Murray Levees, Fish Point ..	1933–34	6,430	
	Little Murray Levees, Benjeroop ..	1933–34	7,500	
	Murray River Levees, Swan Hill ..	1935–38	7,000	
	Murray River Levees	1937–38	3,000	
	Loddon River Levees	1937–38	3,000	
				27,100
Dandenong	Levee Bank, Stud Road	1934–35	700	
				700
	Total (Flood Protection Works) ..			**209,540**

SCHEDULE OF GRANTS 12TH JULY, 1932, TO 30TH JUNE, 1939—*continued.*

Locality.	Works.		Grant.	
	RIVER IMPROVEMENTS.		£	£
Mitchell River	Snagging—Bairnsdale	1932–33	350	350
Goulburn River	Cribwork—Acheron Breakaway ..	1932–34	1,000	1,000
Rivers Generally	Snagging—			
	Avoca, West Barwon, Broken, Fitzroy, Gellibrand, Goulburn, King, Kiewa, Latrobe, Loddon, Macalister, Mitchell, Ovens, Powlett, Rubicon, Snowy, Tambo, Tarra, Tarwin, Thomson, and Yarra Rivers; Gunbower and Woori Yallock Creeks	1934–37	46,500	
		1937–38	5,000	
		1938–39	9,000	60,500
Snowy River, Orbost	Improvements	1933–38	17,580	
	Improvements	1938–39	10,000	27,580
Latrobe River	Improvements	1936–38	18,000	
	Improvements	1938–39	19,000	37,000
	Total (River Improvements)		..	**126,430**
	GENERAL.			
Districts Generally	Noxious Weeds—Destruction ..	1936–37	1,000	1,000
	Total of Grants from 12.7.32 to 30.6.39 ..			**£2,612,133**
	GRAND TOTAL OF GRANTS FROM 1.6.30 TO 30.6.39			**£2,778,168**

NOTE.—The total expenditure of Unemployment Relief Funds as from 1st June, 1930, to 30th June, 1939, was £2,674,232, the total number of men to whom employment was provided being 42,423.

SUMMARY.

Year.	Grants.
	£
1930–32 (Prior to constitution of Employment Council)	166,035
1932–33	281,318
1933–34	313,721
1934–35	489,540
1935–36	319,582
1936–37	371,917
1937–38	423,295
1938–39	412,760
Total	2,778,168

APPENDIX B.

Statements Giving General Particulars Relating to Districts Controlled By Commission.

A—IRRIGATION AND WATER SUPPLY DISTRICTS.

SOURCES OF SUPPLY AND CHANNEL MILEAGES.

District.	Source of Supply.	Mileage of Irrigation Channels.
Bacchus Marsh	Werribee River and Tributaries	47
Boort	Goulburn River	144
Calivil	Goulburn River	102
Campaspe	Campaspe River	24
Cohuna	Murray River, Torrumbarry System	167
Deakin	Goulburn River	85
Dingee	Goulburn River	21
Echuca North	Goulburn River	40
Fish Point	Murray River, Torrumbarry System	15
Katandra	Goulburn River	38
Kerang	Murray River, Torrumbarry System	201
Koondrook	Murray River, Torrumbarry System	200
Leitchville	Murray River, Torrumbarry System	36
Maffra-Sale	Macalister River	196
Merbein	Murray River	54
Murray Valley	Murray River, Yarrawonga System	7
Mystic Park	Murray River, Torrumbarry System	32
North Shepparton	Goulburn River	129
Nyah	Murray River	35
Red Cliffs	Murray River	125
Rochester	Goulburn River	294
Rodney	Goulburn River	639
Shepparton	Goulburn River	98
South Shepparton	Goulburn River	48
Stanhope	Goulburn River	94
Swan Hill	Murray River	104
Third Lake	Murray River, Torrumbarry System	33
Tongala	Goulburn River	162
Tragowel Plains	Goulburn River	398
Tresco	Murray River	18
Werribee	Werribee River and Tributaries	48
Kerang North-West Lakes (Waterworks District)	Murray and Loddon Rivers	25
Western Wimmera (Waterworks District)	Grampians Reservoirs	50
First Mildura (Irrigation Trust)	Murray River	169
Main Channels	Miscellaneous	254
	Total	**4,132**

B—DRAINAGE DISTRICTS.

AREAS, OUTFALLS, AND MILEAGES OF DRAINS.

District.	Area (Acres).	Outfall.	Mileage of Drains.	
			Open.	Pipe.
Cohuna	65,350	Barr Creek	127	..
Kerang East	87,220	Barr Creek	115	..
Maffra-Sale	24,330	Lake Wellington	93	..
Merbein	8,415	Murray River and Drainage Reserves	6	54
Red Cliffs	13,425	Murray River and Drainage Reserves	5	85
Rochester	46,230	Murray and Campaspe Rivers	128	..
Rodney	38,730	Goulburn River	66	..
Shepparton	68,030	Goulburn River and Broken and Nine Mile Creeks	194	..
Tongala-Stanhope	88,085	Murray and Goulburn Rivers	252	..
Werribee	11,250	Port Phillip Bay	44	..
Woorinen	6,070	Local Depressions and Lakes	35	..
First Mildura (Irrigation Trust)	14,315	Murray River and Drainage Reserves	2	107
Not yet included in constituted Drainage Districts	..	Various Outfalls	232	..
		Totals	1,299	246

APPENDIX B—*continued.*

STATEMENTS GIVING GENERAL PARTICULARS RELATING TO DISTRICTS CONTROLLED BY COMMISSION—*continued.*

C—FLOOD PROTECTION DISTRICTS.

AREAS, WORKS, AND MILEAGES OF DRAINS.

District.	Area (Acres).	Nature of Works.	Mileage of Drains.
Cardinia	36,040	System of drainage channels with outfalls into Western Port Bay	160
Kanyapella	17,012	Protective Levee Bank with Regulator ..	..
Loch Garry	45,700	Protective Levee Bank with Regulator ..	..
Lower Kooweerup	61,720	System of drainage channels with outfalls into Western Port Bay	280
		Total	**440**

D—WATERWORKS DISTRICTS.

(Rural Supplies.)

AREAS, SOURCES OF SUPPLY AND MILEAGES OF CHANNELS AND PIPES.

District.	Area (Acres).	Source of Supply.	Mileage of— Channel.	Mileage of— Pipe.
Axe Creek	5,960	Coliban Reservoirs	13	..
Birchip	261,860	Grampians Reservoirs	237	..
Carwarp	102,860	Murray River	155	..
Carwarp Central	14,535	Murray River	12	..
Coreena	101,850	Murray River	103	..
Harcourt	10,240	Coliban Reservoirs	28	..
Hindmarsh	39,430	Grampians Reservoirs	37	2
Karkarooc	720,730	Grampians Reservoirs	642	..
Kerang North-West Lakes ..	49,640	Murray and Loddon Rivers ..	(See Irrigation and Water Supply Districts)	..
Long Lake	438,950	Grampians Reservoirs	472	..
Millewa	318,250	Murray River	492	..
Millewa Central	207,290	Murray River	186	..
Normanville	121,320	Goulburn and Loddon Rivers ..	109	..
Sea Lake	371,370	Grampians Reservoirs	373	..
Tyntynder	624,150	Grampians Reservoirs	615	..
Tyrrell	555,050	Grampians Reservoirs	447	..
Tyrrell West	877,330	Grampians Reservoirs	719	..
Upper Western Wimmera ..	253,520	Grampians Reservoirs	209	..
Upper Wimmera United ..	409,880	Grampians Reservoirs	347	..
Walpeup West	1,531,620	Artesian Bores	..	..
Werribee	14,210	Werribee River and Tributaries ..	24	..
Western Wimmera	1,009,080	Grampians Reservoirs	751	20
Wimmera United	832,030	Grampians Reservoirs	999	..
Wycheproof	439,000	Grampians Reservoirs	407	..
Yelta	33,790	Murray River	50	..
Carrum (W.W.T.)	14,800	.. ..	10	..
Loddon United (W.W.T.) ..	287,760	Goulburn and Loddon Rivers ..	87	..
Main Channels	..	.. ..	169	..
		Total	**7,693**	**22**

WATERWORKS DISTRICTS SUPPLYING URBAN DISTRICTS.

(For pipe reticulations, see under Urban Districts.)

District.	Source of Supply.	Mileage of— Channel.	Mileage of— Pipe.
Bellarine Peninsula	Barwon River	92	35
Mornington Peninsula	Bunyip River	50	60
Newstead	Jim Crow Creek	18	..
Otway	Arkins Creek	..	51
Coliban	Coliban River	348	5
	Totals	**508**	**151**
	GRAND TOTALS (Waterworks)	**8,201**	**173**

STATEMENTS GIVING GENERAL PARTICULARS RELATING TO DISTRICTS CONTROLLED BY COMMISSION—*continued.*

E—URBAN DISTRICTS AND DIVISIONS.

SOURCES OF SUPPLY, STORAGES AND RETICULATION MAINS.

District or Division.	Source of Supply.	Local Storages.		Reticulation Mains.	
		Type.	Capacity.		
			gallons.	miles.	chains.
Anglesea	Barwon River ..	Earthen storage	3,210,000	3	30
Antwerp	Wimmera–Mallee Channel System	Earthen storage	3,500,000	0	23
Bacchus Marsh ..	Werribee River and tributaries	Concrete-faced embankment (Grant's Gully)	4,350,000	11	0
Barwon Heads and Ocean Grove	Barwon River ..	Concrete tank	270,000	12	5
Berriwillock ..	Wimmera–Mallee Channel System	Earthen storages	9,800,000	0	79
		Concrete tower	68,000		
Berwick	Bunyip River	Concrete basins (low level) ..	264,000	5	52
		Concrete tower (high level)	100,000		
Beulah	Wimmera–Mallee Channel System	Earthen storages	15,420,000	1	39
		Concrete tower	120,000		
Birchip	Wimmera–Mallee Channel System	Earthen storages	24,300,000	4	46
		Steel tower	60,000		
Bittern ..	Bunyip River	Earthen storages	2,650,000	1	10
Crib Point ..				4	46
Brin	Wimmera–Mallee Channel System	Earthen storage	11,100,000	1	76
Bunyip ..				3	41
Garfield ..	Bunyip River	Earthen storage	2,129,000	2	29
Longwarry ..				2	44
Camperdown ..	Arkins Creek	Earthen storage	30,000,000	14	62
		Concrete lined storage basin	750,000		
Carrum	Bunyip River	Supplied from Frankston and Lysterfield Reservoirs	..	33	62
Carwarp	Murray River	Earthen storages	1,300,000	0	35
		Galvanized-iron tank ..	15,000		
Chillingollah ..	Wimmera–Mallee Channel System	Earthen storages	9,128,000	0	47
		Concrete tower	50,000		
Chinkapook	Wimmera–Mallee Channel System	Earthen storage	3,200,000	0	45
		Concrete tower	50,000		
Cobden	Arkins Creek	Earthen storage	5,860,000	4	60
Cohuna	Gunbower Creek ..	Concrete tower	100,000	6	63
Corop	Goulburn River ..	Gravitation pipe from Waranga–Mallee Channel	..	0	30
Cranbourne	Bunyip River	Concrete basins	264,000	3	51
Crib Point (see Bittern)					
Culgoa	Wimmera–Mallee Channel System	Earthen storages	9,900,000	0	67
		Concrete tower	30,000		
Dandenong ..	Bunyip River	Earthen storage, also Lysterfield Reservoir	35,000,000	26	41
Springvale ..				41	67
Dimboola	Wimmera–Mallee Channel System	Earthen storages	94,954,000	11	70
Dingee	Goulburn River ..	Elevated tank	20,000	1	16
		Earthen storage	250,000		
Dooen	Wimmera–Mallee Channel System	Earthen storages	5,042,000	0	74
Drysdale	Barwon River ..	Earthen storage	6,806,000	4	60
Frankston	Bunyip River	Earthen storage	180,000,000	25	66
Garfield (see Bunyip)					
Hastings	Bunyip River	Earthen storage	1,730,000	2	72
Heyfield	Macalister River ..	Earthen storage	5,000,000	5	70
		Earthen basin	380,000		
Hicksborough (see Wonthaggi)					
Hopetoun	Wimmera–Mallee Channel System	Earthen storages	65,300,000	2	23
		Concrete tower	120,000		
Jeparit	Wimmera–Mallee Channel System	Earthen storage	39,729,000	3	72
Jung Jung	Wimmera–Mallee Channel System	Earthen storages	2,700,000	1	40
		Steel tower	20,000		
Koondrook	Murray River	Concrete tower	63,000	2	40
Lake Boga	Lake Boga	Concrete lined storage basin	200,000	2	60
TOTALS (carried forward)	.. ..	.. .. ..	575,602,000	256	53

APPENDIX B—*continued.*

E—URBAN DISTRICTS AND DIVISIONS—*continued.*

SOURCES OF SUPPLY, STORAGES AND RETICULATION MAINS.

District or Division.	Source of Supply.	Local Storages.		Reticulation Mains.	
		Type.	Capacity.		
			gallons.	miles.	chains.
Brought forward ..	.. ..	.. .. ..	575,602,000	256	53
Lalbert	Wimmera–Mallee Channel System	Earthen storages	10,100,000	2	54
		Earthen basin	600,000		
Lascelles	Wimmera–Mallee Channel System	Earthen storages	11,800,000	1	7
		Concrete tank	90,000		
Leitchville	Murray River	Steel tower	25,000	1	30
Lockington	Goulburn River ..	Elevated tank	20,000	1	70
Longwarry (see Bunyip)					
Manangatang ..	Wimmera–Mallee Channel System	Earthen storages	11,300,000	1	79
		Concrete tower	200,000		
Marnoo	Wimmera–Mallee Channel System	Earthen storage	10,100,000	1	74
Merbein	Murray River	Concrete tower	125,000	7	28
Meringur	Murray River	Earthen storage	3,000,000	0	58
		Galvanized-iron tanks ..	30,000		
Minyip	Wimmera–Mallee Channel System	Earthen storages	15,150,000	3	54
		Concrete tower	120,000		
Mornington	Bunyip River	Earthen storage	71,707,000	12	20
Mount Martha ..	Bunyip River	Earthen storage	1,000,000	5	46
Murrabit	Murray River	Earthen storage	250,000	0	70
		Elevated tank	20,000		
Nandaly	Wimmera–Mallee Channel System	Earthen storage	33,700,000	0	53
		Concrete tower	50,000		
Natimuk	Wimmera–Mallee Channel System	Earthen storages	10,600,000	4	72
Newstead	Jim Crow Creek ..	Earthen storage	9,946,000	6	27
North Wonthaggi (see Wonthaggi)					
Nullawil	Wimmera–Mallee Channel System	Earthen storage	5,300,000	0	52
		Concrete tower	89,000		
Nyah	Murray River	Earthen storage	1,000,000	2	0
		Galvanized-iron tank ..	12,000		
Nyah West	Murray River	Earthen storages	4,000,000	2	60
		Concrete tower	120,000		
Ouyen	Wimmera–Mallee Channel System	Earthen storages	62,000,000	4	50
		Concrete tower	230,000		
Pakenham	Bunyip River	Earthen storage	3,300,000	4	55
Patchewollock ..	Wimmera–Mallee Channel System	Earthen storages	7,800,000	1	16
		Concrete tower	90,000		
Piangil	Murray River	Pumped direct from river .	..	3	6
		Concrete tank	150,000		
Portarlington ..	Barwon River ..	Concrete tank	208,000	7	9
Pyramid Hill ..	Goulburn River ..	Earthen storage	1,275,000	2	60
		Concrete stand pipes ..	160,000		
Quambatook ..	Wimmera–Mallee Channel System	Earthen storages ..	21,300,000	2	43
		Concrete tower ..	90,000		
Queenscliff and Point Lonsdale	Barwon River .	Earthen storage	6,806,000	12	24
Rainbow	Wimmera–Mallee Channel System	Earthen storages	43,113,000	5	19
Red Cliffs	Murray River	Pumped direct from river ..	..	8	27
		Concrete tower	200,000		
Rupanyup	Wimmera–Mallee Channel System	Earthen storages	13,800,000	2	50
		Concrete tower	120,000		
Sea Lake	Wimmera–Mallee Channel System	Earthen storage	66,700,000	2	30
		Concrete tower	120,000		
Somerville	Bunyip River	Supplied from main pipe line	..	4	1
South Frankston ..	Bunyip River	Earthen storage	2,442,000	6	52
		Concrete tower and basin ..	842,000		
Speed	Wimmera–Mallee Channel System	Earthen storages	6,900,000	1	45
		Concrete tower	120,000		
Springvale (see Dandenong)					
Stanhope	Goulburn River ..	Elevated galvanized-iron tanks	20,000	0	78
TOTALS (carried forward)	.. .. ..	.. .. ..	1,013,842,000	385	32

APPENDIX B—*continued.*

E—URBAN DISTRICTS AND DIVISIONS—*continued.*

SOURCES OF SUPPLY, STORAGES AND RETICULATION MAINS.

District or Division.	Source of Supply.	Local Storages.		Reticulation Mains.	
		Type.	Capacity.		
			gallons.	miles.	chains.
Brought forward ..	.. ..	.. .. ..	1,013,842,000	385	32
Tempy	Wimmera-Mallee Channel System	Earthen storages	8,400,000	1	16
		Concrete tower	50,000		
Torquay	Barwon River ..	Earthen storage	5,445,000	5	24
Ultima	Wimmera-Mallee Channel System	Earthen storages	11,300,000	2	28
		Concrete tower	80,000		
Waitchie	Wimmera-Mallee Channel System	Earthen storages	5,100,000	1	26
		Concrete tower	50,000		
Walpeup	Wimmera-Mallee Channel System	Earthen storages	5,300,000	1	0
		Galvanized-iron tanks ..	30,000		
Watchem	Wimmera-Mallee Channel System	Earthen storages	13,500,000	1	62
		Concrete tower	90,000		
Werrimull	Murray River . ..	Earthen storages	10,000,000	2	3
		Concrete tower	120,000		
Wonthaggi ..	Lance Creek			19	22
North Wonthaggi		Concrete tower	120,000	4	34
Hicksborough		Earthen storages	424,438,000	0	22
Woomelang	Wimmera-Mallee Channel System	Earthen storage	21,500,000		
		Concrete tower	180,000	2	53
		Steel tower	12,000		
Woorinen	Wimmera-Mallee Channel System	Earthen storages	7,600,000	1	20
Wycheproof ..	Wimmera-Mallee Channel System	Earthen storages	21,900,000	4	54
		Concrete tower	80,000		
Yaapeet	Wimmera-Mallee Channel System	Earthen storage	29,300,000	1	23
		Concrete tower	60,000		
		Totals	1,578,497,000	434	19
Coliban	Coliban River and Main Storages	28 subsidiary storages ..	**1,249,000,000**	**300**	**0**
		GRAND TOTALS (Urban)	**2,827,497,000**	**734**	**19**

APPENDIX C (1)

Statement showing the monthly run-off during the past three years and the maximum, minimum, and average run-off since the inception of gaugings in the Hume, Goulburn and Coliban catchments.

Month.	Catchment.																	
	Hume.*						Goulburn (Mnrchison).						Coliban.					
	Run-off in Acre-Feet.																	
	1936–37.	1937–38.	1938–39.	Max.	Min.	Ave.	1936–37.	1937–38.	1938–39.	Max.	Min.	Ave.	1936–37.	1937–38.	1938–39.	Max.	Min.	Ave.
	Since Year 1891.						Since Year 1882.						Since Year 1890.					
July	395,210	80,760	104,050	1,088,000 (1917)	81,000 (1937)	340,000	365,880	66,290	162,100	861,000 (1906)	53,000 (1886)	343,000	15,620	510	1,270	34,340 (1923)	510 (1937)	9,790
August ..	1,031,190	121,200	141,070	1,075,000 (1909)	52,000 (1902)	408,000	736,040	114,860	117,290	1,137,000 (1909)	48,000 (1902)	401,000	21,010	780	1,500	56,700 (1909)	760 (1937)	12,360
September ..	492,000	440,280	212,830	1,464,000 (1917)	108,000 (1902)	496,000	372,440	244,630	132,480	1,264,000 (1917)	62,000 (1914)	425,000	4,300	1,540	660	51,800 (1916)	540 (1914)	10,910
October ..	374,440	299,120	138,160	2,026,000 (1917)	77,000 (1914)	496,000	154,970	206,730	48,450	934,000 (1917)	40,000 (1914)	308,000	3,170	1,830	0	21,060 (1916)	0 (1938)	5,670
November ..	219,020	140,190	58,690	714,000 (1916)	19,000 (1914)	288,000	152,990	73,040	23,420	651,000 (1916)	22,000 (1914)	181,000	1,490	370	110	13,890 (1892)	50 (1914)	2,650
December ..	226,110	82,000	26,150	546,000 (1934)	26,000 (1938)	172,000	118,620	35,940	16,950	692,000 (1934)	17,000 (1938)	108,000	2,200	390	0	13,260 (1930)	0 (1900–1938)	1,370
January ..	164,930	54,910	17,210	595,000 (1891)	17,210 (1939)	121,000	92,490	23,020	8,340	187,000 (1904)	8,340 (1939)	60,000	620	0	0	12,210 (1904)	0	620
February ..	81,430	41,690	52,750	203,000 (1891)	16,000 (1903)	74,000	49,520	23,050	33,960	136,000 (1911)	12,000 (1926)	41,000	320	0	220	9,990 (1911)	0‡	520
March ..	73,250	36,580	291,220	291,220 (1939)	9,000 (1915)	79,000	31,790	14,520	215,230	215,000 (1939)	12,000 (1915)	43,000	590	0	50	10,840 (1911)	0	650
April	52,470	43,420	238,490	249,000 (1900)	15,000 (1915)	91,000	21,720	26,900	432,900	433,000 (1939)	13,000 (1915, 1927)	59,000	10	110	3,020	3,540 (1935)	0	500
May	77,290	59,630	177,300	393,000 (1918)	30,000 (1902)	135,000	45,460	34,160	237,600	567,000 (1918)	21,000 (1910–1912)	91,000	80	10	3,750	8,030 (1909)	0	1,460
June	77,680	87,030	363,310	1,251,000 (1931)	54,000 (1912)	263,000	52,300	88,180	412,580	1,201,000 (1917)	33,000 (1934)	248,000	100	790	12,380	28,110 (1899)	100 (1934–1937)	6,880
Totals ..	3,265,020	1,486,810	1,821,230	8,048,000 (1917–18)	883,000 (1914–15)	2,963,000	2,194,220	951,320	1,841,300	5,799,000 (1917–18)	655,000 (1914–15)	2,308,000	49,510†	6,330†	22,960	144,260 (1916–7)	6,330† (1937–8)	53,380

* River Murray at Jingellic plus Mitta River at Tallangatta.
† Includes intake through Ashbourne Channel.

‡ Where the year is not stated in the minimum column, the run-off has been nil in three or more years.

APPENDIX C (2)

Statement showing the monthly run-off during the past three years and the maximum, minimum, and average run-off since the inception of gaugings in the Campaspe, Little Wimmera and Werribee catchments.

Month.	Catchment.																	
	Campaspe River at Rochester Weir.						Little Wimmera River at Lake Lonsdale.						Werribee River at Melton Reservoir.					
	Run-off in Acre-Feet.																	
	1936–37.	1937–38.	1938–39.	Max.	Min.	Ave.	1936–37.	1937–38.	1938–39.	Max.	Min.	Ave.	1936–37.	1937–38.	1938–39.	Max.	Min.	Ave.
				Since Year 1886.						Since Year 1904.						Since Year 1917		
July	69,350	170	80	145,100 (1923)	0*	32,020	29,830	0	6,280	47,900 (1923)	0 (1914) (1937)	13,400	17,940	910	980	25,090 (1923)	910 (1937)	7,300
August ..	130,000	100	650	203,200 (1909)	100 (1902)	44,690	34,730	1,210	730	84,600 (1909)	0 (1914)	17,000	13,900	1,120	1,130	30,590 (1932)	1,120 (1937–1938)	10,180
September ..	18,460	140	40	176,900 (1921)	0 (1902)	41,230	8,360	4,130	100	53,100 (1910)	0 (1914)	17,100	5,150	1,500	360	27,410 (1917)	360 (1938)	8,310
October ..	3,180	110	60	139,000 (1916)	0 (1902)	18,390	3,600	7,220	270	44,500 (1916)	0 (1914)	8,000	1,740	15,350	310	30,630 (1923)	310 (1938)	6,900
November ..	2,090	100	60	63,200 (1924)	0	8,300	2,230	0	0	27,300 (1924)	0*	4,300	1,050	170	310	20,450 (1924)	170 (1937)	3,320
December ..	4,430	90	60	105,100 (1930)	0	4,910	2,830	1,480	0	15,000 (1933)	0	1,600	3,350	1,140	50	28,980 (1933)	50 (1938)	2,810
January ..	820	90	70	34,000 (1904)	0	2,470	800	950	0	900 (1938)	0	200	960	190	0	2,610 (1934)	0*	910
February ..	110	80	5,260	70,000 (1911)	0	2,090	880	1,110	0	37,200 (1911)	0	1,600	700	560	19,410	20,380 (1928)	0 (1923)	2,790
March ..	250	90	3,620	29,000 (1928)	0	2,080	90	410	0	7,800 (1910)	0	1,000	360	650	1,430	41,800 (1919)	0	3,260
April	100	80	104,220	104,220 (1939)	0	4,010	470	680	8,240	11,200 (1932)	0	1,400	920	570	3,670	25,750 (1935)	310 (1923)	2,530
May	100	50	19,000	61,800 (1931)	0	4,950	550	150	6,900	11,700 (1906)	0	2,100	1,000	570	1,180	8,500 (1935)	260 (1934)	1,860
June	30	40	58,810	181,400 (1931)	0	23,710	10	1,950	10,040	37,400 (1931)	0	7,000	570	910	8,450	10,710 (1918)	230 (1927)	4,450
Total ..	228,920	1,140	191,930	628,500 (1917–18)	2,930 (1937–38)	188,850	84,380	19,290	32,560	181,800 (1916–17)	5,400 (1914–15)	74,700	47,640	23,640	37,280	117,080 (1918–9)	16,340 (1926–7)	54,620

* Where the year is not stated in the minimum column, the run-off has been nil in three or more years.

APPENDIX D.

STATE RIVERS AND WATER SUPPLY COMMISSION

WATER SUPPLY STATISTICS.

1938-39.

SUMMARY RELATING TO WATER SUPPLY IN VICTORIA.

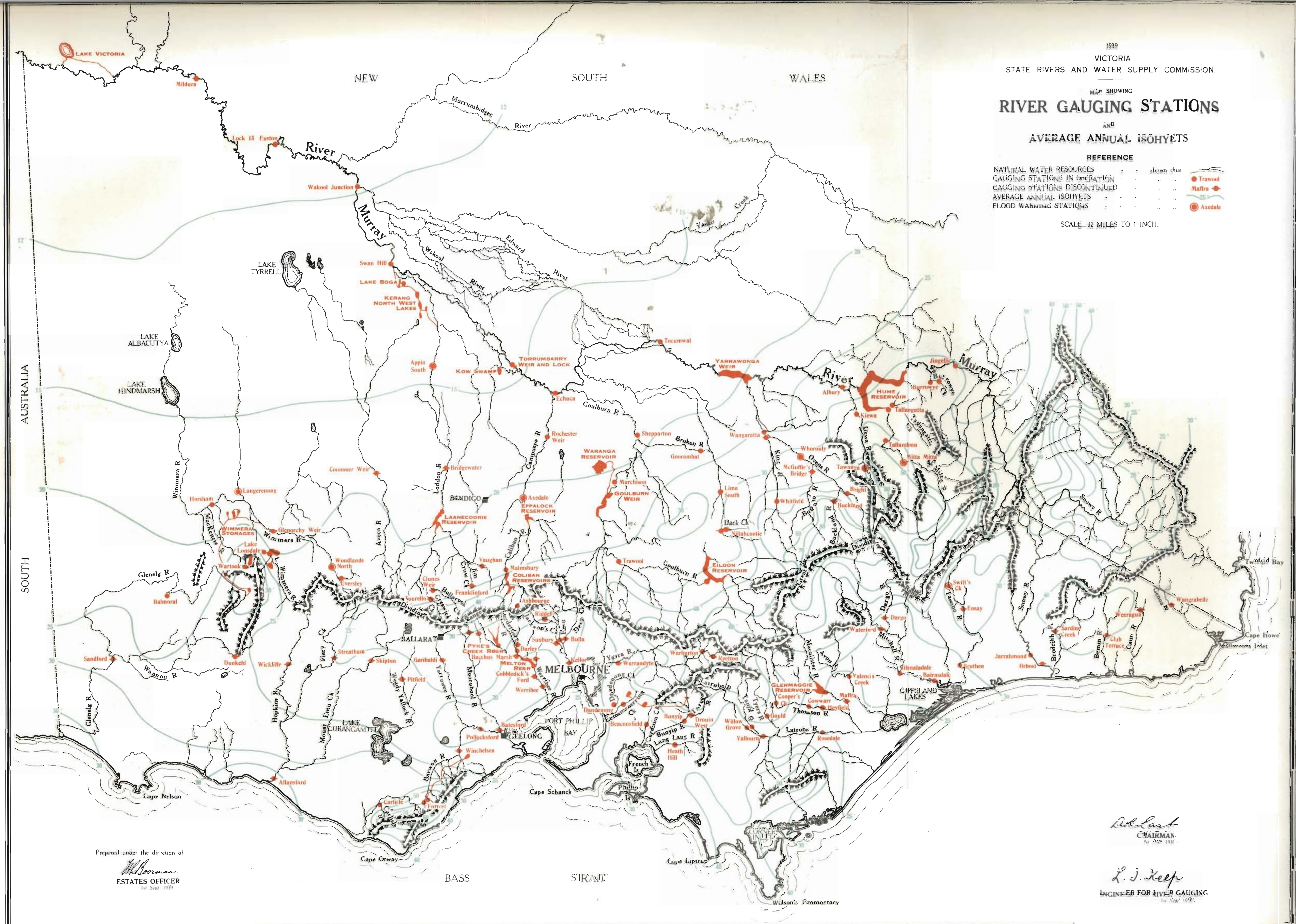
Victoria—Area				**87,884 square miles (56,000,000 acres)**
Rainfall				**10 inches to 80 inches**
Under 15 inches	18,701	square miles	= 21·3	per cent. of area of State
15 inches to 20 inches	13,800	,, ,,	= 15·7	,, ,, ,,
20 ,, 25 ,,	13,551	,, ,,	= 15·4	,, ,, ,,
25 ,, 30 ,,	14,528	,, ,,	= 16·5	,, ,, ,,
30 ,, 40 ,,	15,802	,, ,,	= 18·0	,, ,, ,,
40 ,, 50 ,,	6,671	,, ,,	= 7·6	,, ,, ,,
50 ,, 60 ,,	2,660	,, ,,	= 3·0	,, ,, ,,
Over 60 inches	2,171	,, ,,	= 2·5	,, ,, ,,
Total	87,884	,, ,,		

Expenditure Country Water Supply to 30th June, 1939—(*a*) Borne by the State		**£21,161,346 16 3**
(*b*) Borne by the Districts		**£5,690,950 11 9**
Total	..	**£26,852,297 8 0**

Channels—Length—	
Irrigation Supply	**4,132 miles**
Domestic and Stock Supply	**8,201 miles**
Drainage	**1,985 miles**
Total	**14,318 miles**

Area of lands in Victoria artificially supplied with water for domestic and stock purposes by channels, tanks, and bores	**15,083,000 acres**
This represents over one-quarter of the total area of the State—actually two-fifths of the agricultural lands	
Area commanded by irrigation channels	**2,115,000 acres**
Area Irrigated—1938-39	**515,357 acres**
Area benefited by Flood Protection Works	**160,500 acres**
Storages—	
Present capacity	**1,950,960 acre feet**
Additional storage being provided by works in course of construction	**18,640 acre feet**
Further storage which could be provided by completion of existing works	**420,500 acre feet**
Rural Districts administered by Commission—	
Irrigated Districts—Water supplied for cultivation	**32 districts**
Domestic and Stock Districts—Water supplied to fill excavated storage tanks	**33 districts**
Flood Protection Districts	**4 districts**
Waterworks Trusts and Local Governing Bodies supervised by Commission	**135 districts**
Sewerage Authorities supervised by Commission	**38 districts**
Country Towns—Reticulated pipe supplies for domestic use—	
Administered by Commission	**119 towns**
,, ,, Waterworks Trusts	**113 towns**
,, ,, Local Governing Bodies	**16 towns**
Total Population in Country Towns supplied with water	**440,000 persons**

By Authority: T. RIDER, Government Printer, Melbourne.


1939
VICTORIA
STATE RIVERS AND WATER SUPPLY COMMISSION.
MAP SHOWING
RIVER GAUGING STATIONS
AND
AVERAGE ANNUAL ISOHYETS
REFERENCE
NATURAL WATER RESOURCES - - shown thus
GAUGING STATIONS IN OPERATION - - .. .. Trawool
GAUGING STATIONS DISCONTINUED - .. .. Maffra
AVERAGE ANNUAL ISOHYETS - - - .. ..
FLOOD WARNING STATIONS - - - .. .. Axedale
SCALE 32 MILES TO 1 INCH.
NEW SOUTH WALES
SOUTH AUSTRALIA
BASS STRAIT
Murray River
Lake Victoria
Mildura
Lock 15 Euston
Wakool Junction
Swan Hill
Lake Boga
Kerang North West Lakes
Torrumbarry Weir and Lock
Kow Swamp
Echuca
Tocumwal
Yarrawonga Weir
Hume Reservoir
Albury
Waranga Reservoir
Goulburn Weir
Eildon Reservoir
Laanecoorie Reservoir
Eppalock Reservoir
Wimmera Storages
Glenmaggie Reservoir
BENDIGO
BALLARAT
MELBOURNE
GEELONG
PORT PHILLIP BAY
GIPPSLAND LAKES
Cape Nelson
Cape Otway
Cape Schanck
Cape Liptrap
Wilson's Promontory
Cape Howe
Twofold Bay
Prepared under the direction of
ESTATES OFFICER
1st Sept 1939
CHAIRMAN
1st Sept 1939
L. J. Keep
ENGINEER FOR RIVER GAUGING
1st Sept 1939