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30. The groundwater potential of north-eastern Tasmania.

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The availability of groundwater in a particular area is controlled by the physical geography and geology. Location and relief influence rainfall and run-off, so determining the potential quality of groundwater and the likely demand for it. Rock type and geological structure control the movement and storage of groundwater.

Both types of information are therefore required in order to assess the groundwater potential of the area. Rock type, potential yield and water quality are shown in Figure 91 and the physiographic regions used in this report are shown in Figure 92.

THE HIGH COUNTRY

Highland areas comprise about two-thirds of the area of north-eastern Tasmania, and as most of these are formed of dolerite overlying a permo-Triassic sedimentary sequence, or of granitic rocks intruding Mathinna Beds, they are grouped together.

No drilling or groundwater investigation has yet been undertaken in these areas due to the lack of demand for groundwater supplies. No demand for groundwater is likely in the foreseeable future. Therefore the results suggested are extrapolated from low lying areas. As the high country generally has a higher rainfall, yields are likely to be higher and the quality of the groundwater should be better than in low lying areas of the same rock type.

Diamond drill holes in the dolerite have produced low but continuous flows of good quality groundwater which is frequently chemically hard. No systematic groundwater investigation has been undertaken with the dolerite. Granite in the low land areas is currently being investigated and the results to date indicate that it may yield from 8-450 *l*/min of good quality groundwater. Both the Permo-Triassic and Mathinna Beds sediments would no doubt produce supplies of groundwater in the high country as in the low lying regions where they are found to be low yielding but reliable rock aquifers.

SCAMANDER-FALMOUTH COASTAL PLAIN

No investigation has been undertaken in this area. The coastal sand dunes offer the greatest potential source for groundwater.

ST HELENS VALLEY

The Tertiary sediments, having been derived from granite, are the most likely source for groundwater although they are of limited thickness and areal extent. The quantity of groundwater available will depend on their thickness and the amount of clay they contain.

MUSSELROE-ANSONS BAY COASTAL AREA

The sand dune regions are of a limited extent but locally quite extensive (*e.g.* east of Mt William). They appear to offer more potential than the Tertiary sediments of the coastal terrace. The Tertiary sediments are generally less than 15 m in thickness although they may be thicker at some localities. Thicknesses in the order of 20-30 m could yield up to 75 *l*/min of good quality groundwater.

GLADSTONE PLAINS-RINGAROOMA VALLEY

This area is at present being investigated. Bores in Tertiary basalt yield 23-225 *l*/min of good quality groundwater. The Tertiary sediments beneath the basalt appear to produce high yields of a similar quality groundwater. Thicknesses of 15-30 m of Tertiary sand and gravel may yield more than 1500 *l*/min with about 400 ppm of total dissolved solids. The Tertiary sediments not overlain by basalt yield 23-375 *l*/min of high quality groundwater. Mathinna slate is a reliable rock aquifer in this area yielding 225-600 *l*/min. Water quality is in the range 300-800 ppm. The coastal dunes are yet to be investigated.

WATERHOUSE-BOOBYALLA REGION

Investigation is in progress in this area and the Tertiary sediments are anticipated to be as reliable and high yielding an aquifer as in the Gladstone Plains and Scottsdale Basin. To the west of the region the Tertiary and Quaternary sediments appear to consist mainly of clay and their yields are low (<40 *l*/min). The Mathinna sediments are a very reliable low yield aquifer in this region and the granites have a yield in the range 8-450 *l*/min. The coastal sand dunes are reliable aquifers (15-225 *l*/min), but the quality of the water varies within short distances along the Waterhouse dunes, although water from only one bore out of eight drilled was too salty for stock use.

SCOTTSDALE BASIN

The groundwater investigation of this area has been completed. Tertiary sediments provide good yields of high quality groundwater. Yields in excess of 1500 *l*/min in certain localities are adequate for town supply and industry. The yield of the Tertiary sediments appears to be controlled by the percentage of clay mixed with the sand and gravel than the total thickness of the Tertiary sediments. The basalt near Scottsdale is a low yielding aquifer (8-40 *l*/min). The coastal dunes are as in the Waterhouse region.

PIPERS RIVER-LILYDALE AREA

The Tertiary basalt and sediments produce groundwater but the yields are not known. The Mathinna sediments have proved to be as reliable a rock aquifer as in the Boobyalla-Waterhouse region with similar yields and quality. The groundwater properties of Triassic sandstone are not known for this region as the sandstone is usually overlain by dolerite. The Permian sediments are more widespread and in the Turners Marsh area are reported to produce up to 225 *l*/min of good quality groundwater.

TAMAR VALLEY

The Tertiary sediments consist mainly of clay which yields little groundwater, and this is invariably saline. The dolerite bordering the valley has not been sufficiently tested to form any conclusions.

LAUNCESTON TERTIARY BASIN

Tertiary sand and gravel aquifers interbedded with clay have been pumped at rates of up to 1100 *l*/min and have greater potential at some locations. Bores in Tertiary basalt have been pumped at rates of up to 1500 *l*/min. Quality ranges from about 150-6000 ppm total dissolved solids with the highest values in the south-east. Permian and Triassic rocks around the basin are largely untested but are expected to yield small quantities of water in topographically favourable areas.

PORT SORELL-RUBICON VALLEY

The groundwater investigations in this area are nearing completion. Both the Tertiary basalt and sediments contain excellent quality water, but yields from the latter depend on the relative proportions of sand, gravel and clay. Yields from the basalt are in the range 70-800 *l*/min, and from gravel and sand 200-1000 *l*/min.

UPPER MERSEY VALLEY

In this area Tertiary basalt and gravel are reported to give good quality groundwater (40-225 *l*/min).

MOLE CREEK AND GOLDEN VALLEY

Quaternary river gravel is likely to yield considerable quantities of groundwater. The Permian sediments and Ordovician limestone are largely untested. Yields from limestone are likely to be nil, although enormous supplies could be obtained if an underground stream or cavern were tapped.

SOUTH ESK AND FINGAL VALLEY

No groundwater investigation has been conducted in this area but the gravel derived from Mathinna Beds, granite and dolerite areas should contain large supplies of groundwater.

[12 February 1975]

PRELIMINARY RESOURCES MAP
N. E. TASMANIA

GROUNDWATER RESOURCES

ROCK TYPE - YIELD - QUALITY

1:500 000

CAINOZOIC
Quaternary coastal sand and clay. Good quality > 40–225 l/min. Salt content > 200– 2000 + p.p.m.

Tertiary gravel, sand, clay and basalt. East of Tamar, sand and gravel 75 – 750 l min. > 100 – 500p.p.m. Tertiary basalt 40–225 l min. < 200 – 500 p.p.m. Longford clay with minor sand and gravel 15–230 l min. 300 – 1000 + p.p.m. Tamar, clay with minor sand. Low yields, and normally saline.

JURASSIC
Dolerite. < 8–40 l/min. 100 – 1500 + p.p.m.

PERMO—TRIASSIC
Sandstone, siltstone and mudstone 15–150 l/min. 500 – 2000 p.p.m.

DEVONIAN
Granite, adamellite and granodiorite 8–450 l/min. 200 – 7000 p.p.m.

SILURO—DEVONIAN
Mathinna sediments – folded and highly jointed greywacke sediments, slate and sandstone 15–225 l/min. 200 –1000 p.p.m.

ORDOVICIAN
Limestone, siltstone and sandstone 25–550 l/min. 500 – 3000 p.p.m.

CAMBRIAN AND PRECAMBRIAN
Sandstone, slate, and phyllite quartzite 15–60 l/min. 100 – 1500 p.p.m.

5 cm

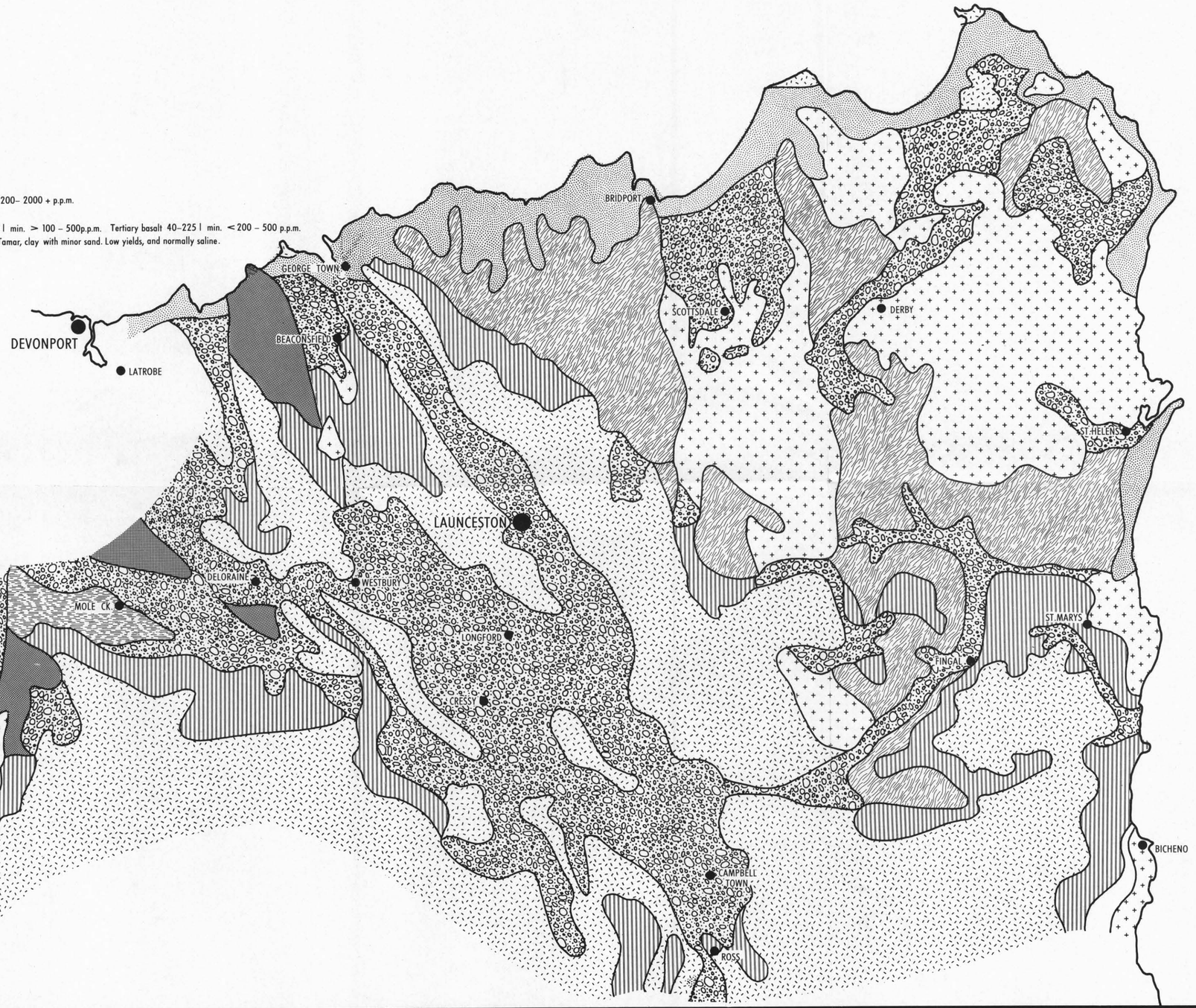

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FIGURE 91

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5 cm

PRELIMINARY RESOURCES MAP
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GROUNDWATER REGIONS

1:500 000

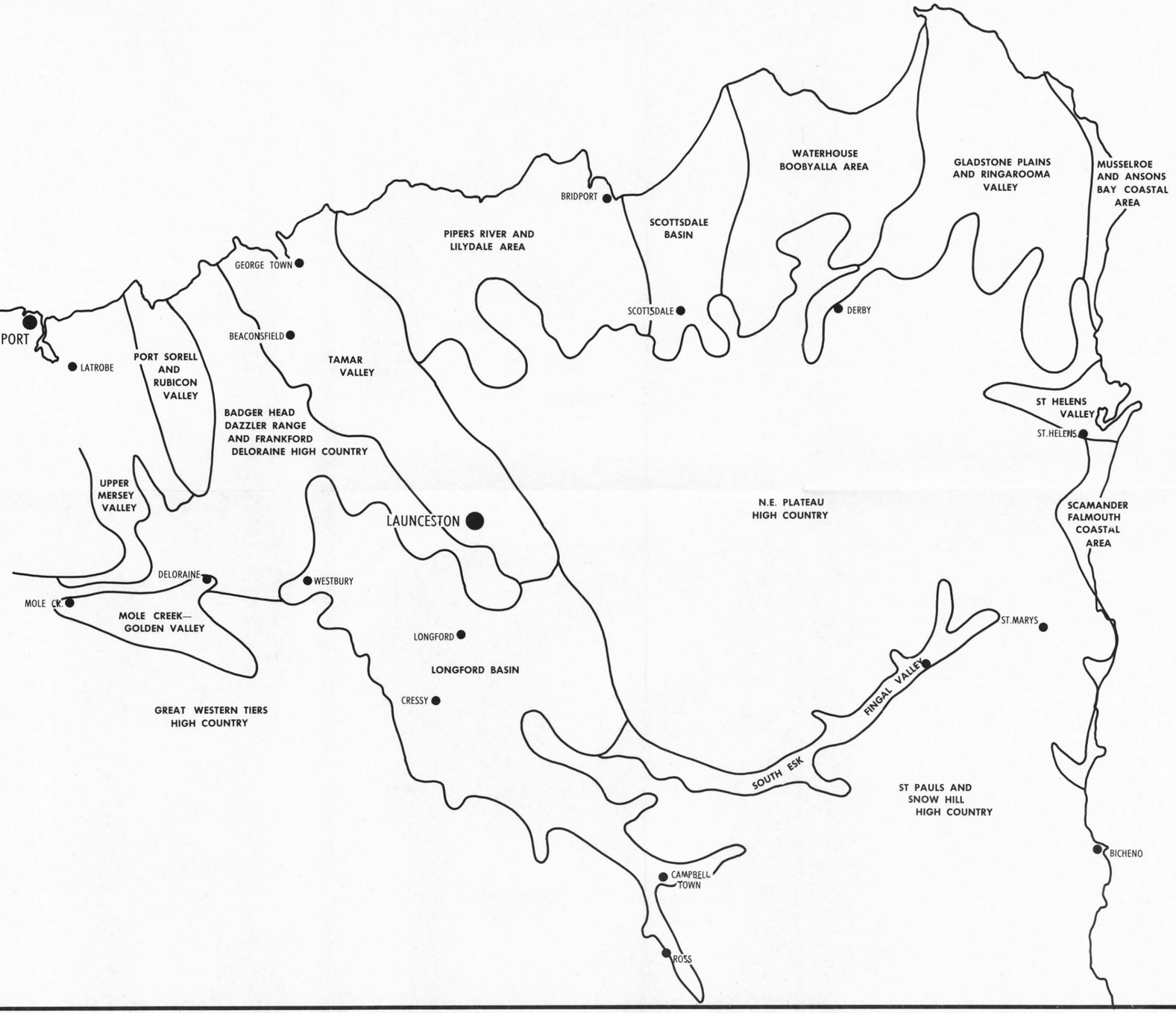

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FIGURE 92

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