



A Modern Marina in a Primitive Paradise: How the First Floating Marina was Commissioned in Papua New Guinea

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ABSTRACT

The story of how a floating marina was designed and commissioned by the Royal Papua Yacht Club of Port Moresby, Papua New Guinea. Despite a lack of capital and little experience in marina design and construction, a state of the art marina was installed in 1984. The impact of the marina on the Yacht Club, its membership and finances has been remarkable.

INTRODUCTION

Historical background

Papua New Guinea is a developing country of the South Pacific region with enormous natural resources of minerals, timber and fisheries, a modest population of 3.6 million, 2000 tribes and 700 different languages.

Independent since 1975, Papua New Guinea has been variously described as “like the last frontier” and “every place you’ve never been”. It is a land of jungles, snow-capped mountains nearly three miles high, mighty river systems and idyllic beaches and coral reefs.

The capital of the country is Port Moresby, ‘discovered’ by Captain John Moresby R.N. on an exploratory voyage in 1823. A decade later, the southern half of the country was declared a British Protectorate .

Captain Moresby described the harbour of the future city which bears his name as a “beautiful lake”. Since those early days, Port

Moresby has become the bustling commercial centre of this gold, copper, copra and coffee-rich country. It is this lake-like harbour which provides the backdrop, while encroaching commercialization was instrumental in the birth of the Port Moresby marina.

The Yacht Club

There has been a boating club in the city since 1921, then known as the Port Moresby Aquatic Club (Spradbery [6]). In those days, the expatriate community sailed the local canoe (“lakatoi”) with indigenous crews.

These outrigger craft made from hollow logs with a large rectangular lugsail are capable of 18 knots on a broad reach in the stiff south easterly trade winds which prevail for much of the year (Spradbery [5]).

The clubhouse in the 1930’s was a modest structure on stilts over the waters of the harbour, but a marauding Japanese Zero in World War II used it for target practice. In 1946, after the hostilities had ceased, the club moved to its present site (Fig 1 next page).

Today, the club is called the Royal Papua Yacht Club, in keeping with its importance as a focal point for competitive and cruising yachtsmen, game fishing, scuba diving and water skiing with an active membership approaching 2,000 people.

For more than half a century, the city’s harbour waters have been filled with pleasure craft on swing moorings, well protected from the trade winds from April to December.

However, during the cyclone season, unpredictable and heavy winds from the northwest caused regular damage to moored boats and forced the more prudent boat-owners to alternative and less convenient anchorages. This situation stimulated a flurry of interest in floating breakwaters although their effectiveness was limited (Spradbery [6]).

Recent events

A significant event in the history of both city and yacht club was the introduction in the 1970’s of containerized shipping with its appetite for large areas of land.

Plans for a container wharf resulted in the staged reclamation of 4 hectares (10 acres) of beach-fringed harbour within the centre of the city by 1977 (Fig 1) (Maunsell [2]).

Stage 2 would engulf the now much reduced area of water available to the pleasure-boating fraternity of Port Moresby. Protests from many sections of the community concerning the impact of stage 2 on the life of the city has not materially changed the plan (Maunsell [3]).

Although efforts to relocate the yacht club continued and intensified (Spradbery [6], Wild [9]), there was also a move to maximise the severely limited area of water now available for club use.

The answer was a marina where boat populations per unit area could be increased five-fold compared with the densities for swinging moorings (Walters [8]).



Fig 1 – Port Moresby: staged reclamation for overseas container wharf in relation to the Royal Papua Yacht Club and its marina.

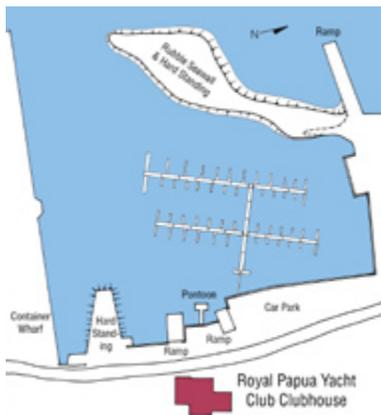


Fig 2 – Site plan: floating marina and seaworks for the Royal Papua Yacht Club.

Opposite – The completed floating marina at Royal Papua Yacht Club in Port Moresby, PNG

THE MARINA

Protective works

The major obstacle to any form of marina was the lack of protection from the north westerlies. This problem was promptly solved at no cost to the club with the encouragement of the Papua New Guinea Harbours Board when all rock fill from the various building activities within the city had to be dumped so as to produce a seawall (Figs 2, 3).

By 1983, the seawall was essentially complete and is now an important storage and haul-out area as well as providing protection for the yacht harbour.

Design parameters

As Commodore of the Royal Papua Y.C. and thus Chairman of a long-standing Relocation Committee, the author's interest in marinas was firmly established in 1975. As a result of attending the 1980 International Conference, "Leisure Harbours in the 80's", organised by National Yacht Harbours Association (NYHA) [4], he returned to Papua New Guinea as an 'expert' in marina development (Spradbery[7]).

The principal design features were that the structure must be floating with finger berthing and accommodate at least 100 vessels. Based on the structure of the registered fleet of the club, the size classes of sail and power boats determined the characteristics of the layout and the number and length of fingers



Boats would be orientated fore and aft into the prevailing north westerly wind direction (Fig 2).

Walkways were 2.0 m wide in 11.0 m timber modules, each supported by 3 floatation units (Fig 4). The frames were 150 x 50 mm timber with 100 x 38mm decking and braced diagonally at 2.0 m centres with 24 mm diameter hot-dip galvanised rods. End to end joints to use rubber buffers (Walcon Marine, UK).

Walkways to be anchored to piles via 12 mm galvanised chain encased in polypropylene

pipes to allow rolling action. Pile fenders consisted of 1600 x 150 mm sacrificial timber blocks bolted to the side frame. Wooden bollards were incorporated into the structural design (see Fig 4c).

Fingers were 4, 6, 8 and 11 metre long. Floatation units were polystyrene blocks encased in glass-reinforced cement for protection and stability. Services provided to include water and power with telephone and satellite TV cable as optional extras. Engineering services were supplied by Frame, Harvey and West of Port Moresby.



Modern Marina



Figure 3. Aerial views of marina development at Royal Papua Yacht Club – (a) Before any developments (1981); (b) After construction of seawall and reclamation of container wharf (1983); (c) After installation of marina (1984). Note number of moored and berthed boats in Figs 3a and 3c.

Far right – The official opening of the new marina by HE the Governor General of PNG, Sir Kingsford Dibela, accompanied by Commodore Phil Spradbery, 1984

Materials and supplies

All wood used in the marina was local timber from a land rich in forest resources. Piles were 400 mm diameter, pressure treated (tanolized) Hopea pine (*H. iriana*/glabrifolia). All other timber was Kwila (*Intsia bijuga*) heartwood.

This local hardwood is accepted as the standard against which the durability of other timbers is assessed and is one of the most decay-resistant timber species in New Guinea (Burgess [1]).

The Kwila was supplied at extremely favourable rates by Sabusa Sawmilling Co P/L. All steel components were hot dip galvanised by a modern steelworks (Atlas Steel P/L) in Port Moresby.

The specification for polystyrene floatation units resulted in the prospect of a backyard factory to fabricate the 130 units required (due to the prohibitive cost of shipping the expanded polystyrene blocks from Australia or elsewhere).

Quite by chance, a local company (Rouna Industries) with Yacht Club connections established a polystyrene fabrication plant in 1983 to construct insulated wall panels for housing. This development made the marina project both technically and financially feasible.

Finance and budgets

Budgets and cash flows were prepared after construction costs of the marina were obtained

and assuming an occupancy rate of 80%. Assuming installation by the club using its own resources at little extra cost, the estimated expenditure for the 104-berth marina was K120,000 (1 PNG kina = 1 US\$) or K1,153 per berth, including anchorage piles and services.

Annual berthing fees, irrespective of boat size were set initially at K400 per berth with a few at K2,000 on 5-year leases. A K90,000 loan over 5 years was negotiated with the club's bankers, PNG Banking Corporation.

Piling began in late 1983 and the marina was officially opened by the Governor General of Papua New Guinea, Sir Kingsford Dibela, in September 1984.

Impact on club and community

In the five years since the marina was opened, the club has undergone a revitalisation in both its membership and financial position.

Despite a cost overrun of 50%, due to escalating installation costs and further improvements to lighting and security etc., the eventual K180,000 capital cost for a total of 118 berths (by extension and modification) was K1,525 per berth – economical by any standards.

Occupancy was well in excess of 100% before the marina was opened and today there are 40 boat-owners on the waiting list despite the annual berthing fee being raised to K1,000. None of the structural components has failed although PVC deck-mounted power and light

units have proved fragile and the 11 metre fingers were redesigned to provide better torsional strength.

The annual maintenance cost is around K8-10,000 with substantial net income being generated for the club.

Overall, the marina with its easy access and year-round protection for boats has resulted in a virtual doubling of club membership and boat ownership with a considerable increase in the average size of boats.





Fig 4 – Stages in construction and installation of marina. – (a) pile driving (1983); (b) Fabricating GRC-covered polystyrene blocks for floatation units at Hornibrook Steel; (c) Manoeuvring an 11-metre walkway into position.

The financial success has been phenomenal with the bank loan repaid in 2½ years instead of 5 and the club’s finances the best they have been in its 70 year history.

THE FUTURE

The threat of losing the existing marina area with the construction of the second stage of the overseas container wharf remains.

However, this year (1989), the club obtained an underwater lease over 13 hectares (33 acres) a few hundred metres north of the present site.

Plans for a reclaimed lagoon-style island with marina well-protected within its palm-fringed walls are underway. The new marina will accommodate at least 200 boats. Perhaps at another international marinas meeting, the sequel to this story will be told.

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Figure 5. Before and after marina installation, from sea level – (a) 1973; (b) 1985.

Since this article was published, the Royal Papua Yacht Club has successfully relocated to a new site within Port Moresby harbour with an even more modern floating marina. See www.rpyc.com.pg

