

# Log Barging

# Proposal

to get export log trucks off  
Tahunanui Drive & Rocks Roads

Nelsust April 2011



Kenō! Pōhī! Pōhī!

# Log Barging Proposal

A study into the possibility of reducing heavy traffic through Tahunanui and around Rocks Rd by barging logs directly to ships in port.

**Nelsust Inc. April 2011**

## Introduction

This Proposal is to ask NCC, TDC and Port Nelson to commission a fuller study into barging logs to ships at Port Nelson from Rabbit Island. Trucks carrying export logs from the south of Nelson to the port would be diverted to Rabbit island.

Our aim is to reduce heavy traffic around Rocks Road, through Tahunanui and and also Richmond, by getting log trucks off these roads. By this means we can take 35,000 log trucks per annum off these roads. Whilst we are not pretending this is all or even most of the heavy traffic on these roads it is 35,000 of the most intimidating trucks.

Unlike other means of getting trucks off these roads, this proposal could have a zero cost. It involves releasing most of the 15% of Port Nelson land currently allocated to log storage, freeing it up for more lucrative uses.

## Proposal

The proposal is for logs from the arriving log trucks to be loaded directly onto barges attached to a floating wharf. No cranes would be required, The large log loaders currently used at the port would grab a load of logs, drive down a ramp down from the shore to a floating wharf (another barge) to which two barges are tied up (end on) to each side. (see attached images) The only elements that will be in the estuary bed itself would be some 20 timber piles. The barges and floating wharf would be free to float up and down with the tides, but be held in place from sideways movement by the piles. No fixed wharf is envisioned. This floating wharf arrangement is similar to how "The Straitsman" was loaded at Port Nelson until about 2000.

The barges would moved at high tide with dedicated tugs with a maximum 2 metre draft. They would require not much more than the equivalent of twin 300 hp engines and could be converted fishing boats. The barges we propose using are manoeuvred by the tugs from a wedge-shaped stern key, a system called Articulated Tug Barges (see appendix for further information). This system of tug/barges not only allows very good control of the barges by the tug, but allows very rapid attaching and releasing of barges.

The logs would be barged to the log ships in Port Nelson, ready for loading when the ships are docked. Double handling that is currently done on valuable port land would be reduced: a lot of the logs could be loaded directly from log trucks onto barges at Rabbit Island, with no further handling until the log ships' cranes lift them on board from the seaward side, when they are tied up at port. Only once the barges are full and the log ship is yet to come in would logs be stored on the ground at Rabbit Island. Please find attached pictures of the overall route and detail at Rabbit Island and at Port Nelson.

We are anticipating using four 45 x 15m barges, some or all of which may be tied up at Rabbit Island Depot at any one time. Barge movement needs to be near a high tide to

easily manoeuvre to and from the Rabbit island site and around Blind Channel (alongside Tahuna Beach). The site at Rabbit Island has 4m depth 25m out from shore at the lowest high tide. The barges would be moved to and from Rabbit Island at high tide slack periods, 2 hours either side of high tide, day or night when the log ships come in.

In terms of the environmental impact, no dredging is required or proposed: the effect on the inter-tidal zone and associated bird life appears to be minimal and certainly less than the existing water ski boats. The effect on the view from Monaco would also be minimal as the distance is significant, at least 2.30 km. There are two low lying islands between Monaco and the potential Rabbit Island barging site. It seems the floating wharf and support structures would be against the backdrop of the taller pine tree plantations on Rabbit Island, so would not create a new skyline profile.

Rabbit Island is a significant recreational area, but in fact a lot of it is used for commercial forestry and sewerage biosolids dumping. The proposed marshalling area and floating wharf site borders what used to be a water ski area, but this is little used now. The road we propose to use goes past the sewerage spreading depot and appears to be of little recreational value.

We propose to (initially at least) to focus on the transshipment of logs, which makes the great majority of export heavy traffic along the coast to Port Nelson. In future the range of products and materials the barges could transport could be extended. This might need cranes, warehouses, and similar structures for marshalling the materials for export, and import. They could be largely screened by mature trees on the Eastern side towards Nelson Airport and Monaco Peninsula.

The facility may need to include and upgrade of existing Rabbit Island forestry roads and a fenced, stabilised marshalling yard near the wharf. Except for the support buildings and the perimeter fencing, most of the capital cost is in equipment. If there were a failure in this technology, or a severe reduction in exports, or some other reason to liquidate, there is very little sunk cost that could not be sold off - the barges, floating wharf, ramp and other equipment could easily be sold.

## **Conclusion**

We have asked Cawthron for a rough estimate of the costs of an Environmental Impact Statement and an Economic Feasibility Study, for this project. There are many variables, but the approximate cost for these two studies would be around \$100,000.- Barges could be working relatively quickly, and relatively economically, improving our waterfront without more urban roading. Barging is a long term solution, which reduces urban congestion. For less than a 1/4 of the cost of the Southern Link, log barging could get 35,000 of the most intimidating trucks off Tahunanui and Rocks Roads without shifting them over the hill and through another urban community.

END.

attachments:

Overall Map showing whole route (colour A3)

Aerial Image showing barges at Log Ship in Port (colour A3)

Aerial Image showing barges being loaded at Moturoa - Rabbit Island (colour A3)

## **APPENDIX:**

### **People and Organisations Consulted**

(that is not to say any or all of them wholeheartedly support the proposal)

Navel Architect

Ship Inspector

Tug Master

Nelson Harbour Master

Port Nelson Chief Commercial Officer

Port Nelson Infrastructure Officer

NCC environmental officer

TDC environmental officer

Ornithologist

Local Iwi (feedback not available at time of printing)

### **Articulated Tug - Barges**

**DESCRIPTION-** A system of integrating tugs with barges so they are not rigidly connected, but free to swivel (articulate) about the connection axis. The barges have a notch at the stern (or structures added to the stern) to accept the bow of the tug. The tug is attached to the barge by hydraulic rams from the sides of the bow into the sides of the notch of the barge. The tug and the barge can thus pitch independently about the articulated joint. One system that appears promising is where the tug has a ram either side with a spiky "helmet" on the ends. These connect to a rack of spikes on the barge.

**ADVANTAGES -** Ideal for short haul, confined channel runs like this, no dealing with heavy hauling hawsers, no (or few) crew required, very fast turn around times with very quick and easy connection and disconnection, superb manoeuvrability and control of the barge. Pilot certified skippers would be required for this length of vessel, but this is just a matter of upskilling and certifying the skipper(s).

### **Barge Costs**

See following spreadsheet.

Barges could be made here in Nelson but appear to be very much cheaper in Singapore and Japan. They are available there for around NZ\$750,000, We have assuming quarter of a million to get them here by deck cargo, to fit out each with articulated barge ends, log stakes etc

### **Channels and Depths**

We have measured the depth of water at the proposed site at Rabbit Island and there is 4m depth at the lowest high tide (neap tide) 25m off shore. We are working on 2m max draft for tug and loaded barges.

The channel was again checked at a lowest low tide (spring low tide) and there appears to be no significant obstacles to high tide manoeuvrability. There may be issues at neap tides with barges or parts of barges sitting on the bottom at an angle.

### **How might this happen - Where would Funding Come From?**

Ballpark Capital costs are shown in the spreadsheet below, but in summary: the capital costs should be less than \$10m. Most of that is in barges, tug, floating wharf and ramp. Unlike roading costs, all of these are not sunk costs, but readily saleable and moved elsewhere should the need arise. Furthermore it could be argued that there is a \$11.2m benefit to the port company freeing up prime port land compared with a few hectares of

forestry land that are valued at less than \$0.2m. (govt. valuations)

### **Why would trucks take logs to the port via the barges?**

NCC & TDC own the port, they could require that all logs from the South of the city come via the barges. If there is no nett cost to the Port operations and no nett cost to trucking companies, why wouldn't they?

### **Where do we get our figures from?**

#### **NUMBER OF BARGES REQUIRED:**

A log ship takes of the order of 30 k tonnes of logs for a full load. Normally less than 1/2 the load is from any one port so this =15kt logs. We have made the assumption that 3/4 of the logs exported from the port come from the South of the city, so this = 11kt per ship of logs to be barged. Each one of our 45x15m barges would take of the order of 1000 tonnes of logs. The turn around time for log ships needs to be less than 3 days, so working on 2 days turn around and only being able to move loaded barges at high tides, that gives us 2 days x 2 high tides/day = 4 tides to move barges. 11 barges carrying 1kt each are required so we need 11 barge loads / 4 tides = 2.8 barges - We have budgeted for 4 barges to give some overcapacity margin.

#### **TRUCKS NUMBERS of Rocks Rd & Tahuna drive:**

Log exports in 2008-9 were 726,127 tonnes, if we assume 2/3 of these are from the South and allowing for return trips with an empty truck, that gives us 726,127 tonnes / 29 tonnes of logs per truck and trailer x 2/3 from the South x 2 to allow for the return trip, that gives us 33,385 trucks per annum.

If we assumed 3/4 of the logs came from the South that gives us 37,558 per annum

Heavy Vehicles presently account for 6% of the traffic around Rocks Rd. Over the last 10 years the numbers of these vehicles has increased even while the total vehicle numbers have stayed constant. There are presently 1200 Heavy Traffic Vehicles per day around Rocks Rd according to the Arterial Study, a lot will be lighter delivery trucks without trailers, but what proportion of them are log trucks that we can get off that road?

1200 Heavy Vehicles/day x 365 days/ year = 438,000 Heavy vehicles per annum. The log barges could take 33 to 38,000 of these trucks of these roads which = between 8 and 9 % (depending on assumptions of proportions of logs from the south rather than the North)

### **Barging other things:**

Although this proposal is just for logs we see there is some potential for it also to be used in the transfer of sawn timber and MDF to ships and perhaps backloading imported Urea. These initiatives could get a further 44,000 trucks off Nelson roads.

PTO for costing spreadsheet

<b>Capital Costs of Log Barging Proposal</b>					
Item - Costs in NZ\$000's	NZ\$ In Japan	Shipping to NZ & Modifying	Number required	Subtotal	Comments
Barges each	750	250	4	4,000	Dredgebrokers.com
Floating Wharf Barge	600	200	1	800	Dredgebrokers.com
Tug (converted fishing boat)	600	150	1	750	Dredgebrokers.com
		\$1000's Each	Number required		
Piles		5	20	100	estimated
Ramp		50	1	50	estimated
Shore ramp edge levelling		20	1	20	estimated
Roading		200	1	200	estimated
Roading		0	0	0	use roads as they are
Site Office, weighbridge		200	1	200	estimated
Front end loaders (reuse port ones)		0	2	0	
Value of Rabbit Island land not in forest		0	1	0	Assumed same as port land cost
Credit for Port Land freed up		0	1	0	Assumed same as rabbit island l
Contingency	20 %			1,224	
<b>Total Ballpark Capital Cost</b>				<b>7,344</b>	NZ\$000's
<b>Port Land Valuations</b>					
31 Graeme St	2.00 million		estimated		
30 Cargeek St	1.17 million		both lots		
10 Low St	3.85 million				
22 Rogers St	1.52 million				
45 Wildeman	2.70 million		both lots		
<b>Total</b>	<b>11.2 million</b>				
<b>Rabbit Island &amp; Rough Island</b>	<b>10.3 million</b>				
Percentage of this for proposal	0.52 %				
<b>Total</b>	<b>54 thousand</b>				

End of appendix (3 colour A3 images on following pages)



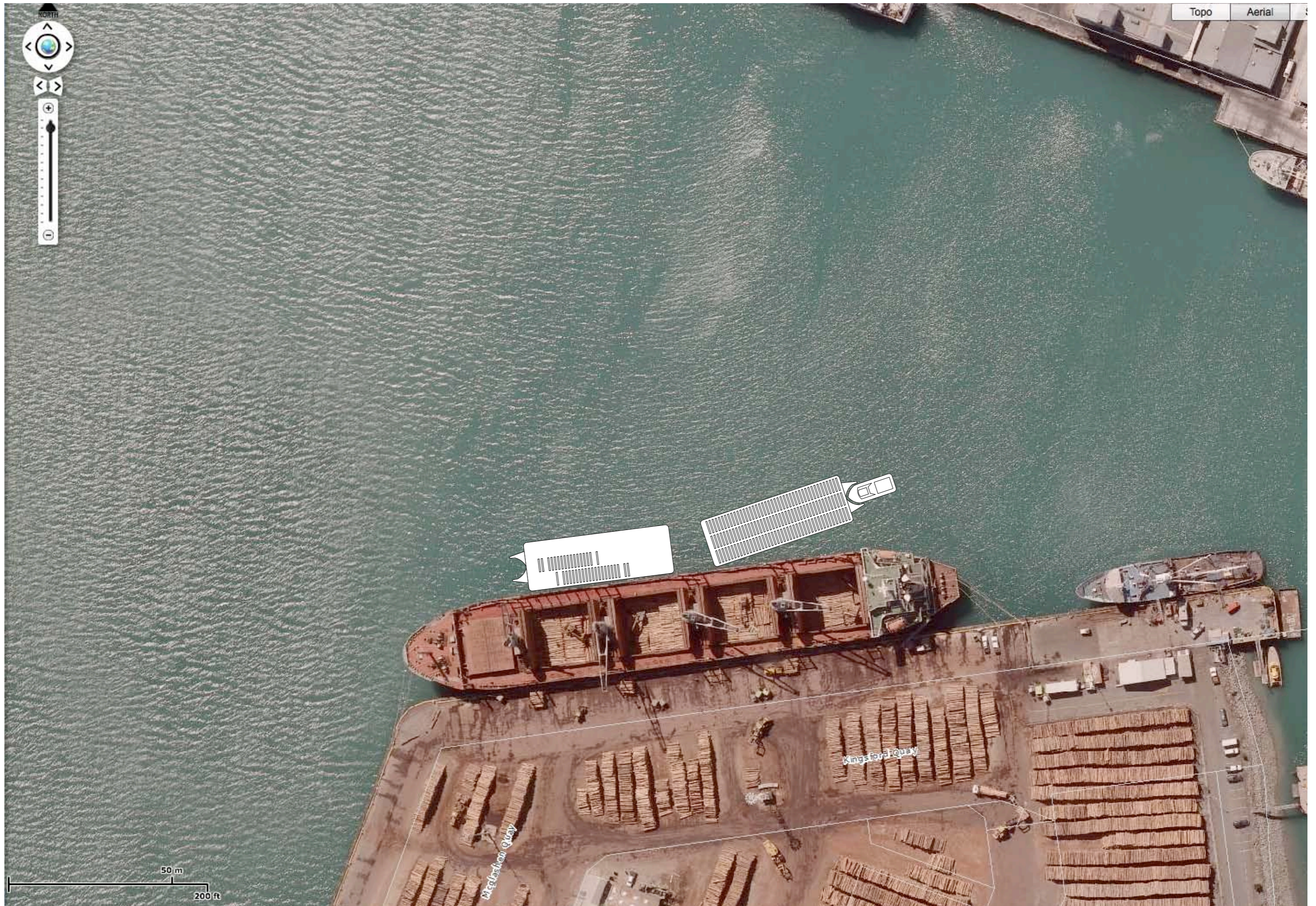
**Proposed Log Barging Route Moturoa - Rabbit Island to Port Nelson**

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Barge Loading area at South East end of Moturoa - Rabbit Island





**Barge being Manouvred alongside Logship in Port while another barge is being unloaded** Log Barging Proposal Nelsust April 2011 page 8 of 8