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DEPARTMENT OF THE INTERIOR

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Mr. D.W. Shoobridge,
Director,
City Parks Administration

Ginninderra Creek Aquatic Plant Survey: Mr. C. Nazer

Forwarded for your information is Mr. Nazer's report on aquatic weeds found growing in Ginninderra Creek.

This report should prove a useful guide as to the weeds we may expect to see in Belconnen Lake when it is filled.

It has been put together in a sensible way and is the result of a careful and conscientious piece of work on the part of Mr. Nazer.

It is extremely doubtful if chemical eradication of any aquatic species now growing in the creek would be worthwhile.

R.H. Powell

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Arboriculturist,
Research & Nursery

Asst. Secretary
City Services Branch

Scott & Furphy are preparing an impact statement for NCDC on effect of urban development proposals on Ginninderra Creek. They have asked for a copy of this report by Mr Nazer. I see no reason why this information should not be given to them & recommend accordingly

D Shoobridge
6/8/73

P/A

SURVEY OF AQUATIC PLANTS OF GINNINDERRA CREEK IN RELATION TO THEIR POTENTIAL AS AQUATIC WEEDS IN LAKE GINNINDERRA

An embankment is to be built across Ginninderra Creek to form a V - shaped artificial lake adjacent to the Belconnen Town Centre. This will be called Lake Ginninderra.

Using experience gained from Lake Burley Griffin the new lake will be colonized by aquatic plants, some of which can be considered weeds particularly in the shallow regions.

The initial colonizers will undoubtedly be hydrophytes already situated in the Ginninderra Creek system above the dam embankment. With Lake Burley Griffin situated only a few miles distant however, propagules of other species not found in the Ginninderra Creek system may be transported to the new lake by water birds after it begins to fill about October 1973.

To ascertain possible initial colonizers a survey of the aquatic plants in the Ginninderra Creek headwaters was carried out during June and July 1972. This survey was also to determine the amounts and distribution of these aquatic plants, and the practicability of eradication of those considered to be potential weeds.

It was not practicable to prevent entry of aquatic weeds into Lake Burley Griffin as they were present in large amounts in all streams and rivers which flow into the area both in the A.C.T. and N.S.W.

Some aquatic weed species, e.g. Potamogeton crispus, die back during winter months and form dormant buds (turions) in the bottom mud, and these produce new plants in spring. Another short survey of the area in spring will be necessary to check these species.

THE GINNINDERRA CREEK HEADWATER SYSTEM

From the north-eastern end of the proposed lake (near the Belconnen Naval Station) the Ginninderra Creek extends in a north-easterly direction for a distance of approximately seven miles. Several main tributaries run into the main creek from approximately three miles upstream from the north-eastern end of the proposed lake, and these in turn are fed by small streamlets from the surrounding foothills. (See map).

At the time of the survey the upper sections of the tributaries were mainly dry or at most had only an occasional small shallow pool. The lower areas and the main creek itself consisted of a series of connected pools of differing sizes, some up to 100 yards long and 8 yards wide, and up to 5 feet in depth.

TYPES OF AQUATIC PLANTS

Aquatic plants may be classified into a number of groups based on growth habit.

a) Free floating -- non anchored
b) Floating anchored
c) Submerged anchored
d) Emergent
e) Algae

RESULTS

a) Free floating plants: these are able to obtain nutrients directly from the water and do not need to be rooted in soil. No plants of this type were observed.

b) Floating anchored: these grow rooted in the bottom mud, have a stem structure growing in the water, and leaves floating above. Commonly the floating leaves are of a different form to those on the submerged portions.

Plants observed were:

Potamogeton tricarinatus: Extensively distributed in both shallow and deeper pools, ranging from small to quite large patches. It was also found in several farm ponds close to the creek. (See map).

Ottelia ovalifolia: Distribution was very limited. It was confined to large patches in several connecting pools in an eastern arm of the creek. (See map).

c) Submerged anchored: Those which grow rooted in the bottom mud and extend through the water towards the surface.

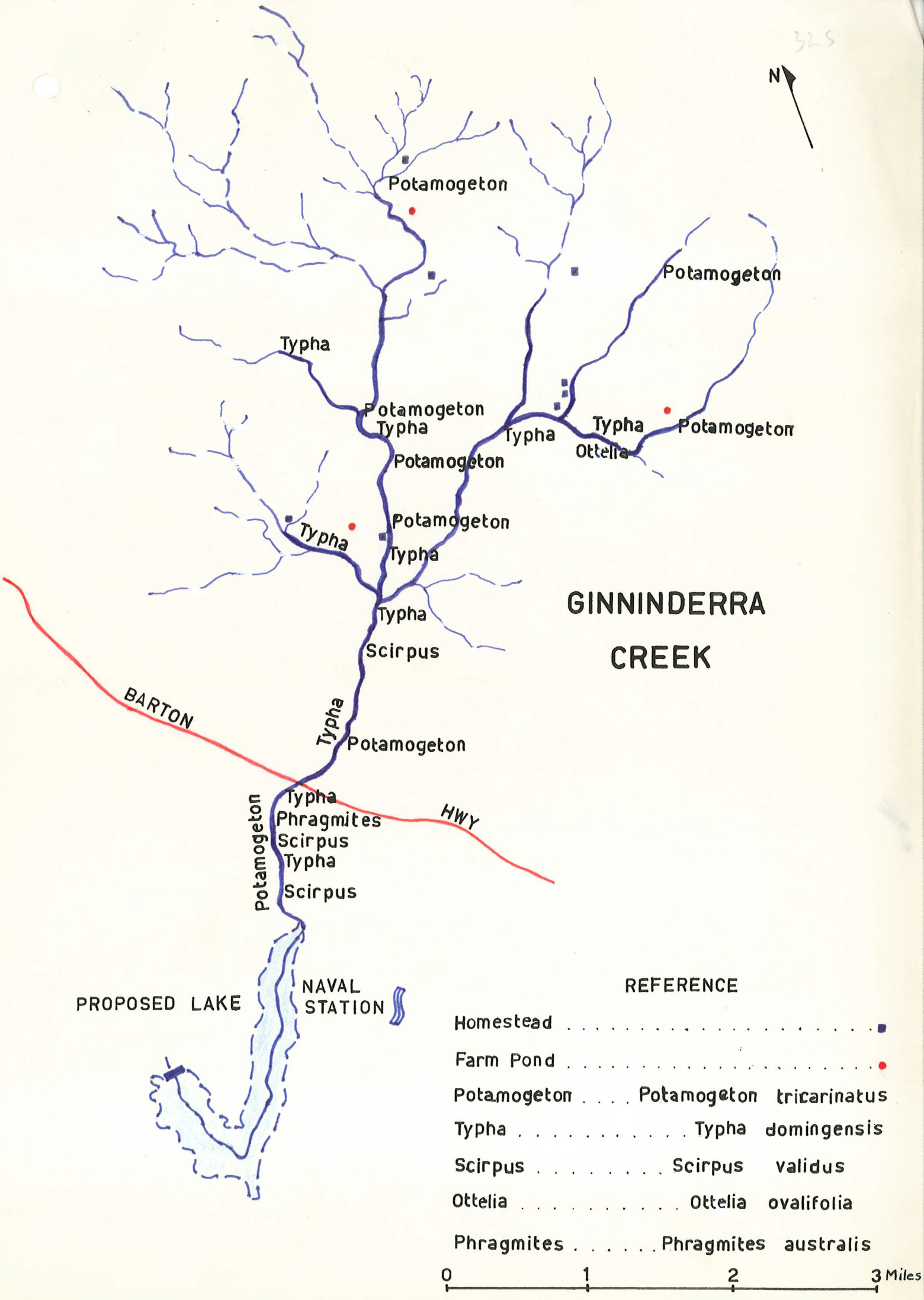
Plant observed was:

Myriophyllum propinquum: Distribution was very extensive, the plant occurring in most pools regardless of depth, ranging from small to quite large patches, and therefore is not included in the map.

d) Emergent aquatics: Two types are considered in this category.
(i) These grow rooted in bottom mud but with the majority of above ground parts above the water.
(ii) These require a high water table for optimum growth, but not necessarily water above the soil surface. Many emergent species can fall into both categories.

Plants observed were:

Typha domingensis: Distribution was extensive ranging from small clumps to very large ones up to approximately 40 square yards. (See map).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GINNINDERRA
CREEK
BARTON
HWY
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Scirpus
Typha
Scirpus
Potamogeton
PROPOSED LAKE
NAVAL
STATION
REFERENCE
Homestead
Farm Pond
Potamogeton . . . Potamogeton tricarinatus
Typha . . . . . Typha domingensis
Scirpus . . . . . Scirpus validus
Ottelia . . . . . Ottelia ovalifolia
Phragmites . . . . . Phragmites australis
0
1
2
3 Miles

Phragmites australis: Distribution was limited to one large clump. (See map).

Juncus spp.: Extensively distributed along the creek margins in almost all areas.

Plants of the Family Cyperaceae:

Scirpus validus: Distribution limited to some large clumps in several areas. (See map).

Many other species occur along the banks and in swampy regions in the area usually in considerable numbers. These were not considered separately because of the numbers involved, the extreme difficulty in identifying them, and their lack of potential as future weeds.

Lythrum hyssopifolium and Lythrum salicaria: Distribution limited to individual plants in some swampy areas.

Rananculus papulentis: Distribution limited to small patches in some swampy areas.

Allisma plantago-aquatica: Distribution was limited to individual plants in most swampy areas.

Rorippa sp.: Distribution limited to small patches in a few shallow, flowing areas of the creek.

e) Algae: Considerable amounts of filamentous algae and the stoneworts, (Chara sp. and Nitella sp.) were present in the creek.

AQUATIC WEED POTENTIAL

The following is a list of species which may colonize the shoreline and shallow regions of the Belconnen lake and could constitute a weed problem needing control.

Floating Anchored:

Potamogeton tricarinatus may develop as a problem in shallow water (Boden & Gray 1965). Observations in Lake Burley Griffin since 1965 have shown that this species is a slow spreader and that it will grow in depths up to 10 feet. It appears that this species cannot compete with the faster growing submerged species, but it could prove a problem initially.

Ottelia ovalifolia has unknown potential and appears not to grow in depths greater than 4 feet.

Submerged Anchored:

Myriophyllum propinquum: Boden and Gray (1965) stated that Myriophyllums have a high potential for development as a weed problem in shallow water in Lake Burley Griffin. Although they are present in Lake Burley Griffin they have only occurred in very shallow water and are not considered a weed problem. A species very similar to M. propinquum, namely M. verrucosum, however, has heavily infested a clear water experimental pond at Yarralumla, growing in depths up to 10 feet. From this it appears that light is a main limiting factor with these species, and that the water turbidity in the new lake will determine the weed potential of this species.

Emergent Aquatics:

The taller plants in this group represent a problem mainly in preventing access to the shoreline. Most of the smaller growing species are potentially valuable for shoreline stabilization and are unlikely to become major pests.

Typha domingensis: Boden and Gray (1965) considered this plant to have a high potential as a weed in margins and up to 4 feet in depth. This species has proved a rampant weed in Lake Burley Griffin forming dense stands and should prove a problem in the Belconnen lake.

Phragmites australis: Boden and Gray (1965) considered this plant to have a high potential as a weed in margins and up to 4 feet in depth. This species has not proved as rampant as Typha in Lake Burley Griffin and should not be as big a problem.

Scirpus validus is considered here because it is a tall growing species and has formed dense stands in the margins of Lake Burley Griffin. Because of this evidence it is considered a weed of some potential.

Algae:

Filamentous algae has proved a nuisance in Lake Burley Griffin as it needs to be cleaned up regularly from the shoreline. It would be impossible to eradicate completely in a large lake.

ERADICATION OF POTENTIAL AQUATIC WEEDS

The aquatic species described as having weed potential occur rather extensively. Whilst prevention is better than cure, it is only by the use of very potent, highly residual weedicides, that eradication could be achieved.

Even if the use of these chemicals in large amounts could be permitted, the task of applying them to such a large number of weed patches in an area of this size would be a mammoth one.

Chemical residues in water used for stock watering, and flowing ultimately into the Murrumbidgee River, would be a situation best avoided.

Eradication prior to the filling of the lake may provide an initial period free from weed infestation problems, however it may be only a short period of time before aquatic weeds were introduced from Lake Burley Griffin

by birds or other sources. The most serious weed pests in Lake Burley Griffin, Potamogeton crispus and Vallesneria spiralis are able to spread rapidly by means of vegetative pieces, and once in the Belconnen lake would soon present a serious weed problem.

These points determine, I believe, the impracticability of any eradication programme.

REFERENCES:

Boden, R.W. and Gray, J.E. (1965) "The Development and Control of Aquatic Plant Growth in Lake Burley Griffin". Lakes Technical Report No. 1 --- Parks and Gardens Branch

C. J. Nazer

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