

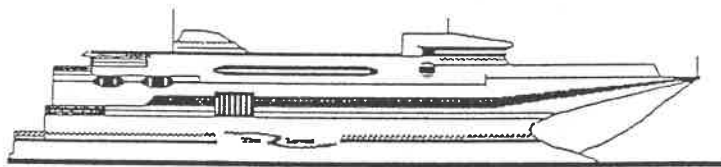
**MAKING WAVES
FAST FERRIES AT THE FRONTIER OF
INTERNATIONAL ENVIRONMENTAL LAW**

BY

**J STEPHEN KOS
RUSSELL McVEAGH McKENZIE BARTLEET & CO**

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of International
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***(Marlborough District Council
v New Zealand Rail Ltd
[1995] NZRMA 357)***

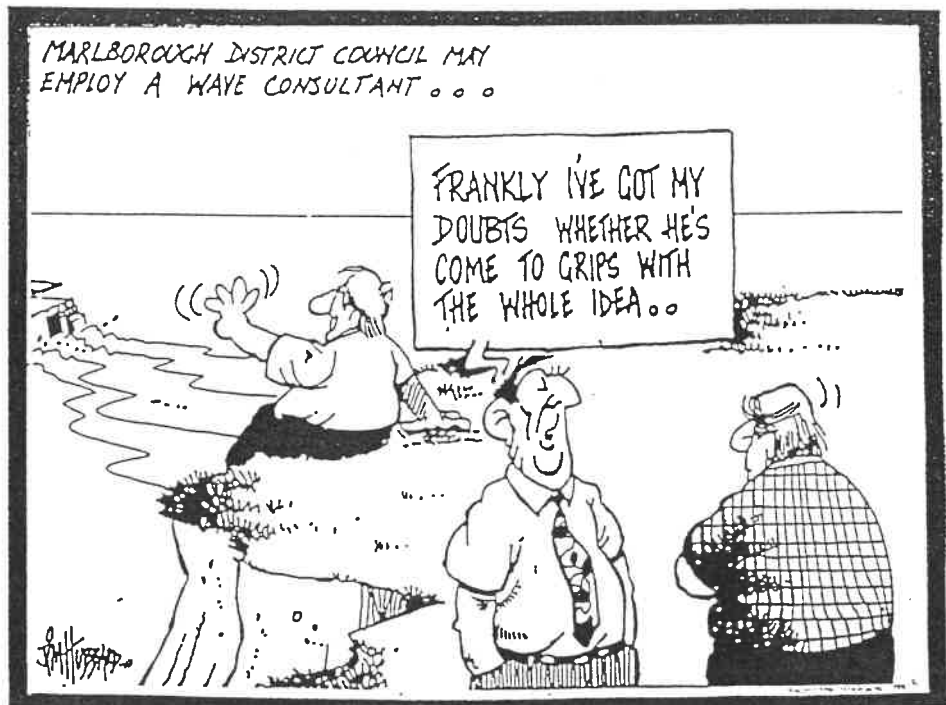
J STEPHEN KÓS

RUSSELL McVEAGH McKENZIE BARTLEET & CO

**BARRISTERS, SOLICITORS & NOTARIES PUBLIC
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1. INTRODUCTION

- 1.1 On 21 September 1994 New Zealand Rail Limited - now called Tranz Rail Limited ("**Tranz Rail**") - commenced its *Lynx Fast Ferry* service across Cook Strait between Wellington and Picton. Tranz Rail's vessel was the *Condor 10*, built by Incat in Tasmania. Shortly afterwards a competing fast ferry service also commenced: a company now in liquidation (for reasons which will soon be evident), Sea Shuttles Limited, ran the *Albayzin* on the same route.



- 1.2 Prior to the commencement of the fast ferry services in December 1994 neither operator had any appreciation that the vessels might cause adverse environmental effects. Each had applied for and obtained the requisite environmental consents to modify terminal facilities. The idea that the ordinary operation of the vessels might cause environmental damage to the coastline of the Marlborough Sounds was not adverted to.

- 1.3 A matter of days after these services commenced claims of damage to property (including boats), and danger to bathers, were raised. It was said that these arose from "huge waves", created by the two fast ferries.
- 1.4 After early concerns expressed on television by a local Department of Conservation field officer, a group of property owners in the Marlborough Sounds established an action group - Save the Sounds, Stop the Wash Inc ("**STS**"). While that body assumed an environmental protection mantle, its motives were always rooted in the protection of specific property interests. Opposition groups from the Marlborough region - keen to keep the fast ferry service - returned STS's fire and the case of the fast ferries became the cause celebre of the 1995 summer.
- 1.5 STS and the Department of Conservation then sought orders to have the fast ferries stopped, or slowed down. This address looks at the case, why STS and the Department failed, and the wider implications and consequences of the decision.

2. THE DECISION IN A NUTSHELL

- 2.1 New Zealand has a separate Court - the Environment Court - to hear cases relating to environmental issues. It was formerly called the Planning Tribunal. Most of its work concerns appeals from decisions of local authorities on the content of district and regional plans, or decisions by the Hearings Committees of those authorities on specific applications for resource consents. The Court also has authority to issue enforcement orders, ie injunctions, and it is that jurisdiction with which we are concerned here.
- 2.2 The Judge who heard the *Fast Ferry* case was Judge Treadwell. He was the longest- serving Environment Court Judge, with a reputation for rigorously testing both assertion and evidence, and an elephantine ability to recall arcane aspects of evidence. His reputation was as a practical, firm and fair Judge, and while those qualities describe all the Judges in that Court, Judge Treadwell would not necessarily have been the first choice of a residential-cum-environmental group seeking to halt a fast ferry operation. His decision is reported: *Marlborough District Council v New Zealand Rail Ltd* [1995] NZRMA 357.
- 2.3 Under New Zealand's environmental law - now primarily consolidated in the Resource Management Act 1991 ("**Act**") - maritime operators can be liable if wake (or other) effects of the operation of vessels disturb the foreshore or seabed in an adverse manner, unless those effects are expressly permitted by a plan or a resource consent.
- 2.4 In this case the operation of an interisland ferry service activity was expressly allowed by a plan. No resource consents were

therefore required to commence the new fast ferry service. That was not, however, the end of the matter.

2.5 Overriding provisions in the Act impose a duty to:

. . . avoid, remedy, or mitigate any adverse effect on the environment arising from an activity carried on by or on behalf of [a] person, whether or not the activity is in accordance with a rule in a plan . . . [or] . . . a resource consent . . . (section 17(1)).

2.6 The concept of the "environment" extends to the limits of the territorial sea - ie the "12 mile limit". There is no issue but that section 17 overrides common law rights of navigation - on which Adrian Duffy will speak later in this session. The Environment Court's jurisdiction to issue an enforcement order is found in sections 17(3) and 314(1) of the Act. The former provides:

[A]n enforcement order . . . may be made . . . to -

- (a) Require a person to cease, or prohibit a person from commencing, anything that in the opinion of the [Environment Court] or an enforcement officer, is or is likely to be noxious, dangerous, offensive or objectionable to such an extent that it has or is likely to have an adverse effect on the environment; or
- (b) Require a person to do something that, in the opinion of the [Environment Court] or an enforcement officer, is necessary in order to avoid, remedy, or mitigate any actual or likely adverse effect on the environment caused by, or on behalf of, that person.

2.7 Judge Treadwell held in his decision that the Environment Court would only issue an enforcement order *stopping* the fast ferries - under section 17(3)(a) - if it was satisfied that the activity as a whole was causing serious adverse environmental effects. Those effects had to be exceptional, not "the type of effects that one might normally experience in the day-to-day activities of a society". The burden lay on the applicants for an enforcement order to show:

- (a) the existence of serious adverse effects; and
- (b) that those effects were either so noxious, dangerous, offensive or objectionable as to justify a cessation order, or that measures were necessary to avoid, remedy or mitigate them.

No onus lay on the operators, except that Judge Treadwell stated:

If I found on a consideration of the matter as a whole, that those applying for the order had satisfied me that an order should be granted, I would then look to those

carrying out the activity to satisfy me on a like balance that the action sought should not be taken. I must at all times be secure and comfortable having regard to all circumstances (which may include the necessity or otherwise for the continuance of the activity) that an order would be justified.

2.8 Judge Treadwell held that:

. . . there are some effects on the Tory Channel environment which are adverse in the eyes of some parties to these proceedings - namely, disturbance of foreshore; disturbance of sub-tidal and inter-tidal marine life; and other matters. . . The main debate still revolves around whether these effects are in fact adverse or do in fact affect the sustainability of the environment for future generations. There is also no consensus as to whether the fast ferries are a causative factor.

The Act expressly directs decisionmakers to recognise and provide for certain listed "matters of national importance".

2.9 The Judge held that the fast ferry service - part of the interisland ferry link - although not expressly listed, was a matter of national importance, and that consideration needed to be balanced against environmental values expressed in the legislation to be of national importance - including the preservation of the coastal environment from inappropriate use.

2.10 Finally, after a lengthy and comprehensive review of the evidence, Judge Treadwell concluded:

Looking at sections 17 and 314 I am unable on the evidence to find that the activity is noxious, dangerous, offensive or objectionable to such an extent that it has or is likely to have an adverse effect on the environment. I have fully traversed these matters in the course of this decision, and find that the effects are not of a serious nature as contemplated by the subsection and, furthermore, that the Cook Strait ferry service itself is one of national importance and should not be the subject of a cessation order on the basis of inconclusive and subjective evidence. Public perception of the activity as shown on television is selective and not a fair indication of the activities of fast as opposed to conventional ferries.

I am not convinced that any of the mitigation orders sought would in fact avoid, remedy or mitigate any actual or likely adverse effects on the environment.

3. IMPLICATIONS AND IMPORTANCE OF THE DECISION

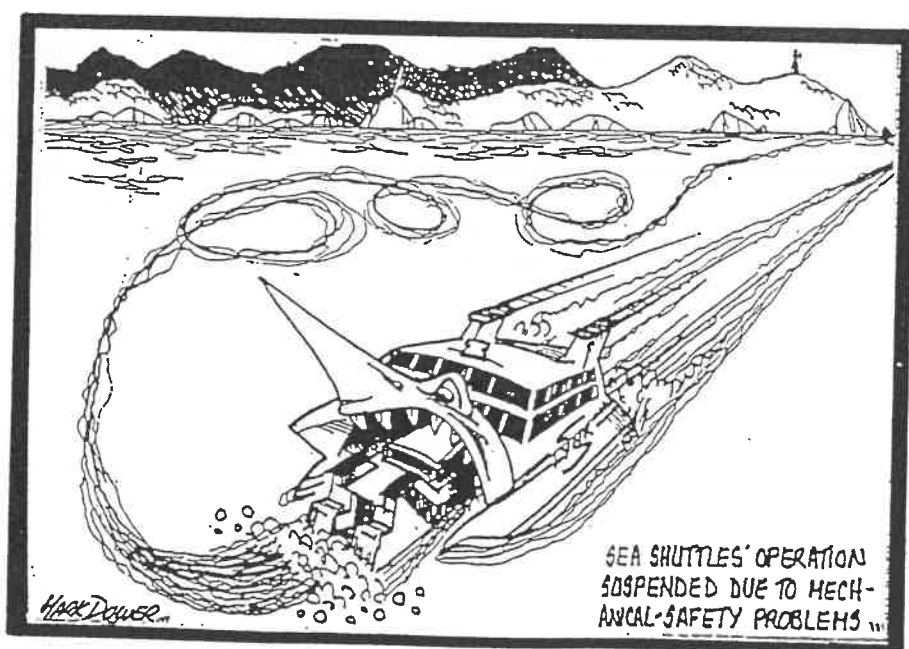
3.1 The *Fast Ferry* case may well be the first case in the world where an injunction was sought to stop a ship from operating because of alleged environmental effects of those operations on the coastal environment.

- 3.2 The case drew international attention to the environmental effects of vessels - especially high speed ferries.
- 3.3 The case represents a timely reminder that common law rights of navigation can be made subject to local legislation - within the territory in respect of which the legislation has effect. Of necessity this will always include the immediate coastal environment.
- 3.4 The case, and the later hearing referred to in paragraph 9.3, call into question the appropriateness of simple speed restrictions as a means of controlling fast ferry wake effects. The evidence presented at both hearings was that slowing the fast ferries down to the same speeds as conventional ferries could have caused serious erosion of the coastline.
- 3.5 The case also reinforces the commercial necessity of understanding the environmental effects of a new activity before its commencement. Each operator had invested heavily in the new service (indeed there was virtually a race to be the first to commence it), and that investment was imperilled by the applications made for enforcement orders to stop or slow down the service.
- 3.6 The case also reinforced the importance of proper scientific investigation, over a period of time, before drawing definite conclusions of fact. This aspect will be considered in more detail in sections 6 and 7 below.
- 3.7 Finally, environmental groups often face a mismatch of resources in opposing major corporations on environmental issues. But that does not justify resorting to trial by news media, or lowering standards of proof in the Environment Court. This especially when what is sought is to stop a commercial activity, with serious implications for any new operator, on the basis of scientific analysis and speculation that contained serious shortcomings - shortcomings that as you will soon see were exposed in the course of the hearing. It was those shortcomings that led the Judge to describe the applicants' evidence as "inconclusive and subjective".

4. THE VESSELS

- 4.1 *Condor 10* is a 74m wave-piercing catamaran, a modern high technology vessel in world terms, designed for high speed travel. It has a capacity of 576 passengers and 82 vehicles and operates at normal speeds of 35 to 38 knots. It was built by Incat in Tasmania in 1993 and is owned by Holymans, a United Kingdom-based company.
- 4.2 It operates in Europe (on the Channel Islands - Weymouth run, and in the Baltic and Irish Seas) during the summer in that hemisphere, and in New Zealand during the summer in this.

- 4.3 *Condor 10* took one hour 45 minutes to make the Wellington-Picton voyage, compared with up to three hours 20 minutes for conventional ferries. It proved extremely popular with passengers, and with the Marlborough community who found a much increased number of people travelling for day and short trips to the Marlborough region. The converse was also true. This was demonstrated during the course of the hearing when cross-examination proved that each of the South Island based applicants travelling to Wellington to give evidence in the Environment Court had done so on the very fast ferry they were seeking to stop or slow down.
- 4.4 Often forgotten, now, is the other vessel, the *Albayzin*. It was a monohull, of Spanish origin, capable of carrying a similar number of passengers, but fewer cars. Soon after it arrived it showed alarming directional instability (completing an unexpected 360° manoeuvre at sea), before transmission failure made it non-operational and the butt of numerous jokes. After a lengthy period alongside the Wellington wharves, the operator now in liquidation, it was repaired and slunk from the city not to be seen there since.



- 4.5 The fast ferries travelled the same route as the conventional ferries: out of Wellington Harbour across the Cook Strait and into the Marlborough Sounds through the Tory Channel and Queen Charlotte Sound to its terminus at the little town of Picton. That has been the regular route for interisland shipping since 21 December 1925 - 69 years to the day before *Condor 10* began its service. In those days the service was operated by the Union vessel *Tamahine*, which crossed the Strait six times a week. Sixty-nine years later *Condor 10* crossed the Cook Strait

six times a day, along with the *Albayzin*, three other Tranz Rail conventional ferries, and competing coastal freighters which also provide a several times daily service.

- 4.6 During preparation for the hearing two other interesting historical discoveries were made:
- (a) in the late 1950s and early 1960s, the Union vessel *Rangatira* (which normally serviced the Wellington-Christchurch run) was used as a backup to the *Tamahine* between Wellington and Picton at Christmas and Easter. That vessel, apparently, regularly created a 9 foot wake, to the discomfort of Marlborough boaties;
 - (b) when new diesel/electric conventional ferries entered the Cook Strait service in the early 1960s, and yet newer versions in the mid 1970s, making passage faster and more frequent, some of the same wake effect problems were experienced as arose 20-30 years later in the summer of 1995. Residents noticed changes to the beach line, and there were complaints about erosion and damage.

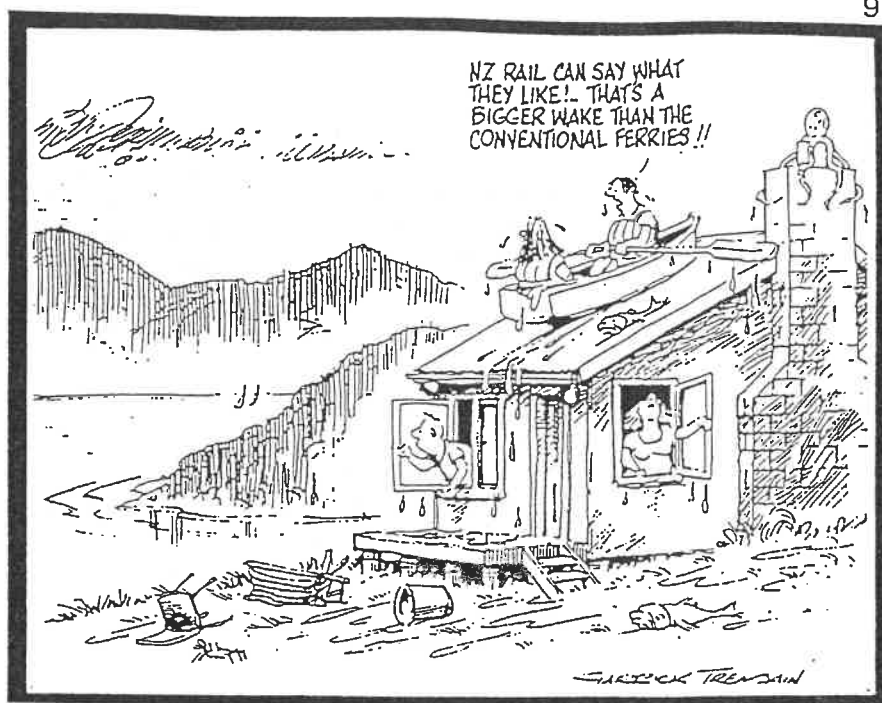
Ironically the result was that in 1977, funded by the ferry operator, the University of Canterbury Geography Department undertook studies of the beaches. The problem complained of by residents in the 1960s and 1970s then seemed to go away. However, over 20 years later those same studies provided invaluable base line data for measuring change to beach profile and shape caused by the introduction of the fast ferries.

5. A CACOPHONY OF COMPLAINTS

- 5.1 The first indication that there was a problem came within a few days of the service commencing on 21 December 1994. Before New Year's Day 1995, complaints (and claims) for damage to boats and jetties had arrived at Tranz Rail. Boaties were caught unaware by the new wave effects and their boats were thrown against jetties. A home-made sea wall and a small boatshed (of dubious stability) were swept away. One boatie complained that the new wake effects meant that he had to keep racing out and taking his boat off his jetty a few minutes before the fast ferry arrived, thus putting him to a series of enforced temporary maroonings in the stream (where he was of course buffeted by the wake). This was all at the Marlborough Sounds end of the run. At the Wellington end there was little concern until a family picnic at Shelly Bay was swamped and the family's kettle barbecue was carried out to sea.
- 5.2 Tranz Rail (and Sea Shuttles) saw that they had both a public relations and operational problem on their hands. The new

ferries were clearly doing things differently to the older conventionally powered ferries. The questions were what exactly, and why? Tranz Rail sent its Interisland Line General Manager, Paul Harper, and its Fleet Support Manager, Capt. John Hogan, down to the Marlborough Sounds for a period of days to consult locals and watch the wake effects.

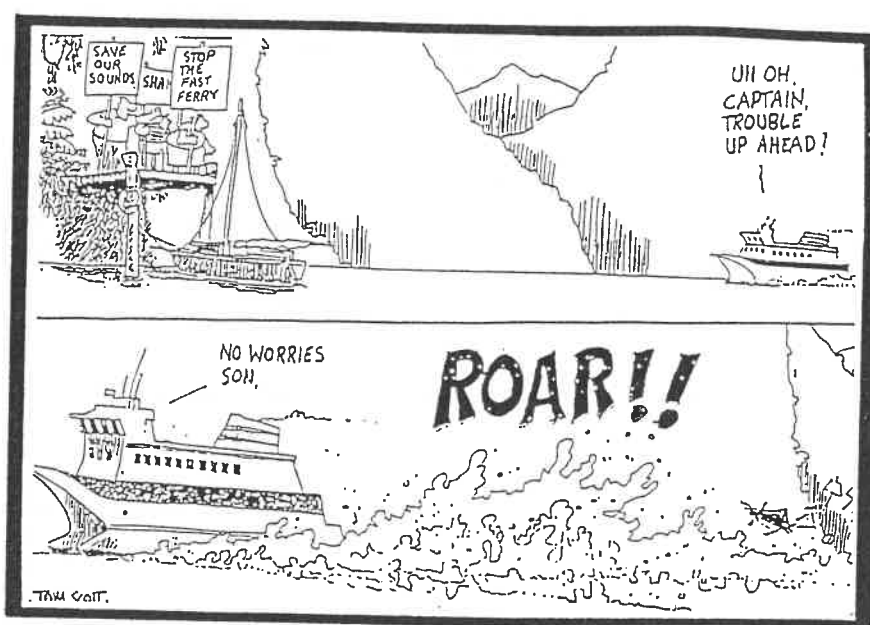
- 5.3 What they saw were some big waves. The waves were different from those of the conventionals. One should not play down the conventionals' waves: they made big waves too, but the fast ferry ones were of a different kind. Conventional waves happened more immediately, generally had a smaller height and shorter period and wavelength. Sometimes, however, the conventional waves were very high, especially when two ferries passed one another and their wave trains combined.
- 5.4 The fast ferry waves, by contrast, were curious. Sometimes, as with conventionals, nothing much happened at all. Other times the effect was dramatic. Like all novelties, however, the sense of drama subsided once the effects became more familiar. This is what observers saw:
- (a) waves that seemed to begin breaking much later than the conventional ferries. Often the fast ferry would be out of sight around the headland by the time the waves reached the beach. (The fast ferries were, of course, travelling at twice the speed of the conventional ferries);
 - (b) the "delay" meant that when the waves did arrive, their effect was rather unexpected. There was a distinctive drawdown in the water level followed by a surge and set up when the wave trains arrived. Initially a few small waves would start to hit the beach; then bigger ones would seemingly rise from the sea and start "pounding";
 - (c) overall the waves seemed (and were) higher than the conventionals, and more powerful.



- 5.5 The Department of Conservation started to draw attention to large pink algae-covered boulders thrown up on the beach, and to a variety of biota - paua, shellfish, sea urchins, mussels, etc - thrown onto the beach. A field officer was filmed by a television news special showing all the "environmental damage", which was blamed on the fast ferries. Sensation followed. Having caused the furore in the first place, however, the Department of Conservation - which had been trenchantly criticised by Tranz Rail and Sea Shuttles for its trouble - then took a rather less active stance. It started to undertake a joint study with experts appointed by Tranz Rail. Within three days of the complaints emerging, Tranz Rail had appointed a well qualified environmental scientific team, including leading experts in marine biology and water quality (Dr Paul Gillespie and a team from the Cawthron Institute) and in coastal processes (Professor Bob Kirk and Dr Martin Single, from the University of Canterbury).
- 5.6 The public running of the issue was then taken up by local land and boat owners, in a somewhat uneasy alliance with environmental groups and local Maori iwi. The property owners formed STS, a raucous but reasonably well funded group (the landowner element adding economic weight to the environmental rhetoric). On 17 January 1995 its solicitor made its position clear:

Given the mounting weight of evidence as to the environmental damage which each passage of the ferry is causing, which is now acknowledged in part by your company, and the further matters of safety and impairment of fisheries to which we refer in this letter, we would like to know whether your company is prepared to take the environmentally sound option of halting the fast ferry until research and investigation can be undertaken to prove the short, medium and long term environmental impact and the means by which this may be mitigated? . . . Having regard to the urgency of this matter caused by

the ongoing environmental degradation and threat to safety and health which each passage of the fast ferry poses, we must advise you that failing a satisfactory response being received from your company, then we have instructions to issue a legal proceeding seeking to halt the fast ferry so that the status quo existing prior to commencement of the fast ferry services, or what remains of it, can be preserved pending the investigations concerning environmental impact to the fast ferry operation being undertaken and completed.



- 5.7 Media statements flew with the frequency of boulders dislodged from the intertidal zone, although with less effect. The STS group, which was drawn mostly from people with property interests along the affected coastline, found themselves immediately at odds with other people in the Marlborough region, for whom the additional traffic carried by the fast ferries was of direct economic benefit. A fast ferry support group was set up in Picton, and public meetings were held. A large petition to keep the fast ferries running was organised by the Marlborough Chamber of Commerce and others. In the midst of this tempest, the Wellington evening newspaper called for calm and balance:

The turbulence produced by the powerful water jet engines of the Cook Strait fast ferries is not confined to the churning wake the vessels leave behind. It has become a feature of the war of words among the various parties concerned at the impact the ferries are allegedly having on the Tory Channel and Queen Charlotte Sound environment. What is required now is a period of calm so that the effects the introduction of the fast ferries has had on the marine environment can be assessed and addressed in a responsible way.

There is more at stake here than the simple issue of the environment. Even if it can be shown that the ferries are

having a deleterious effect on marine life, that is not to say that the only solution is to bring the services to a halt.

6. **MAKING WAVES**

- 6.1 The *Fast Ferries* case produced a substantial body of scientific evidence about wave effects, and the differences caused by differing sources (fast ferry versus conventional ferry versus natural waves) and differing speeds. Before addressing that evidence, however, it is worth spending a moment contemplating the object of the wake effects - the beaches.

Beaches

- 6.2 This is what one of the experts called by Tranz Rail - Professor Bob Kirk (Professor and Head of the Department of Geography at the University of Canterbury, Christchurch, and New Zealand's leading coastal process expert) had to say about beaches:

Ocean waves contain significant, sometimes very large, amounts of energy. On ocean shores waves have average power levels not dissimilar to those generated by motor cars. Given that waves arrive at the beach every six to ten seconds more than 3 million waves break on a beach, day in, day out, without cease, in the course of the year. In storms energy levels rise to extremely high levels. Beaches, especially stable, equilibrium beaches, buffer this large, ever present, constantly varying energy supply using the weakest geotechnical materials we know of, i.e. a mixture of sand and water.

Professor Kirk continued:

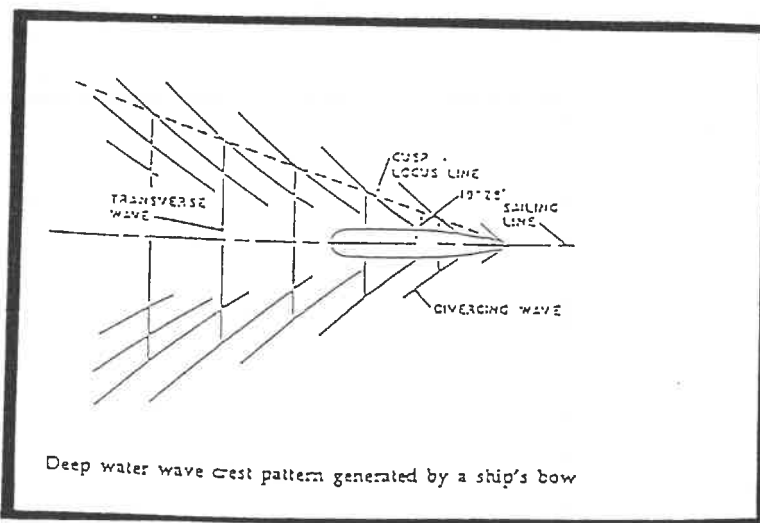
Balance and energy conversion are achieved by changes in the beach *shape*. Such shape changes involve the transfer, sometimes onshore, sometimes offshore, of very large quantities of sediments. It is well established that the *rate* at which beach shape change takes place is a function of wave energy or power (the higher the levels, the faster the change). It is also well established that the *type of change* occurring is a function of the wave shape. In general, steep waves erode beaches by transferring sediments offshore. The beach profile becomes concave upward, the foreshore becomes narrow and flat and it may develop a permanent scarp or "stepped bank" on its landward side. In general, flatter waves will cause onshore sediment transport and accretion of the foreshore. The visible beach will become steeper and wider, the profile will be convex upward, and a prominent ridge or "berm" may appear on it. An accreted foreshore is the best natural protection against erosion by waves.

Thus, continual changes of shape occur in response to day-to-day variations of wave shapes and energy levels. These changes are expressions of the means by which a healthy beach maintains stability and are not hazardous

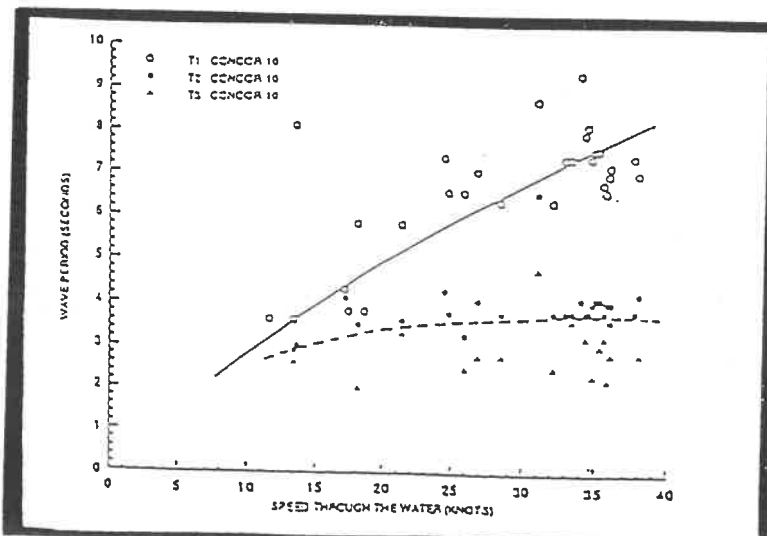
unless humans are foolish enough to interact with the changes in some way.

How vessels make waves

6.3 Vessel waves differ from those created by wind. Vessel waves are likely to have different heights periods (and wavelengths), and different energy levels to wind waves. They may arrive at the beach at different angles to wind waves. Typically, vessel waves will arrive in distinct groups or "sets" across a short time period. Any vessel in forward motion will generally create four wave systems or patterns. The bow creates a transverse wave at right angles to its path and a divergent wave which is concave in shape, and travels out from the vessel at an oblique angle to its sailing line. The transom (stern) creates a similar pair of



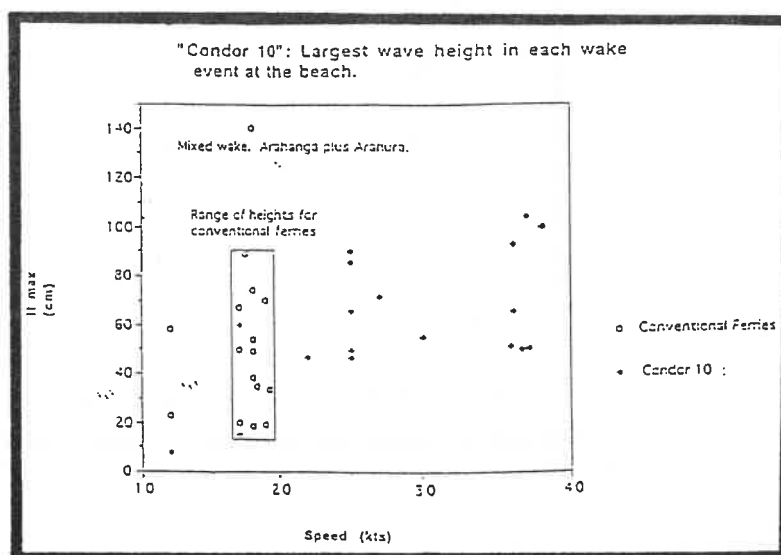
6.4 Fast ferry waves differed from those of conventional ferries. Fast ferry transverse waves were not significant because vessel speeds were so high. Fast ferry divergent waves were dominated by those generated by the transom. A series of speed tests were undertaken by *Condor 10* in the Tory Channel and the resultant wake waves were measured by a wave rider buoy at shore:



In the case of *conventional* waves, since divergent waves move with the vessel, changing vessel speed changes the speed of all the waves. This was true for those *fast ferry* waves depicted in the diagram with hollow circle points: these were the *divergent* waves. But the black circle points represented another wave pattern independent of vessel speed. This second wave system moved at speeds independent of the vessel. These were not transverse, but *dispersive* waves, created by excess energy shed in the formation of the divergent sets.

Wave height

- 6.5 Wave *height*, along with wave period, is used to calculate wave shape (and also wave energy). As the next figure shows, there was great variation in the wave heights produced by fast ferries:



What should also be noted is that the *highest* wave height recorded by the scientists studying Tory Channel was a combination of waves generated by two *conventional* ferries passing one another.

Wave period

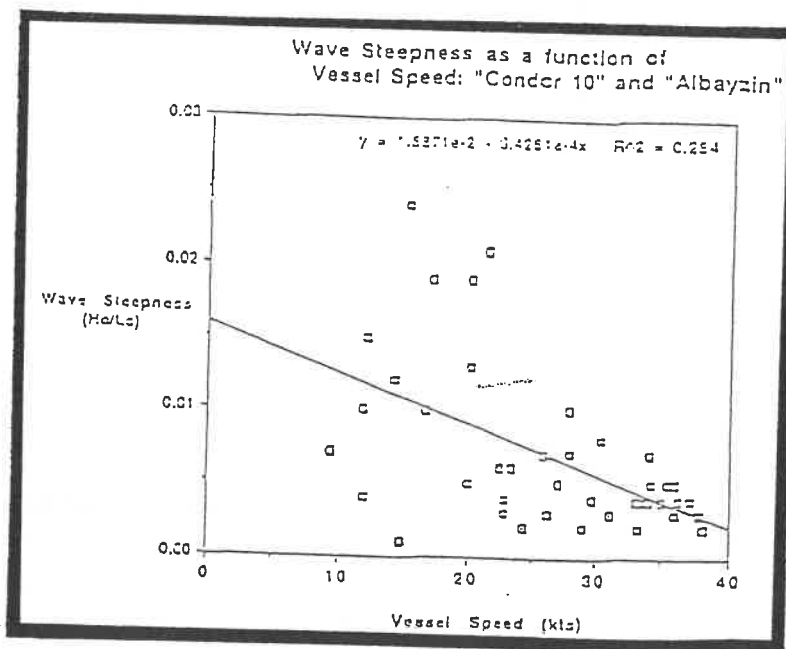
- 6.6 Fast ferry waves have a longer *period* (ie time between wave crests) than conventionals. Indeed, this was arguably the main difference between fast and conventional wakes. Wavelength is directly related to the square of the wave period. One consequence of the longer wave period for fast ferries is that their waves reach deeper - ie touch the beach earlier and deeper than waves created by conventional ferries. Depth distribution of a wave is controlled by its length, rather than its power or energy. The longer the wavelength, the deeper it reaches.

Wave shape (or steepness)

- 6.7 Wave *steepness* is a useful measure of wave *shape*. Whether a wave has an erosional or accretional affect depends on wave steepness. Wave steepness is the ratio of wave height to wave length. Steep waves erode beaches; flat waves cause accretion.
- 6.8 Measurements showed that conventional ferry waves were much steeper than those of fast ferries - a direct reflection of the shorter wavelength of conventional wakes. The mean wave steepness for conventional ferries (ie height divided by length) was 0.010. The mean wave steepness for fast ferries (operating normally at speeds of 30-38 knots) was less than half, at 0.004. Thus fast ferry waves were relatively more accretional, and conventional waves were relatively more erosional.
- 6.9 It is this simple statistic alone which explains the change in beach behaviour following the introduction to the fast ferries - as the beaches adjusted to the new shape waves impacting on their margins.

Vessel speed

- 6.10 The measurements also showed that the faster *Condor 10* was travelling, the flatter its waves:



If the vessel were slowed down to 15 knots, as was suggested by STS and the Department of Conservation the waves would be erosional in a similar manner to those of conventional ferries. You might well ask, "What would be wrong with that?" The answers are two:

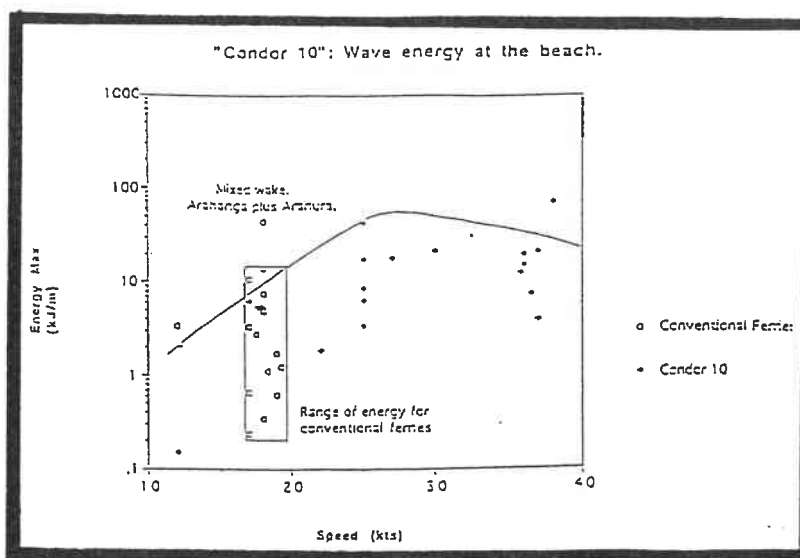
- (a) you would then cause yet another adjustment process to yet another (pro-erosional) equilibrium; and

- (b) the extra energy of the fast ferry waves would accelerate erosion of the Tory Channel/Queen Charlotte Sound beaches, and would literally excavate them. Those beaches would take on a constant shape, but would eat back into the land. (In the Canterbury Bight, on the east coast of the South Island, there are beaches which have a constant shape, but which for thousands of years have been receding into the land at a rate of one metre a year.)

The converse of (b) is not however true: the accretional effects of fast ferry waves are limited by the lack of sediment supply. There is no prospect of the Tory Channel beaches marching towards each other across the channel.

Wave energy

- 6.11 Wave energy is the combined energy due to wave height, mass and speed. The relevance of wave energy is that the *rate of change* is a function of wave energy. The higher the energy levels, the faster change occurs (ie the quicker a new equilibrium is achieved).
- 6.12 Were fast ferry waves more powerful than conventional?



Generally speaking, wave energy levels are a function of vessel speed. On the whole fast ferry waves were more powerful, but the *maximum* energy of conventionals exceeded the *mean* of *Condor 10*, and the combined conventional wave event (noted earlier) was nearly as great as the maximum *Condor 10* event.

Conclusion

- 6.13 The net result was this: fast ferry waves were more powerful (and therefore caused a faster rate of change to beaches), and flatter than conventionals (so tended to accrete rather than erode: the point Professor Kirk was making in the quotation noted in paragraph 6.2 above).

- 6.14 It should also be noted that Tranz Rail was able to mitigate wake effects somewhat by adjusting loading, trim and vessel turning.

"Dynamic Equilibrium"

- 6.15 In some ways the biggest splash made by Professor Kirk was his theory of the "dynamic equilibrium" of beaches. This was Professor Kirk's view expressed at the hearing, some three months after the introduction of the fast ferries:

I consider that most of the shoreline change that can be created at sites generally less than 1000 metres from the sailing lines by the wake waves of the fast ferries, has already occurred. Changes presently being measured on beaches are small, predominantly accretional rather than erosional, and are not irreversible or hazardous in nature. In my view, the beaches of Tory Channel, like all other beaches, adjust rapidly to the forces that work on them. Little subsequent change is to be expected once a new equilibrium is achieved.

That view was supported by repeated sophisticated survey remeasurement of wave affected sites - comparing changes prior to the hearing against the pre-fast ferries data gathered by Canterbury University researchers in 1977.

- 6.16 Judge Treadwell accepted Professor Kirk's view stating:

I have reached the conclusion that the character of the shoreline as it previously existed has been modified, but the physical modification is tailing off and substantial further changes are unlikely.

Subsequent remeasurements in the 1995/96 and 1996/97 seasons have proved both the Professor and the Judge correct.

- 6.17 The Judge also concluded that to *slow* the fast ferries down would be deleterious:

I am not satisfied that any of the mitigation orders sought [by the applicants] will in fact avoid, remedy or mitigate any actual or likely adverse effects on the environment. Although not convinced one way or the other, I have largely reached the conclusion that were I to interfere with the speeds of the ferries, results may be equally "adverse" on the environment, remembering that the proponents of the ferries do not concede an adverse effect. The evidence largely persuades me (though not to the required standard of proof) that a mitigation order concerning ferry speed might have the following effect: a reversal of the equilibrium now reached may occur and erosion may follow (as opposed to present accretion in most areas) which could be more pronounced than the erosion fears presently expressed by STS and the Minister of Conservation.

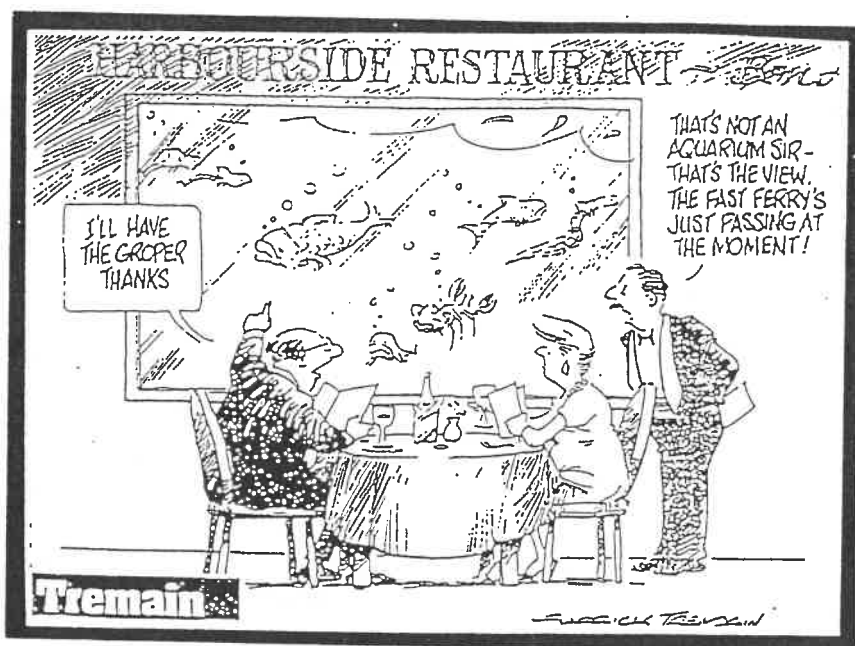
7. ABOUT BIOTA (AND BOULDERS)

- 7.1 A major concern in the case was the effect of the fast ferries on coastal ecology. Television news specials and items showed stranded and broken invertebrates - sea eggs, urchins, paua, and snake stars - broken kelp holdfasts, and the media had a continuing fascination with large pink boulders thrown up on the beach - pink because of the coralline algae - the pink bleaching into white after several days' exposure to air and sunlight.
- 7.2 Tranz Rail commissioned an intensive study from the Cawthron Institute, a large non-profit independent scientific research organisation based in Nelson, New Zealand. Its team was led by Dr Paul Gillespie. It undertook five surveys before the hearing, and a further survey in the midst of that hearing. Unlike the coastal geomorphologists, the marine biologists had a harder task, because there was little quantitative data available on the biology in the Tory Channel prior to the introduction of the fast ferries. An exception was work done by a doctoral student from Otago University, Mr Miles Lamare. He was studying kina (or sea urchins). A report was commissioned of him by STS. They did not like his report, and did not call him to give evidence. We found out about him, and subpoenaed him to tell the Court what he had found.
- 7.3 It was clear that the fast ferries, because of their longer wave period, reached deeper, and disturbed the sub-tidal environment otherwise largely unaffected by conventional ferries. This deeper reaching of course explained the relocation of rocks. Those rocks were the habitat of various sub-tidal species. Yet the survey evidence showed that the effect of the fast ferry wake was limited: from 1m below the spring low tide level, marine life proceeded virtually unaffected.
- 7.4 Strandings were more noticeable on ferry wake-affected beaches than non-ferry-affected (control) beaches. Over the two month period of the surveys, stranding rates remained stable, but Dr Gillespie's expectation was that they would decline slowly over time: not because there was no more sub-tidal marine life to be stranded (as was suggested by the applicants) but because the populations would adjust or migrate.
- 7.5 Underwater observations and measurements of sub-tidal populations of kina and paua showed the populations were not depleting. Indeed in some areas the populations had actually increased during the period of the survey. Half the affected coastline had bedrock (rather than cobble or boulder) shores, and the populations here were virtually unaffected. Where cobble/boulder shores were present, inter tidal populations were greatly reduced by comparison to control sites distant from the ferries - but the scientists could not say whether this was different from the position obtaining prior to the fast ferries,

when conventional ferry wakes would still have impacted on these areas.

- 7.6 Considering the evidence as a whole, Judge Treadwell concluded that the changes that had occurred were not such as to affect or threaten the sustainability of the resource as a whole. His Honour said:

I am unable to find, on the material placed before me, evidence of environmental damage such as sufficient to cause me to modify the speeds of the fast ferries with any degree of confidence that such modification may result in an environmental improvement. I tend largely to the view that what has happened is now reaching equilibrium and may result in a modified natural environment, that modification representing acceptable human intervention.



- 7.7 **Sea lettuce:** One vexed question which occupied some time at the hearing was an influx of sea lettuce on some beaches. This material accumulated on the beaches in the shallows, where it began to rot, producing an appalling stench. There was much anecdotal evidence that this was a natural but occasional phenomena in the area, accelerated by warm winters. However, the fast ferry waves might well have exacerbated the harvesting of the material. By the time the hearing wound down, much of the sea lettuce material had naturally dispersed by wave action. In one particularly badly affected beach, Tranz Rail, without admitting causation, offered to assist in the clear-up operation.
- 7.8 **Continued monitoring:** Since 1995, Tranz Rail has continued monitoring before and after the summer fast ferry services recommences. In the summers of 1996 and 1997 there has only been one fast ferry operating in the Sounds, the *Condor 10*. Notwithstanding the on-again off-again nature of the fast ferry service (in the succeeding summers - it has never operated

during the winter) the same degree of stranding did not recur. The principal reasons identified by Dr Gillespie for that are:

- The lack of sufficient time for recolonisation in the disturbance zone.
- The stabilisation of biological communities to the new wave climate.
- The continuing effects of conventional ferries and storms (the latter with effects similar to fast ferries) during the winter lay-off period.

7.9 Sub-tidal populations remain strong; claims of "depletion" and "decimation" were not substantiated.

8. OTHER PLACES

8.1 While the New Zealand case is believed to be the first where environmental and property interests have sought an injunction to control the normal operation of vessels (particularly their speed), it is not the first time that fast ferry wake has come into scrutiny. In:

- (a) Australia, issues have arisen in New South Wales and along the Gordon River in Tasmania.
- (b) the United States, there have been concerns about wake effects, resulting in speed limits in Chesapeake Bay, Maryland and the Rich Passage near Seattle.
- (c) Scandinavia, there have been studies into fast ferry wakes undertaken by the Danish Hydraulics Institute.

8.2 Generally, few restrictions have been imposed in rivers, ports or other enclosed water areas specific to fast ferries. Such controls as have been imposed have been general, and confined to speed, without regard to any other wake properties of particular propulsion systems. Such scientific studies as have been conducted tend to have been brief, and the New Zealand case appears to have been the first time that a thorough study of fast ferry wake effects, hydrological and ecological, has been undertaken.

9. THREE POSTSCRIPTS

9.1 **Fallout from decision:** The decision was extremely controversial. In New Zealand a public sentiment seems sometimes to exist that if you complain loudly enough in the first place, any subsequent public or judicial inquiry is bound to confirm those complaints. There is then grave shock when the

commissioner acts according to the evidence, and he or she gets a generally bad press. A case in point is the recent "Winebox" Inquiry (where former Chief Justice Sir Ronald Davison acquitted New Zealand's Inland Revenue Department and Serious Fraud Office of any wrongdoing or incompetence in investigating various Cook Islands - based tax structures).

- 9.2 The decision of Judge Treadwell sparked furious claims that the Resource Management Act was "pointless" and "lacked teeth". This seemed to assume that the Resource Management Act had been enacted to protect New Zealand from *change* - a curious view in the New Zealand context where political and economic revolution (and resultant uncertainty) have become the norm. An article in the New Zealand Law Journal by Mr Bruce Pardy ("*Fast Ferries: New Equilibrium v Ecological Sustainability*" [1995] NZLJ 202) criticised the Judge's decision on the basis that the Resource Management Act should protect ecological sustainability - by which he meant "the ability of an ecosystem to continue indefinitely in its present state". The Judge, he said, refused relief because there was an "altered ecological equilibrium", but that was the antithesis of ecological sustainability. Together with my junior, Steve Bielby, I wrote a reply: "*Fast Ferries Decision: Seeing Sense in its Wake*" [1995] NZLJ 363. In it we quoted a submission I had made to the Environment Court:

No more futile gesture could be imagined than setting a nation's face against advances in transportation technology. Faster and larger capacity planes and boats are an inevitability - because of the public quest for efficiency in transportation. To turn a fast ferry into a fast fast slow ferry is a foolish foxtrot. The same recessional tune would leave us with coal smoke-belching, counter-sterned ferries like the *Tamahine* and clothed-covered open cockpitted Tiger Moths.

This reply seemed to snuff out any further controversy in the columns of the New Zealand Law Journal. Well almost. There was one more letter, from a much respected Auckland practitioner who also happens to be New Zealand's leading maritime historian. His complaint was that I had overlooked the fact that the *Tamahine* burned oil, not coal.

- 9.3 **A new plan:** In July 1995 the Marlborough District Council, the local authority which governs the Marlborough Sounds issued a new combined regional and district plan. A new Plan is required to undergo a public submission and hearings process before it becomes operative. The Council's decision at the end of this process can then be appealed to the Environment Court.
- 9.4 In the Plan the Council attempted to grapple with the problem of how to avoid unacceptable adverse effects of vessels operating in the Sounds while still allowing for the economic use of the waterways and the continuing economic viability of Sounds communities and the Marlborough District generally. The

solution it came up with was to map out two "national navigation routes" through the Sounds, one through Tory Channel to Picton and the other through Queen Charlotte Sound. Within these route use of surface water by all vessels is permitted without restriction as to speed. Outside the routes vessels greater than 500 gross registered tons travelling in excess of 18 knots would require resource consent.

- 9.5 The Department of Conservation initially submitted that there should be controls on all vessels using the Sounds, including vessels using the national navigation routes, so that they were required to obtain resource consent if they produced effects above the level of effect produced by the conventional ferries. However, at the Council hearing in June 1997, the Department modified its position. They said they were no longer concerned about Tory Channel because it had already been "modified". However, they wanted a control based on the "nearshore velocity" of *waves* imposed on the route through Queen Charlotte Sound. The fast ferries occasionally use this northern national navigation route when weather and safety require it.
- 9.6 Tranz Rail, and other submitters such as the New Zealand Shipping Federation, opposed any suggestion of imposing vessel speed limits within the national navigation routes. They have also opposed the proposed speed control *outside* the routes. Tranz Rail also expressed concern that the national navigation routes imposed in the Plan are too rigid. Vessels may need to move outside the marked routes in the interests of navigational efficiency and safety. It has sought that the routes be made indicative only.
- 9.7 The Council's decision on the Plan is due out before Christmas.
- 9.8 **A new port:** The final irony in relation to the *Fast Ferry* case is this: for over 70 years Tranz Rail, its executives and their predecessors in the Government Railways Department have had in mind a new port, in place of Picton, at the South Island terminus of the interisland service. The problem is that Picton, while providing a sheltered port, is in the wrong place, and in any event most of the road traffic then doubles back towards Christchurch and points south - in the other direction from Picton: see the map at paragraph 1.1, above. A new port on the coastline, at Clifford Bay, would be far more convenient, save half an hour at sea and as much as a further hour land time for travellers heading in a southerly direction.
- 9.9 In September 1996 Tranz Rail applied for resource consents to construct that new port - a \$120 million project - on the coast at Clifford Bay. Its application received some support from the remnants of STS. The residents of Picton were divided: some foretelling doom, others seeing the community transcending its mere transit point status of now.

- 9.10 The Marlborough District Council and the Minister of Conservation appointed special commissioners to determine the application. Hearings began in January 1997, and ended in May. In July 1997 the Special Hearings Committee delivered a decision granting resource consents to Tranz Rail to build the new port. The Picton port company and others have appealed, to the Environment Court.