



Pacific Marine Management Ltd

Business & Operations Analysts -

Shipping & Ports Sector

New Zealand Ministry of Foreign Affairs & Trade

Cook Islands Shipping Services Review

Domestic Shipping Services

FINAL REPORT

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Wellington
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Executive Summary

Historic Situation & Conclusions

Two relatively recent reports document the history of domestic shipping in the Cook Islands and propose solutions; “Review of Shipping Services between Rarotonga and its Sister Islands” 2002 and “A New, Custom Designed & Built Ship to Service the Cook Islands” originally written in 2007.

In endorsing those reports, this report is of the view:

- That outer island social and economic development is being adversely affected by poor shipping services;
- That for two decades now, market-based solutions to domestic shipping have resulted in inadequate shipping services that are unsustainable in the longer term, particularly for the Northern Group;
- As a consequence, to improve shipping services, some government intervention is required;
- It is time to make a decision on whether to continue the market-based solutions, which have resulted in old ships that are not fully suited to the transport task, or to move towards new policies that would encourage better options;
- Such options are:
 1. **Capital subsidy:** a purpose designed ship be acquired, perhaps smaller than but similar in concept to that proposed in the 2007 paper (for example, similar to the proposed new Tokelau ship)
 - Note that diminishing populations means that in future, such a ship could be too big
 - Or, if population decline were to be halted, it would be about right
 2. **Operating Subsidy:** Existing services be subsidised through an operating franchise
 - Note that this doesn't of itself result in modern, efficient ships.
 3. **Combine with Tokelau:**
 - **Northern Group:** combining the Tokelau new ship on both the Tokelau and Northern Group routes, based in Apia.
 - This may need a ‘social’ connection with Rarotonga, for example subsidised air services.
 - **Southern Group:** an operating subsidy may be enough to encourage improved services to the Southern Group.

This Project team considers that the best option is either the capital subsidy, or combining with Tokelau and an operating subsidy for both Northern and Southern Groups. In both these options, a new, modern and efficient ship would be acquired. For both these options the best arrangement would be for such a ship to be franchised out to a private sector operator (or the Tokelau ship operator in that case) for a medium term period, perhaps two or three years at a time, and operated against a minimum service level specified in the franchise arrangement.

The risk, and therefore potential profit in the operation should be placed on the franchise holder, not the Government. In this way Government would know its financial exposure.

Present Status

The only formal shipping service in 2011/12 to and from Rarotonga to the outer islands is that which is provided by Taio Shipping. Records show that in total Taio Shipping's ship, Maungaroa II undertook 34 voyages in 2010/11 and 36 voyages in 2011/12. Southern Group islands received between 7 and 11 visits, but Northern Group islands were poorly served. Of the Northern Group, only Rakahanga and Manihiki received a reasonable number of visits. Palmerston was visited by Maungaroa II just twice, both times only 12 days apart in July 2011 to transport and return a Tere party. Pukapuka and Penrhyn fared even worse, with only one visit each.

Records also show that Maungaroa II carried total cargo volumes of 3,800 revenue tonnes in the period June 2011 to May 2012. This compares with 6,054 tonnes in 2006/07; a reduction to 63% of the 2006/07 volumes. The population of islands has reduced over this same period. For the islands serviced by Taio Shipping, the populations reduced by 18%. The cargo per capita reduced by 24%.

Total freight revenue is estimated to be between \$1.1 million and \$1.5 million in 2011/12. This is estimated to leave Taio Shipping's one ship service with an overall loss of \$1.1 million to \$1.5 million a year (including an allowance for capital recovery of \$0.5 million a year).

The population of all outer islands is in decline. Since the 2006 census, the population of the Northern Group islands that are served by shipping (ie, excluding Nassau) has reduced from 1322 persons to 1036. The population of all Southern Group Islands that are served by domestic shipping (ie excluding Aitutaki and the uninhabited islands) has reduced from 1820 persons to 1550.

Adequacy of Shipping Services

The domestic shipping services are at present less than adequate, as indicated in the following table:

Adequacy of Domestic Shipping Services

Adequacy of services		Service attribute			
Group	Island	Regularity	Reliability	Appropriate frequency	Transport capability
Southern Group	ATIU	Reasonable	Poor	Poor	Reasonable
	MANGAIA	Reasonable	Poor	Satisfactory	Reasonable
	MAUKE	Reasonable	Poor	Reasonable	Reasonable
	MITIARO	Reasonable	Poor	Poor	Reasonable
Northern Group	PALMERSTON	Non-existent	Extremely poor	Extremely poor	Extremely poor
	RAKAHANGA	Poor	Extremely poor	Reasonable	Reasonable
	MANIHIKI	Poor	Extremely poor	Reasonable	Reasonable
	PUKAPUKA	Non-existent	Extremely poor	Extremely poor	Extremely poor
	PENRHYN	Non-existent	Extremely poor	Extremely poor	Extremely poor

The Northern Group is inadequately serviced by ships. In 2011/12, only Manihiki and Rakahanga had formal ship calls in more than one month of the year, and even these were not

evenly spaced. It is reported that fishing boats made calls and sold fuel and goods to some Northern Group islands. HMNZS Canterbury delivered fuel to some islands in June 2012.

The Southern Group has an almost adequate shipping service in terms of transport capability and regularity, but in terms of reliability (ie ability to keep to schedule) and frequency it is poor. In 2011/12, all Southern Group islands had at least 7 formal ship calls. However, Mr Taio of Taio Shipping advised that he frequently waits until the cargo accumulates to an economic quantity before commencing on a voyage. Thus, the frequency and regularity are being driven by operational needs rather than by market demands. As a consequence, reliability of scheduling is very poor.

Plans for the Future

The existing fleet has comprised of all old ships, 30 years of age plus, which are very difficult to keep in service, and very costly to maintain. Old ships inevitably compromise safety. Taio Shipping advised that they have plans to add to their fleet by introducing another ship that is also over 30 years old. Pacific Schooners has indicated that it too, intends to introduce a ship, primarily focused on adventure tourism, but with cargo and passenger service potential. It is not clear how the revenue base will support two or more ships. It is evident that there is insufficient revenue to support Maungaroa II alone, let alone two ships.

Options for Improving Services to the Outer Islands

There are four options for improving services to the outer islands that can sensibly be considered:

- Let things continue
- Offer an Operating subsidy
- Combine with Tokelau's ship
- Government acquires a purpose designed ship and franchises it out

It is the view of this report that the only options that deliver a reasonable and reliable level of service to the outer islands are the third and fourth options, that of combining with Tokelau's ship, or Government acquiring a purpose designed ship. Either could be franchised out. The cost of each of these options can be summarised:

Let things continue

Letting things continue as at present costs the government nothing, but costs the outer island communities in that they do not have a realistic service.

Offer an Operating subsidy

The real cost of the existing shipping operation, one ship operated by Taio Shipping but operating at an acceptable frequency, is estimated to cost between \$1.1 million to \$1.5 million a year. Seeking operating subsidy bids should therefore result in bids that are of the same magnitude.

Combine with Tokelau's ship

The total cost of operating Tokelau's proposed new ship to the Northern Group is of the order of \$1.2 million pa. Freight revenue presently paid by Northern Group residents is about \$250,000 to \$300,000. Unless a freight rate increase were agreed, then the shortfall of about

\$0.9 million is the required Northern Group operating subsidy. See Appendix 1 for more detail.

This would leave the Southern Group needing support for a service from Rarotonga. The required operating subsidy would be \$0.9 million to \$1.3 million a year. The total required subsidy is therefore of the order of \$1.8 to \$2.2 million.

There is a cultural cost to this option, in that Northern Group islands could become more closely aligned/ associated with Samoa, as that would become their to and fro port for both passengers and freight. Commercially, Samoa would most likely become the providing port for Northern Group requirements, thus further reducing ties with Rarotonga, and with the Rarotongan business community. A solution would be to subsidise some air services. This is estimated to cost about \$0.25 million pa. Also, costs associated with secure supply of aviation fuel to the Northern Group from Apia would need to be accounted for.

Government acquires a purpose designed ship and franchises it out

The Project team has estimated that a newly acquired ship costing say, \$9 million would cost about \$0.3 million a year more than the existing service (including full capital recovery of about \$0.8 million pa at a discount rate of 8% pa). Based on annual revenue of \$1.5 million, the operating deficit would be \$0.6 million. This implies that the franchise arrangement would result in Government receiving nothing for the lease of the ship, and having to top up the operating subsidy component by \$0.6 million.

Whether or not some of that cost can be offset by using the ship for tourism purposes is another matter. The international ship safety rules (SOLAS) make this quite costly to implement, and the net gain may be small or even negative.

The subsidy requirements of the four options are set out in the following table:

Option	Capital subsidy requirement	Operating subsidy range	Social cost	NPV of subsidies
Let things continue	Nil	Nil	No realistic service level	Nil
Offer an Operating subsidy	Nil	\$1.1 to \$1.5 million	Safety issues	\$11.9 million
Combine with Tokelau's ship	Nil	Northern Group: \$0.9 million Southern Group: \$0.9 to \$1.3 million Total: \$1.8 to \$2.2 million	Cost of loss of cultural and commercial ties between Northern Group and Rarotonga. Eg cost of subsidised air services, est \$0.25 million	\$19.3 million
Government acquires a purpose designed ship	Estimate of \$9 million	Up to \$0.6 million	Best solution socially	\$14.0 million

Addendum

The Cook Islands Government issued a third international shipping license and a domestic shipping license to UMA Shipping CI Ltd (UMA) on or about 31 October 2012. This report was through its draft stages but not yet published, and as it has a bearing on the recommendations, the event is noted in this addendum.

The international license covers services between New Zealand and both Rarotonga and Aitutaki. The domestic license allows services from Rarotonga and New Zealand to the Northern Group islands of Penrhyn, Manihiki, Rakahanga, Pukapuka and Nassau. UMA has engaged Pacific Direct Line (PDL) to secure and manage the Tiare Moana, a ship of 98m length overall and a nominal container capacity of 224 teu. The ship is scheduled on approximately 28 day voyages from Auckland to Rarotonga and Aitutaki, calling at the Northern Group Islands every second voyage (and at Pago Pago on the voyages in between). A ship of the size of Tiare Moana should be well suited to working off-shore into lighters at ports such as Aitutaki and Northern Group islands. The Northern Group cargo transport requirements will be well met.

Although this service will avoid the cutting of commercial ties between Rarotonga and Northern Group islands, there is still the issue of cultural ties. The social connection mentioned above may still be needed; subsidised airfares is the suggestion. These are estimated to cost about \$0.25 million a year.

Should the new service prove to be short-lived, the options set out in this report, combining with Tokelau's new long-term ship, or Government acquiring a purpose designed ship, still hold good.

1. Introduction

1.1 Background of Project

CIG is concerned about shipping services to outer islands, particularly the Northern Group. Present services are irregular and uncertain. There is concern regarding the costs of proposed services, and it is unclear whether these will meet the supply needs. These issues are the subject of this report.

1.2 Objective

The Terms of Reference state that the overall aim of this assignment is

To provide up to date information on shipping services within the Cook Islands for immediate and projected needs; and

That decision makers in the Cook Islands (and potentially the New Zealand Aid Programme) are sufficiently informed to make decisions re shipping services for the Cook Islands.

The objective of the consultancy is therefore to review the existing domestic shipping services, and determine and recommend the best option to improve and secure domestic shipping services for the Cook Islands in the future.

Specifically, the task is to:

- Document the level of existing shipping services to each of the outer islands of the Cook Islands (compared to existing demand with a focus on transport of essential supplies such as fuel, and food);
- Highlight areas of critical need for shipping services to the outer islands; and
- Provide advice on options for addressing areas of critical need (including through sub-regional arrangements, e.g. with Samoa, Niue and Tokelau).

1.3 Project Team

NZ Ministry of Foreign Affairs and Trade (MFAT) has commissioned Mark Oxley of Pacific Marine Management, Auckland to carry out this review. MFAT has also appointed John Kenning of Rarotonga to be Mark Oxley's counterpart for this review.

2. Historic Situation & Previously Proposed Solutions

Two relatively recent reports document the history of domestic shipping in the Cook Islands and propose solutions; “Review of Shipping Services between Rarotonga and its Sister Islands” 2002¹ and “A New, Custom Designed & Built Ship to Service the Cook Islands” originally written in 2007².

2.1 2002 Report, “Review of Shipping Services between Rarotonga and its Sister Islands”

The 2002 report details the sequence of ships and companies from the Silk & Boyd days pre 1988 right through to 2002. It is a story of old ships competing in a small and diminishing market place, under a regime of Government controlled prices. Not surprisingly, very few operations were commercially successful.

Silk & Boyd ceased operations in 1988 when their remaining ship, Manuvai stranded at Nassau. To fill the void, CIG chartered a series of ships, but at a financial loss and with operational problems. Taio Shipping commenced operations in 1995 and still operates today. A sequence of other companies placed ships in service in competition from time to time, but none have survived.

A common trait is that all these ships were already old when brought to the Cook Islands. Several were originally designed for other purposes such as fishing. None were fully suitable.

Through this time, the Government had relaxed its licensing regime. From 1988 (when Silk & Boyd went out of business) the Government placed no restriction on the number of licences approved. Price control was exercised. At times when more than one operator was in business, freight rates tended to be below the price control maximums. But at other times when there was just one operator, it is evident that revenue was insufficient to cover the costs of such operations in a sustainable way.

A comment in the 2002 report states “Government’s ‘free enterprise’ policy has militated against any degree of certainty in this high cost industry. It has been generally recognised in the industry that there is only room for one operator, and one reliable [word obscured]. Again there has been no point in investing large sums of money in [word obscured] vessels while the policy is in place.”

Since 2002 little has changed in terms of services and Government policy. Taio Shipping is still in business, with different ships to those operated in 2002, but still old ships that are not fully suitable. Competitors have come and gone, including Mataroa Shipping and Trading who were operating in 2002, but Taio Shipping has survived. However the level of its services is poor and its financial viability must be in question.

¹ *Review of Shipping Services between Rarotonga and its Sister Islands*, A report to the Cook Islands Government, Teina Bishop, Brian Mason, Piho Rua, Aukino Tairea & Trevor Simmons, 9 July 2002.

² *A New, Custom Designed & Built Ship to Service the Cook Islands*, Alan Sefton, Don Silk & Colin Dunlop, originally drafted in 2007, and updated from time to time. Appended as Appendix 3 to this report in its entirety as received by the Project team from Alan Sefton on 10 July 2012.

Today Government does not support domestic shipping financially. In the past however, there has been assistance, often in the form of fuel subsidies. Pre- 1988 Silk & Boyd received a fuel subsidy. In 2002, Taio Shipping was receiving concessionary fuel prices, although according to the 2002 report Mataroa Shipping and Trading was not. It is unclear when this concession on fuel prices ceased, but Mr Taio of Taio Shipping advised the Project team that there are no subsidies today.

The 2002 report looked at various options for assistance to shipping and concluded that a purpose built vessel is the best option for Government, and that it be the only ship licensed to operate in Cook Island waters (except Aitutaki). The report proposed a structure for the commercial operation of the ship whereby it is owned by Government and leased out to an operator who would have to undertake a specified service level. The financial analysis in the report indicates that it was not expected that the revenue from the service would be sufficient to fully repay the capital cost of the ship. In essence, CIG would be subsidising domestic shipping by providing a capital asset, the ship, for which it does not fully recover the capital outlay over the life of the asset.

2.2 2007 Report, “A New, Custom Designed & Built Ship to Service the Cook Islands”

The 2007 report is written by Alan Sefton, Don Silk and Colin Dunlop. It is a response to the then Government deciding to commission and own a new vessel, as proposed by the 2002 report and other similar studies. The 2007 report is appended to this report in its entirety with the permission of its authors as Appendix 3. It should be noted that their report is copyrighted.

The 2007 report summarises the situation thus:

“Besides long sea distances and small volumes of cargo, shipping services in the Cook Islands face other constraints, such as dangerous anchorages and the lack of safe harbours. But, the biggest and most urgent domestic shipping problem facing the Cook Islands Government today is how to replace the ageing fleet of vessels that have increasingly struggled to provide the service that is needed. Existing ships of a suitable size have become older, scarcer and increasingly expensive to operate. They are, in fact, now practically unavailable.

In a bid to find a solution to this inexorable dilemma, the Cook Islands Government has, over the last 10 years [ie 1997 to 2007], commissioned three different reviews of internal shipping. All three arrived at the same conclusion - that the only logical solution to the nation’s needs is a new, purpose designed and built vessel that takes full advantage of all the latest advances in ship technology in order to have the optimum ability to viably provide the services that are essential to the future of the Group.

Lending institutions, however, view island shipping ventures as high risk (at best), and private enterprise finds it is unable to raise the necessary capital for building a new ship that can provide the services needed. The Cook Islands Government has, therefore, determined to combine the strengths of both the public and private sectors in order to achieve the objective of a purpose-built vessel to service all of the islands in the nation.

To overcome the financial challenges of building a new ship, Government intends to commission and own the proposed new vessel. It will then lease that vessel to private sector operators who, under strict guidelines, will be responsible for providing the required cargo, passenger and infrastructural services on a regular and scheduled basis.”

The report then goes on to propose a solution that fits this concept:

“The new vessel envisaged would service the whole of the Cook Islands group, with once-per-month voyages to the North and a twice-per-month voyages to the South, and would answer the two most consistent criticisms of the declining internal shipping service in recent times (both have been serious contributors to the depopulation of the outer islands).

- The lack of a regular schedule of voyages which, in itself, is a severe disincentive to any social development in the outer islands and of any indigenous industries (ie crop farming, lagoon fishing, snapper and reef fishing etc) and of any significant island tourism infrastructure; and
- The lack of provision for fare-paying passengers (tourists and/or locals).”

The distinct potential of adventure tourism opportunities presented by a modern ship voyaging through the mostly unspoiled islands and atolls of the group has also been addressed, without any compromise of the vessel’s ability to provide the regular freight and fuel services that the outer islands so desperately need. In fact, the vessel proposed would considerably improve those services by enabling regular scheduling of voyages, regardless of freight loads, and better protection of cargo in terms of loading/unloading and of in-hold storage. And, it would do so with the very real possibility of the tourism aspects of the vessel’s operation subsidising freight operations to a level that will make the overall operation of the vessel economically viable.”

2.3 Comment on the Earlier Reports

2.3.1 Requirement for a purpose designed ship

These earlier reports both point to an inadequacy of shipping services to the outer islands of the Cook Islands. In the analysis which follows below, this report endorses that view. This report also endorses the view that the 20 year experiment of leaving the market to a free enterprise policy has not resulted in acceptable services. The reasons are twofold:

- The quantity of cargo is small, too small to sustain a shipping service viably; and
- The population of the outer islands is declining, resulting in a diminishing volume of cargo.

Time and again, reports have concluded that the best solution is for a purpose designed ship to be acquired, and because its operation cannot be financially viable, acquired by Government.

2.3.2 Size and Nature of a Purpose Designed Ship

Circumstances have changed since the 2007 report:

- Cargo volumes have diminished, and unless population decline is halted or reversed, will diminish further

- Ship safety rules have changed since 2007. Internationally trading passenger vessels need to be built to SOLAS passenger vessel standards. Since 2009, SOLAS passenger vessels are now required to have more onerous subdivision and damage survival features.

As a consequence, the size of the 2007 report's proposed ship may need to be revised downwards, perhaps by up to 60% of the capability assumed then. And the whole concept of carrying tourism passengers hinges on the ability to carry them internationally, between places like Tahiti and Samoa and the Cook Islands. This may now not be worth the marginal cost of doing so, given that the ship would need to be larger than necessary for just domestic cargo and passenger purposes, and have additional safety features and equipment beyond that necessary for domestic trading.

There is also the prospect of combining Tokelau's need for a ship to carry out a similar task with the Cook Islands' need, particularly in the Northern Group. It is possible that one ship might carry out the two tasks more effectively and efficiently than two ships separately doing the two tasks. This would need to be the subject of an investigation in its own right.

2.3.3 Overall View of this Report

With the caveat set out in the above section regarding size and nature of any proposed ship, this report is of the view that the previous reports are on the right track:

- That outer island social and economic development is being adversely affected by poor shipping services;
- That for two decades now, market-based solutions to domestic shipping have resulted in inadequate shipping services that are unsustainable in the longer term, particularly for the Northern Group;
- As a consequence, to improve shipping services, some government intervention is required;
- It is time to make a decision on whether to continue the market-based solutions, which have resulted in old ships that are not fully suited to the transport task, or to move towards new policies that would encourage better options;
- Such options are:
 1. **Capital subsidy:** a purpose designed ship be acquired, perhaps smaller than but similar in concept to that proposed in the 2007 paper (for example, similar to the Tokelau new ship)
 - Note that diminishing populations means that in future, such a ship could be too big
 - Or, if population decline were to be halted, it would be about right
 2. **Operating Subsidy:** Existing services be subsidised through an operating franchise
 - Note that this doesn't of itself result in modern, efficient ships.
 3. **Combine with Tokelau:**
 - **Northern Group:** combining the Tokelau new ship on both the Tokelau and Northern Group routes, based in Apia.
 - This may need a 'social' connection with Rarotonga, eg subsidised air services.
 - **Southern Group:** an operating subsidy may be enough to encourage improved services to the Southern Group.

This Project team considers that the best option is either the capital subsidy, or combining with Tokelau and an operating subsidy for both Northern and Southern Groups. In both these options, a new, modern and efficient ship would be acquired. For both these options the best arrangement would be for such a ship to be franchised out to a private sector operator (or the Tokelau ship operator in that case) for a medium term period, perhaps two or three years at a time, and operated against a minimum service level specified in the franchise arrangement. The risk, and therefore potential profit in the operation should be placed on the franchise holder, not the Government. In this way Government would know its financial exposure; the difference between the lease fee and the cost of ownership.

This report recommends that the size and capability of any proposed ship be re-evaluated to take account of the possibility of combining the Cook Islands requirement with the Tokelau requirement, of the Cook Islands future (diminishing) requirement for cargo, and of the cost of carrying international passengers.

3. Present Status

3.1 Taio Shipping

3.1.1 Ships in Service

The only formal shipping service in 2011/12 to and from Rarotonga to the outer islands is that which is provided by Taio Shipping of Rarotonga. In an interview with the owner of Taio Shipping, Mr Tapi Taio, he advised the Project team that at present he owns and operates three vessels:

- Maungaroa II – Services to Southern Group and Northern Group
 - cargo ship of 150t capacity (ex Norwegian navy ship)
 - 20 deck passengers plus 6 cabin passengers.
 - Built 1979, but re-engined
 - Purchased by Taio Shipping in 2009 (30 years old) for \$2 million
- Fishing boat
 - For fishing
- Lady Mary – short voyages to Southern Group islands
 - Fast ferry, converted from small fishing boat
 - 20t cargo
 - 5 passengers

3.1.2 Level of services

Cook Island Port Authority records show that Maungaroa II undertook 34 voyages in 2010/11 and 36 voyages in 2011/12. That is, approximately three voyages a month. No other ships are recorded as making formal voyages. Visits to outer islands are shown in Table 1:

Table 1: Ship visits to Outer Islands, 2011/12

Group	Island	Ship visits in 2011/12
Southern Group	ATIU	7
	MANGAIA	11
	MAUKE	9
	MITIARO	7
Northern Group	PALMERSTON	2
	RAKAHANGA	5
	MANIHIKI	5
	PUKAPUKA	1
	PENRHYN	1

Southern Group islands received between 7 and 11 visits, but Northern Group islands were poorly served. Of the Northern Group, only Rakahanga and Manihiki received a reasonable number of visits. Palmerston was visited by Maungaroa II just twice, both times only 12 days apart in July 2011 probably to pick up persons for the Constitution Day celebrations. Pukapuka and Penrhyn fared even worse, with only one visit each.

3.1.3 Cargo Volumes

Cook Island Port Authority records³ show that Maungaroa II carried total cargo volumes of 3,800 revenue tonnes in the period June 2011 to May 2012. This compares with 6,054 tonnes in 2006/07; a reduction to 63% of the 2006/07 volumes.

The population of islands has reduced over this same period. For the islands serviced by Taio Shipping, the populations reduced by 18%. The cargo per capita reduced by 24%. See Table 2:

Table 2: Outer Island Population, Cargo volumes and Cargo per capita: 2011/12 cf 2006/07

Group	Island	Population		Import cargo volumes		cargo per capita		Change in cargo per capita - 2011/12 cf 2006/07	Ship visits in 2011/12
		2011/12	2006/07	2011/12	2006/07	2011/12	2006/07		
Southern Group	ATIU	481	570	747	874	1.6	1.5	1%	7
	MANGAIA	573	640	1,040	1,762	1.8	2.8	-34%	11
	MAUKE	307	391	803	967	2.6	2.5	6%	9
	MITIARO	189	219	320	380	1.7	1.7	-2%	7
	Total Sthn Group	1550	1820	2,910	3,982	1.9	2.2	-14%	
Northern Group	PALMERSTON	60	63	20	150	0.3	2.4	-86%	2
	RAKAHANGA	77	141	226	182	2.9	1.3	127%	5
	MANIHIKI	243	356	484	684	2.0	1.9	4%	5
	PUKAPUKA	453	507	69	557	0.2	1.1	-86%	1
	PENRHYN	203	255	92	499	0.5	2.0	-77%	1
	Total Nthn Group	1036	1322	890	2,072	0.9	1.6	-45%	
Total	2586	3142	3,800	6,054	1.5	1.9	-24%		

The Southern Group suffered only a 14% reduction in cargo per capita, although one island, Mangaia had a 41% reduction, 34% in per capita terms. This is odd, because Mangaia had 11 ship visits, more than any other island. It is the closest island to Rarotonga (110 nm) so possibly air freight charters handled significant quantities, or other vessels provided informal and unrecorded services from time to time.

3.2 Cargo Composition

Cargo manifests were provided by the Ports Authority for 2010/11 and 2011/12. No detailed analysis has been made, but a typical cargo consists of foodstuffs and other general goods for retail sale, building materials, beverages, pig feed, gas, oil, petrol and diesel. Some of the building materials may well be for projects, other for use in home construction or improvements.

Most of the diesel is in relatively large consignments for use in power generation. The other fuels are in what appear to be household quantities, petrol and oil for example probably for outboard motors, and gas for cooking. There is also avgas for aircraft refuelling.

Diesel makes up about 12% of the total cargo overall, a total of 477 tonnes (573,000 litres). However, in the Northern Group, diesel comprised only 8% of the cargo carried by Maungaroa II, a total of 78 tonnes (94,000 litres) in 2011/12. Other fuel deliveries are known to have been made to Northern Group islands over this period, including by HMNZS Canterbury in June 2012, and by fishing vessels in the vicinity. The actual diesel demand is therefore higher than the 78 tonnes recorded in the Maungaroa II manifests. Note however, that the New Zealand Aid Programme

³ The Port Authority records are the summaries of Taio Shipping manifests, used by the Port Authority to levy port charges. The records do not look to be carefully checked, and it could well be that they understate the actual quantities carried. Other potentially unrecorded cargo could have been carried, for example by the Kwai, and Samoan charters used to transport Constitution Celebration teams over the past two to three years.

and CIG have projects in preparation to replace diesel power generation with renewable energy methods. This is likely to reduce the cargo demand in overall terms.

No outer island exports are shown in the manifests. The quantity if any is likely to be insignificant in cargo revenue terms, although not insignificant to the persons who produce such exports.

3.3 Cargo Freight Revenue

3.3.1 Freight Rate Levels

Freight rate levels have been subject to price control for over 20 years. In 1992, prices were set, and held at least until 2002 (as reported in the 2002 report). They have been increased since, but not at the rate of inflation. The CPI has increased by 75% since 1992, but the maximum allowable freight rate by only 30%. This must mean that the freight component of prices of goods in the outer islands has reduced over the years.

The 2002 report gives an analysis that shows that the freight component then of a can of corned beef was about 4% of the Rarotonga retail price in the Northern Group, and 3½% in the Southern Group. Prices then of corned beef were much higher in the outer islands than these margins, with goods being marked up by local retailers by between 85% and 150%, presumably to cover retail outlet costs, or just to take advantage of a captive market. The consequence is that there is plenty of room within the retail prices in outer islands to absorb freight rate increases, or at least, there was in 2002.

This report recommends that the control of freight rates be re-examined as to its effectiveness and necessity.

3.3.2 Total Freight Revenue

Mr Taio of Taio Shipping advised that the freight rates average about \$300/ revenue tonne to the Northern Group, and \$280/ revenue tonne to the Southern Group. At these rates, the present annual cargo freight is about:

- Northern Group:
 - 890 r/t * \$300 = \$267,000pa
- Southern Group:
 - 2910r/t * \$280 = \$814,800 pa
- Total cargo freight:
 - \$1,081,800 pa

This is well short of the \$1.5 million reported to the Project team by Mr Taio and another interviewee, Garth Broadhead of Pacific Schooners. Mr Broadhead bases his estimate on about 7000 r/t to 8000 r/t of cargo; an underlying 4000 to 5000 r/t, plus 2000 to 4000 r/t of project driven cargo. At an average cargo rate of \$200 to \$220 (lower than Taio Shipping's estimate of average rate), 7000 r/t would produce about \$1.5 million pa.

Note that in 2006/07, a rate of \$250r/t would have produced \$1.5 million, so in all probability the actual freight potential in 2012 is somewhere between \$1.1 million and \$1.5 million.

3.4 Viability of Existing Services

3.4.1 Covering both Northern & Southern Groups

The Project team estimates the real cost (including adequate expenditure on maintenance) of operating Maungaroa II on say, 7 voyages a year to the Northern Group and 14 to the Southern Group to be about \$2.1 million per year excluding capital recovery. Based on a capital outlay of \$2 million and a remaining life of 5 years, the required capital recovery is of the order of \$0.5 million a year (at a cost of capital of 8% pa). This increases the cost of the shipping service to about \$2.6 million a year.

With revenue of only \$1.1 to \$1.5 million, this leaves Taio Shipping's one ship service with an operating deficit of \$0.6 million to \$1.0 million, and an overall loss of \$1.1 million to \$1.5 million a year.

3.4.2 Covering Southern Group only

If the Northern Group were serviced from Apia using Tokelau's new ship, the cost of operating Maungaroa II on 14 voyages a year to the Southern Group only would be about \$1.6 million per year excluding capital recovery. Inclusive of \$0.5 million required capital recovery, the total cost is therefore about \$2.1 million.

Taio Shipping's Southern Group annual revenue is estimated to be between \$0.8 and \$1.2 million. If Maungaroa II were operated only to the Southern Group, this would leave Taio Shipping's one ship service with an operating deficit of \$0.4 million to \$0.8 million, and an overall loss of \$0.9 million to \$1.3 million a year, marginally better but more or less the same as covering all outer islands.

This report concludes that the existing services are not viable in the medium term, and could be in negative cash flow right now, even though it is apparent that insufficient money is being spent on maintenance. Even if restricted to Southern Group services, the existing service would still be not viable.

3.5 Population and Economy

3.5.1 Northern Group

The population of all outer islands is in decline. Since the 2006 census, the population of the Northern Group islands that are served by shipping (ie, excluding Nassau) has reduced from 1322 persons to 1036. See Table 3:

Table 3: Population of Northern Group; 2011 & 2006

Group	Island	Population		Population %age change
		1/12/2011	1/12/2006	
Northern Group	PALMERSTON	60	63	-5%
	RAKAHANGA	77	141	-45%
	MANIHIKI	243	356	-32%
	PUKAPUKA	453	507	-11%
	PENRHYN	203	255	-20%
	Total Nthn Group	1036	1322	-22%

The main employment in Northern group islands is working for the Public Service. The 2006 census estimates that 80% of the population aged 15 and older was in formal employment. 61% of the population is 15 and over (2011 census). Therefore, about 505 persons in the northern group are employed in formal work.

Of that 505 employed persons, the 2006 census reports that 63% were in the Public Service, ie about 318 persons. The 2011/12 Government expenditures totalled \$2,093,000 for salaries to public servants in the Northern Group. On average, \$6,580 per person. Assuming that the other employed persons earned at the same rate, the total wages and salaries would have been about \$3,320,000.

Other government expenditure in the Northern Group was: Child benefit, \$335,000; Old Age Pension, \$500,000; expenditure on operations (eg fuel, stores, etc), \$802,000. The total cash inflow into the Northern group was therefore as shown below in Table 4:

Table 4: Sources of Income, Northern Group

Source of income	\$ pa
Wages & salaries	3,320,000
Child benefit	335,000
Old age pension	500,000
Other expenditure by Govt	802,000
Total Cash Income for Northern Group	4,957,000
Cash Income per capita	4,784

A Household expenditure Survey conducted in 2004 however reports Northern Group household expenditure of \$8,412,000. Adjusting for the population decline, this would be something less than \$6,500,000 by 2011, or \$6,275 per capita. This is 31% greater than the direct cash inflow calculated above. This may be accounted for by remittances, or perhaps by lower earnings per employed person today, or both.

The Northern group economy is therefore based on an amount per capita of between \$4,784 and \$6,275.

3.5.2 Southern Group

Since the 2006 census, the population of all Southern Group Islands that are served by domestic shipping (ie excluding Aitutaki and the uninhabited islands) has reduced from 1820 persons to 1550. See Table 5:

Table 5: Population of Southern Group; 2011 & 2006

Group	Island	Population		Population %age change
		1/12/2011	1/12/2006	
Southern Group	ATIU	481	570	-16%
	MANGAIA	573	640	-10%
	MAUKE	307	391	-21%
	MITIARO	189	219	-14%
	Total Sthn Group	1550	1820	-15%

There is insufficient data to make a reliable estimate of the amount of money available for expenditure in the Southern Group. Aitutaki is included in too many of the data to make an estimate that excludes Aitutaki reliably. However, based on the Northern Group data of an amount per capita of between \$4,784 and \$6,275, the Southern Group total household expenditure (excluding Aitutaki and Rarotonga) would be between about \$7.5 million and \$ \$10.0 million. This may be too low, given that there is more economic activity in the Southern Group than in the Northern Group.

3.5.3 Freight Payments as a Proportion of Island Economies

The total freight payments for the Northern and Southern groups are estimated above to be \$267,000 and \$814,800 respectively. For the Northern Group, this represents 4% to 5% of the estimated total cash income of the group. For the Southern Group, it is 8% to 11% of the total estimated household expenditure, although it may well be less than this if the household expenditure estimates above are too low.

4. Adequacy of Shipping Services

In descriptive terms, the domestic shipping services are at present less than adequate, as indicated in Table 6. Services to each island are described in terms of essential service attributes: regularity, reliability, appropriate frequency and transport capability. The descriptions range from **Satisfactory**, through **Reasonable** and **Poor**, to **Extremely poor** and **Non-existent**.

Table 6: Adequacy of Domestic Shipping Services

Adequacy of services		Service attribute			
Group	Island	Regularity	Reliability	Appropriate frequency	Transport capability
Southern Group	ATIU	Reasonable	Poor	Poor	Reasonable
	MANGAIA	Reasonable	Poor	Satisfactory	Reasonable
	MAUKE	Reasonable	Poor	Reasonable	Reasonable
	MITIARO	Reasonable	Poor	Poor	Reasonable
Northern Group	PALMERSTON	Non-existent	Extremely poor	Extremely poor	Extremely poor
	RAKAHANGA	Poor	Extremely poor	Reasonable	Reasonable
	MANIHIKI	Poor	Extremely poor	Reasonable	Reasonable
	PUKAPUKA	Non-existent	Extremely poor	Extremely poor	Extremely poor
	PENRHYN	Non-existent	Extremely poor	Extremely poor	Extremely poor

4.1 For Northern Group

4.1.1 Overview

The Northern Group is inadequately serviced by ships. In 2011/12, only Manihiki and Rakahanga had formal ship calls in more than one month of the year, and even these were not evenly spaced. It is reported that fishing boats made calls and sold fuel and goods to some Northern Group islands. HMNZS Canterbury delivered fuel to some islands in June 2012.

4.1.2 Critical areas

Virtually all aspects of Northern Group shipping need attention. Services are to all intents and purposes non-existent to Palmerston, Nassau, Pukapuka and Penrhyn.

The necessities are:

- Services at regular intervals
 - Regularity allows persons to plan and stock up.
- Reliable services
 - Without reliability, the ability to plan is lost
- Services at an appropriate frequency
 - Provided services are both regular and reliable, the optimum frequency is that which allows economic activity to take place and improve, but not so frequent that cargo volumes can't accumulate to a sensible quantity for transportation.
 - For the Northern Group, a good guess at the optimum is between 6 weeks and 8 weeks frequency
- Transport capability
 - Capability to transport
 - General goods
 - Refrigerated
 - Fuels

- Project cargoes
- Passengers to/from main islands such as Rarotonga and perhaps Apia

If each island were visited on each voyage say six times a year, the cargo capacity would need to be about 150t, which is just beyond the capacity of Maungaroa II.

4.2 For Southern Group

4.2.1 Overview

The Southern Group has an almost adequate shipping service in terms of transport capability and regularity, but in terms of reliability (ie ability to keep to schedule) and frequency it is poor. In 2011/12, all Southern Group islands had at least 7 formal ship calls. However, Mr Taio of Taio Shipping advised that he frequently waits until the cargo accumulates to an economic quantity before commencing on a voyage. Thus, the frequency and regularity are being driven by operational needs rather than by market demands. As a consequence, reliability of scheduling is very poor.

4.2.2 Critical areas

Some aspects of Southern Group shipping need attention. As with the Northern Group, the necessities are:

- Services at regular intervals
 - Regularity allows persons to plan and stock up.
- Reliable services
 - Without reliability, the ability to plan is lost
- Services at an appropriate frequency
 - Provided services are both regular and reliable, the optimum frequency is that which allows economic activity to take place and improve, but not so frequent that cargo volumes can't accumulate to a sensible quantity for transportation.
 - For the Southern Group, a good guess at the optimum is between 3 weeks and 6 weeks frequency
- Transport capability
 - Capability to transport
 - General goods
 - Refrigerated
 - Fuels
 - Project cargoes
 - Passengers to/from main islands such as Rarotonga and perhaps Apia

If each island were visited on each voyage say twelve times a year. The cargo capacity would need to be about 250t. Alternatively, calling at say Atiu and Mitiaro on one voyage, then Mauke and Mangaia on the next, but still 12 visits pa to each island, the cargo capacity would need to be about 150t.

4.3 Safety

Safety is a major service attribute. The existing services are provided by a ship that is more than 30 years old, and unlikely to be fully maintained as a result of cash flow pressures. Although Maungaroa II is in survey, its condition and safety capability cannot be as good as a younger ship. This is explained further in Section 5.1 following.

5. Plans for the Future

5.1 Use of Old ships

The existing fleet comprises of all old ships. Only the Lady Mary was sighted by the project team, but ships of this age, over 30 years in the case of Maungaroa II, are very difficult to keep in service, and very costly to maintain. For example, to keep a ship of 30 years in service, fully surveyed, usually costs about 75% a year more than the same ship when new or in its first 5 to 10 years of age. The main component of cost is the five yearly dry docking, at which any major deficiencies have to be put right. At 30 years of age, not only are hull plates corroding and needing replacement, and engine parts and deck machinery increasingly wearing out, but pipework and electrical systems are reaching their end of life. These are very costly items to replace or renovate.

For ships of the size in use in the Cook Islands, the cost of repairs, maintenance and an annual docking allowance should be \$250,000 a year or more for a 30 year old ship. Observation of old ships indicates that they are often not nearly kept up to a safe standard. This is almost always because the cost is prohibitive in competition with younger, more modern ships. As a result, safety is compromised, and scheduling becomes unreliable through breakdowns and emergency repairs.

Ship powering requirements and marine engine design have improved markedly over the last 10 years or so. Thus, the fuel consumption per tonne of cargo carried of older ships is higher than in a modern equivalent sized ship.

Modern ship cargo stowage design and handling has improved. Consequently the cost of stevedoring has reduced for modern ships, and the out-turn of cargo has improved through less damage.

As a rule of thumb, any ship over 25 years of age is unlikely to be able to compete with younger ships for two reasons: its maintenance costs begin to escalate; and technology improvements mean that younger ships' improved efficiency make the older ships obsolete.

5.2 Plans for Replacement

Tapi Taio of Taio Shipping advised that they have plans to add to their fleet. He advises that they have purchased the Ocean Sun, a ship with a capacity of 600t of cargo and 100 passengers. This ship, built in 1980 is also over 30 years old. It has cost Taio Shipping \$1.5 million, and will cost a further \$0.5 million to bring it to the Cook Islands from Norway where it was bought. Taio Shipping intends to put it into the Northern Group service, with Maungaroa II concentrating on Southern Group.

It is not clear how the revenue base will support two ships. It is evident that there is insufficient revenue to support Maungaroa II alone, let alone two ships.

Garth Broadhead of Pacific Schooners also outlined plans to introduce ships. These plans are based around adventure tourism, but supplementing income with cargo revenue. If Pacific Schooners enters the domestic cargo market, the revenue base will be split between more than one ship and one operator.

6. Options for Improving Services to the Outer Islands

6.1 Options to consider

There are four options for improving services to the outer islands that can sensibly be considered:

6.1.1 Let things continue.

But this has been the case for more than 20 years, services are not at an adequate level and do not look like improving. The incumbent operator, Taio Shipping does not look like an ongoing sustainable enterprise. For these reasons, carrying on as now is not a good option.

6.1.2 Offer an Operating subsidy.

Seek operating subsidy bids from potential operators, who would provide their own ship(s) and operate against a requirement to provide a specified minimum level of service. This would give sustainability, but with old, tired ships. Competition for the service by bidders should result in a low annual operating subsidy, but the successful bidder is likely to be so, on the back of a cheap but old ship. Service reliability is not likely to be satisfactory, even with financial penalties built into the franchise arrangement.

6.1.3 Combine with Tokelau's ship:

Tokelau and the NZ Government are in the process of acquisition of a new ship for Tokelau's service between Apia and Tokelau. The proposed ship is about 45m in length, smaller than but similar in concept to the ship proposed in the 2007 paper. A high level analysis indicates that this ship would have spare time in its Tokelau itinerary to undertake say 4 or even 6 voyages a year from Apia to the Northern Group. See Appendix 1 for greater detail.

Note though that there is a cultural cost to this option, in that Northern Group islands could become more closely aligned/ associated with Samoa, as that would become their to and fro port for both passengers and freight. Commercially, Samoa would most likely become the providing port for Northern Group requirements, thus further reducing ties with Rarotonga, and with the Rarotongan business community. This option may therefore need a 'social' connection with Rarotonga, for example subsidised air services. The total air passengers from and to the Northern Group are about 400 each way a year, 744 both ways in 2010 and 863 in 2011. The annual capacity of Taio Shipping's service is about 150 passengers each way. The likely requirement for subsidy is therefore something less than 150 passengers each way per year, say 250 both ways. The fare difference is about \$1000, so an estimate of the required annual subsidy is \$0.25 million.

Similarly, Air Rarotonga maintains fuel supplies on some of the Northern Group islands. To supply this fuel from Apia instead of Rarotonga would necessitate a reliable agent there to receive their empty tanks, clean and refuel them. Air Rarotonga stated to the project team that they do not know what the cost of that would be and would have some reservations in doing so. The project team consider this to be a cost that needs to be weighed up against the overall benefit of the provision of a comprehensive service to the Northern Group.

If a ship that services Tokelau is also to service the Northern Group, there remains the requirement to support a service to the Southern Group. This could be done through an operating subsidy as outlined in section 6.1.2 above.

6.1.4 Government acquires a purpose designed ship and franchises it out.

This is the concept favoured by all recent reviews of domestic shipping, the latest of which is that reported in 2007, authored by Don Silk, Alan Sefton and Colin Dunlop. Under this option, the ship would be tendered out to the highest bidder, who, as in the two options above, is required to operate it against a requirement to provide a specified minimum level of service, and who takes the risk on the profit or loss of the commercial operation. This has the strengths that it provides a modern ship to do the required task, without needing any private person or entity to put up a large amount of capital and thus risk losing it if Government were not to protect them. Its major shortcoming is that it requires perhaps a capital investment up front by Government.

6.2 Cost of options

See Table 7 below and Appendix 2.

Let things continue

Letting things continue as at present costs the government nothing, but costs the outer island communities in that they do not have a realistic service.

Offer an Operating subsidy

The real cost of the existing shipping operation, one ship operated by Taio Shipping but operating at an acceptable frequency, is estimated above (section 3.4.1) to cost between \$1.1 million to \$1.5 million a year⁴. Seeking operating subsidy bids should therefore result in bids that are of the same magnitude.

Combine with Tokelau's ship

The total cost of operating Tokelau's proposed new ship to the Northern Group is of the order of \$1.2 million pa. See Appendix 1. Freight revenue presently paid by Northern Group residents is about \$250,000 to \$300,000. Unless a freight rate increase were agreed, then the shortfall of about \$0.9 million is the required operating subsidy.

This would leave the Southern Group needing support for a service from Rarotonga. Based on the cost structure set out in Appendix 2, the required operating subsidy would be \$0.9 million to \$1.3 million a year. See also section 3.4.2. The total required subsidy is therefore of the order of \$1.8 to \$2.2 million.

Note though the cultural cost to this option outlined above; as the Northern Group loses contact with Rarotonga it will probably become more associated with Samoa, the home base of the Tokelau vessel. A solution would be to subsidise some air services. This is estimated above to cost about \$0.25 million pa. Also, costs associated with secure supply of aviation fuel to the Northern Group from Apia would need to be accounted for.

Government acquires a purpose designed ship and franchises it out

The Project team has estimated that a newly acquired ship costing say, \$9 million⁵, would cost about \$0.3 million a year more than the existing service (including full capital recovery of about

⁴ Comprising 7 Northern Group voyages and 14 Southern Group voyages a year.

⁵ The ship described in the 2007 Sefton, Silk, Dunlop report is estimated by those authors to cost about \$20 million if built in a shipbuilding centre such as Indonesia or China, or \$25 million if built in New Zealand or Australia. However, the Project team consider that design to be much larger than necessary. An appropriately sized ship of

\$0.8 million pa at a discount rate of 8% pa). Based on annual revenue of \$1.5 million, the operating deficit would be \$0.6 million. This implies that the franchise arrangement would result in Government receiving nothing for the lease of the ship, and having to top up the operating subsidy component by \$0.6 million.

Whether or not some of that cost can be offset by using the ship for tourism purposes is another matter. The international ship safety rules (SOLAS) make this quite costly to implement, and the net gain may be small or even negative.

Table 7: Cost & Profitability of Options

Cost & Profitability (NZ\$)	One ship service, Northern & Southern Groups from		Tokelau Ship, Northern Group from Apia; Existing Ship Southern Group from Rarotonga		
	Existing Ship	New ship	Existing ship, Sthn Group only	Tokelau ship, Nthn Grp from Apia	Combined cost
Capital value	2,000,000	9,000,000	2,000,000		
Annual reqd cap recovery	\$500,913	\$815,751	\$500,913		
Total fixed operating costs	1,425,689	1,223,251	1,425,689		
Total period costs	1,926,602	2,039,002	1,926,602	700,000	2,626,602
<i>Voyage costs</i>					
Fuel cost pa	607,031	803,658	175,000	468,000	643,000
Other voyage costs	82,000	42,000	28,000	14,000	42,000
Total voyage costs	689,031	845,658	203,000	482,000	685,000
Ops & voyage costs(excl cap recovery)	2,114,721	2,068,909	1,628,689		
Total annual cost (incl cap recovery)	2,615,633	2,884,660	2,129,602	1,182,000	3,311,602
<i>Revenue</i>					
Revenue	1,500,000	1,500,000	1,200,000	300,000	1,500,000
Ops surplus, excl cap recovery/ (deficit)	(614,721)	(568,909)	(428,689)		
Total profit/ (loss)	(1,115,633)	(1,384,660)	(929,602)	(882,000)	(1,811,602)

It is the view of this report that the only options that deliver a reasonable and reliable level of service to the outer islands are the third and fourth options above, that of combining with Tokelau’s ship, or of Government acquiring a purpose designed ship. Either could be franchised out. However, the least cost option is to continue operating the existing ship(s). This would need an operating subsidy, which could be arrived at through a tender process. Nevertheless, there remain concerns as to the reliability and safety of continuing to use such old ships.

6.3 Subsidy Requirements

Based on a total domestic shipping annual revenue of \$1.5 million, The estimates of the subsidy requirements for each option are as set out in Table 8:

about 60% smaller capacity might therefore cost significantly less, say \$9 million, the estimated capital cost of putting Tokelau’s new ship into service.

Table 8: Subsidy Requirements for Options

REQUIRED SUBSIDIES	One ship service, Northern & Southern Groups from		Tokelau Ship, Northern Group from Apia; Existing Ship Southern Group from Rarotonga		
	Existing Ship	New ship	Existing ship, Sthn Group only	Tokelau ship, Nthn Grp from Apia	Combined cost
Capital subsidy requirement		9.0			
Operating subsidy requirement	1.1	0.6	0.9	0.9	1.8
NPV based on 25 years, at disc rate of:	(11.9)	(14.0)	(9.9)	(9.4)	(19.3)

The lowest Net Present Value (NPV) of subsidy support is \$11.9 million for continuing with existing services. This consists of an annual operating subsidy of \$1.1 million).

The next lowest NPV is \$14.0 for a new ship which consists of a capital subsidy of \$9 million, plus an annual operating subsidy of \$0.6 million.

The highest NPV is \$19.3 million for the Tokelau ship to service the Northern Group, and an existing service to continue servicing the Southern Group only. The subsidies comprise of annual operating subsidies of \$0.9 million each for the two components. In addition, this option may need an air service subsidy of about \$0.25 million a year, in order to maintain cultural links.

In summary, the subsidy requirements of the four options are set out in Table 9:

Table 9: Summary for Improving Services to the Outer Islands

Option	Capital subsidy requirement	Operating subsidy range	Social cost	NPV of subsidies
Let things continue	Nil	Nil	No realistic service level	Nil
Offer an Operating subsidy	Nil	\$1.1 to \$1.5 million	Safety issues	\$11.9 million
Combine with Tokelau's ship	Nil	Northern Group: \$0.9 million Southern Group: \$0.9 to \$1.3 million Total: \$1.8 to \$2.2 million	Cost of loss of cultural and commercial ties between Northern Group and Rarotonga. Eg cost of subsidised air services, est \$0.25 million	\$19.3 million
Government acquires a purpose designed ship	Estimate of \$9 million	Up to \$0.6 million	Best solution socially	\$14.0 million

Addendum

. **Combining New Zealand/ Rarotonga Services with a Service to the Northern Group**

The Cook Islands Government issued a third international shipping license and a domestic shipping license to UMA Shipping CI Ltd (UMA) on or about 31 October 2012. This report was through its draft stages but not yet published, and as it has a bearing on the recommendations, the event is noted in this addendum.

The international license covers services between New Zealand and both Rarotonga and Aitutaki. The domestic license allows services from Rarotonga and New Zealand to the Northern Group islands of Penrhyn, Manihiki, Rakahanga, Pukapuka and Nassau.

UMA has engaged Pacific Direct Line (PDL) to secure and manage a vessel. The ship acquired is the *Tiare Moana*, formerly the *Scarlet Lucy*, a ship of 98m length overall and a nominal container capacity of 224 teu. The ship is scheduled on approximately 28 day voyages from Auckland to Rarotonga and Aitutaki, calling at the Northern Group Islands every second voyage (and at Pago Pago on the voyages in between). This will result in about 6 voyages a year to Northern Group islands. A ship of the size of *Tiare Moana* should be well suited to working off-shore into lighters at ports such as Aitutaki and Northern Group islands. The Northern Group cargo transport requirements will be well met.

Although this service will avoid the cutting of commercial ties between Rarotonga and Northern Group islands, there is still the issue of cultural ties. *Tiare Moana* is not scheduled to return from the Northern Group islands to Rarotonga, and may not in any event be capable of carrying passengers. The social connection mentioned in section 6.1.3 may still be needed; subsidised airfares is the suggestion. These are estimated in that section to cost about \$0.25 million a year.

Should the new service prove to be short-lived, the options set out in this report, combining with Tokelau's new long-term ship, or Government acquiring a purpose designed ship, still hold good. See Chapter 6, Options for Improving Services to the Outer Islands above.

Appendices

Appendix 1: Combining with Tokelau’s new ship

MFAT and the Government of Tokelau are working towards acquisition of a new ship for the Apia/ Tokelau service. This ship will have passenger and cargo capability to SOLAS Passenger Ship standards. It is intended to provide about 26 voyages a year between Apia and Tokelau, once every fortnight. The proposed ship’s particulars are:

<i>Proposed Tokelau Ship</i>		
Gross Tonnes (GT)		<500
Length overall	m	44.8
Length waterline	m	42.8
Beam	m	9.6
Draft	m	2.8
Passenger capacity		80
Crew		12
Cargo capacity -deadweight	t	375
General cargo - deck	m2	150m2
Freezer/ cooler	m3	20m3
Diesel	litres	200,000
Petrol		drums on DG voyage
Fresh water	litres	70,000
Engine power (MCR)		2x750kW
Speed		12 kn
Fuel consumption for 12 kts	l/hr	300

Meeting the requirement

The Apia/ Tokelau round voyage takes about 7 days. A round trip from Apia to Nassau/ Pukapuka/ Rakahanga/ Manihiki/ Penrhyn would take about 12 days. If this Northern Group voyage were undertaken once every 2 or 3 months, then on 4 or 6 occasions a year, Tokelau would have the period between calls at each atoll extended from 14 days to 19 days. But the full 26 voyages a year would still be achievable.

A voyage to the Northern Group once every 3 months would need a cargo capacity of about 225m3. This may be beyond the capacity of the Tokelau ship. Therefore, a voyage every 2 months may be more suitable; a cargo capacity requirement of about 150m3.

If fewer than 15 passengers are carried, petrol can be carried in drums. Diesel can be carried on any voyage.

Cost

The annual fixed cost of operating the proposed new Tokelau ship is estimated to be about \$2.5million (including required capital recovery). If the Northern Cooks received 6 voyages a year (a total of 72 days) and Tokelau 26 voyages (182 days), the Northern Cooks share would be 28% of this fixed cost, ie about \$700,000. The voyage costs (mostly fuel) for 6 voyages would be about \$500,000 a year. The total cost is therefore of the order of \$1.2 million pa.

The estimate of freight revenue presently paid by Northern Group residents is about \$250,000 to \$300,000. Unless a freight rate increase were agreed, then the shortfall of about \$900,000 is the required operating subsidy.

Appendix 2: Cost comparison of Options

The costs of options are set out below, with a consistent set of assumptions, for:

- A One-ship service based on Rarotonga:
 - Using an existing ship
 - Acquiring a new ship
- A combined service:
 - Using an existing ship for Southern Group services, from Rarotonga
 - Using Tokelau's new ship for the Northern Group, from Apia

Cost & Profitability (NZ\$)	One ship service, Northern & Southern Groups from		Tokelau Ship, Northern Group from Apia; Existing Ship Southern Group from Rarotonga		
	Existing Ship	New ship	Existing ship, Sthn Group only	Tokelau ship, Nthn Grp from Apia	Combined cost
Capital value	2,000,000	9,000,000	2,000,000		
Life	5	25	5		
Future Value (at end of life)		2,000,000			
Discount rate					
8%					
Annual reqd capital recovery	\$500,913	\$815,751	\$500,913		
<i>Fixed Operating costs</i>					
Crew Costs	425,000	440,000	425,000		
Repairs & maintenance	670,689	383,251	670,689		
Insurance	30,000	100,000	30,000		
Administration	300,000	300,000	300,000		
Total fixed operating costs	1,425,689	1,223,251	1,425,689		
Total period costs	1,926,602	2,039,002	1,926,602	700,000	2,626,602
<i>Voyage costs</i>					
Fuel					
Speed	8	12	8		
Consumption (t/day)	3.0	6.0	3.0		
Consumption / 100nm	1.56	2.07	1.56		
Price/litre	1.666	1.666	1.666		
Price/t	2000	2000	2000		
Cost/mile	31.25	41.37	31.25		
Miles pa	19,425	19,425	5,600		
Fuel cost pa	607,031	803,658	175,000	468,000	643,000
Other voyage costs	82,000	42,000	28,000	14,000	42,000
Total voyage costs	689,031	845,658	203,000	482,000	685,000
Ops & voyage costs(excl cap recovery)	2,114,721	2,068,909	1,628,689		
Total annual cost (incl cap recovery)	2,615,633	2,884,660	2,129,602	1,182,000	3,311,602
<i>Revenue</i>					
Cargo pa	3,800	3,800	2,910	890	3,800
Cost/rev tonne	688	759	732	1,328	871
Revenue	1,500,000	1,500,000	1,200,000	300,000	1,500,000
Ops surplus, excl cap recovery/ (deficit)	(614,721)	(568,909)	(428,689)		
Total profit/ (loss)	(1,115,633)	(1,384,660)	(929,602)	(882,000)	(1,811,602)

The resulting subsidy requirements are therefore:

REQUIRED SUBSIDIES	One ship service, Northern & Southern Groups from		Tokelau Ship, Northern Group from Apia; Existing Ship Southern Group from Rarotonga		
	Existing Ship	New ship	Existing ship, Sthn Group only	Tokelau ship, Nthn Grp from Apia	Combined cost
Capital subsidy requirement		9.0			
Operating subsidy requirement	1.1	0.6	0.9	0.9	1.8
NPV based on 25 years, at disc rate of:	(11.9)	(14.0)	(9.9)	(9.4)	(19.3)

8%

Assumptions:

Capital Values:

Existing ship based on purchase prices of recently acquired, old ships for Cook Islands trading, plus their modifications/ remedial work costs to put into service

New ship based on estimated total cost of placing Tokelau’s proposed new ship into service.

Crew Costs:

Based on estimated crew composition for Cook Islands domestic service (non- SOLAS):

	NZ\$
Master	120,000
1st mate	60,000
2nd mate	
Ch Eng	80,000
2nd eng	60,000
3 x Deck crew	45,000
2 x ER crew	30,000
Cook	30,000
Stwd	
Total	425,000

A new ship also assumed to have 1 Steward, for tourist passengers, at \$15,000 pa.

Repairs & Maintenance (R&M)

New ship based on estimate for Tokelau’s proposed ship. Existing ships based on 1.75 times the new ship cost. See section 5.1

Fuel consumption

Existing ships based on Maungaroa II.

New ship based on estimates for Tokelau’s proposed ship, which in turn are based on actual consumption in service for PB Matua, which is presently in service between Apia and Tokelau.

Cargo Revenue

It is likely that the cargo records understate the actual cargo volumes carried. See section 3.1.3. Two independent sources estimated the total revenue in the domestic trade to be about \$1.5 million pa. This has been used as the revenue assumption.

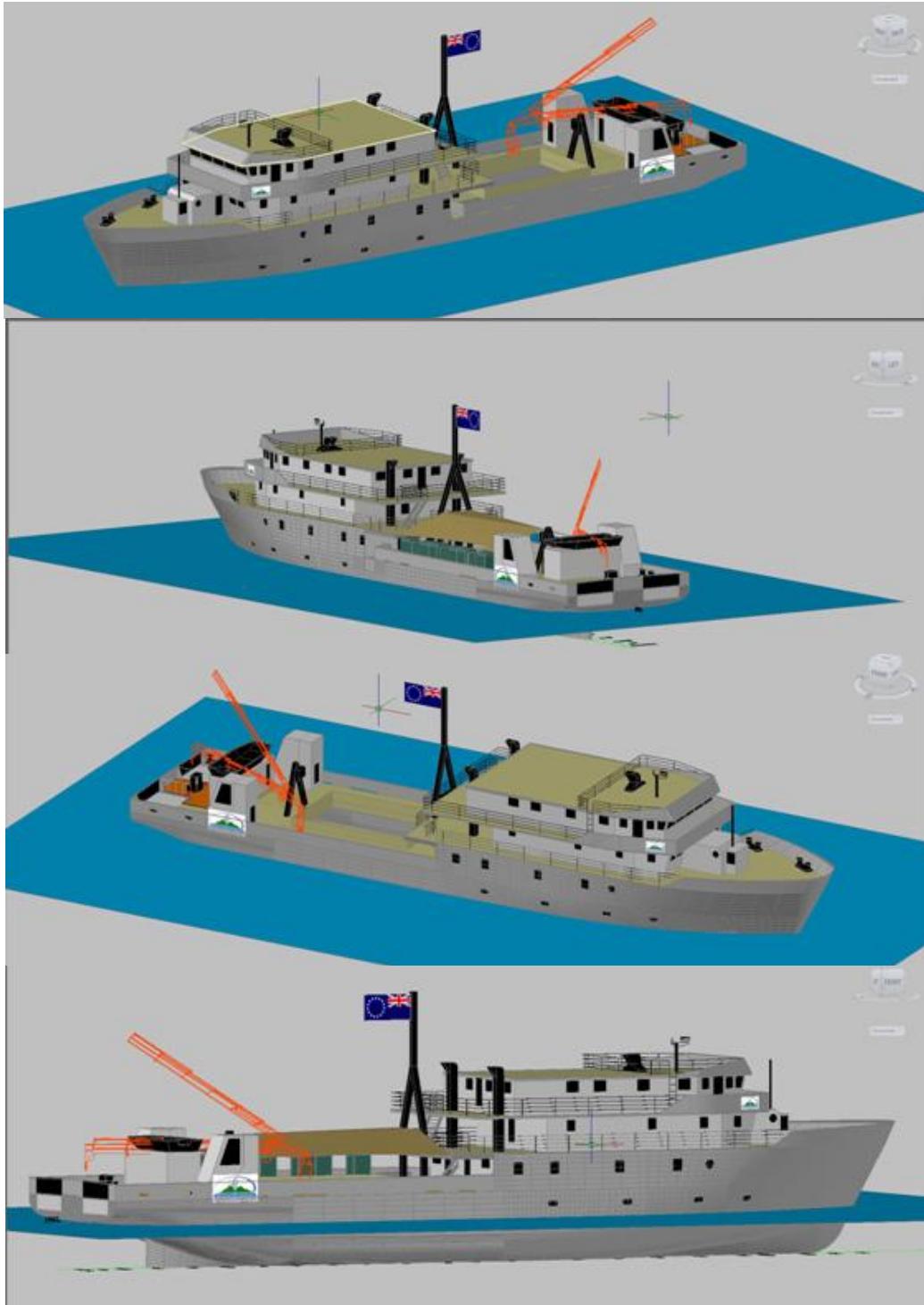
Charter of Tokelau Ship

The cost of the charter of the proposed new Tokelau ship is based on the data set out in Appendix 1.

. Appendix 3 – “A New, Custom Designed & Built Ship To Service The Cook Islands”, Sefton, Silk & Dunlop

A New, Custom Designed & Built Ship To Service The Cook Islands

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Preamble

This paper provides a backdrop to the initiative of the Government of the Cook Islands to achieve a purpose designed and built, modern ship to provide the regular and reliable services that are absolutely fundamental to the economic and social futures of the 15 far-flung islands and atolls that make up this unique South Seas nation.

Overview

The **Asian Development Bank (ADB)**, in 2007, commissioned an extensive study on what it termed "the shipping sector of Pacific developing member countries".

The report was prepared as part of the output of the Bank's regional technical assistance project (TA 6166 REG): Pacific Regional Transport Analysis. The goal of that project is to enhance economic development in Pacific developing member countries (DMCs) of ADB by improving the efficiency and effectiveness of Pacific transport services.

In order to achieve this, the report was expected to contribute to reform of public sector operations and policies in the transport sector, and to increased private sector participation in transport service provision. Such reform and participation, the report said, would reduce the costs of trade and commerce and consumer goods, increase employment, and reduce poverty.

It noted that the island countries of the Pacific had much in common. Most striking in this regard were their essentially maritime character, their small economic scale, and their remoteness from major markets. .

Many Pacific island countries (PICs) were remote from both major population centres and maritime trade lanes and, in most cases, imports far outweighed exports. In some cases, this imbalance was extreme, such as in Nauru, where the ratio (by value) of imports to exports was more than 600:1. More typically, the ratio lay in the range between 3:1 and 20:1. For a small number of PICs, however, this was not the case.

The report identified and quantified challenges in the shipping sector, and how these manifested themselves as costs to the community through imposts on logistics costs. Some of these challenges were immutable, but others could be addressed by local or regional initiatives. Prominent challenges that were immediately evident but not easily addressed were.-

- Long distances between ports
- Low trade volumes
- Low population and far-flung communities
- Imbalance in trade, with exports usually far outweighed by imports; and
- Widely varying port facilities with generally inadequate funding for the operation and maintenance

These factors combined to make services relatively expensive. Because of the long distances between ports and low trade volumes, PICs could not take advantage of the economies of scale available to larger international ports.

The inter-island shipping services in the Cook Islands are almost a classic example of the report's findings.

The Cook Islands

The 15 islands that form the group known as the Cook Islands are spread over 2 million square kilometres of ocean and comprise all the islands between 08 degrees and 23 degrees south latitude and 156 degrees and 167 degrees west longitude.

The total land mass amounts to only 240 square kilometres.

The 15 islands fall naturally into two groups as follows:

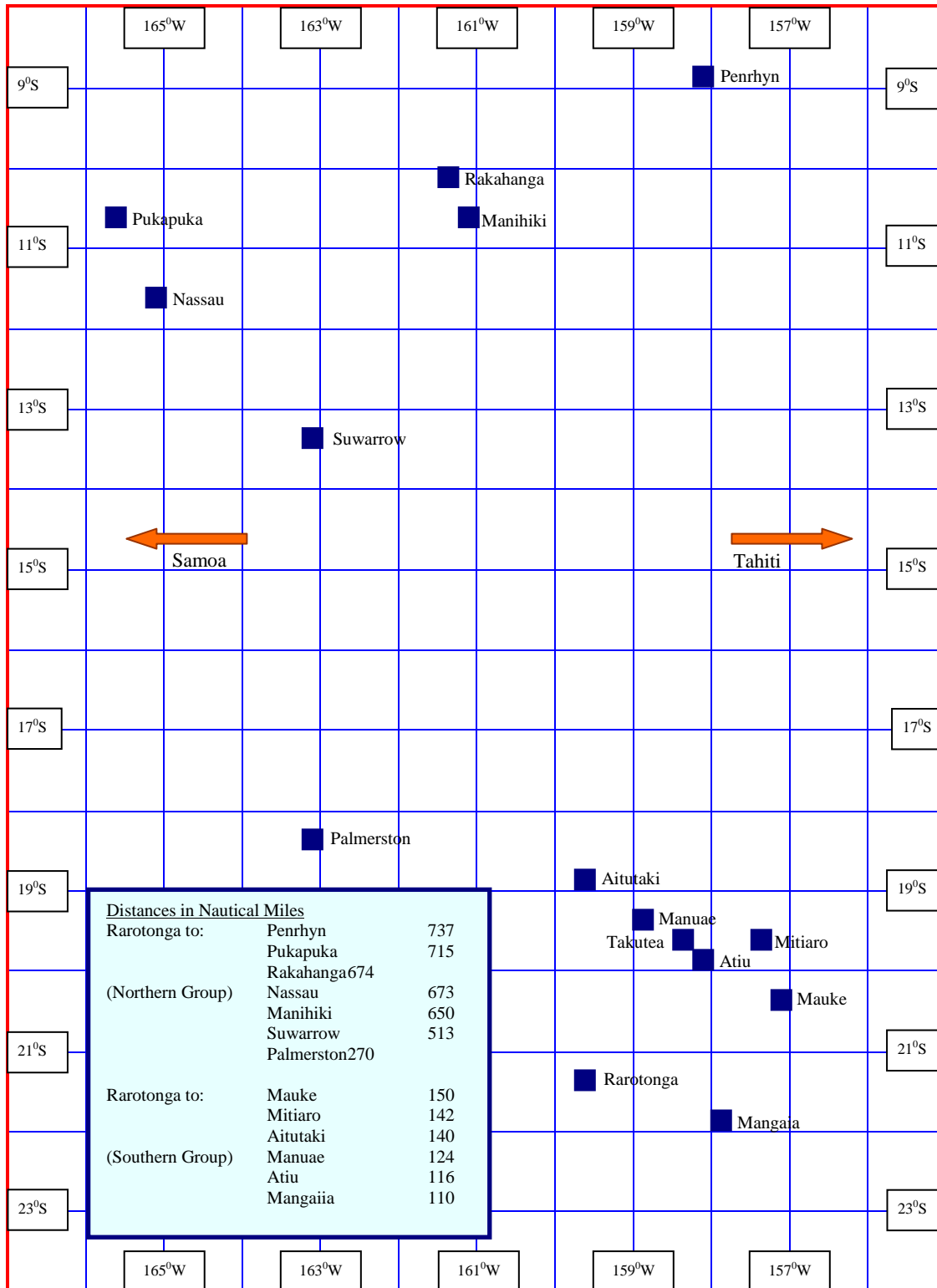
Southern Group: Comprising of the islands of Manuae, Palmerston*, Aitutaki, Mangaia, Atiu, Mauke, Mitiaro, Takutea and Rarotonga. All, except Manuae Takutea and Palmerston are of volcanic origin – Manuae and Palmerston* being coral atolls. Takutea and Manuae are uninhabited.

Northern Group: Comprising of the coral atolls of Penrhyn, Pukapuka, Nassau, Manihiki, Rakahanga and Suwarrow, which has only a resident caretaker. These islands are less developed and less populated than the Southern Group islands.

* *Geographically, Palmerston is in the Southern Group. For shipping purposes it is considered a Northern Group island.*



The Cook Islands & Distances Between



Government

The Cook Islands group became self-governing on 4 August, 1965. Today it elects a 24-member Parliament every four years. Her Majesty, the Queen of Great Britain is the titular Head of State, symbolised in Rarotonga by an appointed Queen's Representative. The people of the Cooks are British subjects with New Zealand citizenship. They govern themselves in all respects except defence, which is the responsibility of New Zealand, (with ultimate decision-making vested the Cook Islands Government). The Cook Islands promulgates and enforces its own laws, carries out its own foreign and trade policies, and maintains its own relations with other countries independent of New Zealand involvement.

The Economy

The main productive sectors of the Cook Islands economy are:

- Tourism:** The major growth sector and of significant importance to the nation's economy, Cook Islands tourism is mainly centred on Rarotonga and Aitutaki, with small motel units on Atiu, Mitiaro, Mauke and Mangaia. In the northern group there is a small motel on Manihiki and one on Penrhyn
- Agriculture:** The growing of fruit and vegetables for domestic consumption and to supply the growing tourist industry on Rarotonga and Aitutaki. Agriculture in other southern group islands is largely limited to domestic consumption except for what can be air freighted to Rarotonga. The establishment of a regularly scheduled shipping service would encourage the production of crops such as taro, bananas and citrus
- Pearl Farming:** The farming of cultured black pearls is an important industry for the northern islands of Manihiki and Penrhyn
- Fishing:** Fishing in the southern group is mainly for the domestic market. Fishing in the northern group is mainly for albacore, most of which is landed at Pago Pago (American Samoa). At present there are two vessels landing loined albacore in Rarotonga for transhipment to New Zealand

The Population

The population of the Cook Islands is Polynesian in origin with a mixture of European/Polynesian-blood moderately evident. The 2006 Census of Population recorded a population figure of 19,569. The spread in that that census was:

Population by Island, 2006

Rarotonga		14,153
Other Southern Group Islands		
Aitutaki	2,194	
Mangaia	654	
Atiu	572	
Mauke	393	
Mitiaro	219	4,032
Northern Group Islands		
Palmerston	63	
Nassau	71	
Pukapuka	507	
Manihiki	351	
Rakahanga	141	
Penrhyn	251	
Suvarrow	0	1,384
TOTAL COOK ISLANDS POPULATION 2006		19,569

Although most of the islands experienced population decreases since the previous census, this was offset by the 16.1% increase in Rarotonga and 12.7% in Aitutaki. In 2006 the estimated resident population was 11,800.

Declining Population in the Outer Islands

Compared to the other islands of the group, Rarotonga is relatively over-crowded with its services and utilities strained. Other than Rarotonga and Aitutaki, the population is in serious decline, a situation that is believed to have worsened (particularly in the northern group) since the census of 2006.

Manihiki had a surge in population during the 1990's with a booming cultured pearl industry, but *Cyclone Martin* devastated the island in 2000 and many people left permanently. The price of Cook Islands cultured pearls has since reached an all time low and although government is making an effort to revive the industry, there are now only a handful of successful pearl farmers left in Manihiki and Penrhyn.

Final Report

Population Decline

Northern Group Population Decline							
Census	Manihiki	Penrhyn	Rakahanga	Pukapuka	Nassau	Palmerston	Total
1961	1,006	628	319	718	109	86	2,866
1966	584	545	323	684	167	86	2,389
1971	452	612	339	732	160	62	2,357
1976	266	531	283	785	123	56	2,044
1981	405	608	269	797	137	51	2,267
1986	508	497	282	761	119	66	2,233
1991	663	503	262	670	102	49	2,249
1996	668	606	249	779	99	49	2,450
2001	515	357	169	664	72	48	1,825
2006*	351	251	141	507	71	63	1,384
Southern Group Population Decline							
	Census	Mangaia	Atiu	Mauke	Mitiaro	Total	
	1961	1,877	1,266	785	307	4,235	
	1966	2,002	1,327	671	293	4,293	
	1971	2,081	1,455	763	331	4,630	
	1976	1,530	1,312	710	305	3,857	
	1981	1,364	1,225	681	256	3,526	
	1986	1,229	957	692	273	3,151	
	1991	1,214	1,006	639	247	3,106	
	1996	1,108	956	652	319	3,035	
	2001	744	623	470	230	2,067	
	2006*	654	572	393	219	1,838	
*Preliminary							
Source: Statistics Cook Islands							

The decline in population can be attributed to several factors:

1. Copra, once the main income for all islands in the northern group, is no longer produced. The international price has fallen due to competition from other sources of vegetable oils
2. Oranges and pineapples which were produced in the southern group for the processing factory in Rarotonga were, in effect, subsidized by N.Z. by means of a protective tariff which favoured the Cook Islands. This industry collapsed when the protective tariff was removed

3. The building of the Rarotonga International Airport employed hundreds of men, many of whom came from the outer islands, particularly the southern group. When the airport was completed in 1972, Cook Islanders had, for the first time, almost unlimited opportunity to travel, and many of these workers, taking advantage of their New Zealand citizenship, left for that country.

Between 1972 and 1976, the population fell by 2900, or 13.6%. This was really the start of a steady outward migration of the Cook Islands population which persists to the present day. The diminishing population is particularly noticeable in the outer islands, which, of course, impacts on domestic shipping.

Transportation

Shipping and Harbours

Rarotonga is the commercial centre of the Cook Islands and most of the country's imports and exports flow through its port. Consequently it is the hub of inter-island shipping within the group. With the exception of Rarotonga and Penrhyn, the islands have no harbour facilities for ships. The loading and off-loading of cargoes from ships requires barges or lighters.

Aitutaki has a containerised shipping service from New Zealand approximately every 25 days. The ship calls at Rarotonga en route, so the island enjoys a containerised service from that island also and is not dependant on domestic shipping.

All other islands in the group are serviced from Rarotonga by domestic vessel(s).

Airports and Air Services

There are regular, scheduled international air services from Rarotonga to New Zealand, Tahiti and North America.

In terms of internal air services, other Southern Group islands that have airstrips are Aitutaki, Mangaia, Atiu, Mauke and Mitiaro.

Air Rarotonga maintains a scheduled service to all these islands and makes flights on demand to Penrhyn, Manihiki and Pukapuka, the only islands in the Northern Group with airstrips.

The small aircraft that are employed (and the long distances involved) for the services to the Northern Group islands dictate reduced payloads, so passenger fares are high (beyond the means of most of the population), and the small populations do not warrant larger aircraft (which, in any case, can't land on the small airstrips).

Background

In a country of widely dispersed islands, the contribution of transport, particularly regular and reliable shipping, is vital for the movement of commodities and services. Its role relates not only to the distribution of imported goods and the assembly of export products, but also to the social needs of isolated communities and the political desirability of building a cohesive nation from its physical and cultural fragments.

The framework within which transport functions in the Cook Islands is defined by both the geographical configuration and the social and economic structure of the islands, and is conditioned by the perceptions held by users and providers of what should and could be transported. The government, ship owners and villagers all have different interests which they wish to see given priority.

It is the physical distribution of the islands, however, that imparts the most basic constraint on the provision of internal transport and distance from Rarotonga is a central constraint to a more equitable distribution of services, for the costs involved in overcoming isolation are frequently prohibitive. Long sea distances, small populations and small cargo consignments all combine to render shipping services either economically marginal or, in the outer extremities of the country, totally uneconomic.

Economics, however, are not the only consideration. The need, at a national level, for a sense of unity and nationhood has always been seen as a desirable development by the Cook Islands Government.

The outer islands of the Cooks, particularly the northern atolls, pose the greatest problems for they remain marginal not only in an economic sense but also socially and politically. Visits by administrative personnel are rare and generally brief, and the small populations are seen as politically ineffective.

In the lower (more southerly) group of islands, frequent contact by air between island communities and Rarotonga allows for a diffusion of ideas and attitudes and for greater involvement by the State.

Internal Shipping

Internal shipping services in the Cook Islands have deteriorated over the past several decades.

As shipping costs have increased, and volumes of cargo have decreased, operators have economised by reducing the number of port calls, tending to often eliminate those with smaller volumes. In many cases, operators have abandoned scheduled services, preferring to direct vessels to those ports where better volumes of cargo are offering.

Shipping services have therefore acted in response to demand and this has had a major effect on the regularity of service to the outer islands. The advent of internal air services has had little effect on cargo movements but, combined with sub-standard accommodation on domestic

ships, and unpredictable schedules, it has seriously reduced the number of passengers using internal shipping.

Diminishing Opportunity

It is generally recognised that opportunities to participate in the cash economy are fewer for those islands with lesser access to the pivotal point in the economy (Rarotonga) relative to those islands with greater access.

Increasing diversity in levels of social and economic opportunity has intensified the core-periphery structure of the country. This has led to further concentration of shipping services in the areas of greater economic activity.

Caught in a downward spiral, those islands isolated from the central area have become marginalised and the inability of the current internal shipping services to meet the real or perceived needs of island populations throughout the country is an essential problem.

The steady decline in the frequency and quality of internal shipping services has other important implications.

Scheduled internal services generally form the basis of the transport system and the integration of transport with other economic sectors, including Government infrastructure initiatives, is essential if any development strategy in the outer-islands is to be contemplated.

The downward spiral is now fuelling itself and it is this that Government is seeking to fracture with new transportation initiatives.

The Way Forward

Besides long sea distances and small volumes of cargo, shipping services in the Cook Islands face other constraints, such as dangerous anchorages and the lack of safe harbours.

But, the biggest and most urgent domestic shipping problem facing the Cook Islands Government today is how to replace the ageing fleet of vessels that have increasingly struggled to provide the service that is needed. Existing ships of a suitable size have become older, scarcer and increasingly expensive to operate. They are, in fact, now practically unavailable.

In a bid to find a solution to this inexorable dilemma, the Cook Islands Government has, over the last 10 years, commissioned three different reviews of internal shipping.

All three arrived at the same conclusion - that the only logical solution to the nation's needs is a new, purpose designed and built vessel that takes full advantage of all the latest advances in ship technology in order to have the optimum ability to viably provide the services that are essential to the future of the Group.

Lending institutions, however, view island shipping ventures as high risk (at best), and private enterprise finds it is unable to raise the necessary capital for building a new ship that can provide the services needed.

The Cook Islands Government has, therefore, determined to combine the strengths of both the public and private sectors in order to achieve the objective of a purpose-built vessel to service all of the islands in the nation.

To overcome the financial challenges of building a new ship, Government intends to commission and own the proposed new vessel.

It will then lease that vessel to private sector operators who, under strict guidelines, will be responsible for providing the required cargo, passenger and infrastructural services on a regular and scheduled basis.

The new vessel envisaged would service the whole of the Cook Islands group, with once-per-month voyages to the North and a twice-per-month voyages to the South, and would answer the two most consistent criticisms of the declining internal shipping service in recent times (both have been serious contributors to the depopulation of the outer islands).-

- The lack of a regular schedule of voyages which, in itself, is a severe disincentive to any social development in the outer islands and of any indigenous industries (ie crop farming, lagoon fishing, snapper and reef fishing etc) and of any significant island tourism infrastructure; and
- The lack of provision for fare-paying passengers (tourists and/or locals)

The distinct potential of adventure tourism opportunities presented by a modern ship voyaging through the mostly unspoiled islands and atolls of the group has also been addressed, without any compromise of the vessel's ability to provide the regular freight and fuel services that the outer islands so desperately need.

In fact, the vessel proposed would considerably improve those services by enabling regular scheduling of voyages, regardless of freight loads, and better protection of cargo in terms of loading/unloading and of in-hold storage. And, it would do so with the very real possibility of the tourism aspects of the vessel's operation subsidising freight operations to a level that will make the overall operation of the vessel economically viable.

Operational Parameters

In determining the desired operational parameters for the proposed new vessel, the planners briefed by the CI Government's Minister for Shipping took into consideration:

- Cargo capacity
- Fuel-carrying capacity (other than the vessel's own requirements)
- Lifting capacity of the crane(s)/derrick(s)
- Lighterage capabilities
- The amount of reefer and cooler space to be provided

- The number of passengers to be accommodated, and in what class
- The service speed of the vessel; and
- What classification the ship should be built to.

In establishing the above, the Minister's planners took into consideration:

- Cargo volumes in light of depopulation
- Fuel volumes (including power generation and aviation)
- Infrastructural development needs
- Adventure tourism potential
- Likely Northern by-catch volumes *
- Where the vessel needs to go (classification); and
- Tere Party provision **

Their conclusions (and recommendations to Cabinet) were for a ship that has:

- In-hold cargo capacity of 500 cubic metres
- The capacity to deliver, per month to the outer islands, 140,000 litres of diesel and 20,000 litres of petrol (all stored in the double hull of the ship) plus aviation fuel (carried on deck)
- A 10-tonnes lift crane
- Its own lighters (including one with the capacity to accept a 10-tonne load)
- A bow thruster (to assist in lying-to for cargo discharge)
- Provision for 2 x 10ft on-deck containers which can be all-freezer or a mix of freezer/chiller
- Passenger accommodation in appropriate standard cabins for up to 34 passengers on international voyages (to Tahiti and/or Samoa) and 40 on voyages within Cook Islands waters. This cabin accommodation would be complemented by a shop, a bar, a large dining room and ample galley space

The vessel would meet the international requirements for both SOLAS (Safety of Lives At Sea) and MARPOL (Marine Pollution) classification to enable it to voyage to Papeete and/or Samoa where, as a bonus, it would be able to bunker at rates up to 50% cheaper than in Rarotonga. And, it would have the operational speed (10 knots) and reliability to maintain the dependable voyaging schedules that are a key objective.

The Minister's planners also recommended on-going monitoring of developing sail and/or kite systems that would augment performance and reduce fuel consumption (so, increasing operational viability).

* The proposed vessel could, as part of its regular voyages, provide a viable means of delivering the valuable by-catch from the Northern Fishery to Rarotonga, for domestic consumption and to be processed for export. The North is currently being fished almost exclusively for Albacore which is processed by canaries in Pago Pago (American Samoa) with the by-catch, surplus to requirements, dumped over the side

** The annual, week-long Constitution Day celebrations in Rarotonga are a key element in the Government's ambitions for a sense of unity and nationhood in the far-flung Cooks and requires the transportation to and from Rarotonga of parties of up to 40 people from every populated island in the group to enable them to take part in the celebrations and cultural competitions

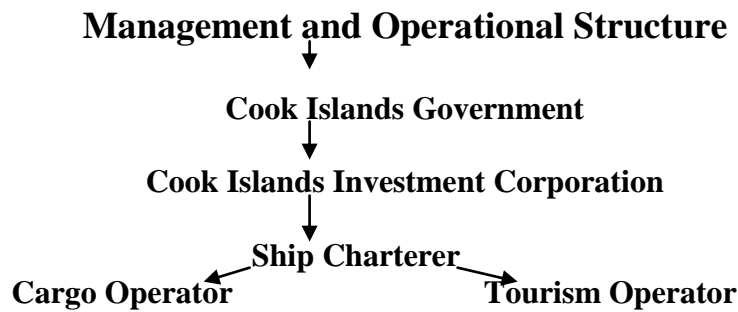
Vital Statistics

Length Overall (LOA)	60.316 metres
Length on Waterline (LWL)	57.145 metres
Beam	12.50 metres
Loaded Draft	3.00 metres
Cargo Hold Volume	517.00 Cu Metres
Assumed Cargo Weight	50 Tonnes
Lift Capacity	1 x 10 tonnes lift crane
Freezer/Chiller Capacity	2 x 10ft containers – all freezer or mix of freezer/chiller
Cargo Fuel	120 Tonnes (147.125 Litres)
Bulk Petrol	20,000 Litres
Ship's Fuel	52 Tonnes (64,000 Litres)
Fresh Water Storage	63,000 Litres
Black Water Holding	25,750 Litres
Grey Water Holding	25,750 Litres
Main Engine	Cummins KTA 38 M2
Prop	2000mm dia
Service Speed	10 Knots
Bow Thruster	HRP 3000 FP (270 Kw)



The detailed design and specification of the above vessel went to tender in April 2009, as a result of which the design contract was awarded to New Zealand-based marine architect Colin Dunlop who is highly experienced in island shipping (inter and intra).

While this stage of the process is being completed, Government is tackling the overall funding issues and testing the market in order to identify potential entities to complete the following management/operational structure for the vessel.



Cook Islands Government	Owns the ship, vests responsibility for ship operations and services in the Cook Islands Investment Corporation
Cook Islands Investment Corp:	Responsible for overall vessel programme, developing an “Operations Manual” and appointing a “Ship Charterer”
Ship Charterer:	<p>Responsible for:</p> <ul style="list-style-type: none"> a) Operating the vessel and maintaining voyage schedule required by CIIC b) All operating costs including charter fee to CIIC c) Recruitment, management & payment of crew d) All maintenance & repairs (to CIIC requirements) e) Ensuring the vessel is always in Class f) Appointing a “Cargo Operator” (subject to CIIC approval) and collecting monies from same g) Appointing a “Tourism Operator” (subject to CIIC approval) and collecting money from same.
Cargo Operator:	<p>Responsible for:</p> <ul style="list-style-type: none"> a) Timely payment of franchise fees (to “Ship Charterer”) for the cargo operations of the vessel b) Running the vessel’s cargo operations as a separate business c) The administration and management of vessel’s freight business including arranging for the consolidation of freight from different shippers, collecting freight fees from shippers, arranging for delivery at each outer island, insuring freight and dealing with claims etc.

Tourism Operator:

Responsible (to “Ship Charterer”) for:

- a) Timely payment of franchise fees (to “Ship Charterer”) for the tourism operations of the vessel
- b) Running the vessel’s tourism operations as a separate business, including marketing the product, and delivering the product, including all house-keeping, catering and entertainment operations

NB: All “franchise” fees paid up front at beginning of Operations Year so that CI Government in a “no loss” position and should even make a return on “its investment”

Proposed Voyage Schedules

Any proposed voyage schedules must:

1. Provide a regular service to all islands
2. Provide a frequency of service that is acceptable to all islands
3. Provide a service that would be compatible with the National Sustainable Development Plan (2007 – 2010)
4. While meeting the above provisions, the schedule must aim at minimising the number of miles travelled, so as to minimise the ever-increasing cost of fuel, and hence the cost of the service.

The following proposed schedules provide two alternatives. The first (**Voyage Schedules A**) is aimed at minimizing the miles travelled, and thus the consumption of fuel. This is achieved by incorporating all the northern group islands on each northern group voyage, something that is not always desirable, or even practical, because of movements of people. It envisages a 52-day cycle including 7 voyages to the Northern Group and 14 to the Southern Group per year. Each voyage encompasses either all islands in the Northern Group or all in the Southern Group. The schedule calls for a speed of 8 knots, allows for 3 days in port between voyages, and 17 days for delays due to weather, religious holidays etc. The ship steams 2,775 miles to complete each cycle, or 19,425 miles per year.

Table 1: Proposed Voyage Schedules A

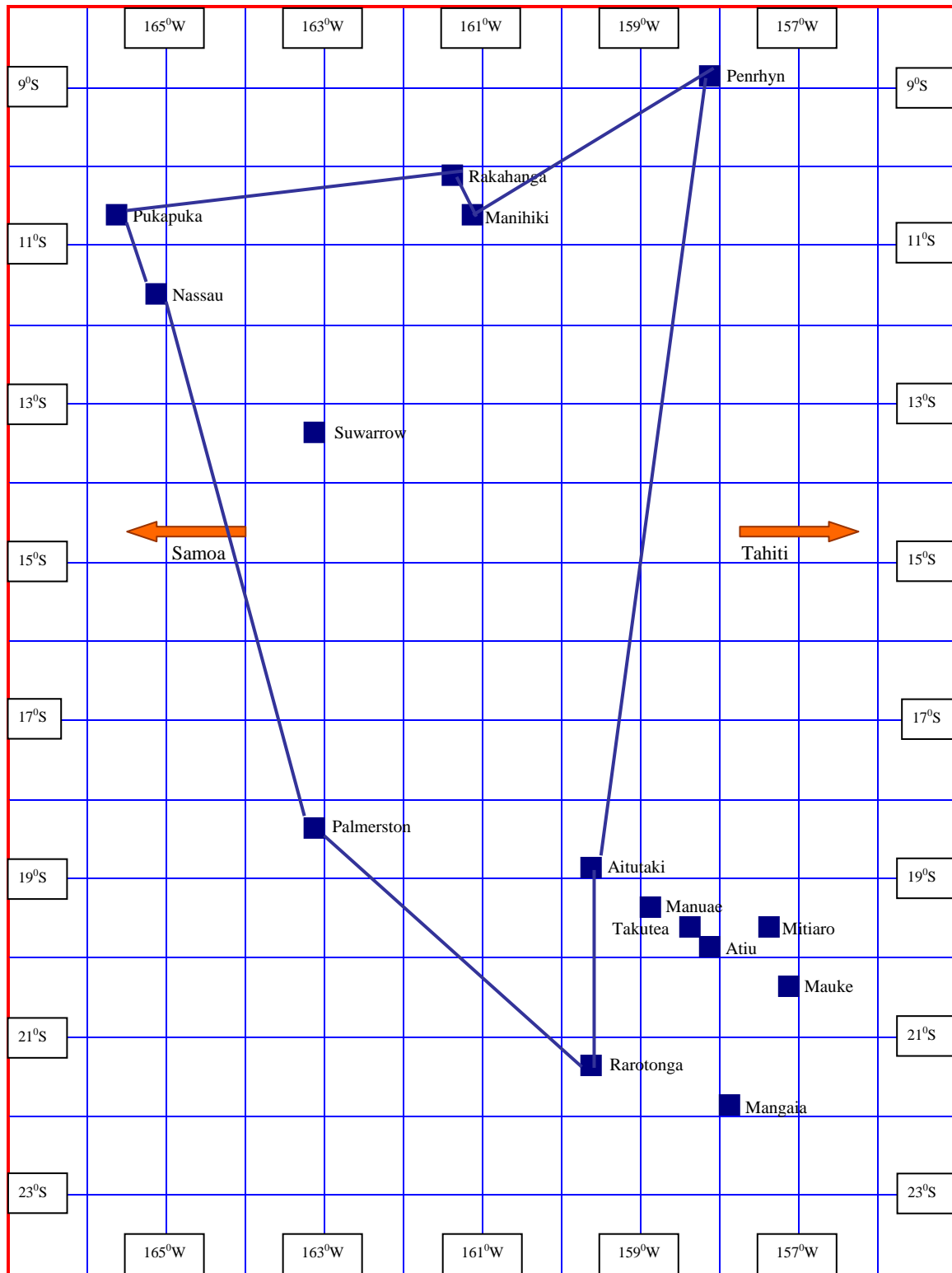


Table 2: Proposed Voyage Schedules AA

(7 trips north and 14 south per year)

VOYAGE #1							
	Miles			Arr	Dep	Day	Av. Cargo
Rarotonga to Palmerston	270		Rarotonga		Thur pm	1	
Palmerston to Nassau	408		Palmerston	Sat am	Sat n/n	3	21.43
Nassau to Pukapuka	48		Nassau	Mon n/n	Mon pm	5	20.27
Pukapuka to Rakahanga	289		Pukapuka	Tues am	Wed pm	6	79.57
Rakahanga to Manihiki	24		Rakahanga	Fri am	Fri pm	8	25.99
Manihiki to Penrhyn	196		Manihiki	Sat am	Sat pm	9	97.76
Penrhyn to Aitutaki	600		Penrhyn	Mon am	Mon pm	11	71.25
Aitutaki to Rarotonga	140		Aitutaki	Fri am	Fri n/n	15	
	1975	1975	Rarotonga	Sat am		16	316.27
VOYAGE #2							
Rarotonga to Atiu	116		Rarotonga		Tues pm	1	
Atiu to Mitiaro	27		Atiu	Wed am	Wed pm	2	62.40
Mitiaro to Mauke	32		Mitiaro	Thur am	Thur am	3	27.13
Mauke to Mangaia	115		Mauke	Thur n/n	Thur pm	3	69.05
Mangaia to Rarotonga	110		Mangaia	Fri am	Fri pm	4	125.85
	400	400	Rarotonga	Sat am		5	284.43
VOYAGE #3							
Rarotonga to Atiu	116		Rarotonga		Tues pm		
Atiu to Mitiaro	27		Atiu	Wed am	Wed pm	2	62.40
Mitiaro to Mauke	32		Mitiaro	Thur am	Thur am	3	27.13
Mauke to Mangaia	115		Mauke	Thur n/n	Thur pm	3	69.05
Mangaia to Rarotonga	110		Mangaia	Fri am	Fri pm	4	125.85
	400	400	Rarotonga	Sat am		5	284.43
		2775				26	

Notes

1. It is proposed that the above three voyages are completed every 52 days .
2. The column showing the average cargo (in and out) for each island is based on Ports Authority figures for 2006/2007.
3. The ship travels 19,425 miles per year.

The second proposed schedule (**Proposed Voyage Schedules B**) has the northern group divided into two sub-groups, with separate voyages to each. Sub Group B1 would comprise Palmerston, Nassau, and Pukapuka while Sub Group B2 would comprise Manihiki, Rakahanga and Penrhyn. This increases the total miles travelled.

It envisages a 52-day cycle including 14 voyages to the northern group and 14 to the southern group per year. Each voyage north includes all islands in one northern group sub-group, and each southern voyage includes all islands in the southern group. The schedule calls for a speed of 8 knots, allows for 3 days in port between voyages, and 12 days for delays due to weather, religious holidays etc. The ship steams 4,216 miles to complete each cycle, or 26,901 miles per year.

Final Report

Table 3: Proposed Voyage Schedules B

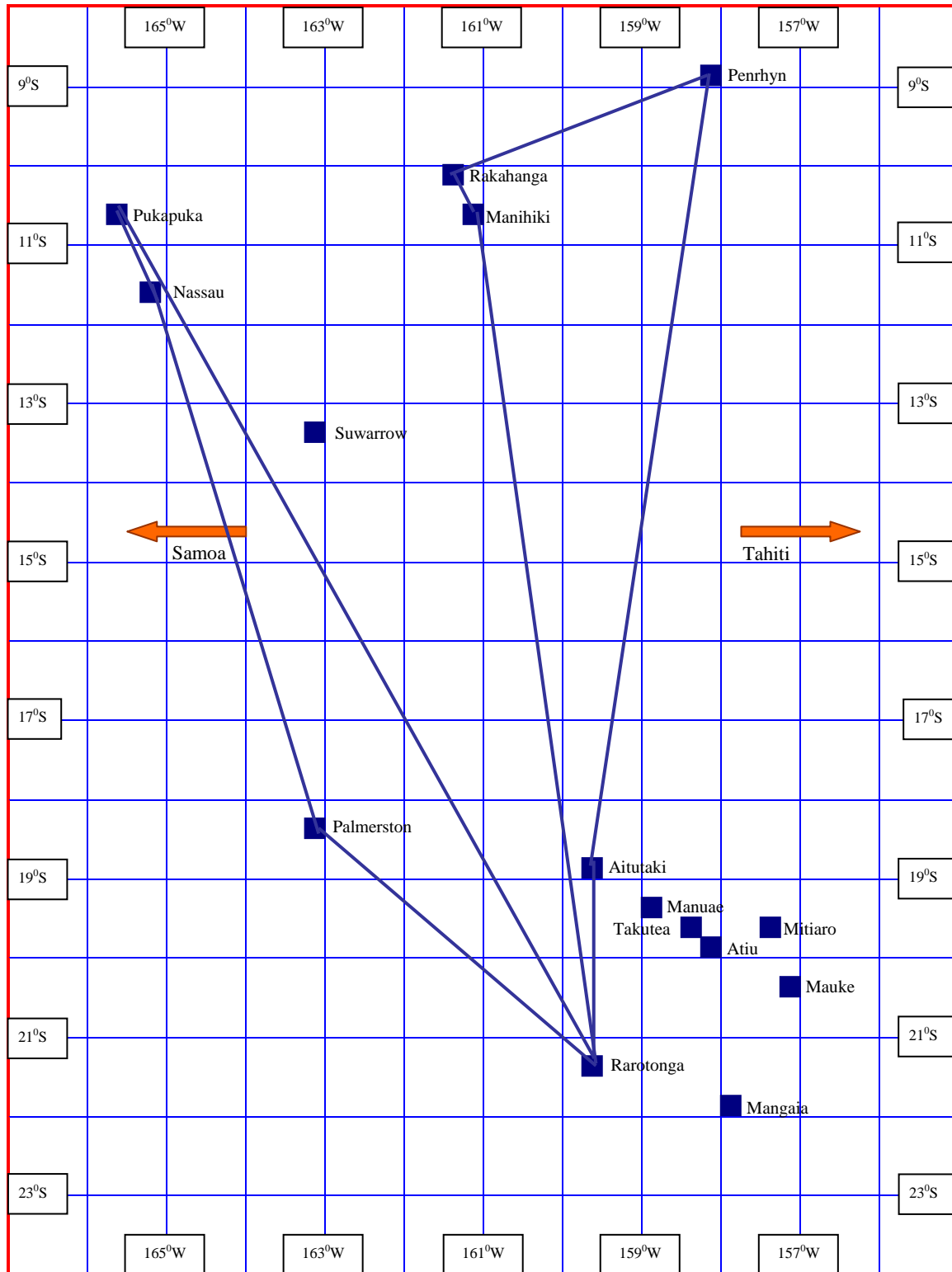


Table 4: Proposed Voyage Schedules BB
14 trips north, 14 trip south per year

VOYAGE #1							
	Miles			Arr	Dep	Day	Av. Cargo
Rarotonga to Palmerston	270		Rarotonga		Thur pm	1	
Palmerston to Nassau	408		Palmerston	Sat am	Sat noon	3	21.43
Nassau to Pukapuka	48		Nassau	Mon n/n	Mon pm	5	20.27
Pukapuka to Raro	715		Pukapuka	Tues am	Wed pm	6	79.57
	1441	1441	Rarotonga	Sun am		10	121.27
VOYAGE #2							
Rarotonga to Atiu	116		Rarotonga		Tues pm	1	
Atiu to Mitiaro	27		Atiu	Wed am	Wed pm	2	62.40
Mitiaro to Mauke	32		Mitiaro	Thur am	Thur am	3	27.13
Mauke to Mangaia	115		Mauke	Thur n/n	Thur pm	3	69.05
Mangaia to Rarotonga	110		Mangaia	Fri am	Fri pm	4	125.85
	400	400	Rarotonga	Sat am		5	284.43
VOYAGE #3							
Rarotonga to Manihiki	650		Rarotonga		Tues pm	1	
Manihiki to Rakahanga	24		Manihiki	Fri am	Fri pm	4	97.76
Rakahanga to Penrhyn	191		Rakahanga	Sat am	Sat pm	5	25.99
Penrhyn to Rarotonga	737		Penrhyn	Mon am	Mon pm	7	71.25
	1602		Rarotonga	Sat am		11	195
VOYAGE #4							
Rarotonga to Atiu	116		Rarotonga		Tues pm	1	
Atiu to Mitiaro	27		Atiu	Wed am	Wed pm	2	62.40
Mitiaro to Mauke	32		Mitiaro	Thur am	Thur am	3	27.13
Mauke to Mangaia	115		Mauke	Thur n/n	Thur pm	3	69.05
Mangaia to Rarotonga	110		Mangaia	Fri am	Fri pm	4	125.85
	400	400	Rarotonga	Sat am		5	284.43
						4216	31
The ship travels 26,901 miles per year.							

Dry Dock Surveys

The above schedules allow time for occasional trips to Papeete for fuel. If these are done in conjunction with a southern group voyage, the ship would travel to Papeete from Mauke, a distance of 480 miles.

Dry-docking, only necessary twice every 5 years, can be done during one of these trips. A dry docking may include cleaning and painting the underwater surface, inspection of through-hull fittings, propeller, and rudder and tail shaft bearings, and can take up to three days. It may be longer if repairs are to be made.

In conclusion...

The new vessel and the scheduled services it will enable have the potential to achieve much more for the Cook Islands nation than the regular and reliable delivery of people and cargo – essential as they are.

The ship and its regular voyages around the group could help curb depopulation of the outer islands by providing a reliable solution to transporting handicrafts and produce to market in Rarotonga.

And, if properly maximised, the ship and its tourist passengers could present a focal point for island community activity, for “cottage-industry development and for culture preservation and presentation.

The ship’s international passengers will be looking to buy handicrafts and other goods that are unique to the islands they visit.

Plus, those same passengers will expect to be entertained – “island-style”, to savour, on-site, the singing, dancing and drumming for which the outer islands are renowned and which are fundamental to island culture.

The only “outside” showcase currently for those activities are the annual Constitution Day celebrations in Rarotonga. The new ship and its tourist passengers will provide one monthly, throughout the year, AND generate an invaluable income stream for the island entertainers.

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