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NEW ZEALAND FRESHWATER FISHERIES MISCELLANEOUS REPORT NO. 7

RISK ASSESSMENT REPORT ON THE PROPOSED  
STOCKING OF GRASS CARP INTO NZ STEEL WATER  
INTAKE LAGOON AT WAIKATO NORTH HEADS MINE

by

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*Servicing freshwater fisheries and aquaculture*

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## NEW ZEALAND FRESHWATER FISHERIES MISCELLANEOUS REPORTS

This report is one of a series initiated in January 1989, and issued by the Freshwater Fisheries Centre, MAF Fisheries. The series was established to ensure that reports prepared for clients, tribunal hearings, internal use, etc., are collected together and available to future users. They are for limited circulation, and some may be confidential.

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RISK ASSESSMENT REPORT ON THE PROPOSED STOCKING OF GRASS CARP  
INTO NZ STEEL WATER INTAKE LAGOON AT WAIKATO NORTH HEADS MINE

Summary

Triploid grass carp will provide a feasible method of aquatic plant management in the lagoon. The aim of plant management is to achieve between 60 and 90% removal of the biomass of plants present in summer. In the first year, 100 fish greater than 300 mm should be stocked. A further 100 fish may be needed if insufficient control is achieved by the end of the first growing season.

NZ Steel should undertake regular patrols to prevent unauthorised removal of the carp. The intake to the lagoon should be screened with a minimum of 3 cm mesh or screen permanently fixed to the intake pipes.

The lagoon has no outstanding public, recreational, wildlife or amenity values which might be affected by grass carp. There are no known sites of rare or endangered aquatic plants within 5 km of the lagoon.

## 1. Location.

NZ Steel has applied for a permit to put triploid grass carp in the storage lagoon at the Waikato North Head Mine Site. The lagoon is at NSMS 260, 642268 (Map 1), adjacent to the Waikato River.

Alan Moore (DOC), Ben Wilson (Auckland Acclimatisation Society) and Nigel McCarter (MAFFish) visited the site on 12 April 1989.

## 2. Aim of Plant Management

At high tide, water flows directly from the Waikato River through a whitebait screen, two 36 inch internal diameter culvert pipes, under a 10 metre wide bank, into the lagoon. Water is then pumped from the lagoon to the water recycling and storage ponds. The water is used to separate iron sand, and to pump slurry to Glenbrook. The water right (WVA) restricts the total amount of water taken to 40,000 cubic metres a day. Excessive plant growth blocks the pumps, causing mechanical breakdowns and expensive losses of time.

Three stainless steel mesh screens (Map 2) protect the pumps. The screens are not effective and need to be cleaned frequently.

The aim of plant management is to reduce the plant biomass by at least 90%.

### 3. Description of pond and water system

Total area = 0.75 ha

Less than 4 metres deep.

Permanent depth around the outside of the lagoon of 1 metre.

The intake to the pond is screened with fine (<3 mm) fibreglass mesh. Water flows from the river through two concrete pipes, which protrude into the lagoon. The pipes are exposed at low water level and can be easily screened. The lagoon was constructed in 1968 and has not been flooded since that date.

### 4. Biotic Features.

The lagoon was cleaned recently, but the mine manager (Mr Terry Flynn) has photographs which illustrate the extent of the problem.

The only species identified was Egeria. The banks of the pond are steep, and there is no cover for water fowl. Mr Flynn reports a population of eels (self-introduced?) and mullet (deliberately introduced) in the mine ponds. Rudd and goldfish may also be present. The lagoon itself has a low wildlife value.

The surrounding area is attractively planted, and we saw bittern, shag, mallard, and pukeko. Other wildfowl species use the area.

## 5. Security

The entire site is fenced and regularly patrolled. Human interference with stock is unlikely. If the whitebait screens on the intake were damaged, it is conceivable that large fish could get to the Waikato river. This can be prevented by screening the culverts where these enter the lagoon. Provided the screens are well made, the probability of the fish escaping to the Waikato River is low. There is a small population of grass carp already present in the Waikato.

## 6. Other impacts on public interest

The lagoon has minimal wildlife value and no recreational or other public interest. Provided there is no catastrophic failure of the bank (eg earthquake, major flood) It is unlikely that the fish will escape. In the event of an escape, the presence of 100 triploid grass carp in the Waikato River will have little or no ecological impact on any known biological resource in the area.

## 7. Stocking rate

Given the high level of control needed, about 100 fish should be introduced to the pond. The stocking rate should be reviewed the summer following initial stocking. A further 100 fish may be needed every three to five years to maintain stocking levels. The fish should be at least 300 mm to reduce predation by shags.

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Mauro Gap  
28

26

24

22

20

NZMS 260  
R. 13





7000 E

7450 E

Strg 40° 00' 00"

8000 E

dredged inlet channel

Stream

WOODEN POST BARRIER

MESH SCREENS AROUND INTAKE PIPES

4503 N

lagoon

Ed

3x S.S. MESH SCREENS

PUMP INTAKES SCREENED

high lift pump station

pumping main

7000 E

8000 E

N.Z. STEEL MINING LTD  
RIVER WATER INTAKE

stical lagoon

