

1925.
NEW ZEALAND.

DEPARTMENT OF LANDS AND SURVEY.

RANGITAIKI LAND DRAINAGE.

REPORT FOR THE YEAR ENDED 31st MARCH, 1925, TOGETHER WITH STATEMENT
OF ACCOUNTS.

Presented to both Houses of the General Assembly in pursuance of Section 10 of the Rangitaiki Land Drainage Act, 1910.

SIR,—

Department of Lands and Survey, Wellington, 12th June, 1925.

I have the honour to submit herewith the report upon drainage operations in the Rangitaiki Plains for the year ended 31st March, 1925, pursuant to the provisions of the Rangitaiki Land Drainage Act, 1910.

The accompanying statement of cash transactions and balance-sheet shows the financial transactions for the year, and the position of the account as at the 31st March last. A plan showing operations is attached.

I have, &c.,

The Hon. A. D. McLeod, Minister of Lands.

J. B. THOMPSON, Under-Secretary.

REPORT OF CHIEF DRAINAGE ENGINEER.

SIR,—

In accordance with the provisions of the Rangitaiki Land Drainage Act, 1910, I have the honour to submit my annual report for the year ended 31st March, 1925.

The period under review has witnessed the completion of practically all scheduled construction and improvement works. The area which will benefit from the further authorized construction works has been reduced to a minimum, and work under this heading will be completed during the coming period. As is universally the case with all land-development undertakings, there is no finality to possible improvements, and consequently additional works will become desirable from time to time; and, as the country develops and progresses sufficiently to warrant the further expenditure, provision will have to be made for carrying out these improvements. In certain localities the drained swamp has not come up to full expectations as regards quality of soil, and in others, after consolidation, sufficient freeboard has not remained for wholly successful cultivation.

Dairying is gradually becoming the premier industry, and smaller holdings are tending towards more intensive cultivation. The amount of butter manufactured by the new Rangitaiki Dairy Company was 776 tons, an increase of 143 tons over last year's production. The amount paid to suppliers was approximately £90,500. The Tarawera Cheese-factory's output for the year was 300 tons of cheese and 9 tons of whey butter, the amount paid to its suppliers being approximately £24,000.

All existing works are being maintained to their full efficiency, and the remaining construction work will be pushed on to completion as early as possible.

Rainfall: The total rainfall for the year was 62·27 in., rain falling on seventy-one days. The wettest month was April, with a fall of 8·06 in., and the driest March, with a fall of 0·57 in. The average rainfall for the past seven years was 50·97 in.; from which it will be seen that this, like the past year, has been an abnormally wet one.

EASTERN DISTRICT.

Maintenance work on the various drains and outfalls in this locality has been carried out periodically, also improvement and deepening where necessary. The completion of the dredging in the Orini Stream, and the consequent deepening of the various subsidiary hand drains, has made a decided improvement in this area. The dredging of the Waioho Stream and deviations, and the erection of a stop-bank to prevent flooding, which work is now nearing completion, should be of immense benefit to this area of first-class land. Generally the works in this district are in good condition, and on completion of the construction work now in hand will require only periodical maintenance to serve the areas depending on them.

WESTERN DISTRICT.

During the period dredging was completed in the two main areas requiring attention—namely, Awakaponga district, to the west of the Tarawera River, and the area served by the Tarawera flood-gate. The deepening and improvement of the subsidiary drains in these areas is well in hand. The stop-banking of the Tarawera River was completed northwards as far as the railway, and Priestman No. 9 is operating from the railway to the coast, completing the stop-banking of the eastern bank. The danger from flooding in this river has now been considerably minimized. Widening and deepening work, together with the erection of a stop-bank was carried out in the lower reaches of the Awaiti Stream, to provide both a better outlet for the large area southwards, and as a preventive against flooding in the flood-gate area. The stone groyne which was completed early in the period has been very effective in keeping an open channel at the mouth of the Tarawera River where it enters the sea through the sandhills. Last winter considerable erosion took place in the Rangitaiki River stop-banks owing to the continued high level of the river. In many places protective willowing was resorted to, but at McCracken's Bend it was thought advisable to provide a flood-channel across the bend. This work was put in hand late in the period, and a 50 ft. channel was scooped out for a length of 16 chains. In this district, as in the eastern district, any future work, apart from the construction work already in hand, will be purely maintenance of existing drains and stop-banks.

DREDGES.

Altogether six dredges, comprising three Priestman, two Monighan drag-lines, and one Bay City dipper dredge, have been continuously employed on works. A total of 626,762 yards of spoil was lifted during the period, covering a total distance of 1,999 chains. The cost per cubic yard of spoil removed was 6·11d.

The following table shows the total amount excavated, with the cost per cubic yard, for the past ten years:—

	Cubic Yards.	Cost per Cubic Yard.		Cubic Yards.	Cost per Cubic Yard.
1915-16 ..	224,740	4·54d.	1920-21 ..	215,768	8·82d.
1916-17 ..	261,751	4·36d.	1921-22 ..	473,994	6·68d.
1917-18 ..	320,614	3·72d.	1922-23 ..	540,802	8·13d.
1918-19 ..	229,659	5·70d.	1923-24 ..	788,059	5·56d.
1919-20 ..	176,672	6·62d.	1924-25 ..	626,762	6·11d.

No. 4 Priestman completed the dredging of the old Rangitaiki River bed up to the Matata Road crossing. The plant then worked back up Seccombe's drain to Section 110 drain, and along this as far as the eastern boundary of Section 108. This completed the programme in the locality, and the plant is now being dismantled in the Tarawera River. During the period this plant dredged a distance of 568 chains and removed 113,249 yards of spoil.

As this year probably finishes the career of No. 4 on the Rangitaiki Swamp, it is fitting to mention that this machine has been in service since March, 1913, and during the twelve years has lifted no less than 1,159,595 cubic yards of spoil. In that time the dredge had one thorough overhaul and no major breakages. This is a very creditable record, and demonstrates the value of the Priestman type of dredger on works such as these. It is anticipated that with a further overhaul the plant will be ready for another twelve years on some other area.

No. 8 Priestman dredge has been working throughout the year erecting stop-banks to prevent flooding in the Tarawera River. Late in the period the plant completed work as far north as the railway, and the machine was then taken back to open up the Tumurau drain on the western bank of the Tarawera River, where previously a private dredge had been operating. During the period a total distance of 300 chains was covered, and 122,680 yards of spoil lifted and deposited to form stop-banks.

No. 9 Priestman dredge : Early in the year this plant completed work as far as it was economically possible for it to operate in the Awakaponga drain, and then worked back to the Tarawera River, cleaning up, leaving the remainder of the cut to be excavated by the Bay City dipper dredge. The machine was then put on erecting a stop-bank and improving the lower reaches of the Awaitei Stream. This work was completed late in the period, and plant was then moved to commence on the Tarawera River stop-banks, from the Railway Bridge northwards. During the period this plant completed a total distance of 455½ chains of dredging, and lifted 123,968 yards of spoil.

No. 17 Monighan dredge commenced work in the Waioho Stream and deviations at the beginning of the period, and has done splendid work in this area. Late in the period the machine had reached the head of the work in this stream, having erected a substantial stop-bank to prevent flooding on the western bank, and made a splendid 40 ft. cut throughout. The plant will commence cleaning up on the way back early in the coming period. A total distance of 188 chains was covered during the period, and 119,363 yards of spoil were lifted.

No. 18 Monighan dredge : This plant completed work in the Kopeopeo Canal during the year, having linked up with the work done by Priestman No. 3 the previous year. The machine was then shifted across to the eastern drain to take up the fall through a deep sand-ridge where great difficulty was previously experienced in keeping an open channel. Splendid work was done, and as a result the low country above the sand-ridge has its freeboard increased by another 4 ft. This work was completed at the end of the period. After a few days overhaul this plant will be available for transfer. A total distance of 245½ chains was dredged during the period, and 91,910 yards of spoil lifted.

No. 21 Bay City dipper : This plant has been working throughout the period under great difficulties, and in exceptionally treacherous country. The transfer to the Awakaponga drain and re-erection was delayed considerably owing to the flood conditions prevailing at the time. Commencing work in June at the railway, the machine linked up with the work done by Priestman No. 9, and worked south again across the railway to the head of the Awakaponga drain. This work was completed late in the period, and plant is being transferred to maintenance work east of the Tarawera River. During the year a total distance of 242 chains was covered and 55,592 yards of spoil lifted.

FLOODS.

Severe floods were experienced in this district during May last, when two heavy rainstorms occurred with a two-weeks interval. The rainfall was exceptionally heavy in the Tarawera watershed, and that river broke its banks in the vicinity of the cross-road and overflowed the low-lying country generally along the Tarawera western drain and in Sections 108 and 110. Considerable damage to drains and small sill bridges resulted. The flooding was also severe in the White-pine Bush area, and water overflowed westwards from this locality into the Kopeopeo Canal via the eastern drain. The works in this locality are now much further advanced, and a similar visitation would not have such far-reaching effects.

ROADWORK.

No new road-formation has been carried out during the year. Roads to the length of 150 chains were graded preparatory to handing over to the local body, and 120 chains of formation from spoil removed by dredges was carried forward on the Kopeopeo Canal. The spoil removed by Monighan No. 17 on the White-pine Bush Road was levelled and surfaced for a distance of 80 chains to form a combined road and stop-bank.

BRIDGES.

One bridge gang has been employed continuously throughout the period erecting permanent pile and sill bridges, laying temporary structures for the passage of walking dredges across drains and canals, and dismantling and re-erecting bridges to allow for passage of floating dredges. Nine new pile bridges were erected during the period, three were dismantled and re-erected, and fourteen temporary structures were laid for walking plants. In addition to this, ten sill bridges of varying widths were placed.

STOP-BANKS.

Maintenance and protective work has been carried out where necessary throughout the completed lengths of the Tarawera stop-bank, and these banks are in good order as far north as the railway-bridge. Protective work was also carried out on the Rangitaiki River banks where erosion was taking place. The Te Rahu bank was also repaired, and raised where excessive subsidence had taken place. A length of 80 chains of new bank, from spoil deposited by dredge, on the White-pine Bush Road, was formed and surfaced to form a combined road and stop-bank.

DRAINS IN OPERATION.

The total length of drains in operation is as follows : Dredge cuts, 64 miles 42 chains ; main outlet drains, 103 miles 26 chains ; road-drains, 29 miles 20 chains.

ROADS OPENED.

The total length of roads opened is still 113½ miles, of which 85 miles have been constructed by the Department.

BUILDINGS.

These consist of Engineer's cottage and twelve cottages and huts for workmen, office building, machine-shop, blacksmith's shop, store-sheds, &c. These are kept in good order and condition. All men occupying quarters are required to pay rent for same.

WORKSHOPS.

Practically all the repair work for the six dredges and general machinery has been done in the workshop and smithy at Thornton, and a very creditable amount of work has been put through in this connection, with a corresponding saving in time and cost.

ROLLING-STOCK.

The Thornycroft lorry has been continuously employed in running coal and benzine supplies to the dredges, and in general cartage of timber and supplies throughout the works. With the improvement in roads the Department is now able to use this lorry for the bulk of its cartage.

PLANT AND MACHINERY.

One Priestman grab dredger was transferred early in the period, and the plant now consists of three Priestman grab dredges, one Bay City walking dipper, and two Monighan walking drag-line excavators, four coal-punts, three oil-launches, one towing-barge, and seven small boats and punts.

SUMMARY OF WORK DONE.

	M. Ch.	Cub. Yd.
New drains	1 50	4,700
Widening and deeping	9 40	13,160
Cleaning drains	72 0	..
Road-formation	4 30	..
Fencing	3 40	..
Stop-banks (new)	1 0	..
Stop-banks (repairs)	4 0	..
Spoil dredge	24 79	626,762
Levels taken	52 0	..
Survey traverses	22 40	..

Pile bridges, 9 ; sill bridges, 10 ; flood-gates, 2.

PROPOSED WORKS.

Completion of Tarawera River stop-banks by No. 9 dredge ; dredging Tumurau drain by No. 8 dredge ; completion of Waioho Stream and White-pine Bush Road and stop-banks by No. 18 dredge ; general maintenance, and minor construction works.

WORKS EXPENDITURE : GENERAL.

The total amount of expenditure recorded in the books for the year was £29,758. Of this amount £11,849 represents day-labour (including dredge crews) and £5,128 payment for piecework contracts. The sum of £20,845 was paid out of Whakatane Imprest Account. The local headquarters are at Thornton, where the subsidiary books are kept. All payments of wages and supplies, &c., are made by the controlling office in Auckland, where the financial record books are kept. The sum of £255 9s. 10d. was received during the year on account of miscellaneous revenue.

The officer in charge is Mr. R. L. Innis, Acting Engineer, who has carried out his many duties in a very able and efficient manner.

I have, &c.,
O. N. CAMPBELL,
Chief Drainage Engineer.

The Under-Secretary for Lands, Wellington.

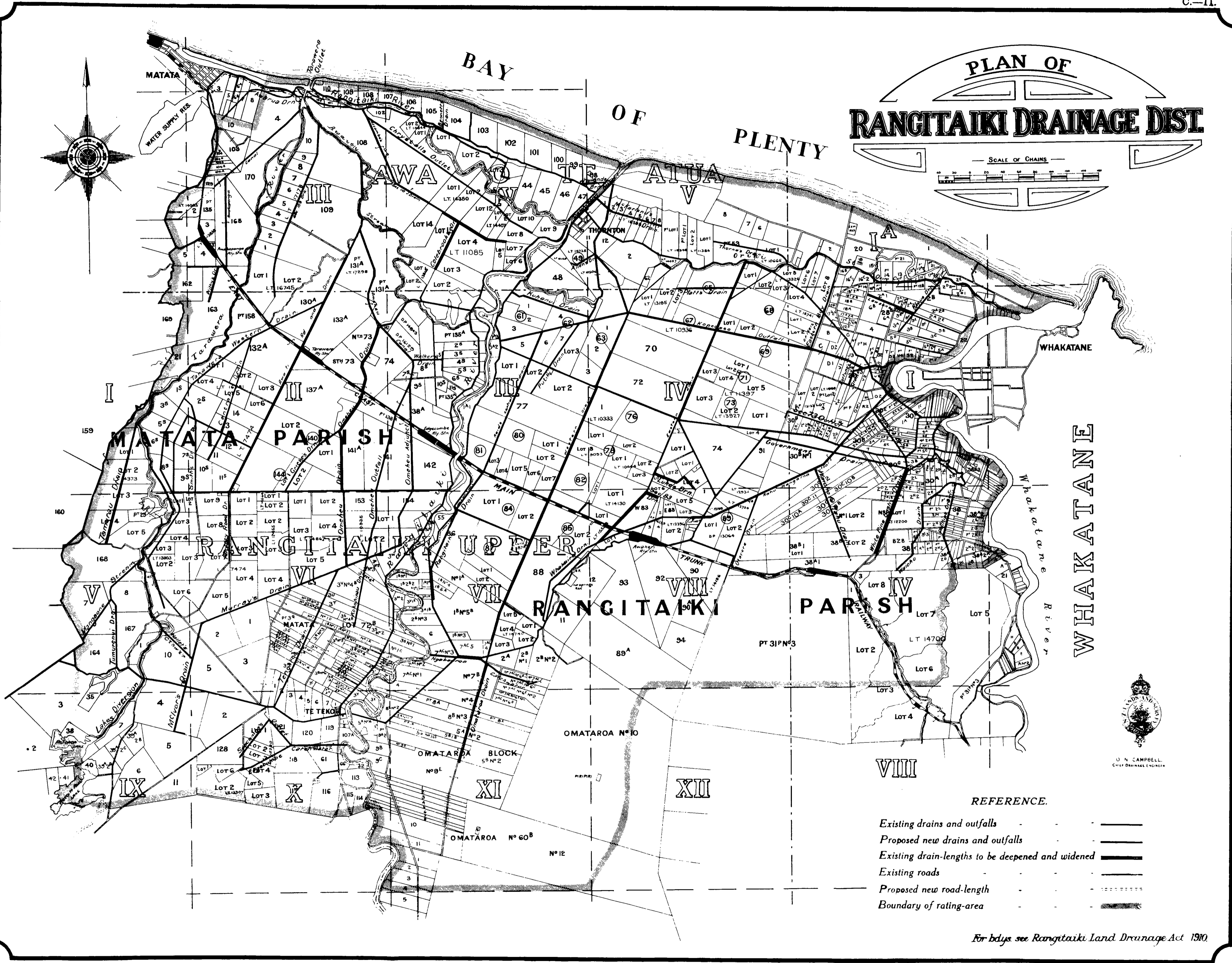
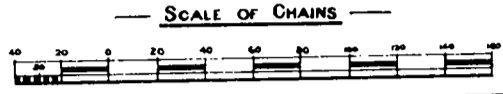
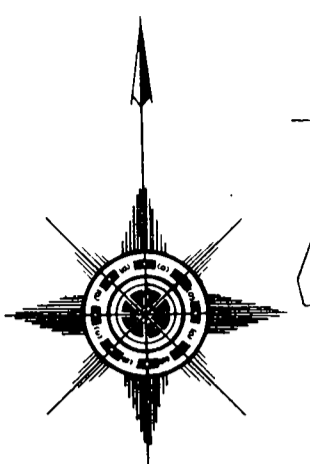
RAWHITIARI LAND DRAINAGE ACCOUNT

RECEIPTS AND PAYMENTS ACCOUNT FOR YEAR ENDED 31st MARCH 1935

Investment Account	10,013 7 5
Cash	12,013 7 5
Balance at 31st March 1934	20,916 7 4
Interest on debentures	0 14 10
Return of overpaid rates	0 0 0
Return of rent	0 0 0
Fuel	3,519 5 10
Material and stores	2,050 10 3
Loose tools	30 2 11
Plant and machinery	27 13 1
Plant expenses	22 17 0
Travelling expenses	75 1 3
Engineering and administration expenses	1,267 13 2
Grants to drainage operations	23,037 15 8
Drainage works stop-banks clearing	

Year 1934-35	23,003 13 0
Year 1933-34	20,264 13 2
Year 1932-33	17,314 13 10
Year 1931-32	10,000 0 0
Year 1930-31	37,100 0 0
Year 1929-30	
Year 1928-29	
Year 1927-28	
Year 1926-27	
Year 1925-26	
Year 1924-25	
Year 1923-24	
Year 1922-23	
Year 1921-22	
Year 1920-21	
Year 1919-20	
Year 1918-19	
Year 1917-18	
Year 1916-17	
Year 1915-16	
Year 1914-15	
Year 1913-14	
Year 1912-13	
Year 1911-12	
Year 1910-11	
Year 1909-10	
Year 1908-09	
Year 1907-08	
Year 1906-07	
Year 1905-06	
Year 1904-05	
Year 1903-04	
Year 1902-03	
Year 1901-02	
Year 1900-01	
Year 1899-00	
Year 1898-99	
Year 1897-98	
Year 1896-97	
Year 1895-96	
Year 1894-95	
Year 1893-94	
Year 1892-93	
Year 1891-92	
Year 1890-91	
Year 1889-90	
Year 1888-89	
Year 1887-88	
Year 1886-87	
Year 1885-86	
Year 1884-85	
Year 1883-84	
Year 1882-83	
Year 1881-82	
Year 1880-81	
Year 1879-80	
Year 1878-79	
Year 1877-78	
Year 1876-77	
Year 1875-76	
Year 1874-75	
Year 1873-74	
Year 1872-73	
Year 1871-72	
Year 1870-71	
Year 1869-70	
Year 1868-69	
Year 1867-68	
Year 1866-67	
Year 1865-66	
Year 1864-65	
Year 1863-64	
Year 1862-63	
Year 1861-62	
Year 1860-61	
Year 1859-60	
Year 1858-59	
Year 1857-58	
Year 1856-57	
Year 1855-56	
Year 1854-55	
Year 1853-54	
Year 1852-53	
Year 1851-52	
Year 1850-51	
Year 1849-50	
Year 1848-49	
Year 1847-48	
Year 1846-47	
Year 1845-46	
Year 1844-45	
Year 1843-44	
Year 1842-43	
Year 1841-42	
Year 1840-41	
Year 1839-40	
Year 1838-39	
Year 1837-38	
Year 1836-37	
Year 1835-36	
Year 1834-35	
Year 1833-34	
Year 1832-33	
Year 1831-32	
Year 1830-31	
Year 1829-30	
Year 1828-29	
Year 1827-28	
Year 1826-27	
Year 1825-26	
Year 1824-25	
Year 1823-24	
Year 1822-23	
Year 1821-22	
Year 1820-21	
Year 1819-20	
Year 1818-19	
Year 1817-18	
Year 1816-17	
Year 1815-16	
Year 1814-15	
Year 1813-14	
Year 1812-13	
Year 1811-12	
Year 1810-11	
Year 1809-10	
Year 1808-09	
Year 1807-08	
Year 1806-07	
Year 1805-06	
Year 1804-05	
Year 1803-04	
Year 1802-03	
Year 1801-02	
Year 1800-01	
Year 1799-00	
Year 1798-99	
Year 1797-98	
Year 1796-97	
Year 1795-96	
Year 1794-95	
Year 1793-94	
Year 1792-93	
Year 1791-92	
Year 1790-91	
Year 1789-90	
Year 1788-89	
Year 1787-88	
Year 1786-87	
Year 1785-86	
Year 1784-85	
Year 1783-84	
Year 1782-83	
Year 1781-82	
Year 1780-81	
Year 1779-80	
Year 1778-79	
Year 1777-78	
Year 1776-77	
Year 1775-76	
Year 1774-75	
Year 1773-74	
Year 1772-73	
Year 1771-72	
Year 1770-71	
Year 1769-70	
Year 1768-69	
Year 1767-68	
Year 1766-67	
Year 1765-66	
Year 1764-65	
Year 1763-64	
Year 1762-63	
Year 1761-62	
Year 1760-61	
Year 1759-60	
Year 1758-59	
Year 1757-58	
Year 1756-57	
Year 1755-56	
Year 1754-55	
Year 1753-54	
Year 1752-53	
Year 1751-52	
Year 1750-51	
Year 1749-50	
Year 1748-49	
Year 1747-48	
Year 1746-47	
Year 1745-46	
Year 1744-45	
Year 1743-44	
Year 1742-43	
Year 1741-42	
Year 1740-41	
Year 1739-40	
Year 1738-39	
Year 1737-38	
Year 1736-37	
Year 1735-36	
Year 1734-35	
Year 1733-34	
Year 1732-33	
Year 1731-32	
Year 1730-31	
Year 1729-30	
Year 1728-29	
Year 1727-28	
Year 1726-27	
Year 1725-26	
Year 1724-25	
Year 1723-24	
Year 1722-23	
Year 1721-22	
Year 1720-21	
Year 1719-20	
Year 1718-19	
Year 1717-18	
Year 1716-17	
Year 1715-16	
Year 1714-15	
Year 1713-14	
Year 1712-13	
Year 1711-12	
Year 1710-11	
Year 1709-10	
Year 1708-09	
Year 1707-08	
Year 1706-07	
Year 1705-06	
Year 1704-05	
Year 1703-04	
Year 1702-03	
Year 1701-02	
Year 1700-01	
Year 1699-00	
Year 1698-99	
Year 1697-98	
Year 1696-97	
Year 1695-96	
Year 1694-95	
Year 1693-94	
Year 1692-93	
Year 1691-92	
Year 1690-91	
Year 1689-90	
Year 1688-89	
Year 1687-88	
Year 1686-87	
Year 1685-86	
Year 1684-85	
Year 1683-84	
Year 1682-83	
Year 1681-82	
Year 1680-81	
Year 1679-80	
Year 1678-79	
Year 1677-78	
Year 1676-77	
Year 1675-76	
Year 1674-75	
Year 1673-74	
Year 1672-73	
Year 1671-72	
Year 1670-71	
Year 1669-70	
Year 1668-69	
Year 1667-68	
Year 1666-67	
Year 1665-66	
Year 1664-65	
Year 1663-64	
Year 1662-63	
Year 1661-62	
Year 1660-61	
Year 1659-60	
Year 1658-59	
Year 1657-58	
Year 1656-57	
Year 1655-56	
Year 1654-55	
Year 1653-54	
Year 1652-53	
Year 1651-52	
Year 1650-51	
Year 1649-50	
Year 1648-49	
Year 1647-48	
Year 1646-47	
Year 1645-46	
Year 1644-45	
Year 1643-44	
Year 1642-43	
Year 1641-42	
Year 1640-41	
Year 1639-40	
Year 1638-39	
Year 1637-38	
Year 1636-37	
Year 1635-36	
Year 1634-35	
Year 1633-34	
Year 1632-33	
Year 1631-32	
Year 1630-31	
Year 1629-30	
Year 1628-29	
Year 1627-28	
Year 1626-27	
Year 1625-26	
Year 1624-25	
Year 1623-24	
Year 1622-23	
Year 1621-22	
Year 1620-21	
Year 1619-20	
Year 1618-19	
Year 1617-18	
Year 1616-17	
Year 1615-16	
Year 1614-15	
Year 1613-14	
Year 1612-13	
Year 1611-12	
Year 1610-11	
Year 1609-10	
Year 1608-09	
Year 1607-08	
Year 1606-07	
Year 1605-06	
Year 1604-05	
Year 1603-04	
Year 1602-03	
Year 1601-02	
Year 1600-01	
Year 1599-00	
Year 1598-99	
Year 1597-98	
Year 1596-97	
Year 1595-96	
Year 1594-95	
Year 1593-94	
Year 1592-93	
Year 1591-92	
Year 1590-91	
Year 1589-90	
Year 1588-89	
Year 1587-88	
Year 1586-87	
Year 1585-86	
Year 1584-85	
Year 1583-84	
Year 1582-83	
Year 1581-82	
Year 1580-81	
Year 1579-80	
Year 1578-79	
Year 1577-78	
Year 1576-77	
Year 1575-76	
Year 1574-75	
Year 1573-74	
Year 1572-73	
Year 1571-72	
Year 1570-71	
Year 1569-70	
Year 1568-69	
Year 1567-68	
Year 1566-67	
Year 1565-66	
Year 1564-65	
Year 1563-64	
Year 1562-63	
Year 1561-62	
Year 1560-61	
Year 1559-60	
Year 1558-59	
Year 1557-58	
Year 1556-57	
Year 1555-56	
Year 1554-55	
Year 1553-54	
Year 1552-53	
Year 1551-52	
Year 1550-51	
Year 1549-50	
Year 1548-49	
Year 1547-48	
Year 1546-47	
Year 1545-46	
Year 1544-45	
Year 1543-44	
Year 1542-43	
Year 1541-42	
Year 1540-41	
Year 1539-40	
Year 1538-39	
Year 1537-38	
Year 1536-37	
Year 1535-36	
Year 1534-35	
Year 1533-34	
Year 1532-33	
Year 1531-32	
Year 1530-31	
Year 1529-30	
Year 1528-29	
Year 1527-28	
Year 1526-27	
Year 1525-26	
Year 1524-25	
Year 1523-24	
Year 1522-23	
Year 1521-22	
Year 1520-21	
Year 1519-20	
Year 1518-19	
Year 1517-18	
Year 1516-17	
Year 1515-16	
Year 1514-15	
Year 1513-14	
Year 1512-13	
Year 1511-12	
Year 1510-11	
Year 1509-10	
Year 1508-09	
Year 1507-08	
Year 1506-07	
Year 1505-06	
Year 1504-05	

PLAN OF RANGITAIKI DRAINAGE DIST



WHAKATANE



O. N. CAMPBELL, CHIEF DRAINAGE ENGINEER

REFERENCE.

- Existing drains and outfalls - - - - -
- Proposed new drains and outfalls - - - - -
- Existing drain-lengths to be deepened and widened - - - - -
- Existing roads - - - - -
- Proposed new road-length - - - - -
- Boundary of rating-area - - - - -

For bids see Rangitaiiki Land Drainage Act 1910.

