LAKE TOOLIBIN REPORT

Surveyed and compiled

by

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Dept. Fisheries and Wildlife.

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INTRODUCTION

This report was compiled by the Waterfowl Research Unit at the request of the West Australian Bird Committee. It has been prepared for distribution to members of the Bird Committee who will be attending the meeting scheduled for the 17th, 18th and 19th of November, 1975 at Lake Toolibin.

The data was obtained basically from a field survey of the area on the 28th to the 31st. October 1975. Wetland status records were compiled from the annual Wetland and Waterfowl survey reports. Personal reports and lithographs of the area were examined for general and statistical data.

A litho copy of the Toolibin district has been included for reference purposes and in addition an aerial mosaic will be made available on the days of the meeting.

LAKE TOOLIBIN

i. Geographic Features

Lake Toolibin and the connecting lakes of the system are situated approximately 35 km (22 mls) East of Narrogin in an agricultural district retaining only small areas of bushland. Fortunately, many of these areas adjoining the lakes in the system have been acquired as reserves (see "Litho" and "List of Reserves" pages 12 & 14).

Of the reserves, Dingerlin Well, Dulbining Lake, Toolibin Lake and the Eastern half of Walbyring Lake are in the Shire of Wickepin. The Western half of Walbyring Lake and the other lakes referred to in the report are within the boundary of the Narrogin Shire.

The topography of the district features undulating country the highest points of elevation above Lake Toolibin not exceeding 70 metres (230 ft).

The lake forms the basin of a catchment area which extends in a Northerly direction for approximately 16 km (10 mls) embracing a calculated area in excess of 20,000 ha (75 sq. mls) (Note that figures quoted are only estimates simply calculated from the examination of contour maps).

Toolibin is the first large lake at the 'Head' of a lakes system which forms the major source of the Arthur river. Two other rivers, the Hillman and the Beaufort, converge with the Arthur river which then becomes the Blackwood.

ii Rainfall and Catchment

The catchment area is located in a low rainfall district having an annual average of 421 mm (16.6 inches).

Two successive years of below average falls can result in the lake drying out as occurred in 1969-70. As no substantial falls of rain were recorded for a further two years the lake remained dry until the winter of 1973.

When full, the lake attains a depth at the centre of approximately 1.4 metres (4ft. 9 inches) and covers an area of approximately 236 ha (585 acres).

The status of the lake and annual rainfall figures are set out in the following schedule. Water levels and comments in the schedule were recorded during the annual Wetland and Waterfowl surveys conducted in either August or September of each year.

Rainfall & Lake Status 1968-75.

Year	Rainfall (mm)	Water Level	Comment
1968	518	Full	Good depth of water throughout area of lake.
1969	266	½ Full	Below average rainfall but had filled in 1968. Almost total area covered.
1970	366	Dry	-
1971	386	Dry	-
1972	250	Dry	-
1973	496	½ Full	Only centre of lake covered, reed area exposed.
1974	554	Flooded	2.5 m (8'.0") deep at centre.
1975 (To 31st. October).	378	2/3 Full	Almost total area covered but only shallow water over reed margin.

iii. LAKE SURVEY

The immediate perimeter of the lake is bordered by a dense growth of Casuarina trees. Beyond the Western and Southern perimeter the country has been cleared for agricultural purposes while a belt of natural bushland remains in the

cont'd...

Eastern and North-Eastern area. The North Eastern area referred to is contained within the boundary of reserve 9617.

Reeds and a light density of young Casuarina occur over the extensive shallow marginal area of the lake. Casuarina is the dominant species of vegetation with some very dense stands occurring through much of the centre and Western sector of the lake. Other species represented in varying densities are Melaleuca and Eucalyptus. Some fine examples of Melaleuca are to be found around the Western area of the lake.

Generally, all vegetation appears to be very healthy with the exception of a few dead Eucalypts. The successive years of drought in 1970-71 and '72 and the flooding of the lake last winter show no indications of having had a detrimental effect on the vegetation.

The maximum depth recorded during the survey was .76 metres (2'6") at the centre of the open area of water. As the rainfall for the area this year is below average, run off into the lake has been minimal. Based on the fact that the lake filled last winter, the water loss over the last twelve months has been considerable. As the lake attains a depth of approximately 4.5 metres (4'9") when full it will be seen that the present volume of water is less than one-third the potential capacity. From these calculations and from past records the lake can be expected to become either very low or dry out completely again this summer.

The water at this time is quite clear and only slightly brackish to taste. Samples were submitted to Government Chemical Laboratories for analyses, the results of which are attached, see page 13 . Note, sample "Toolibin 'A'" is from the deepest point of the open area of water and sample "Toolibin 'B'" was taken from the shallows at the South end.

A common grasslike weed, found in a majority of inland lakes and a type of algae were the only aquatic plants recorded. The only aquatic life noted were tadpoles, a limited number of beetle like insects and several large frogs which were found in trees and nest boxes. It should be noted that limited time was allocated to investigating these aspects during the survey with the result that other species may not have been detected.

iv WATERFOWL OBSERVATIONS

Due to the large area of the lake and the density of vegetation, no attempt was made to obtain an accurate population count of each species. Suffice is to say that Grey teal were the most common, with numerous flocks of twenty to thirty birds being sighted. Other species recorded were either in pairs or small flocks comprising up to ten birds.

Freckled duck sightings were limited to one group of three birds and a single female on a nest. All birds were recorded in the North-west area of the lake, the nest being located in the base of a large dead Eucalyptus tree approximately 10 metres (32 ft) east of nest box 90. An examination of the nest revealed 6 eggs which appeared to be in a late stage of incubation. When disturbed, the female flew only a short distance from the nest returning almost immediately after we retreated. The other three Freckled duck were not concerned at our presence enabling us to observe them from a distance of approximately 25 metres (82 ft).

A complete list of all waterbirds noted during the survey has been compiled on page 7 .

BREEDING

In addition to the nesting Freckled duck, two nests of Pink-ear duck and several of Coot were located and found to contain eggs in a state of incubation. Nests of these species were also noted to have had recent successful hatchings.

Sightings of young waterbirds on Lake Toolibin were limited to one brood of cygnets and another of Coot chicks. The cygnets were in the dark downy phase of development while the Coot were only one day old. The presence of Grey teal and Pink-ear ducklings, or nests, was indicated by the behaviour of parent birds.

Observations of ducklings were made in the creeks entering Lakes Toolibin and Taarblin. Three broods of Grey teal and one of Black duck were sighted, the youngest brood being less than one week old.

v. ARTIFICIAL NEST BOXES

In 1969, one hundred P.V.C. nest boxes were erected on Lake Toolibin; of this total only sixty-five remain. The reason for the nest boxes falling has been attributed to the flooding which occurred last winter when most boxes became submerged. The weight of the water remaining in the boxes when the level receded, either pulled the nails securing the strap, or the nest box simply slipped from the strap.

No usage of the nest boxes has been recorded this season or in 1973 when conditions were favourable for breeding.

LIST OF WATERBIRDS

ANATIDAE

GREY TEAL	*(Anas gibberifrons)*
BLACK DUCK	*(Anas superciliosa)*
PINK-EAR DUCK	*(Malacorhynchus membranaceus)*
WOOD DUCK	*(Chenonetta jubata)*
WHITE-EYE DUCK	*(Aythya australis)*
BLUE-WINGED SHOVELLER	*(Anas rhynchotis)*
MUSK DUCK	*(Biziura lobata)*
MOUNTAIN DUCK	*(Tadorna tadornoides)*
FRECKLED DUCK	*(Stictonetta naevosa)*
BLACK SWANS	*(Cygnus atratus)*

RALLIDAE

COOT	*(Fulica atra)*
WESTERN SWAMPHEN	*(Porphirio porphirio)*

PODICIPEDIDAE

LITTLE GREBE	*(Podiceps novaehollandiae)*

ARDEIDAE

WHITE EGRET	*(Egretta alba)*
NANKEEN NIGHT HERON	*(Nycticorax calendoricus)*
WHITE-FACED HERON	*(Ardea novaehollandiae)*
WHITE-NECKED HERON	*(Ardea pacifica)*

PHALACROCORACIDAE

PIED CORMORANT	*(Phalacracorax varius)*

LAKE TOOLIBIN-LAKE TAARBLIN WATERCOURSE

NATURAL SYSTEM

Lakes Toolibin and Taarblin, some 3.5 km (2.2 mls) apart are connected by a system of creeks and smaller shallow lakes. A drawing of the natural system and man-made drains has been attached to clarify description (see page 9).

The discharge stream from Lake Toolibin flows for a distance of 600 metres (656 yds) through an area of light timber to Lake Walbyring, more commonly known as "Mud Hut". Lake Walbyring has a "medium" density of live and dead Casuarina through it and is almost entirely covered with shallow water.

The system from Lake Walbyring follows a less defined course to the last of the lakes in this section. A more accurate assessment of this particular area can be made by examining the drawing and aerial mosaic provided.

A relatively deep stream flows to Lake Taarblin from the last lake in this section. The stream, which contains water at present, passes through "Napowie", a sheep stud property cleared of most vegetation. It then enters Lake Taarblin through a delta of very dense Ti-tree. It was on this stream that three broods of ducklings were observed.

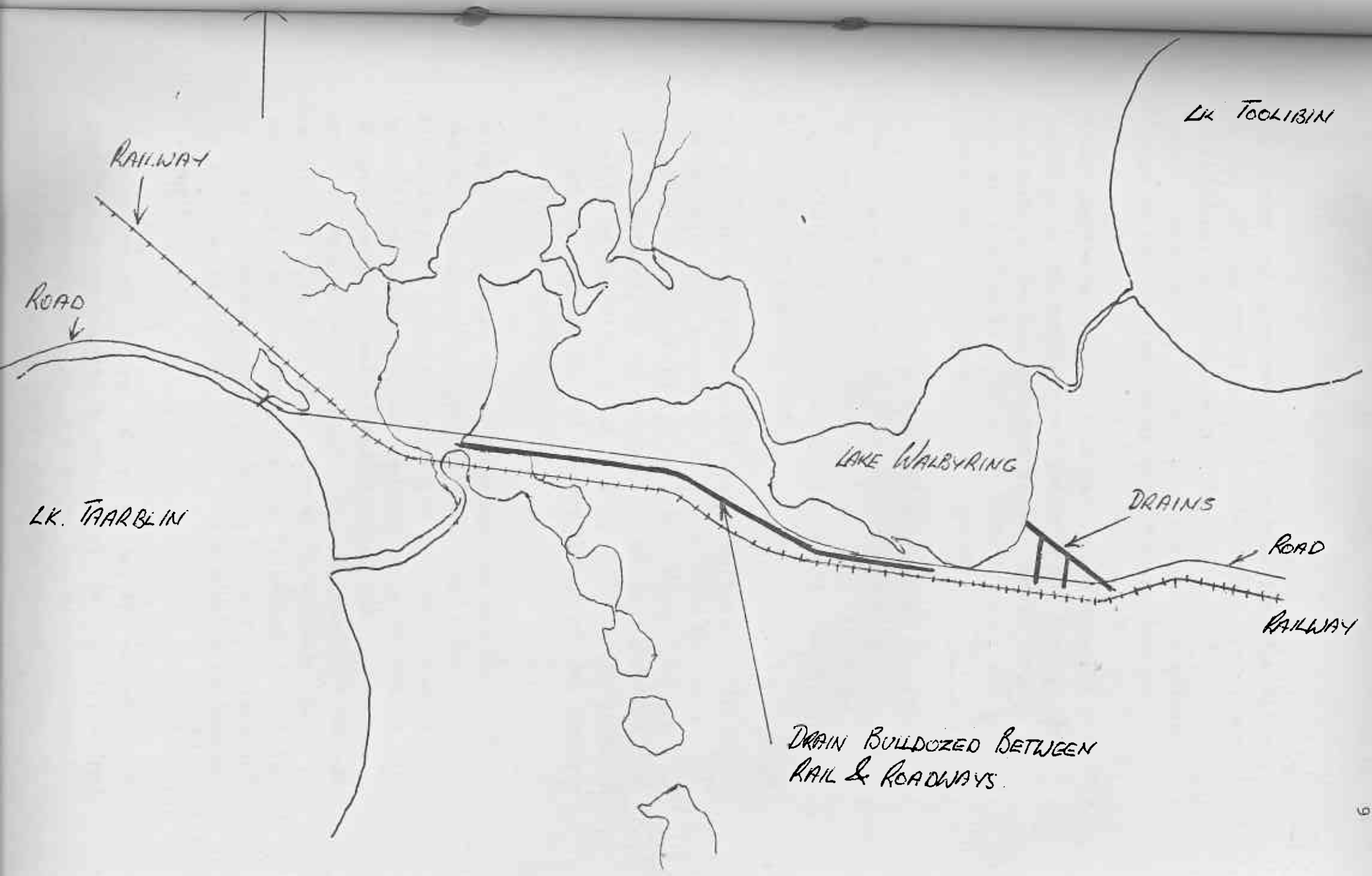
DRAINAGE SYSTEM

The Narrogin-Toolibin rail and roadways are routed parallel and in places through areas of this section of the lake system. Therefore it has been necessary to increase the drainage capacity from these areas to avoid flooding and consequential damage to the embankments.

A system of one main and two secondary drains enter Lake Walbyring in the South-East corner. Another single channel,

the width of a bulldozer blade, runs between the roadway and the railway from the Eastern end of the system to the stream entering Lake Taarblin.

The former drains were excavated prior to 1962 and appear to be regularly cleared of rejuvenating vegetation. The other channel was dug more recently, but prior to 1969. Neither of these man-made drainage systems appear to have any adverse effect on the natural watercourse.


LK TOOLIBIN
RAILWAY
ROAD
LAKE WALBYRING
LK. TAARBLIN
DRAINS
ROAD
RAILWAY
DRAIN BULLDOZED BETWEEN RAIL & ROADWAYS

LAKE TAARBLIN

The status and assessment of Lake Taarblin is similar to that of Lake Toolibin. The water level has receded considerably below the maximum depth attained last winter. Practically the whole of the lake is covered though it is very shallow in the Northern section.

Water samples were taken from the stream entering Lake Taarblin at the Northern end and from the area of the boat ramp on the Southern shoreline. These samples are labelled Taarblin "A" & "B" respectively; the results of the analyses are on page 13.

During an inspection of the outlet creek it was found that an earthen dam had been constructed on the section of creek between road 3383 and the lake. It seems that this would place the dam within the boundary of Lake Taarblin Reserve, 20962.

The dam has been constructed with a bulldozer, forming the dam with soil pushed up from the creek bed to a height of approximately 1.5 metres (5 ft.). The dam will effectively raise the previous maximum attainable level by an estimated 76 cm (2'6"). This is the difference between the top of the dam and the bottom of the concrete pipes passing under the road.

Telephone enquiries with a spokesman for the Shire of Narrogin revealed that authority had been given to the Field and Game Association for the project. However, approval was given only on condition that Government departments be advised of the proposal and that the proposal be acceptable to all. The departments referred to were the West Australian Government Railways, Main Roads Dept., and the Department of Fisheries and Wildlife. In addition to the conditions stated, the Shire reserves the right to remove the dam if at any time it is deemed necessary.

To determine the effects of such a dam, the expertise of qualified persons would be necessary. Personally, I feel that if water retention is found to be practical then a control gate would be a more desirable system. The

advantage of a control gate is that there would be a degree of control over silt, salinity and flood waters.

MANAGEMENT

Waterfowl have been subjected to increasing pressures throughout the whole of the South-West Land Division. As the pressures increase so too does the need to impose restrictions for the protection of the species. To keep the introduction of restrictions to a minimum, the practical and desirable solution is to protect the habitat of the Waterfowl. This can only be achieved with proper management of Wetland areas.

Foremost of the areas requiring consideration in regard to management is the Toolibin System. Priority is due for this area because of it being a favourable habitat, situated in a low rainfall district, subject to drought conditions and consequently vulnerable to fire and other hazards.

RESERVES

The reserves listed have been shaded on the attached litho., for easy reference, i.e. right hand diagonals indicate wetlands, left hand for dry land. They are listed as they appear on the litho., commencing from the most Northerly reserve.

All are for the 'purpose' of "Conservation of Flora and Fauna"and are vested with the W.A.W.L.A.

LIST OF RESERVES

Reserve No.	Name	Area (ac.	ha)	Status
15266	Dingerlin Well	154	62	-
27286	-	848	343	Game Res.
9617	Dulbining Lk.	480	194	" "
24556	Toolibin Lk.	585	236	Sanctuary
14398	Walbyring Lk.	292	118	Game Res.
9550	Taarblin Lk (Nth)	1565	633	" "
20962	" " (Sth)	869	357	" "
9629	Ibis Lk.	50	20	" "
9628	Billy Lk.	90	36	" "
10631	Taarblin	420	170	" "
9551	Bokan	90	36	" "
17339	-	130	53	" "
26785	Nomans Lk.	437	176	" "
9552*	Lukin Lk.	95	38	" "

* An extention of Nomans Lake - not shown on litho.

GOVERNMENT CHEMICAL LABORATORIES
30 Plain St., Perth, Western Australia, 6000. Tel. 25 5544

Technical Officer
Waterfowl Research
Department of Fisheries and Wildlife
Mullaloo Drive
WANNEROO W.A. 6065

Address all correspondence to
The Director,
Government Chemical Laboratories.

7 November 1975. CC.

OUR REF:

YOUR REF:

ENQUIRIES TO:

MATERIAL: Four samples of water, as below.

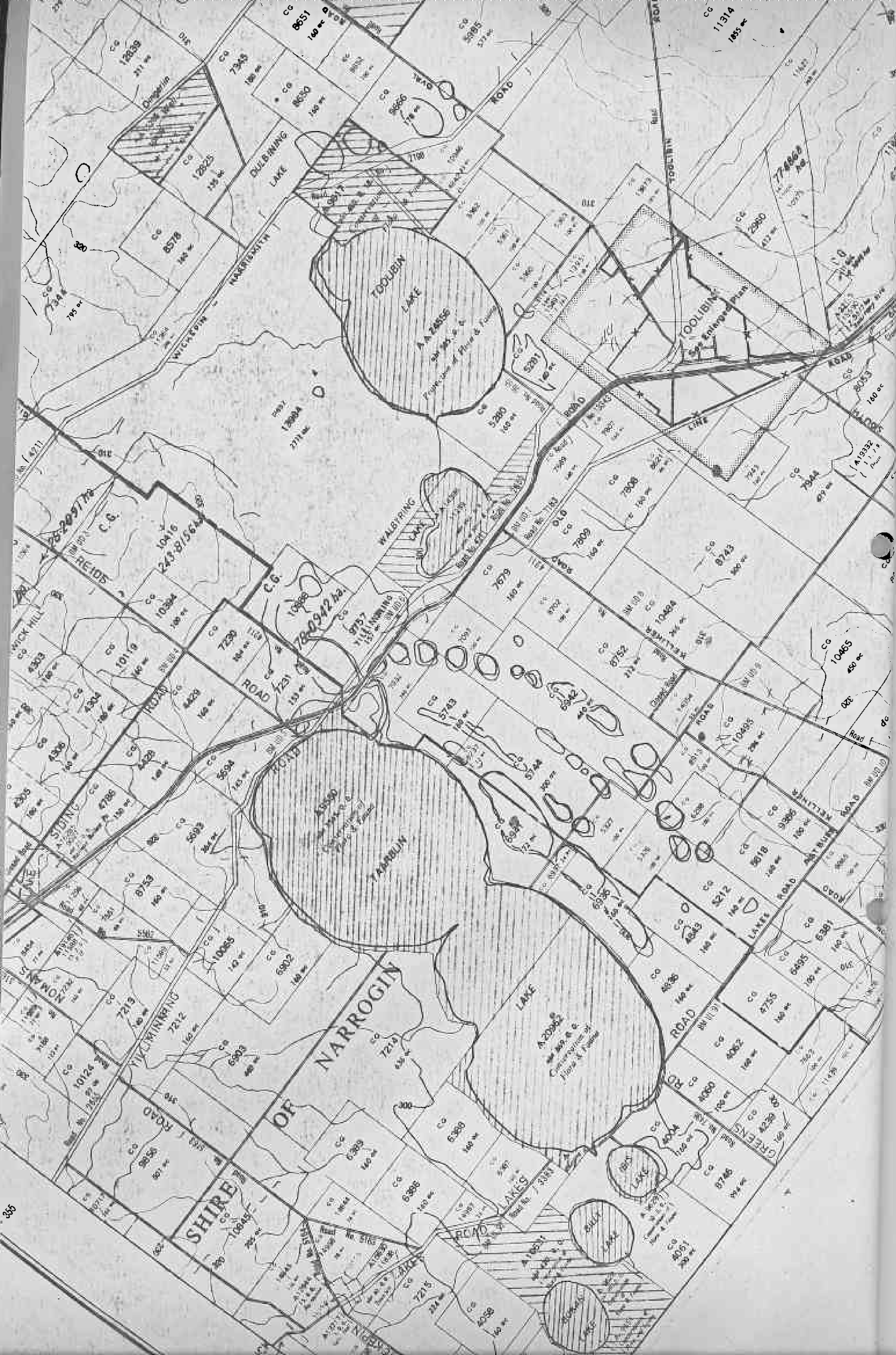
LAB. No. 22298-301/75.

FROM WHOM RECEIVED AND DATE: Department of Fisheries and Wildlife on 31/10/75.

RESULT OF EXAMINATION:

	1	2	3	4
Sample	Taarblin "A" 30/10/75	Taarblin "B" 30/10/75	Toolibin "A" 29/10/75	Toolibin "B" 29/10/75
Lab.No.	22298	22299	22300	22301
Reaction	faintly alkaline	weakly alkaline	faintly alkaline	faintly alkaline
pH	8.7	9.5	7.9	7.8
Appearance	- - - - - clear with slight brown deposit - - - - -			
Colour	- - very pale brown - -		- - - colourless - - -	
Odour	- - - - - - - - - - - - - nil - - - - - - - - - - - - -			
	milligrams per litre			
Total soluble salts (by evaporation)	11000	9460	2700	3750
Sodium chloride, NaCl (calc. from chloride)	10800	9200	2560	3540

PLATELL
CHIEF
WATER DIVISION.



TOOLIBIN LAKE
A 24556
Protection of Flora & Fauna
DULBINING LAKE
WALBYRING LAKE
TAARBLIN
LAKE
A 29962
Conservation of Flora & Fauna
SHIRE OF NARROGIN
LAKES ROAD
GREENS ROAD
OLD ROAD
TOOLIBIN
REIDS
WICKEPIN - HARRISMITH
SIDING
78·2091 ha.
248·8156 ha.
78·0942 ha.
77·4868 ha.
CG 11314 1855 ac
CG 8651 160 ac
CG 10465 450 ac
CG 8578 160 ac
CG 7346 795 ac
CG 5280 160 ac
CG 7806 160 ac
CG 7809 160 ac
CG 7679 160 ac
CG 8743 300 ac
CG 7944 479 ac
CG 8053 160 ac
CG 2960
CG 10416
CG 10394
CG 10119
CG 7230
CG 8752
CG 10484
CG 10495
CG 5743
CG 5744
CG 6942
CG 5694
CG 5693
CG 8753
CG 10065
CG 6902
CG 6903
CG 7212
CG 7213
CG 10124
CG 9856
CG 6389
CG 6388
CG 6386
CG 4755
CG 4062
CG 4060
CG 4004
CG 4239
CG 8746
CG 4051
CG 4058
CG 7215
CG 6381
CG 6495
CG 5212
CG 5618
CG 4843
CG 4836
CG 4786
CG 4303
CG 4304
CG 4306
CG 7210
CG 9666
CG 8650
CG 7345
CG 12639
CG 12625
CG 5985
A 19332
355