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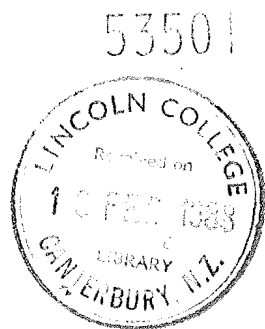
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LANDSCAPE DESIGN GUIDELINES FOR MARINAS



Sue Roff

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October 1987

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abstract

ABSTRACT

Landscape issues concerning the marina industry are identified and discussed. Common understanding between investors, developers and the public about the environmental and social factors influencing marina proposals is an essential pre-condition to the successful design of a marina. Important environmental and social factors involved in marina development are examined.

INTRODUCTION

INTRODUCTION

The accessibility of suitable facilities for the pursuit of outdoor leisure has decreased in recent years, due to urban sprawl and increasing financial constraints upon city dwellers restricting their ability to travel to distant recreational sites.

This has necessitated regional bodies setting aside areas of land primarily for the purpose of recreation, for example at Totara Park in Auckland.

Further, society has reacted to this situation by:

- 1 Encouraging dual- and multi-purpose use, so as to increase the utilization of existing publicly-owned areas such as State Forests and Catchment areas. Some State forests have been opened up to the public and incorporate picnic sites, while water catchment areas have been made accessible to the public by trekking routes; and by
- 2 Reallocating predominantly agricultural land for recreational use. Coastal land is a valuable resource often facing particularly heavy demand from users. This demand requires that the design of facilities must be carefully considered to ensure that any development may best meet the needs of all users without detrimental effect to the landscape values of the coastline. This increase in demand and pressure on coastal development has focused attention on facilities termed "marinas".

The term "marina" has been misused for so long that it can be interpreted in many ways.

The Websters 3rd New International Dictionary defines a marina as:

"a promenade or esplanade by the sea."

Not until the 1970 supplement were marinas described as

"a dock or basin for mooring of yachts and other small craft."

Today the term marina is seen as meaning more than just a group of moorings or piers. It involves a collection of supporting amenities and facilities including the boat harbour. Recreation marinas are a recent concept which did not exist 100 years ago.

Charles Chaney in his book Marinas, Recommendation for design construction and maintenance believed the term was coined in 1928 by the National Association of Engine and Boat Manufacturers. They used the term to describe the modern waterfront facility for recreational boating.

Typical facilities included today are boatyards, chandlers, fuelling points, etc. while amenities can range from yacht clubs and commercial shops to restaurants.

Such facilities and amenities have become part of the recreational life of many New Zealanders. We have an international reputation for being excellent competitors on the water both in sailing and canoeing, thus the demand for such facilities is high.

So popular is sailing in the Auckland region that the city is known as "the City of Sails".



Anniversary Regatta, Auckland, NZ

The number of boats being launched each year continues to grow, while demand for berthing facilities has long exceeded supply.

This is evident from the escalation in the number of sites being investigated or under construction for marina development.

Marinas involve a considerable area of publicly-owned coastline and therefore must provide more than just a place to store boats; they must encourage dual- and multi-purpose use.

Frequently located amongst or close to urban populations, marinas are subject to heavy recreational pressures.

This must be taken into account within the early stages of site selection and site planning. Otherwise the fundamental objectives of the marina development will never be met, with inevitable conflicts arising between various "user groups" and their site requirements.

Land has a limited capacity; if too great a demand is placed upon it, for example excessive pedestrian traffic, then the quality of the resource will deteriorate if the facilities are inadequately designed.

Involvement of a Landscape Architect as part of a design team can ensure that good site planning and layout will proceed, laying the foundations for the successful integration of the project with its environment.

It must be acknowledged however, that a marina will have a significant impact on a site no matter where it is situated. However, this impact will be reduced or increased depending upon how the site is physically altered in terms of the scale of the proposal, the surrounding land and water use, and planning policy for the district.

The design of the marina should extend beyond the boundaries of the site, creating strong relationships between the development and its immediate environment.

Confronted by a number of design issues the landscape architect must make a series of decisions on the relationships between the functional and aesthetic requirements within a marina. For example, parking, boardwalks and buildings are functional but can be linked by the aesthetics of materials selected, eg. native plants, or enhanced by changes in level. Poor design cannot be rescued by last minute planting on an inadequate budget. Buildings and the spaces between them must be treated as a whole, if the complex is to be successful. This necessitates the need for a landscape architect as part of the design team in the initial stages of development.

The involvement of a landscape architect can ensure that developers, investors and the public are aware of all the issues involved in marina design. The aim of this dissertation is to identify these issues and illustrate how they can be approached from a landscape architect's point of view.

Section One highlights areas in which marinas can be better integrated into the community by providing facilities for public use and enjoyment.

Section Two looks at the marina in New Zealand and how its development can be improved by well educated site planning and detail design.

Section Three examines the role of management and maintenance.

Section Four looks at two marinas built in the Auckland region and critically analyses them in the light of these discussions.

Section Five summarises the issues facing marina development in New Zealand, and draws conclusions about their future.

MARINAS FOR THE COMMUNITY



SECTION ONE : MARINAS FOR THE COMMUNITY

1.1 INTRODUCTION

Marinas are developed on prime public land. To compensate for this loss of space, developers must incorporate adequate provision for general public facilities.

The importance of this statement is discussed with relevance to the particular user groups and their demands on the environment, for both New Zealand and overseas marinas.

1.2 MARINAS FOR THE COMMUNITY

In New Zealand many people spend their leisure time on the water or at the water's edge either sailing, windsurfing, water-skiing, swimming, or just walking along the beach, so it is understandable why the public place such high value on coastlines.

They often see development as public space being lost, yet marinas can create greater opportunities for recreation. These must be acknowledged by the developer and every effort made to accommodate these opportunities in development. When the community is involved, resistance against such proposals can be reduced because of their increased awareness and understanding of the project.

Traditional objections to marinas such as excess traffic congestion and rows of cars lining the coastline may be overcome or avoided if careful consideration is given to planning. The solution lies as much in educating the public about what they can expect from marina facilities as in educating landscape architects to explore imaginative alternatives in their project designs.

By catering for the public, or at least recognising them in design, the boatowners would also benefit. For example spin-offs such as sponsorship would be easier to obtain. Only a small percentage of our population understand the amount of dedication and drive required by our sportsmen and women, or the effort and time it takes in training to reach international standards. The greater the public involvement and

understanding, for example, yachting, the more likely businesses will want to be involved in sponsorships.



During the last America's Cup, the public became very involved, providing support emotionally and physically. Everyone shared the same enthusiasm; it did not matter what line of work you were in, sailor, insurance broker, or housewife. We all wanted New Zealand to win, and felt quite at home cheering our side on.

A marina should have that same feeling of being a place for everyone where we all feel comfortable, a place that becomes part of our community.

However, an alternative approach to marina design exists focusing on economic factors.

"Whether a marina development is designed forwards from basic requirements, or backwards from an analysis of investment yields, is a critical question. The answer to it may well determine the size, layout, materials, construction and quality of the future scheme, as well as profitability."

ADIE, D.W. 'Marinas, A working guide to their development and design' p.118

"To design backwards from an analysis of investment yields" is an approach where financial factors override the requirements of the community and environment. Design does not respond to site conditions, but is dictated by a set of profit maximizing objectives.

Financial returns and overall development costs are important as the marina must be economic. Reducing costs must not become the main constraint, however, because impoverished design will not lead to a successful marina in the longterm.

1.3 WORKING OR AESTHETIC MARINA

Every marina has its own character which is influenced by its geographical location and design requirements, but there are always common elements between them.

At the International Marina Conference 1987, it was generally accepted that there were two basic types of marinas.

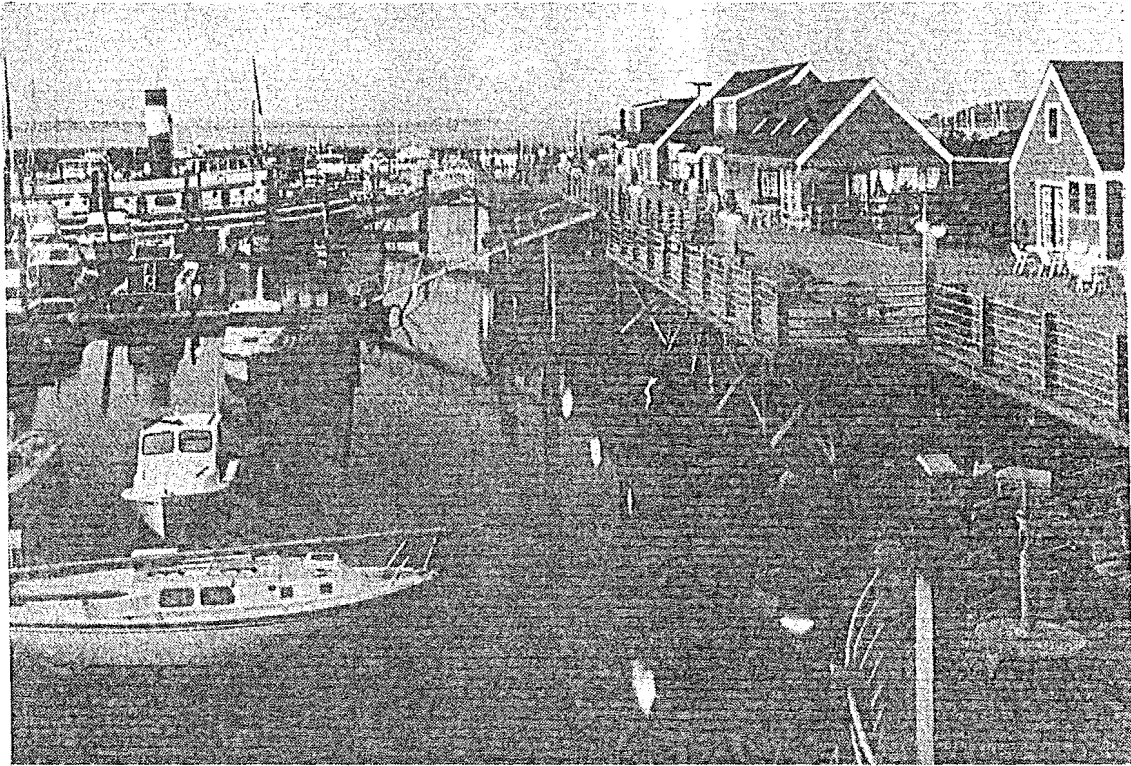
- 1 Aesthetic marinas
- 2 Working marinas

The actual type of marina to be built should be determined at an early stage; particularly in the multi-user project, before moves are made into site planning and the design stages.

1.3.1 Aesthetic Marina

The aesthetic marina is as it sounds – its principal function is that of a visual element, setting a stage to draw a large number of people to the water's edge. The surrounding commercial and entertainment establishments are enhanced by the atmosphere created. Support facilities, ie. boat repairs, dry docks and storage, are often totally

absent or at best minimal, eg. Fisherman's Cove, Surfers' Paradise, while fees for a few private yachts are exceptionally high.



Marina Bay, Boston, USA

1.3.2 Working Marina

In contrast a working marina provides reasonably priced berths and mooring spaces, along with a complete range of support activities and facilities.

It caters principally for boat owners, their needs generally receiving priority over the non-participatory public. Therefore a developer intending to invest in a commercial or mixed use project may find the aesthetic marina more appropriate. On the other hand, if the multi-use project had a large number of residential or overnight guest population eg. Port la Galère, Southern France, a working marina may take precedence.

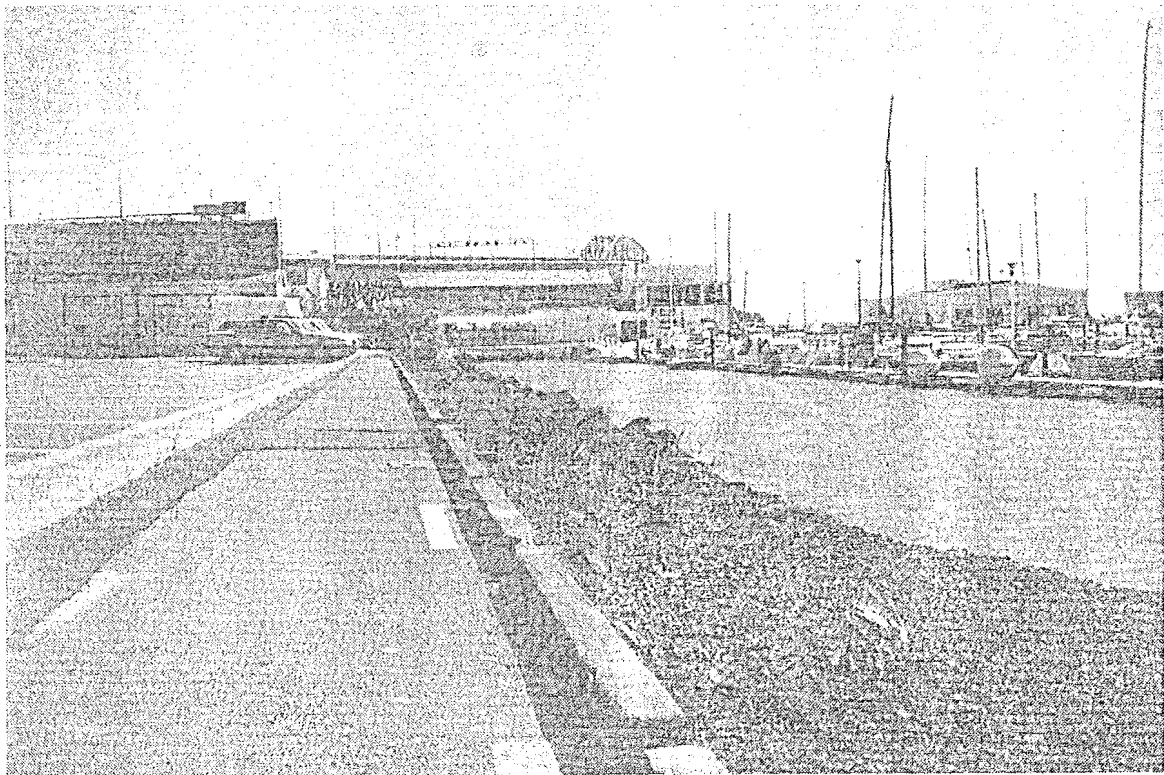


1.4 NEW ZEALAND MARINAS COMPARED WITH BRITISH AND AMERICAN MARINAS

New Zealand marinas do not fall into either of the above categories. This has lead to some confusion, particularly on how to approach the design of each "type" of marina.

Realistically our marinas tend towards that of a working marina, allowing little public involvement or ingenuity in creating aesthetically pleasing environments.

Expansive areas of parking that line the marina edge discourage rather than promote public participation in the area.



Westhaven, Auckland, NZ

New Zealanders have not been as aware of the design potentials, as site responsive, or as adventurous as our American counterparts.

It is acknowledged that our requirements are not identical to those of the United States. Most boats in New Zealand are not left idle for long periods of time whereas in the United States it appears that even day sails are being replaced by afternoon sails. The prestige of owning a boat has become more important than whether you actually use it or not. This is not the case in New Zealand. However, we should utilize elements of American design to enhance our marinas.

This is not to say we should have aesthetic marinas or even that we have the population to attempt them, but we could combine some of the compatible elements of the two to provide areas of public involvement, while still catering for boat owners and their needs. For example in Westhaven, an established marina containing 1470 crafts the boat owners are given top priority. Not only do the public find it difficult to park their cars due to controls, but often they cannot even enter a yacht club without being signed in by a member eg. Squadron Yacht Club.

Members of the public wander around the piers looking at the launches and yachts, trying to become part of the excitement and activity. Where else can they go? "Sitting Ducks", a small cafe where one can sit unobtrusively, is always packed. Has anyone thought why?



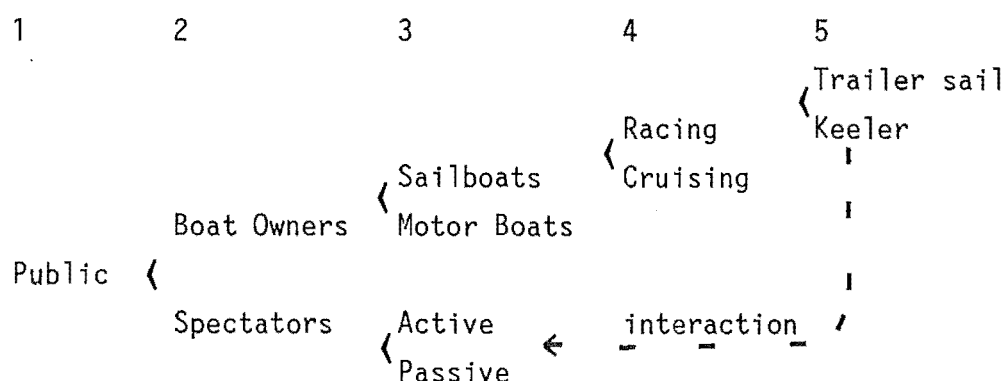
We are not fulfilling all our obligations if that is the only public place on the entire site.

This situation occurs in many of our marinas, reinforcing why we should be developing a marina "type" reflecting New Zealand ideals that cater for both the boat owners and the visitor.

1.5 WHAT TYPE OF PEOPLE USE A MARINA AND WHY?

Up until now we have discussed the term "marina" and why the public should be involved, but just who are the public? This can be ascertained by dividing the general public into groups. In turn each can be studied to determine why they are attracted to a marina and how their demands will vary.

The major split is between spectators and boat owners, but the diagram below shows how this can be broken down further.



Interaction can occur between racing sailors and their supporters. Otherwise the groups at level 3 generally keep to themselves.

Basically four main characteristics act as drawcards for user groups. These can be categorised as:

- convenience
- security
- services offered
- visual/aesthetic values (appearance).

Depending on the individual, the emphasis placed upon each of these categories will vary.

1.5.1 Conveniences

For most boat owners a marina is very convenient because:

- parking is in close proximity to their boats
- a wide range of marine services is provided on site
- the actual storage of the boat ie. mooring, pier or dry storage, makes their boats more accessible; time does not have to be wasted trailing the boat over the countryside
- the marina can also be in close proximity to racing and cruising grounds eg. at Westhaven, Auckland. Wednesday night racing starts just off the breakwater at 6.00 pm.

But the access and location of the marina must be convenient for the users, particularly the passive spectators, otherwise they will look elsewhere for more opportune outings closer to home.

1.5.2 Security

The marina offers security to boat owners.

- During storms owners can feel confident that their boats are well protected.
- Theft and to a lesser degree vandalism is a growing problem, and marinas as a whole suffer quite badly, of which the boat owner is well aware. The simplicity of the design can reduce this, but is usually reinforced by
 - burglar alarms installed in boats
 - use of patrols or night watchmen to act as a deterrent
 - security gates at the end of each pier.

The Minister of Marine through the Local Government Act 1974 advocates the right of public access by land and sea to major areas within the boundaries of the marina. However, for security reasons, it is acceptable for the public to be prohibited from piers and berths during hours of darkness.

For example, at Westhaven the piers that have gates, are locked every night. In the daytime, for convenience of easy access and ministry requirements, the gates are left open, providing the opportunity for public access - a regular pastime for many boating enthusiasts is to look around other boats.

Overseas this is not always the case. The practice of allowing the public onto the piers can be minimal, as the amount of gear being stolen off the boats becomes a problem.

1.5.3 Services

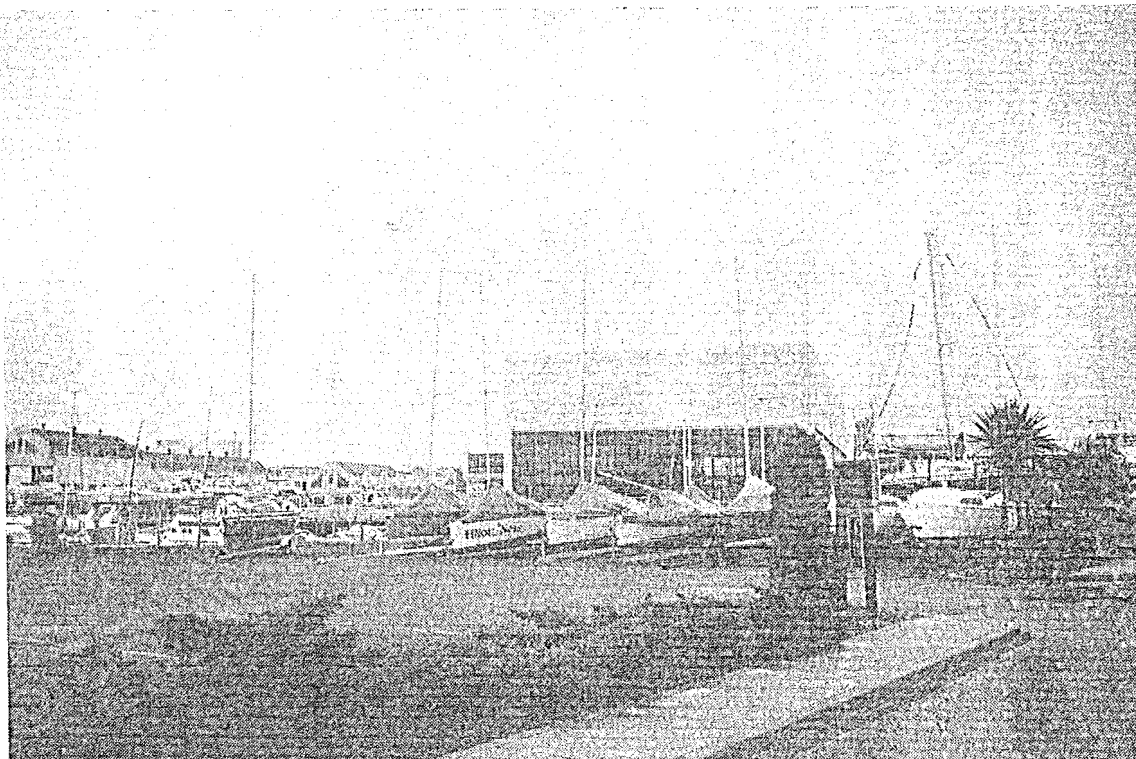
Many groups will not have their boats berthed within the marina but are enticed into the area by services and facilities offered. Many of these represent "conveniences" but since a new group of individual is involved in using these services they have been classified separately.

Services and facilities can include

- cleaning services. The boat can be hoisted out of the water and cleaned with a high pressure hose within an hour. This is quicker than waiting for the tide to rise and fall before scrubbing the boat down by hand.

or

- trailer parking facilities, both permanent and temporary. Elliot 5.9's [18' trailer sailer], have a special permanent trailer area in Westhaven to keep their boats. The floating piers next to the ramp also makes launching very easy. The boat owners do not even get their feet wet!



Elliot 5.9's, Westhaven, NZ

Additionally, yacht clubs attract entrants in for a beer or two after racing.

This can be seen as an opportunity to increase the scope of individuals active in a marina.

1.5.4 Visual/aesthetic values

Both spectators and boat owners, but especially spectators, are aware of the visual aspects of marinas. Of the boat owners, however, it is usually the Sunday sailor who wants to impress a client or friend that takes heed of the environment. Spectators are lured into the marina by

- the atmosphere
- congregation of people
- the racing
- the boats and water.

Basic human instinct attracts us to the water's edge, with its cooling and relaxing qualities. In an urban setting, it offers a sense of open space in contrast to our city confinement. We are always intrigued by the intense activity it supports. Boats and people perpetually appear to be moving over or through it. But we must take a step back and look at visual/aesthetic values (appearance) of a marina. One has to set a stage for activity or it will never occur. This is discussed in further detail in the following chapter.



Visually pleasant environments have the ability to attract people, which in turn creates an atmosphere of activity. It is this that people relate to, rather than their environment.

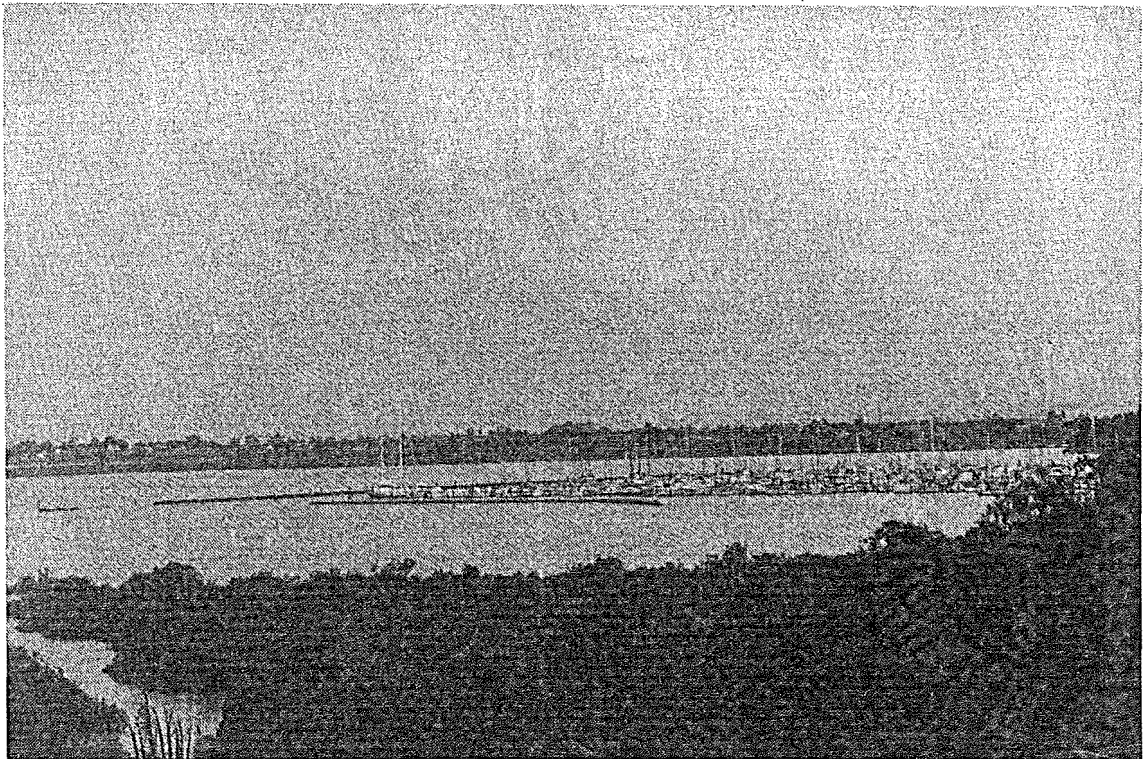
Conversely, an unattractive environment creates an oppressive atmosphere, thus inhibiting the opportunity for activity. The underlying environment must be maintained as an integral part of the marina.

1.6 DEVELOPMENT IN MARINA DESIGN

Changing trends in the boating industry make it difficult to predict future development. Moorings and berths required are not static. Recreational fleets are continually changing in both length and in number. Recent trends indicate that the average length of boats is now greater than 10m – the typical length in the past. This has produced a shortage of existing berths able to accommodate their length. Additionally boat numbers are steadily rising and demand for marina berths seem insatiable. Pressure on boating facilities has steadily increased and shows no signs of diminishing.

Consequently more of our coastline is being taken up by boat moorings as public water space is developed by speculators. As a finite resource, any development for such specialised recreation must be carefully sited and planned to be efficient in both an environmental and economic sense.

For example, more berths can be achieved per hectare using fixed piers than with swinging moorings. But usually a large number of piers creates a solid mass or wall across the landscape. Thus, a balance has to be reached where water space is conserved but not to the detriment of the visual environment.



Westpark Marina, Auckland, NZ

If environmental planning by developers does not take factors like this into consideration local bodies, like the Auckland Harbour Board, are likely to introduce regulations such as zoning to ensure conscientious development does take place.

When considering demands made by boat owners, the question arises: Is the environment capable of accommodating boat owners' demands? Our environment will not always be able to cope or accommodate all demands. This has led developers to investigate alternative methods to wet moorage, for the storage of boats.

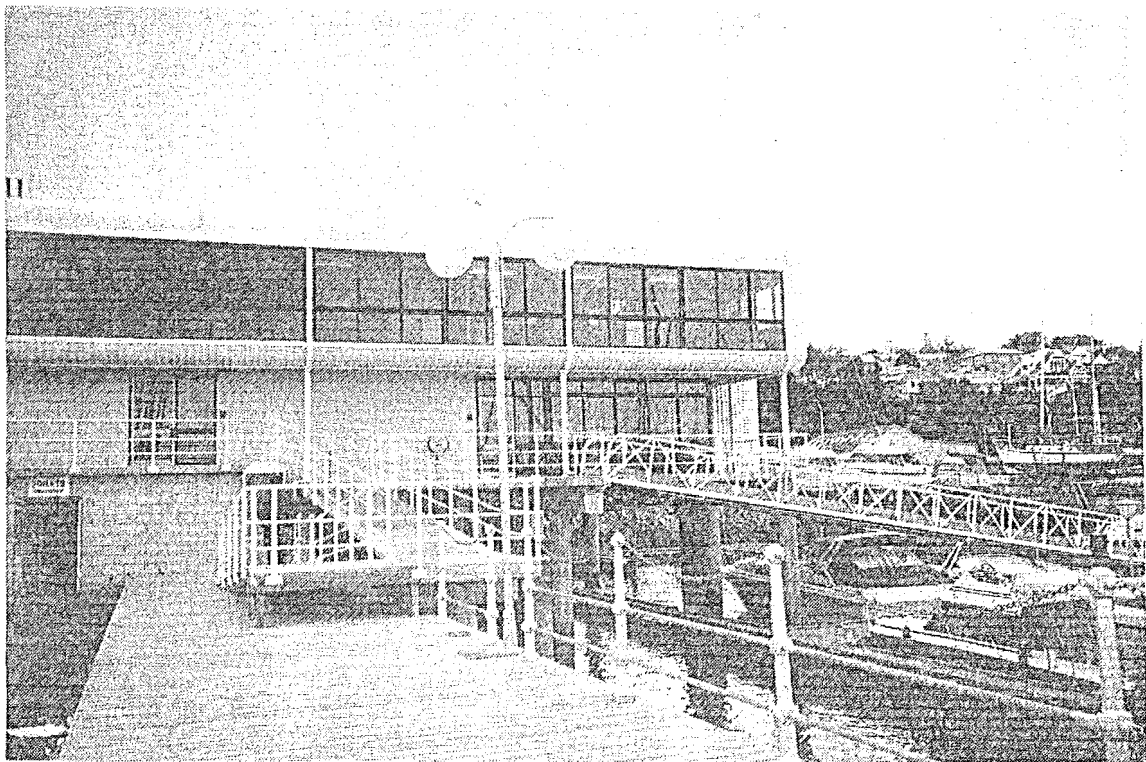
* Dry Storage

Several types of dry storage have been identified as alternatives to wet moorage. These include:

- open dry storage
- semi open stacked storage (roof only)
- stacked covered storage (inside buildings)
- single level covered dry storage.

Each type can provide a viable alternative for a portion of the wet moorage needs and demands but comparisons between each type is difficult as each may be better suited for a particular site or location.

Stacked dry storage is successful in New Zealand eg. Westhaven, as there is no restricted boating season and tidal fluctuations are accommodated; a problem that hinders a number of European countries. Activities are encouraged in the winter months in New Zealand by a continued number of racing series held by boating clubs. People are additionally attracted into the marina mid-week by harbour racing.



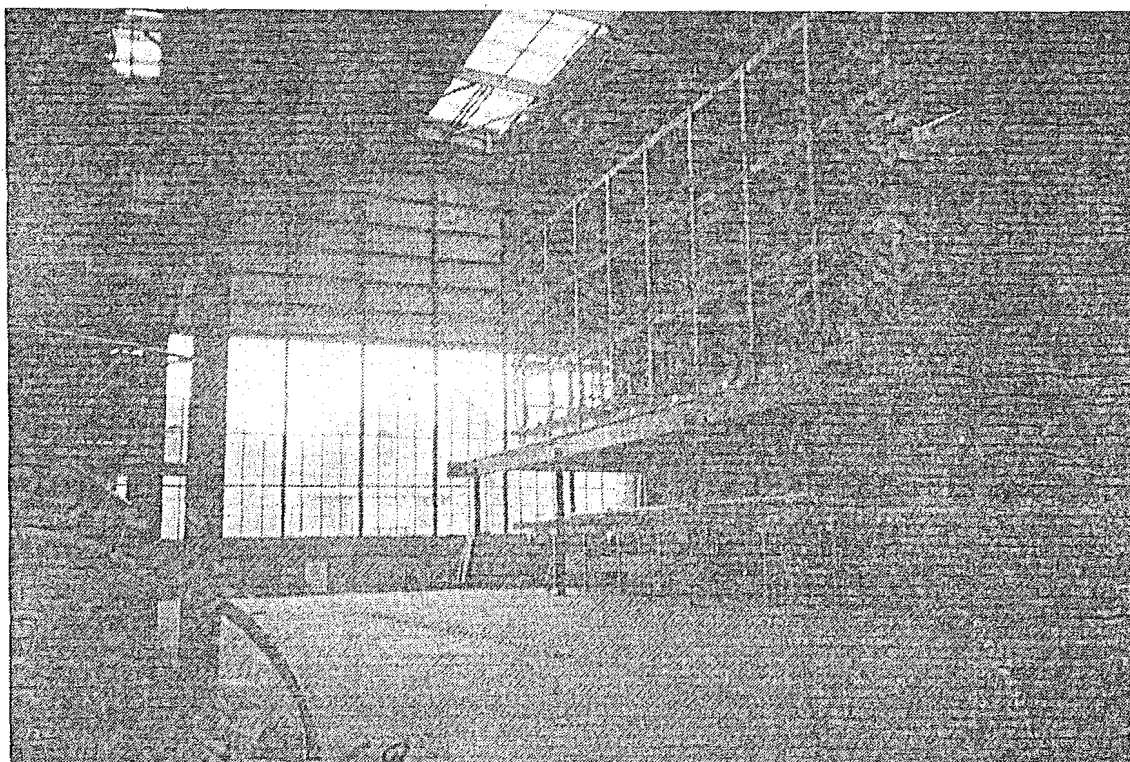
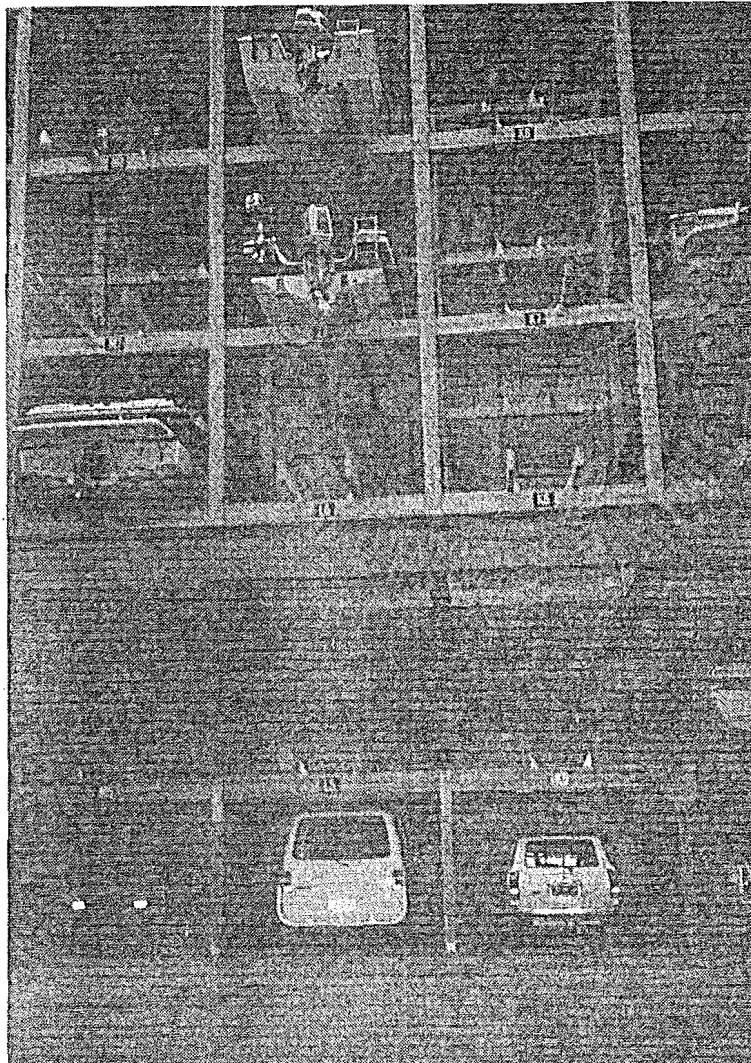
Typical stack storage racks are available as pre-engineered components that assemble to store boats 2, 3, 4 or 5 high, with modules designed to fit various boat sizes. The maximum size of boats to be stored will determine the transfer method to meet launching requirements.

The major advantage of this system is the maximizing of the number of boats that can be stored in a given area. This is the main reason for providing stacked dry storage. The disadvantage is the amount of labour involved. Up to two-thirds of operating expenses are for labour and this cost must be passed onto the user. Where there is a shortage of marina berths eg. Auckland, the cost of this system can be comparable with wet moorage.

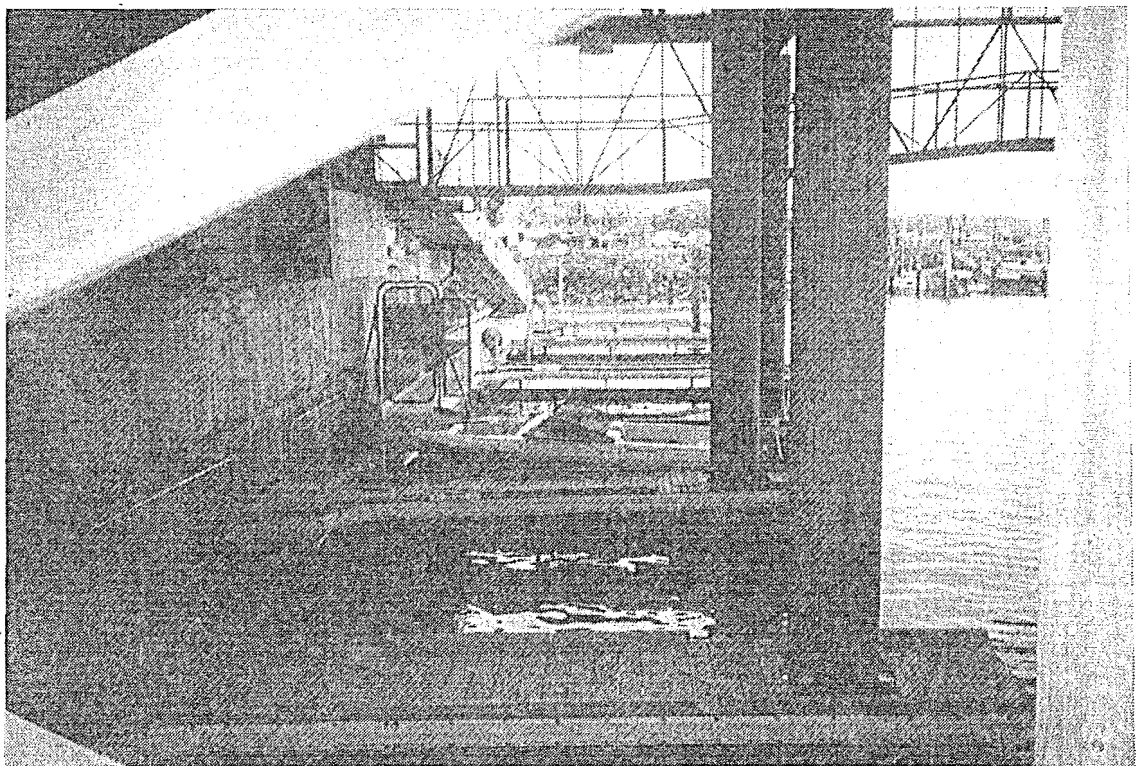
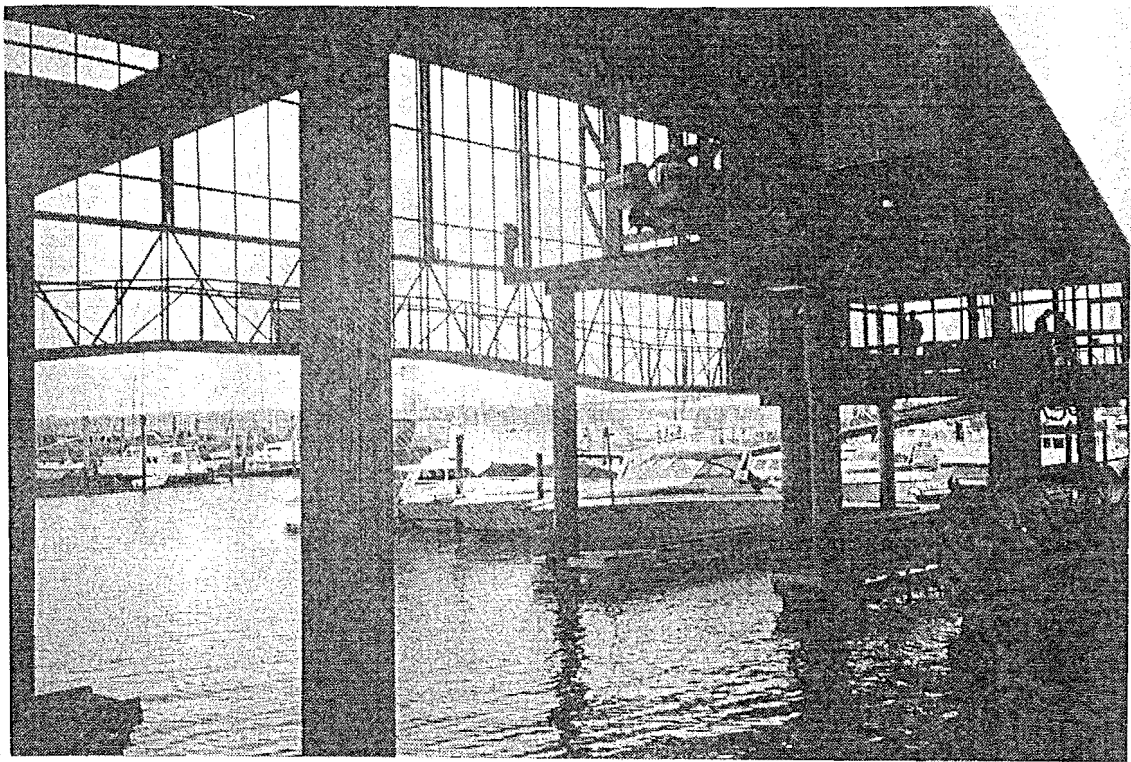
Keels and masts impose difficulties with all covered storage systems. If the mast can be stepped the problem is eased, since most medium-sized boats will store under a 4 metre roof. It is time consuming to remove a mast and under New Zealand climatic conditions is impractical. The dry stack system used in Westhaven is built over water and utilizes an inverted gantry crane with forklift.

Additional advantages that attract boat owners to dry stack storage are increased security, reduced maintenance and convenience, one phone call and your boat will be in the water waiting for you when you arrive. Stored in a module, boats are protected from vandalism, theft and the harsh sea elements.

Buildings involved as alternatives to wet moorage, require a large capital input. To improve return on investment outlaid for both dry storage and wet moorage, service facilities can be developed to attract and retain boat owners after the day's sailing is over. This requires that the landscape architect consider the potential for night activities in the marina, the change in type of user of the facilities and the changed emphasis to social activity. Attention should be switched from the boats, water and harbour, to focus internally, giving the marina a new dimension.



Stacked Dry Storage, Westhaven, NZ



Looking from the storage area into Westhaven

1.7 CONCLUSION

Marinas are for the community – investors, developers and members of the design team, must acknowledge this and aim to make the boating experience in New Zealand accessible and desirable to more people. Spectators want to feel involved while watching the boats and at the same time boat owners relish being active on the water.

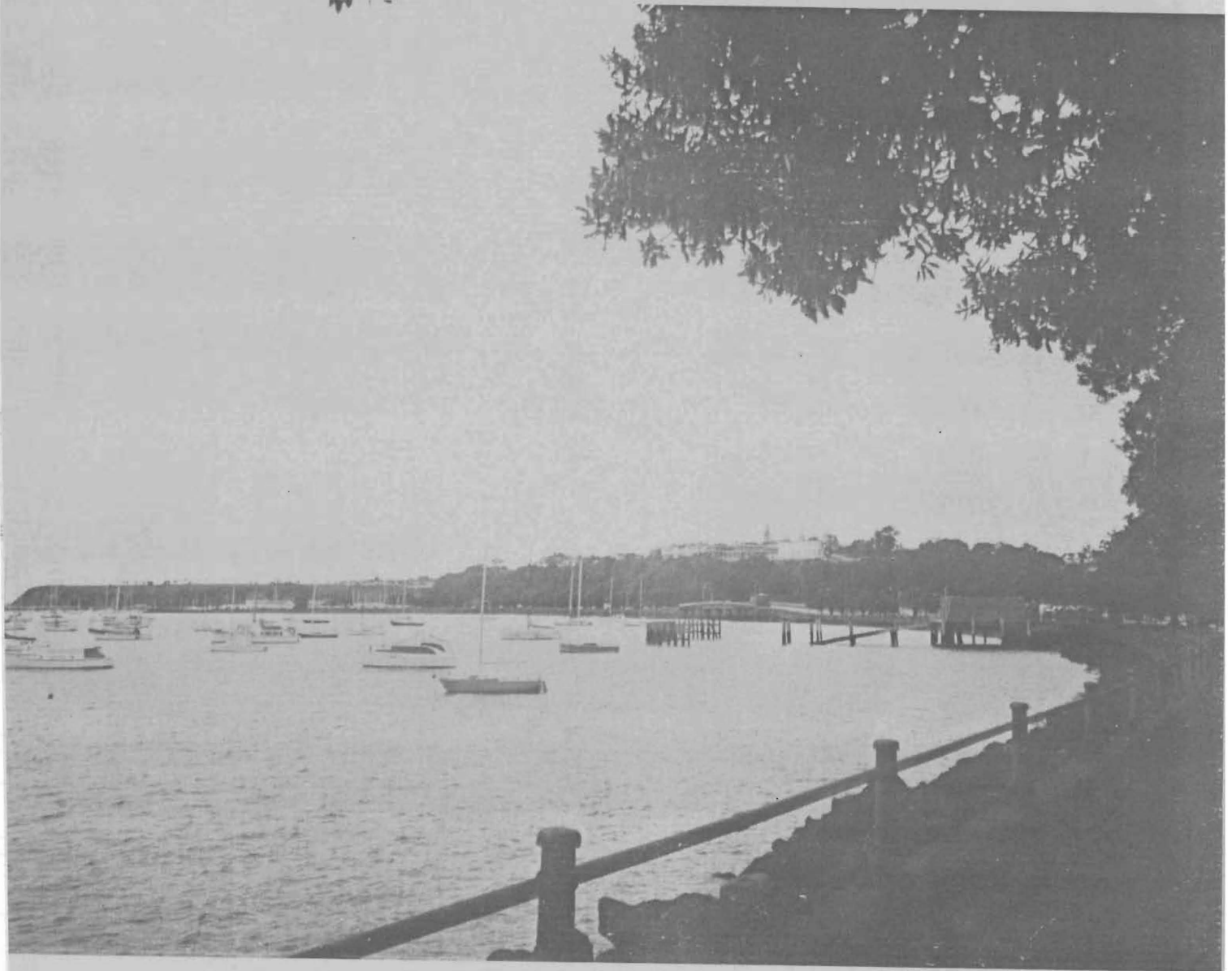
The landscape architect can cater for these demands in marina design by developing a marina that is a combination of a working and aesthetic marina, to achieve a balance between boat owners' and spectators' demands. This will inevitably lead to a greater number of charters and shared ownership of boats.

People will adjust more readily to the visual impacts and noise involved in a marina and take action to reduce conflict, if they have a better understanding of marina activities. The public will realise that through development they will not be losing their waters but gaining an asset – a multi-recreational space to benefit the entire community. The landscape architect has an important role to play in educating the public about marinas and developing shared understanding between the parties involved in new design and construction.

DESIGN ISSUES IN THE NEW ZEALAND CONTEXT



siting



SECTION 2 : DESIGN ISSUES IN THE NEW ZEALAND CONTEXT

2.1 SITING

2.1.1 Introduction

Several features of the proposed setting of the marina indicate guidelines that must be considered in the initial stages of planning and design. These are:

- landscape character
- visual impact
- scale
- centre of activity/focus.

2.1.2 Landscape character

The landscape architect must ensure that the design and planning of a marina is consistent with its surroundings. Unique or dominant landscape features of the proposed site must be acknowledged and incorporated in marina development. These features may be the result of physical factors - climate, topography; ecology; or social factors - nearby settlement etc. Physical and social factors combine to produce the unique setting.

A small quiet inlet contained by gentle undulating countryside suggests design take a soft approach using natural materials. Conversely, a converted dockyard with enclosed walls and hard edged urban atmosphere may dictate a hard design using simple, austere materials.

Landscape character can provide landscape architects with "clues" to broad and specific design components.

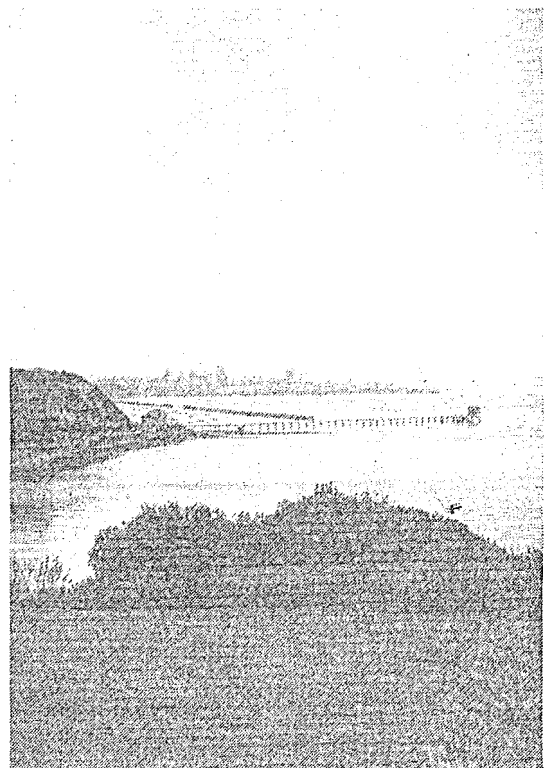
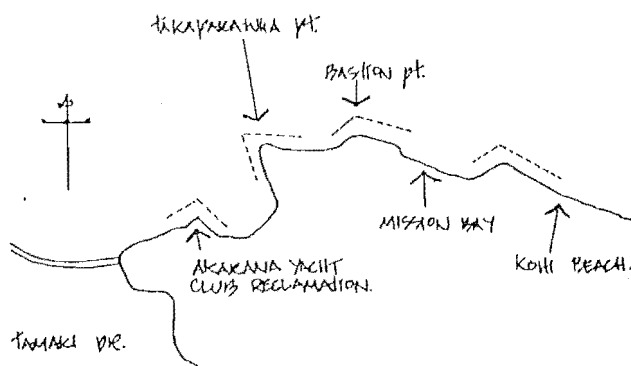
The colours contained within the natural landscape can direct planning and design. Contours of the physical surroundings may suggest appropriately shaped layouts. These may be reflected and repeated within the marina layout. Existing views and vistas must be acknowledged and retained during the design process; the feeling of openness and presence of water should be considered so that the illusion of viewing the seas is retained. Natural vegetation should be noted and incorporated into the marina design to tie in the development with its surroundings. Visual disturbance of the foreshore may be reduced and the marina will appear more harmonious with its setting,

because some of the existing character is retained within the site. Existing features of the site (eg. stone sea walls) may be usefully included in the design to reinforce the history of the site. The predominant pattern of settlement in and around the site should be reflected in the scale of development.

Mary Buckland (1978) discusses six landscape characteristics in the Auckland foreshore region when describing a proposed marina in Shoal Bay.

- 1 "The shape and size of the headlands along the south coast. These headlands are at a sharper angle on the western side and a more gradual angle on the east side. The edge between land and sea is curved, not straight."

Curved wave screens and seawalls can reflect the natural headlands, integrating them with the existing forms of the landscape.



Shoal Bay, Auckland, NZ

2 "Between each headland is a bay ... a stretch of open water."

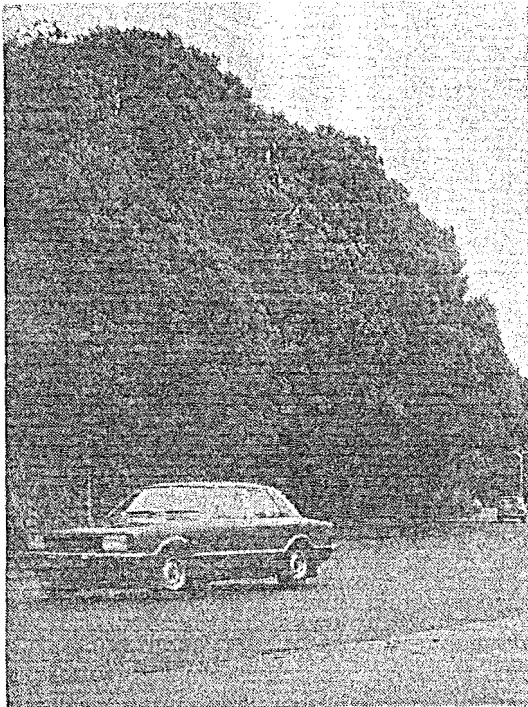
If areas of open water are seen between boats in a marina, the sense of looking at the sea is retained. Piers, radiating from a central area, can assist in creating this illusion. The marina must not appear as a solid mass intruding into the landscape.



The existing mooring facilities do not intrude upon the landscape

- 3 "The headlands have in many cases pohutukawas growing along their cliff edges and the bays are backed with pohutukawas."

Pohutukawas are a common coastal tree in Auckland. The marina designer can create the illusion of an extended original shoreline by repeating a row of pohutukawas along the foreshore; this is particularly effective when viewed across water.



Pohutukawas on the coastline reduce the scale of boats

- 4 "The land/sea edge is marked with a stone sea wall at a particular angle and topped with an attractive metal rail."

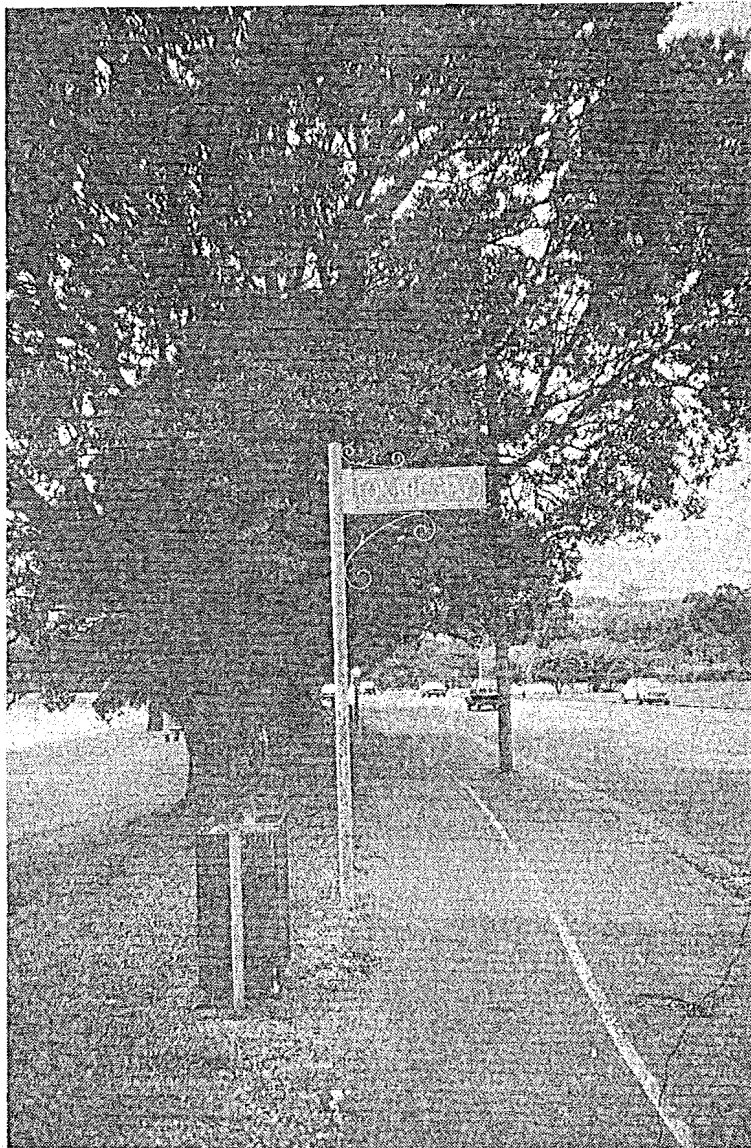
An example of this type of design can be seen along Tamaki Drive. The stone seawall reflects the natural materials used traditionally in the area. An interesting metal rail links the historic feature (the seawall) to the contemporary urban environment.



Tamaki Drive, Auckland

5 The main colours within this landscape are sea blue, deep green, yellow green and tile (terracotta) colour."

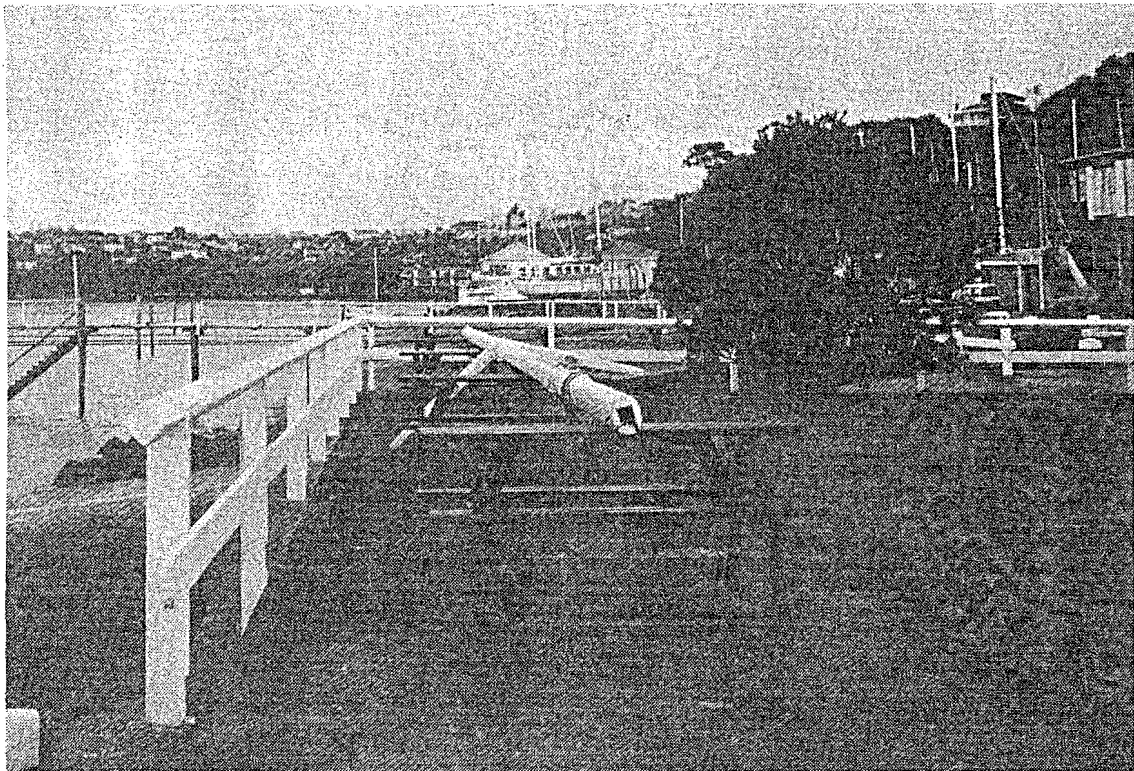
The dominant colours in the surrounding landscape can indicate which colours should be used in design to help create harmony between existing features and the marina development.



Signs can blend in style and colour to the surrounding landscape.

6 "The prevailing character of the buildings in the vicinity is small scale residential."

The colour and scale of surrounding buildings should be reflected by those in the development.



2.1.3 Visual Impacts

The purpose of examining landscape character is to promote a visually harmonious and integrated design. Another technique which can be used to promote such design is to imagine the development from various "viewing sites".

A viewing site is a location (in time and space) from which the marina development is seen.

Such an exercise is of value to landscape architects because it allows them to predict the visual impact of the marina for different users at different times and places.

Landscape architects must ensure that the visual impact of the marina, when viewed from residential sites, that are permanent and static, is low to medium. However, a view, such as a minor road, rarely used, and only by mobile individuals, yields a higher impact and this may be considered acceptable.

Tidal activity may reveal or conceal features of the development and viewing sites must be selected so that these changes are identified. The visual impact of a seawall can change from a relatively pleasing fishing spot at high tide, to an obtrusive pile of rocks and slimy mud protruding from the mud flats at low tide.

Time is also an important determinant of lighting – within 24 hours the marina will be perceived in various ways from one viewing site. Thus, the choice of its duration should be carefully considered to ensure that the marina does not have a high visual impact. If a marina is illuminated by high intensity mercury or sodium vapour lamps, that are switched on early in the evening, subtle light changes, especially those occurring after sunset, will be disrupted. Location will also influence the type and duration of lighting.



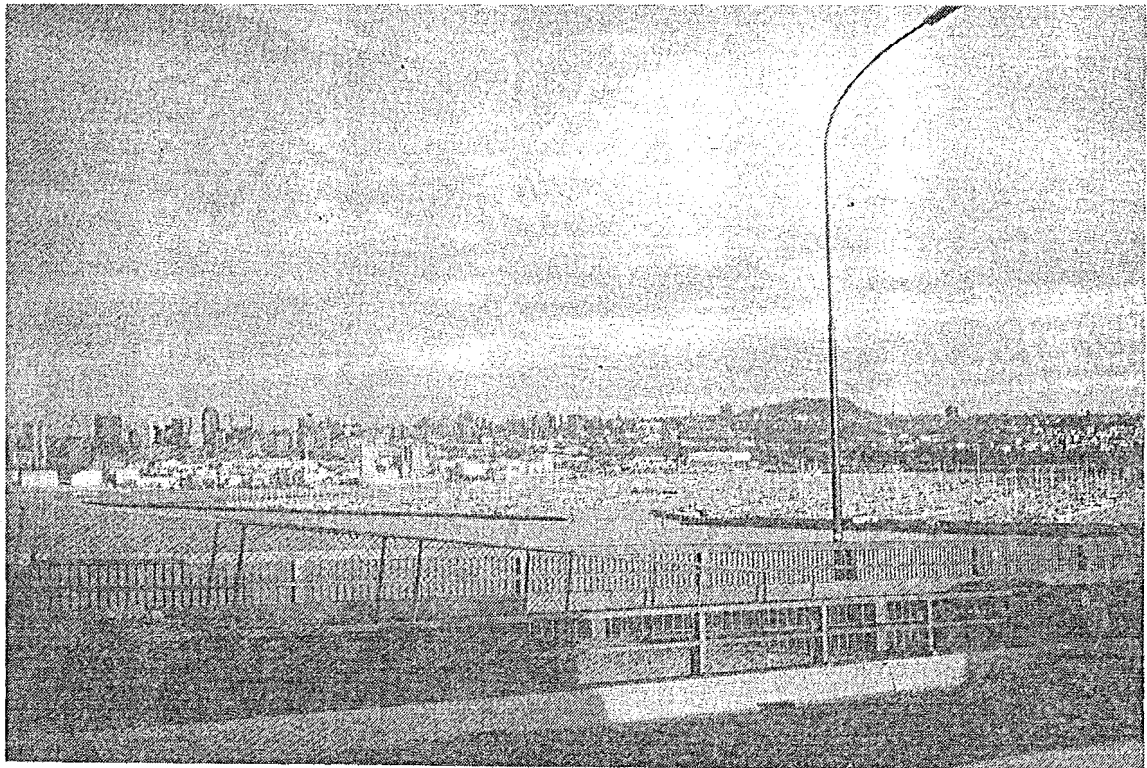
Westhaven situated in Auckland City remains illuminated all night.

2.1.4 Scale

Scale is another factor to be considered in the marina design. If the development is in proportion to the surrounding features the marina can fit harmoniously into the landscape.

This can be described further by using two examples – St Mary's Bay containing Westhaven, an exciting marina, and Shoal Bay, a site proposed for a marina.

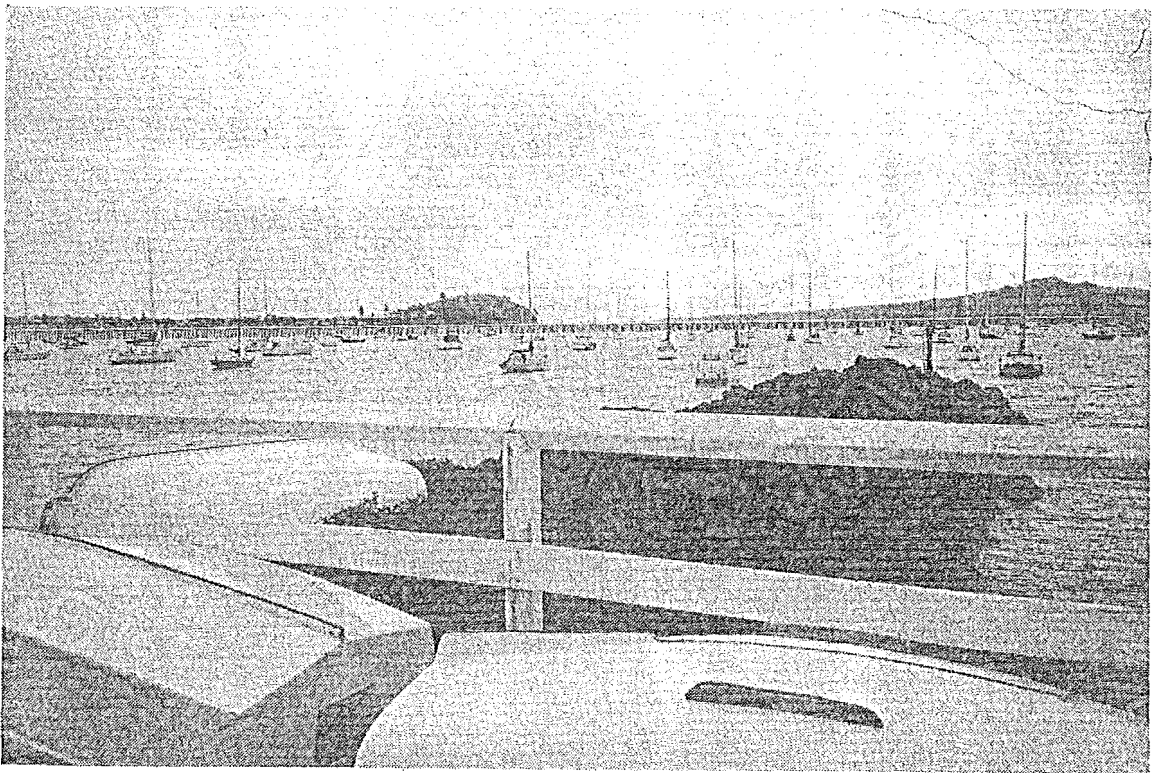
Westhaven is sited in a landscape that has the harbour bridge, industrial areas and motorway as background features. These are large scale features and therefore a marina of 1470 boats does not dwarf its surroundings. By contrast, the marina proposed for Shoal Bay is sited within an area of residential housing. One would expect this marina to contain less berths than Westhaven reflecting the smaller scale of the surrounding features.



Westhaven, Auckland, NZ

Furthermore, scale in terms of space within the development, must be sensitive to the relationships between principle elements eg. buildings, car parking and the water's edge.

Entrepreneurs will demand a high return on investment and as administrative costs are similar in establishing 100 or 1000 berths, they will push for the maximum possible to be provided. Such decisions are usually made with no regard to the visual consequence. The maximum scale of the marina must be determined by studying the surrounding landscape features and not profits.

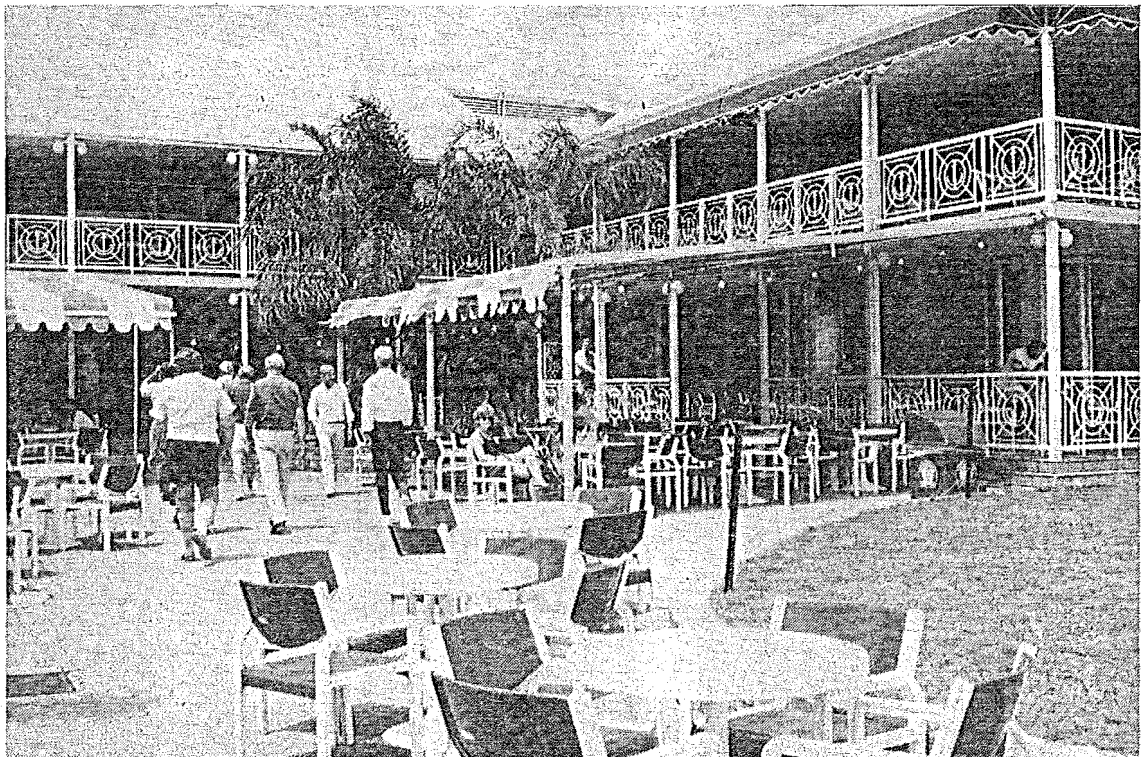


Shoal Bay, Auckland, NZ

2.1.5 Centre of Activity – Focus

The marina can act as a focal point within large multi-use developments. As a result this magnifies the desirability of land surrounding the marina, promoting an increase in real estate values and sales. Incorporating marinas into large developments also allows the risk of capital outlay and cost of services and infrastructure development to be divided between a number of investors.

At a smaller scale, a focal point must be incorporated into the marina itself, a major concept often overlooked in design. In an accessible location people attracted to a central activity can familiarise themselves with the general layout of the marina. Visual access to a number of activities is preferable, to lead people through the site with minimal difficulty. This is particularly important for visitors who are unfamiliar with the marina. Popular marinas typically have a clearly recognisable focal area eg. Fisherman's Wharf, Southport. This emphasises the importance of incorporating community needs into marina design.



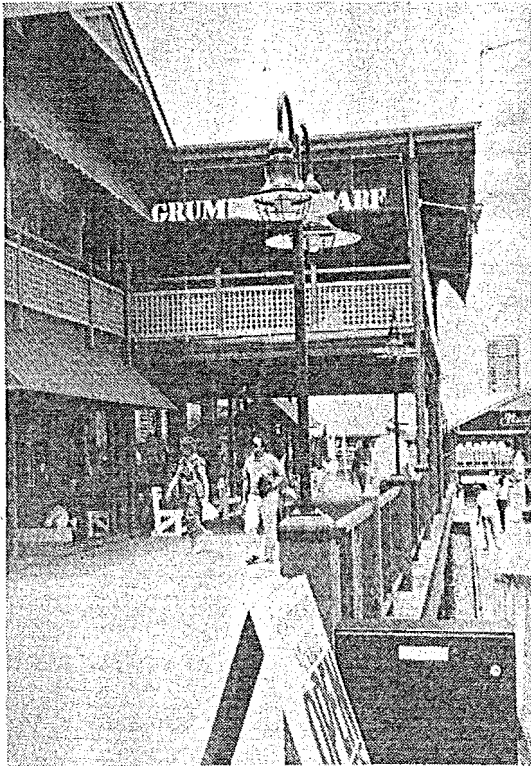
Fisherman's Wharf, Southport, Aust.

The addition of a second focal area within the main area of activity eg. outdoor bar, can enable boat owners and visitors to mix together on neutral ground which has not been designed for the sole needs of either group.

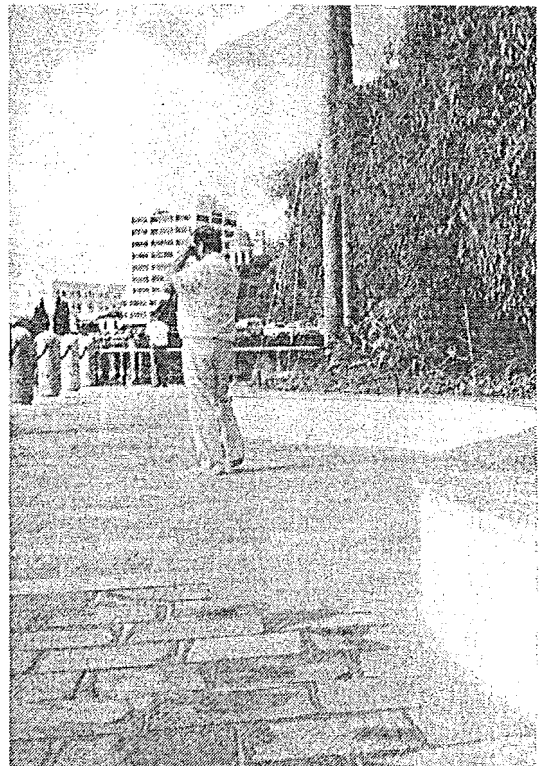


Riverside, Brisbane, Aust.

Successful boardwalks allow easy access between the focal area and associated areas eg. retail outlets, the car park and the water's edge. Boardwalks have a habit of leading people past activities rather than to them.



Mariner's Cove, Southport



Riverside, Brisbane

2.1.6 Conclusion

Existing features contained within the site and surrounding landscape offer guidance to the designer on how to approach the design. The perceived image of the marina and its unique character, must reflect the landscape character. This will indicate the desired scale of the marina and how to visually reduce its impact. The scale must be proportional to its surroundings to attain visual harmony.

Finally each marina must have a focal area, a central point that people gravitate to. This ensures there is always one lively buzzing area of activity, even on winter days. Otherwise lack of activity can discourage patronage.

2.2 PLANNING

2.2.1 Introduction

Once the siting of the marina has been determined in terms of scale, landscape character and also clients' and community needs, attention can be focused on site planning.

For simplicity these have been divided into four categories

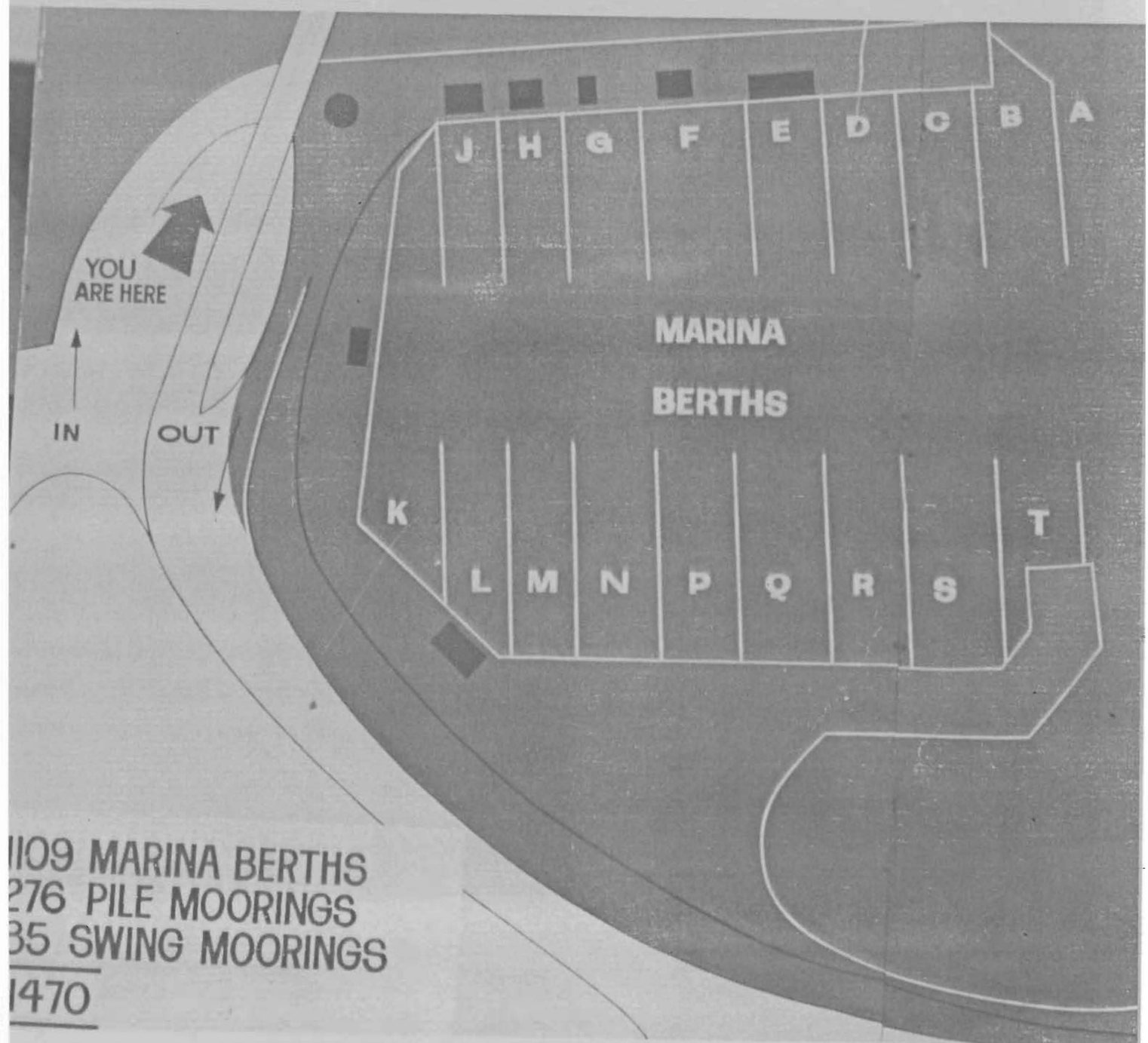
- access
- circulation
- parking
- facility and service location.

Although discussed separately all are contained or defined by decisions made in each of these categories. For example, access may be determined by the presence of a motorway, which in turn determines where the parking can possibly go; or the yacht club sited on the point to overlook the marina and harbour, will determine just how the parking and circulation is orientated on the site. These factors in combination can lead to achieve design solutions appropriate to the site.

2.2.2 Access to Marina Site

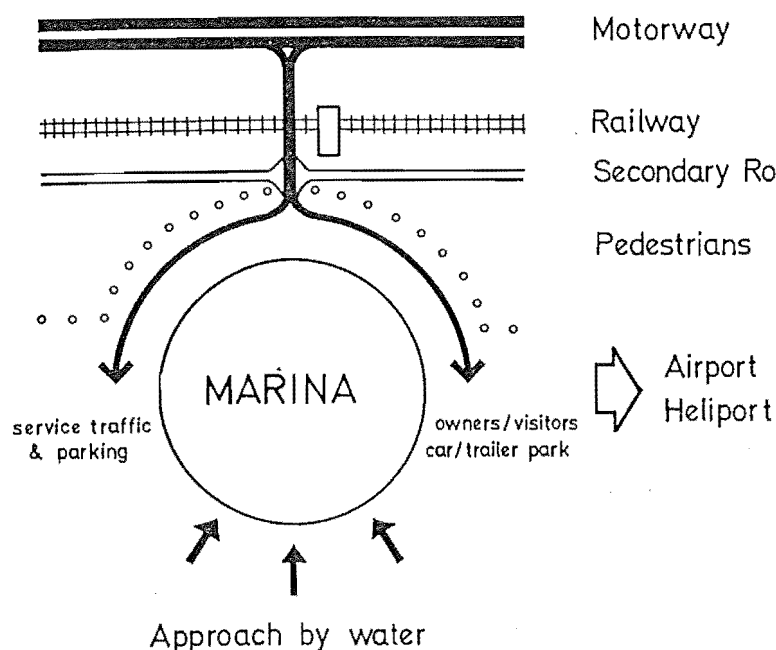
Marinas generate more traffic to the coastline and the effect of this on the adjoining environment should be considered.

planning



Insensitive planning of access onto the marina site effectively leads to changes in the surrounding environment, the greatest impacts occurring when the main approach is through residential areas. For this reason, in large scale development, it is preferable for the main approach to be along an arterial road.

Sites vary a great deal in their demands upon existing transport systems. Generally the larger the marina, the better the road links must be to the site. Therefore early studies are important to predict traffic flows.



Transport Analysis

Observation of existing marinas by A.W. Addie in the book Marinas, a working guide to their development and design confirms that the arrival and departure of owners and visitors is characteristically very dispersed, even during the peak periods of summer.

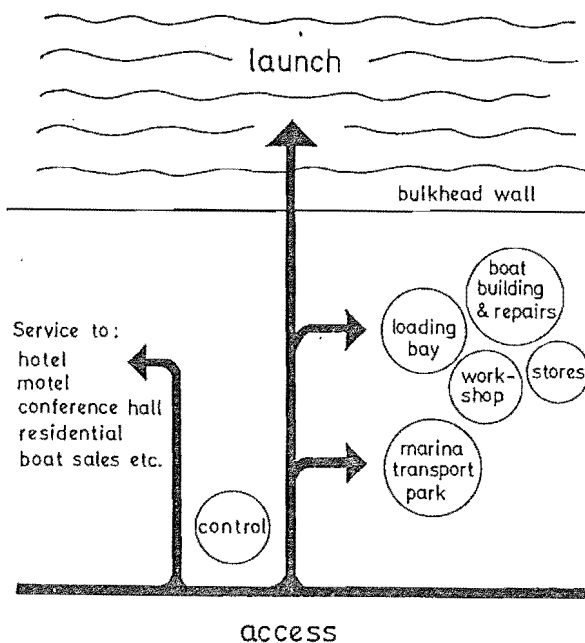
Relatively small roads may therefore, have large amounts of activity without undue congestion. This, however, applies only to the marina element and a reappraisal would be required if other functions such as shopping areas and entertainment centres were incorporated, which would generate heavy and dense traffic.

Thus the landscape architect must consider traffic patterns, duration and likely user density of the marina.

2.2.3 Circulation within the Marina Site

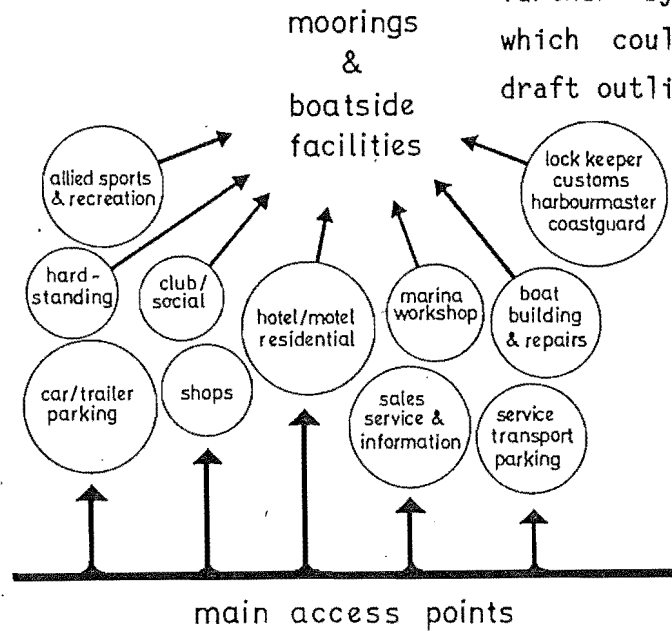
Vehicle traffic ideally should be minimized within any development, particularly in high intensity pedestrian areas. Conflicts between pedestrians and vehicles reduce the safety element. Wherever possible, then, pedestrians should not have to cross the paths of vehicles. Thus the layout of marina facilities becomes significant. To minimize conflict it is desirable to provide separate access to parking areas for industrial, commercial and recreational marina activities, in order that traffic can move directly to one environment without passing through other activity areas. This reduces any possibility of visitor/owner conflicts. Boat owners always want to park as close to their boats as possible and can get annoyed when visitors fill their parking domain.

By providing parking for boat owners near to the site of boat launching but distant from central facilities, parking space is ensured for visitors near such facilities; congestion is reduced.



The main activities which may be included in a marina are indicated, and attempts to show what their physical relationships might be.

This concept is taken a stage further by suggesting a layout which could start from such a draft outline.



For clarity and convenience, services and social areas can roughly be separated. They will not usually be of equal area but will coincide both physically and in function.

The plan must be flexible enough not to prohibit expansion along the shoreline. The diagram above also indicates those facilities which depend on waterside positions and those which do not.

Typically more will require waterside positions than can be accommodated, particularly in off-shore type marinas where there is a minimum of water frontage.

2.2.4 Parking

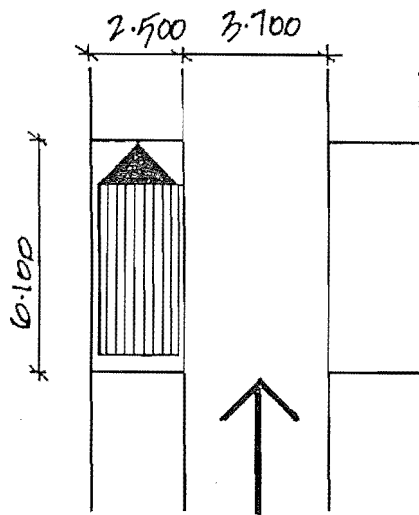
"The design of a car park will depend on its site and on its own special requirements. These vary, but there are a number of factors which are common to all and which must be considered at the outset. These include location, type and intensity of use, size and shape, expected life, capital outlay and subsequent maintenance costs, and the intended character or atmosphere of the total area. They will determine how the carpark is designed, constructed, and maintained. More specifically they will determine each carpark's spatial organisation, surface treatment, planting schemes and maintenance."

Rob Watson

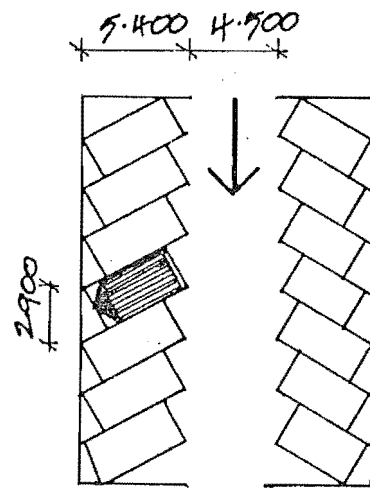
Christchurch Car Parks – Planning and Design p.18

* Spatial Organisation

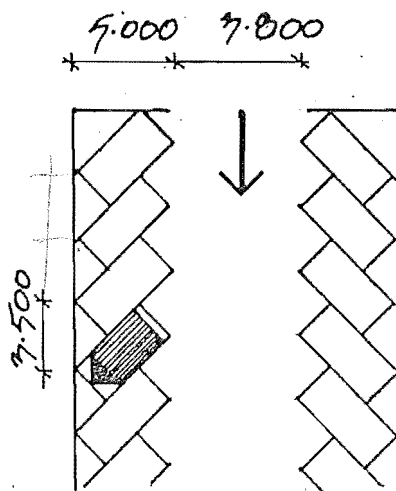
For practical reasons car park layout should be consistent and simple for users to follow. Types of layout are either parallel or a range of angle parking, as illustrated.



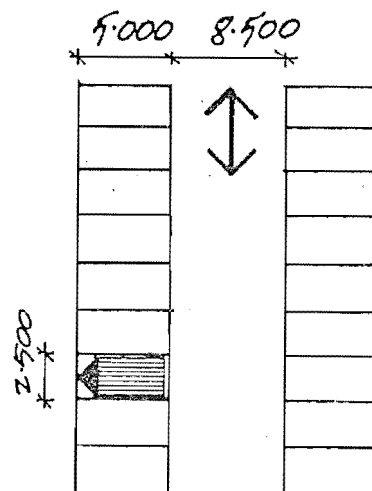
Parallel Parking



60° Parking



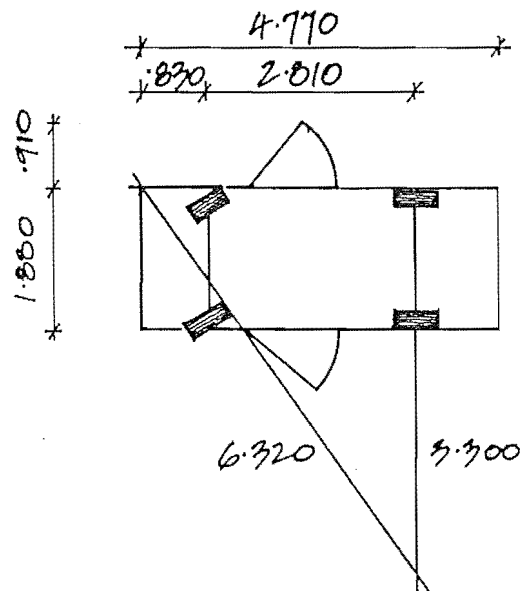
45° Parking



90° Parking

The actual difference in area per car between the varying layouts is minimal. Each arrangement will have some space which cannot be used and thus the space available on the site will dictate which is most suitable.

The parking spaces indicated in the diagram on the preceding page make provision for the 90 percentile New Zealand cars. This would include such makes as Falcons and the Holden Commodore. All require a turning circle of 6.2 m.



The 90 percentile car

For dimensions of various layouts refer to Rob Watson, Christchurch Car Parks.

* Allocation of Car Spaces

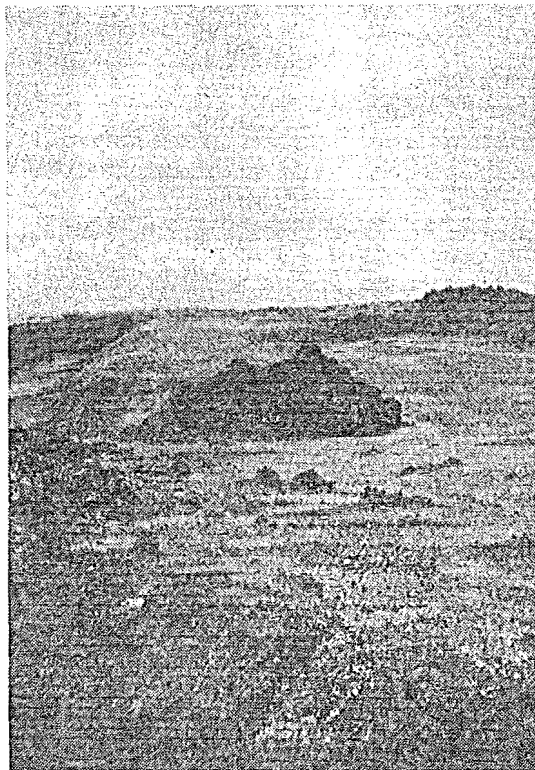
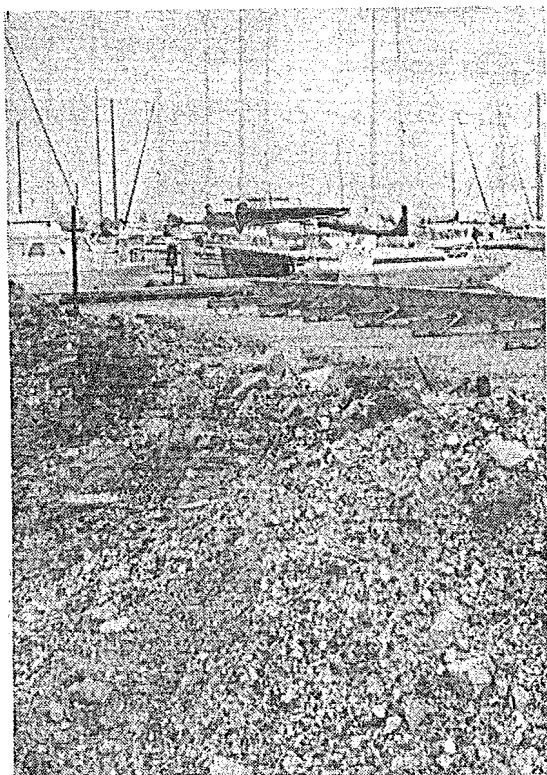
The standard size of a car park in a marina is calculated from

- the number of boats
- the car to boat ratio
- sizes of bays and aisles.

This varies between site location and the land values and attitudes of each country. For example, the Waitemata Harbour Maritime Planning Authority of Auckland suggested 0.6 cars per berth. Westhaven, a busy Auckland marina finds 0.8 cars per berth a minimal ratio. This includes parking for the club house, chandlers and haul-out area.

In the USA the long established Marina del Rey containing 7500 berths has a ratio of 0.75 cars/ berths. However cheap land is no longer available; that ratio has dropped to 0.5 cars/berth. Any increase in parking is not justifiable on economic grounds.

The provision of extra spaces should also be avoided whenever possible. Too generous parking will be vacant much of the time, and is costly, particularly in New Zealand where parking often occurs on reclaimed land. At the same time it is important that a realistic number of spaces are allocated so that visitors/members do not find parking restrictive.



Reclamation at the Royal Queensland Yacht Squadron, Aust.

The reduction in ratio of cars to boats without drastic effects, reflects the overseas trend that boat owners are visiting their marinas less frequently than in the past.

New Zealanders on the other hand do not appear to follow this trend but remain active and frequent users of facilities offered.



Parking, Westhaven, Auckland

Parking facilities are stretched to the maximum on major race days at Westhaven marina.

It is therefore difficult to suggest a car:boat ratio for all New Zealand marinas. Instead, each marina must be considered by the landscape architect and investigated individually to determine an appropriate ratio.

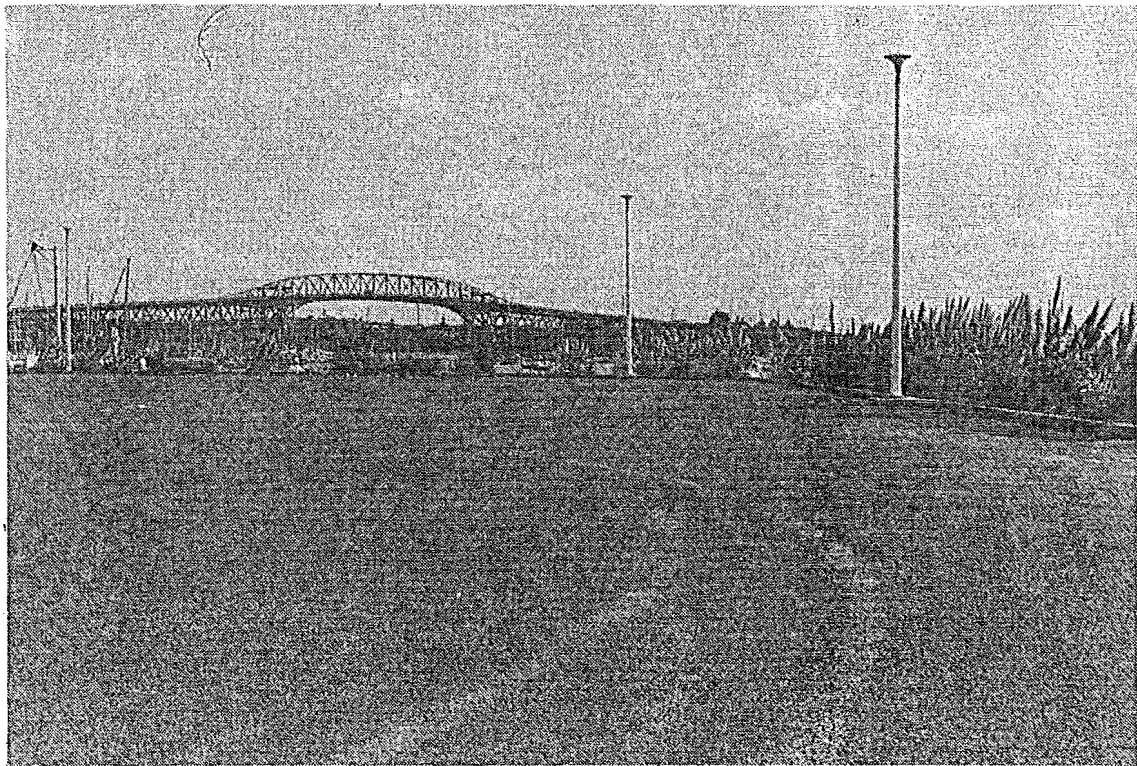
* Waterside Parking

It is visually undesirable to have waterside car parking. Access is needed for launching boats and the boat ramp must be easily accessible. However, the main parking area should not be located on the foreshore for reasons of appearance (as discussed earlier), planning and possibly safety. It is advantageous to allow some of the car parking area to be used as hardstanding.



Portsmouth, UK

Many boats are maintained or laid up for short periods during the winter, when there are fewer cars and more boats out of the water and in the marina at this time of the year. This gives dual use of the area and maximum economy. It also allows the owners to drive alongside their boats with tools and materials for maintenance.



Typical parking on the water's edge shows a lack of imaginative planning by designers.

Techniques for reducing the impacts of parking areas follow.

* Techniques to reduce the impact of parking areas

Surveys carried out by Rob Watson for the Christchurch Civic Trust showed that

"uninterrupted rows of car parking spaces are monotonous, but can be relieved by:

- surface treatment - grass/concrete surfaces eg. gobi blocks
- vegetation - planting schemes
- reducing the number of car spaces into small groups or cells
- fences or walls
- multi-storeyed parking
- or a combination of these techniques.

These techniques all minimize the visual impacts, particularly in large marinas that require substantial parking.

"In general the larger the car parking the greater the need for some device. It is also a matter of scale – the more extensive the horizontal plane, the greater the need for vertical emphasis."

R. Watson, pg.21.

The designer must use his/her imagination to the fullest potential to overcome harsh design. This does not mean design must be intricate and detailed, as often the simplest can be most effective.

As a general rule, if no other technique is going to be included in the area, trees and shrubs are necessary. Vegetation placed after every six or seven car spaces will alleviate monotony and improve the appearance of any car park.



Arts Centre, Christchurch, NZ

Trees have been planted throughout the car park helping to reduce the scale of the area, so it can blend into the surrounding features. Though not a marina, common elements here apply to all parking areas.

* Surface Treatment

There are a wide range of surface materials available on the market from the simple inexpensive materials, grass and gravel, to the more expensive concrete and unit paving.

Whatever material is chosen it must:

- visually blend in with the overall design
- be appropriate to withstand expected use
- be able to survive the expected life of the car park or plans must acknowledge the need for resealing etc at a later date
- correspond in dollars to the amount of funds available.

Drainage should be considered prior to any surfacing being undertaken. The local council can provide information and advice.

Surfacing materials at present available on the New Zealand market include the following - in ascending order of permanence.

- 1 Grass - suitable where use is intermittent and the area is well drained.
- 2 Gravel - suitable in those car parks where raking and re-levelling of the gravel can be undertaken. Difficult to maintain and unattractive on a large scale, but inexpensive and useful in temporary situations.
- 3 Chip Seal - a traditional seal for permanent car parks. It is unattractive on a large scale unless 'softened' by vegetation or other techniques to be discussed.
- 4 Asphalt - another permanent seal and unattractive on a large scale if it is unrelieved by vegetation or some other material. The standard colour is dark grey but red and green are available at extra cost.

- 5 Pressed cobbles – these consist of a concrete base pressed and coated with an oxide glaze. It is an expensive surfacing material and usually confined to smaller areas or used to define particular spaces within larger areas.
- 6 Paving units – these include a variety of paving bricks, tiles, interlocking pavers, concrete pavers, individual cobblestones and gobi-blocks. The cost of laying unit pavers make this expensive. However, they do allow a greater flexibility in design and improve the appearance of a car park whether used alone or in conjunction with other materials.

* Vegetation – Planting Schemes

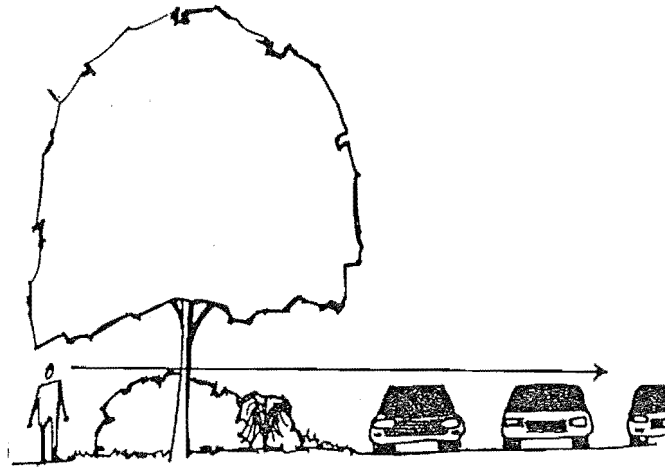
"A planting scheme should be an integral part of the design of every car park. No car park is too small for a tree. Plants have visual and functional uses:

- they improve the appearance of car parks and enhance the broader landscape
- they screen, shade and shelter
- help to purify the air
- reduce noise levels
- they can be used to define the internal layout (where space allows)".

R. Watson, pg.26

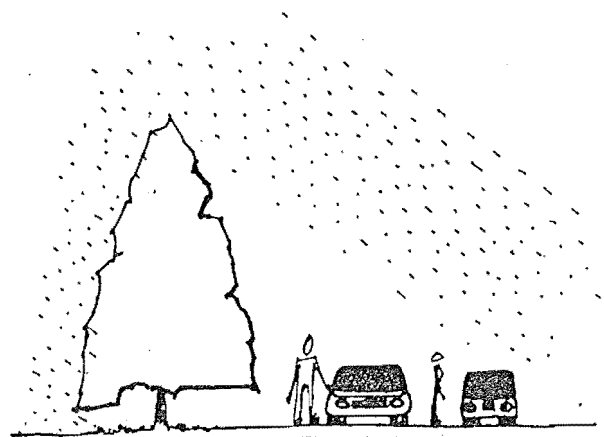
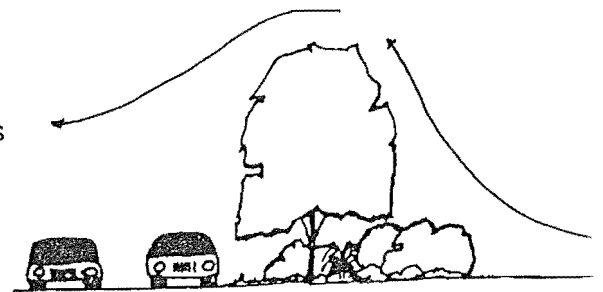
The simplest scheme was found in Watson's surveys to be the most effective and least expensive. The myth that planting creates problems has been overcome by careful planning, the main two benefits of planing – scale ie. trees, and screening ie. shrubs or mounding – reduce the impact of highly visual parking areas.

This is typically achieved by planting evergreen shrubs up to a height of 1-2m, then allowing trees to emerge through this to form a canopy overhead. The trees do not hang over the car spaces creating a hazard overhead.

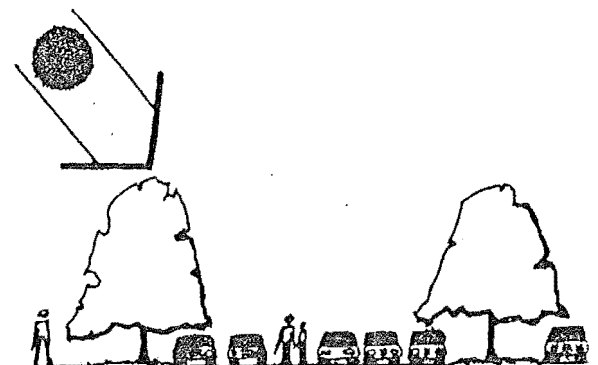


Additional benefits of planting trees and shrubs are:

- increased shelter from wind around cars



- increased protection from rain
- increased shading from the summer sun.



The availability of space should be considered in any planting scheme. Plots for vegetation should be an integral part of car park design rather than a haphazard afterthought. Simple planting can be cheap and effective, but the cost of the initial establishment period must be included. Poor establishment will inevitably lead to a reduction in quality.

Maintenance costs can be reduced by avoiding species that drop leaves, regularly lose branches, and have a strong root system likely to enter drains and other services. Plant material should be selected to suit specific site conditions and these will vary for every location (refer Appendix II).

The theme of the marina will highlight appropriate car park design. Existing established trees on the site may be preserved ensuring some of the original character is retained.

Small groups of car spaces: The most effective way to reduce the impact of car parks is to divide them up into small cells of up to 25 cars. These can then be divided off from each other by mounds and tree planting.

Fences or Walls: Solid fences and walls are seldom used as screens but are very effective where space is limited. Flowering vines or creepers grown up the face, can give a similar effect to shrubs.

Earth Shaping: "Depressing the surface below the existing ground level will reduce its (the car park's) visual impact". (R. Watson, pg.22)

Alternatively where space permits earth shaping can attractively screen car parking, but complete enclosure should be avoided. Mounding completely around the car park would reduce its visual impact but would also sever the strong links of the marina to the water, and more importantly facilitate theft and vandalism to parked cars. For this reason it is preferable to have the area of parking visible from the club house and other marina facilities. Owners also like to be able to see their boats moored or berths for similar reasons. Ideally mounding should allow open vistas and views into activities occurring or off-site while retaining a sense of enclosure.

Multi-storeyed parking: One mechanism for reducing the area required for car parking is to create a two-level car park. The top level is constructed at ground level and the other level below it. In this way the surface area required for parking is cut in half. If desired the yacht club could become the third level and the roof used as a public viewing area.

Ideas similar to this have been used along the waterfront in Hong Kong with several levels of parks, but the background features are large scale. This style would lend itself to the urban setting of New Zealand cities where it is difficult to provide areas for parking.

Another option is to construct a tiered parking building, carefully designed to echo the shape of the cliffs beyond. Pohutukawas in Auckland, effectively in time, scale down the building and tie it back to the cliffs. Appropriate trees could be sought in other New Zealand marinas.

Most marinas in New Zealand lack good car park design. They do not provide simple, consistent layouts, screening, groups of trees for shade and shelter, or a comfortable scale. Spatial organisation, surfacing, and planting schemes must be considered from conception, to implementation to ensure that they contribute positively to the overall design of the marina. Each car park will present its own design problems and design will often focus on one area, but remember:

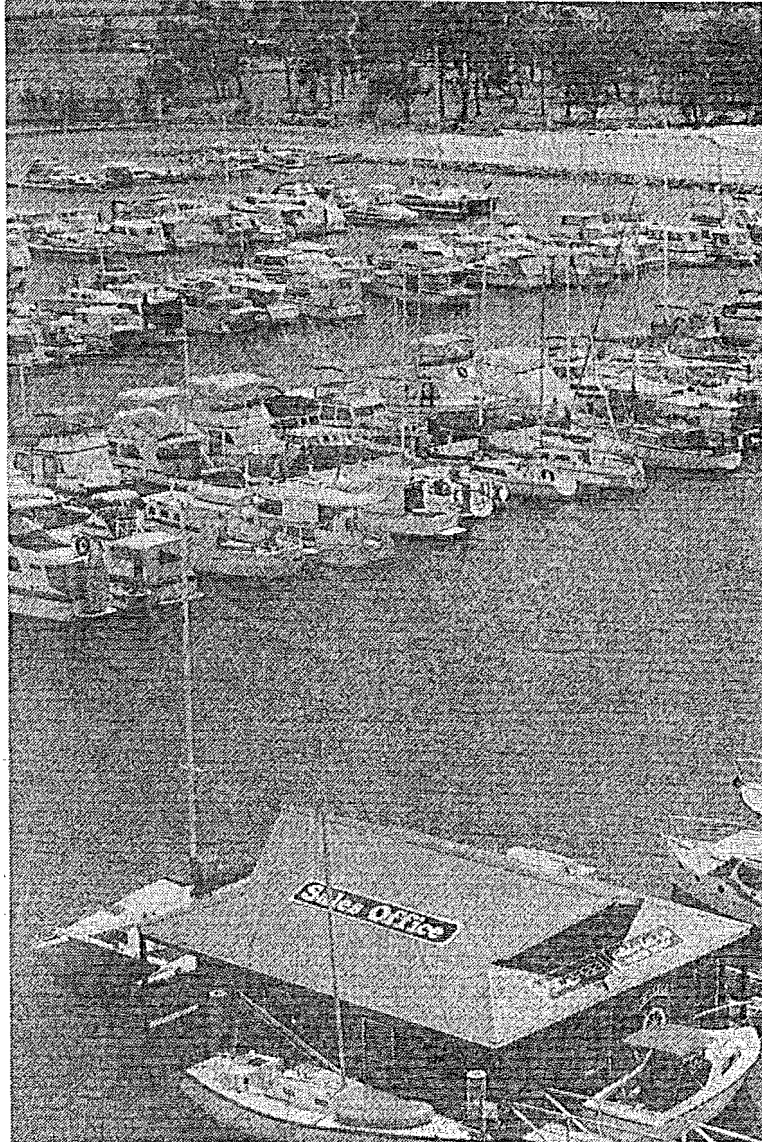
"The most effective way to improve the appearance of a car park is to plant trees. And no car park is too small for a tree".

R. Watson, p.33

2.2.5 Facility and Service Location

Boats and buildings have a visually interesting relationship in a marina, where the water and land form a link between the two. The variation in planes, textures, colours and shapes of the boats readily contrast with the more regular and informal shapes of the buildings. Care must be taken to design buildings that are architecturally unified and maintain a consistent strength within themselves. They must stand on their own without boats acting as camouflage or "stage props".

Yet neither boats nor buildings should dominate the other, if each is to exist in visual harmony.



McLaren Marine Village, Queensland, Aust.

Typically, on-shore development relates to the scale and size of boats in the marina. Larger boats are generally surrounded by extensive complex facilities, compared to rural areas containing a few run-a-boats.

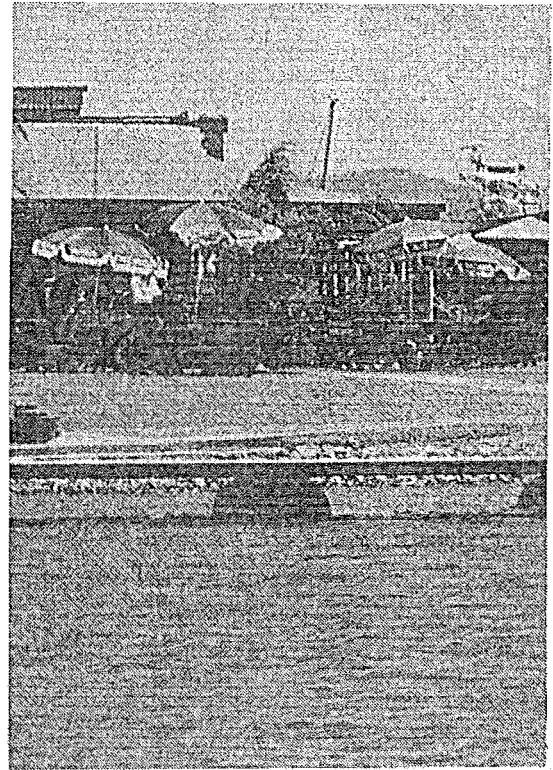
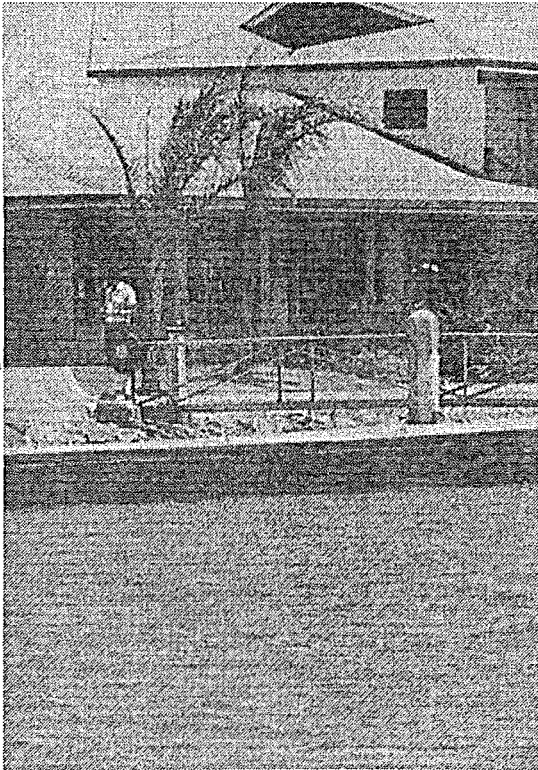
Reflections of buildings in still water along the waterfront can be picturesque but double a building's apparent size. Therefore it is wise to keep a large structure back from the water's edge if possible.

Dry berth structures present an important design constraint for the landscape architect. They are used for economy of storage and are usually at least 20-30m wide and 15m high. Siting of such buildings next to the water's edge must be carefully handled. Vegetation can often be used to enhance the structure, by either screening or softening.



Dry Stack Storage, Westhaven, Auckland

The landscape architect must also analyse the spaces created by these buildings. In areas of high public activity, care should be taken not to have excessive overshadowing or to create wind tunnels, from the placement of structures. Instead they should be used to shelter areas and create a favourable microclimate. This in turn will influence the atmosphere created within the marina.



McLaren Marine Village, Queensland, Aust.

Marina related commercial projects vary widely in size and scope and need to be considered in marina design. They can consist of a single retail outlet, or alternatively encompass offices, shops, hotels, restaurants, and entertainment establishments. In such extensive projects, the marina often functions as a feature to enhance the commercial sector. In some instances, commercial developments, such as San Francisco's Fishermans' Wharf, can successfully combine public and tourist activities with working marinas. This adds considerable interest and attraction to the waterfront.

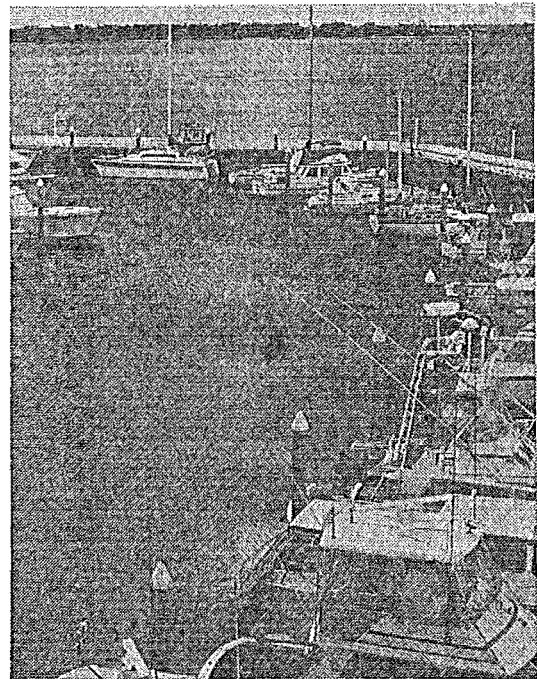
The challenge in the development of huge scale projects is to integrate working marinas with commercial activities. The working marina also requires considerable land for parking, hardstanding and boat repairs. In an urban context the cost of land can make an integrated marina unrealistic.

Commercial establishments associated with the marina should be concentrated in a main area to create the mass of activity necessary for economic viability. Priority should be given to those businesses which benefit from the presence of water, or are an integral part of the workings of a marina, eg. waterside cafes. Other commercial activities such as grocery, hardware and pharmacy, which predominantly serve residential markets, should be located elsewhere in the complex. Chandlery and other marina support facilities are best located central to the boat slip and repair areas.

Any large complex, needs to be located within or near a major population centre, or have a significant number of residential occupants to justify commercial activity associated with the marina. A large market base containing a range of commercial activities minimizes seasonal fluctuations while fostering week-day trading.

Marinas located in rural areas frequently cater for transient populations (due to seasonal operations) and therefore can only support a limited amount of commercial activity.

The landscape architect must consider any residential development related to the marina. Many developers will anticipate incorporating residences within or very close to the marina. This is typical of overseas marinas but has not been developed in New Zealand to date.



Bayview Harbour, Southport, Aust.

Residential facilities within marinas are attractive because they offer views, water frontage and the opportunity to moor your boat next to your dwelling. Every effort, therefore, should be made in residential design to maximize views to the water. This may be achieved by incorporating open spaces in the form of gardens or well-planned car parks.

Any residential development within marinas that did proceed in New Zealand, should consider noise and any other unpleasant effects that derive from the working marina and intense public use areas.

2.2.6 Conclusion

The main issues which need to be addressed in the planning stages to achieve a marina that will visually integrate with its surrounds are:

- 1 The objectives of the development

This involves any financial constraints and targeted markets. These must guide but not constrain the design approach.

- 2 Functional and operational requirements

Planning involving access, circulation, parking, and the location of commercial facilities and services will have to be carefully delineated, each providing strong links within the development. To attain a marina that operates efficiently, while not intruding upon the natural coastline so highly valued, the functional and operational requirements must be carefully considered.

- 3 The existing landscape features

The siting of the marina and design approval must strongly reflect the features of the local environment, thus determining the scale, visual impact, and overall landscape character.

2.3 DETAILS

2.3.1 Introduction

It is the details within the major development that reinforce, or finalise, the evolution of a unique and interesting character or atmosphere.

details



Thus the importance of such details as

- planting
- surface treatments
- materials
- utility items and site furniture

must be acknowledged and any conflicts resolved, to ensure these aspects of the design enhance rather than detract from the marina.

2.3.2 Planting

Vegetation in a marina has to fulfil functional and design objectives, as well as plant species' requirements.

The primary functions of vegetation are to provide shelter, soil stability and spatial control, secondary functions are shading and screening. Once these requirements are acknowledged planting can be used to fulfil design objectives ie. to create an atmosphere or scene. Finally the actual species chosen should suit the site conditions. These often determine the effectiveness of the design. Appropriate plant selection can tie together both functional and design objectives.

Recognising the importance of planting is a first step towards ensuring a successful marina.

* Function of Vegetation

Vegetation serves two main functions in a marina setting - shelter and screening.

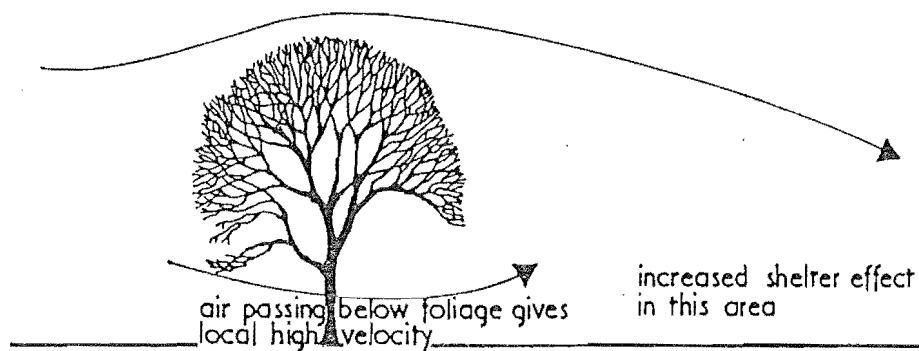
On exposed sites, particularly on the coastal side, there will be a need to provide shelter from the wind, salt and sand. The most hardy plants should be placed on the windward side, followed by semi-hardy species. This will protect the tender species within. Prevailing winds may stunt growth on the outer edges of the planting by reducing the size of new leaves and shoots. This should do no more harm than checking growth, provided the species chosen are suitable.

Windward slopes rising directly from the water are difficult to plant. Since they are rarely found in nature, it is advisable to avoid any type of planting in favour of hard materials, eg. rocks and gravel.

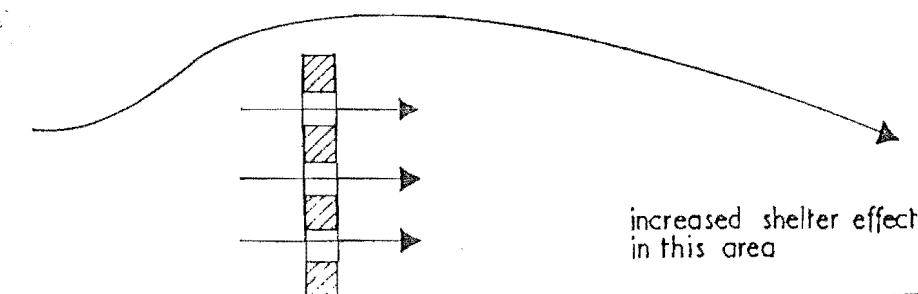
Wind has an impact on virtually all marina sites and its effect should not be underestimated. Salt spray carried by the wind has been known to burn the hardiest of plants up to a kilometre inland. Artificial screening, particularly around young plants can be an advantage until they become established.

Young small specimens are preferable to larger ones – they are not only cheaper to buy and plant, but also establish faster, outgrowing larger specimens within a few seasons.

Shelter belt trees should be planted at right angles to the prevailing winds. A density that allows 50% of the wind to filter through the trees is desirable ie. 50% permeability. This reduces the velocity of wind over a longer distance, giving shelter over a greater area.

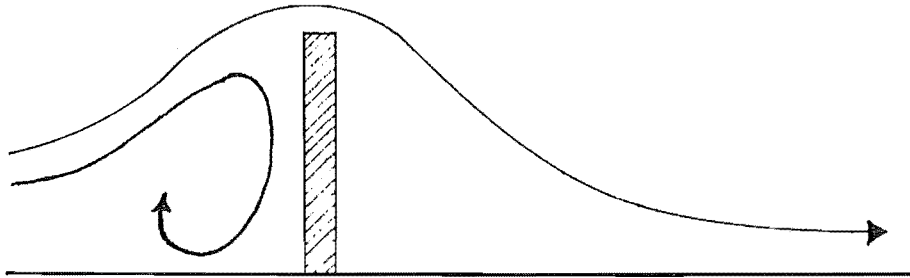


Canopy trees act as a wind screen



Perforated screens work similar to trees

Initially planting could be dense for immediate effect and then thinned out at a later date (12-18 months later). Solid planting acts like a wall providing good shelter over a smaller area, but turbulence is created on the leeward side.



A solid screen gives shelter for a limited distance

The need for shelter sometimes conflicts with that for sunlight, particularly in the winter. It is therefore important to understand wind behaviour and how prevailing winds affect each individual marina site.

Immediate screening can be achieved by using existing features such as mounding, graded banks or existing buildings. Their lees can shelter fast growing hedges, shrubs and trees.

Screens and hedges can also be used to:

- relate buildings to the site and each other,
- to link external spaces,
- accommodate changes of level and ground modelling,
- provide privacy, by forming a visual barrier,
- provide shelter from wind, dust, strong sunshine and to some extent noise,
- form spaces by enclosing or dividing areas,
- direct pedestrian circulation,
- channel views to or away from buildings or objects,
- provide contrast in form, texture or colour with buildings, pavings or water,
- contrast or complement sculpture.

* Design

Until this point, plants have been discussed in a functional manner, yet, it is the artistic combination of plants that can carry a theme or character through the development. The way this is accomplished will vary for each site, but the basic ideas will be similar.

Planting along the outer edges of the marina should be functional but also compatible with the nature of planting in the area, particularly in rural settings because the marina is often surrounded by existing vegetation. In New Zealand, however, exotic species are often visually dominant - a factor which should be considered in planting design. Compatibility or contrast may be put to useful effect.

Themes can be created or enhanced by selecting a main framework of species, to visually blend with existing vegetation outside the site. Tree species can extend from the outer boundaries, where they act as dense shelter, into the car park and commercial areas. Here the emphasis changes from solely shelter to providing interest. The density of planting is reduced toward the centre of the site to achieve this effect.

Pohutukawas in the Auckland region, along with a shrub layer of coastal species prevalent in the area simulate the coastline.

A dense cover under the main theme species screens the full visual impact of cars in the area, but, by enclosing the area security is reduced. To compromise, the car park should be only partially enclosed. This increases the visual impact but ensures security is retained.

Ornamental planting may be used in the commercial, protected area of the marina site. Accent species create interest in areas of high public activity. However, the coastal theme, or particular theme chosen, should continue to thread throughout the site.

The planting theme in service and boat storage areas should relate to the land forms and, where appropriate, dense screening should be carried out.

The designer must recognise any special requirements of specific areas, such as a stream bank, waste disposal, or wet boggy area. Special attention must then be given to these areas in selecting the appropriate species.

The landscape of urban marinas should not be too natural or soft. Hard landscape materials, such as screen walls and fences, adjacent to trees or shrubs look better in high density urban sites than grass and flowerbeds. Again, the general setting and density of planting should reflect vegetation already established in the area.

* Plant requirements

The purpose of planting is to provide shelter, stability, spatial control or a combination of these. Planting should also reflect the design concept. However, plant requirements must also be met if vegetation is to be a successful thriving part of the marina. In order to accomplish this, a number of factors must be considered:

CLIMATIC CONDITIONS - acknowledge prevailing winds, temperatures and rainfall;

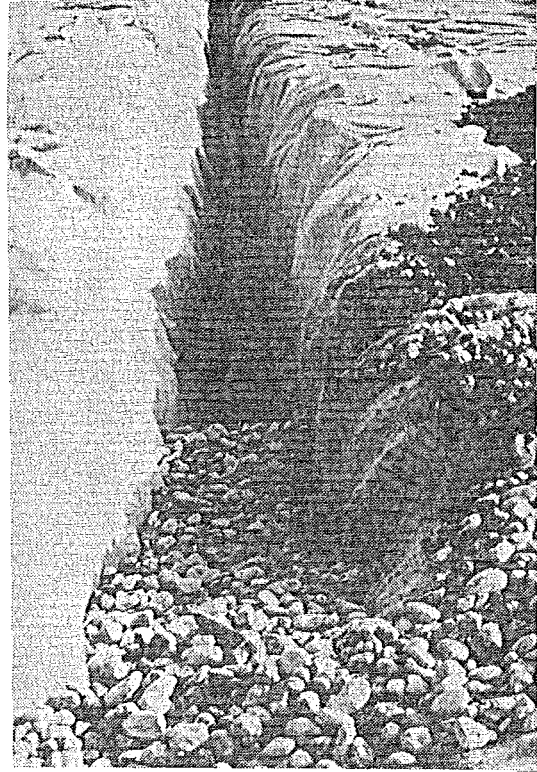
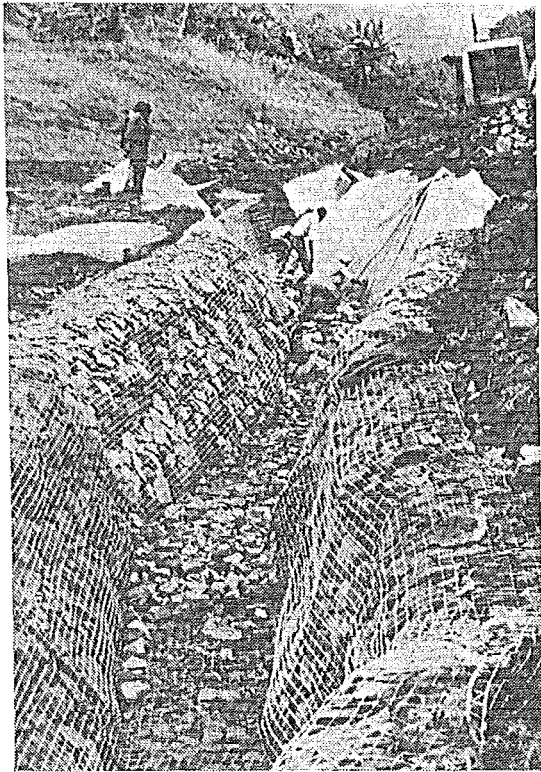
GEOLOGY - are the soil and sub-soil adequate to sustain plants, permeable to allow good drainage, or is there a high water table?

CHARACTER OF THE SITE - will any condition of the site ie. pollution, affect plant growth?

TOPOGRAPHY - are existing levels going to be altered? This could lead to problems with drainage, soil compaction etc.

SOIL CHARACTERISTICS - ensure pH is neutral and that particle sizes are small.

In this way plants can be selected and planted into environments favourable for growth. A list of suitable species is included in Appendix II.



Drainage is an important factor

2.3.3 Surface Treatments

All surfaces in the marina should be slip-proof, well drained, and in some areas eg. boardwalks and decking, suitable for pedestrian traffic without footwear (bare footed). The type of surface used can be effective in separating cars and pedestrians, as well as encouraging or discouraging movement through an area. To encourage movement within special functional areas the following surfaces should be considered:

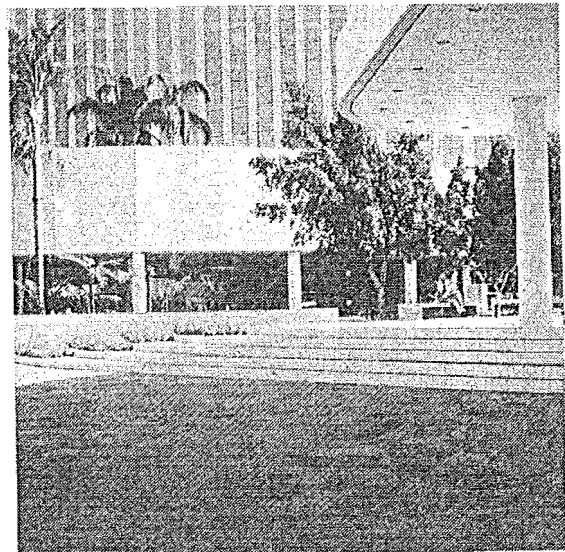
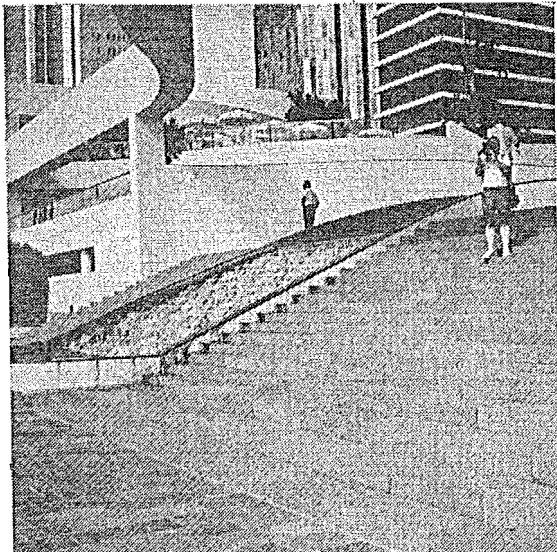
- hard level surface for vehicles
- hard non-slip surfaces for pedestrians
- semi-hard surfaces to promote casual walking including grass.

Movement tends to be discouraged by:

- hard rough surfaces eg. ridged, stepped or cobbled
- semi-soft surfaces eg. thick gravel or sand
- soft surfaces, eg. rough grass or planting.

Besides directing traffic, surfaces can also promote interest by providing:

- changes in surface level
- patterning of surfacing eg. textural concrete, cobblestones
- colour eg. warm red paving stones
- a bold, robust or nautical character that reflects the harsh elements of the sea rather than a weak appearance (eg. thick decking rather than refined, light boards).



Riverside, Brisbane, Aust.

Long, flat areas of plain surfacing are dull and should be avoided. The type of area to be created will define the range of materials suitable, and these should promote interest.

2.3.4 Materials

The choice of construction materials is important because many are exposed to strong winds, salt spray and damp conditions. For these reasons durable materials are chosen. This results in higher costs, higher than is usual for a similar development inland.

Where harsh conditions are expected over long periods, it is advisable to avoid the following materials:

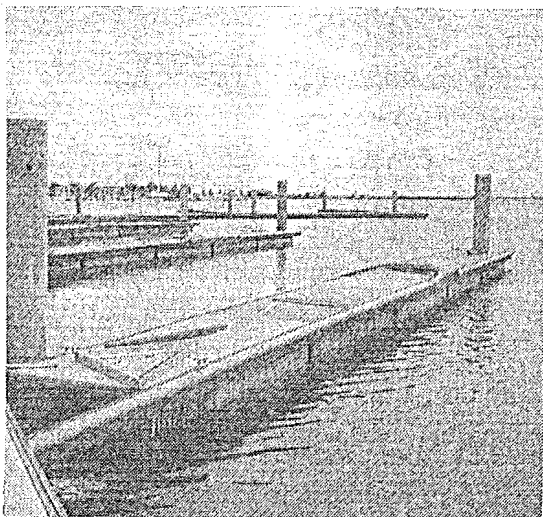
- untreated timber (except cedar)
- unpointed brickwork
- lightweight metals
- tiles
- very large panes of glass
- metal windows without sub-frames.

Use of these materials can lead to increased maintenance.

Decking is generally of timber or concrete, providing a slip-proof, non-abrasive surface that is not too hot or cold on bare feet. Wood, if the weather permits, is visually effective against the water in rural areas. If used, wood is best left in its natural state because timber preservatives eg. creosote can stain clothes and sails.

Concrete is simple to work with and strong, giving better wear than timber. The upper surface can be textured to form attractive patterns. This is commonly found in many marinas.

Plastics can also be used in the marine environment eg. expanded polystyrene and fibreglass. Fibreglass is becoming increasingly popular for pontoons and fingers. It is impervious to insects and most chemicals and therefore has a long life. Any damage that does occur can be easily repaired, making it a highly desirable material.



All metals will corrode or oxidize under atmospheric changes, and exposure to salt accelerates this process. The longevity of ferrous metals depends upon a protective coating. Any breakdown of this outer layer invites rust, which once inside is virtually irremovable. Where two metals of differing galvanic ratings are in close proximity, eg aluminium and steel, salt water will not only damage the materials but also speed up the process of deterioration because of electrolytic action. This problem is well known to yachtsmen, and women, and designers should also be aware of it.

Traditional materials can be used to form a strong link between new developments and the existing established features. Their availability from local sources should be checked in the early stages of design. Often traditional materials are cheaper than the more conventional materials eg Auckland, in the past, scoria was cheaper than concrete blocks because it was readily available and transportation costs to the site were low.

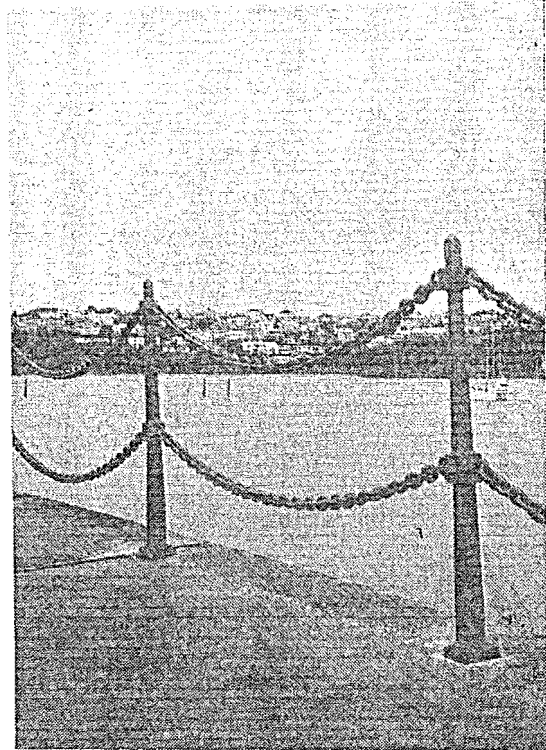
Overall the suitability, durability, texture, colour and cost of any construction materials have to be considered in their selection. The variability and quality of materials on the market is extensive. No attempt has been made here to identify or determine (other than in broad terms) which material should be used for a particular job.

2.3.5 Utility Items and Site Furniture

Small details add to the atmosphere and character of a marina. They also give the designer the opportunity to be creative, and to initiate details that will make the site unique.

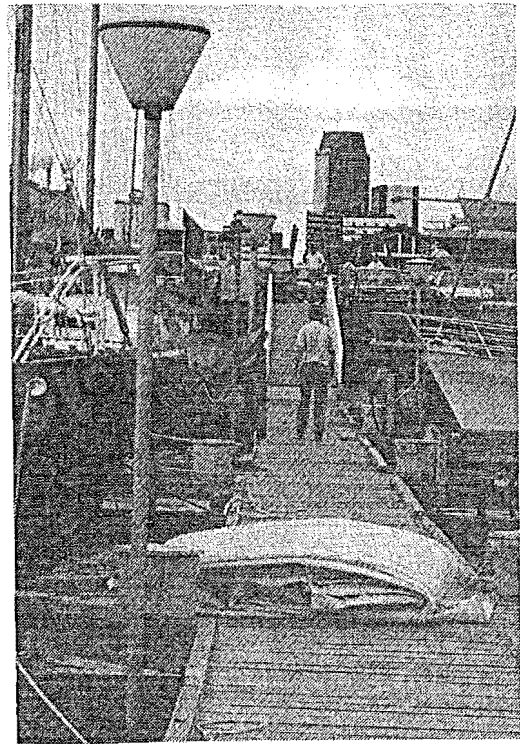
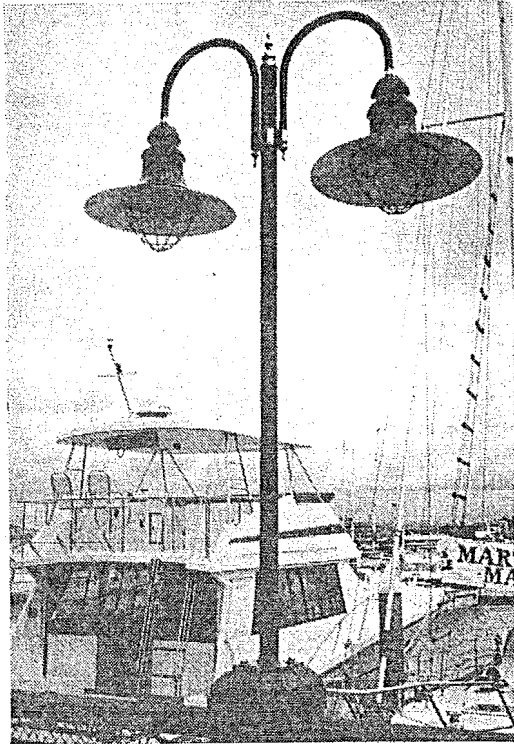
Small utility items, such as security fences, lighting, litter bins and safety sails, have a significant visual impact, particularly from close up. Their impact is greater than expected due to the contrast between the marina and the surrounding uninterrupted surfaces of water. The visual impact of such items should be reduced to a minimum to prevent any visual clutter. Those that have to be included should not appear as an after-thought, but should be thoughtfully placed and well designed.

Items such as safety rails along the sea wall should reflect existing features rather than form a visual barrier between the land and sea.



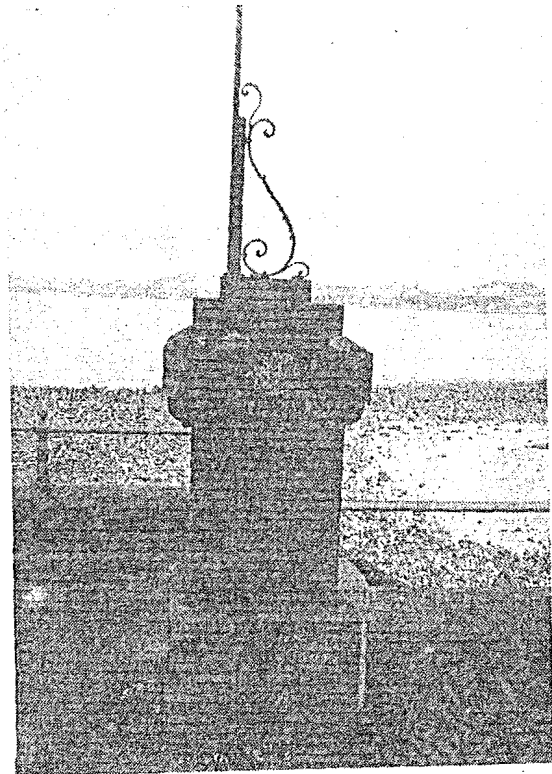
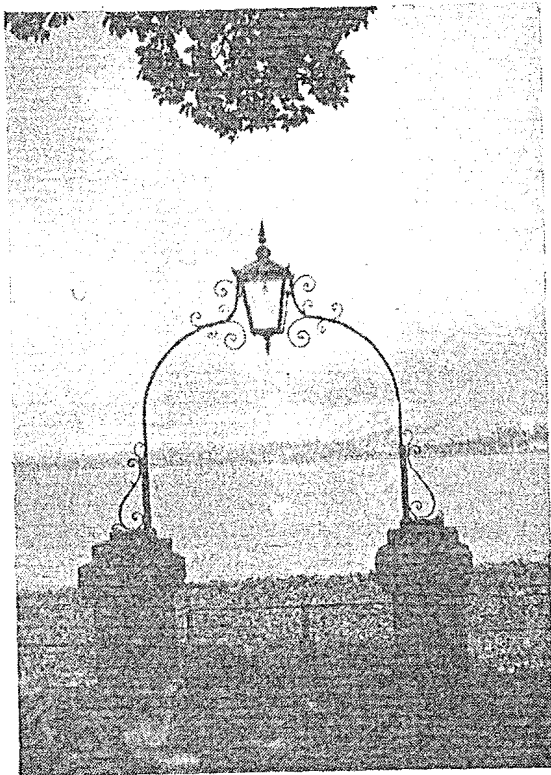
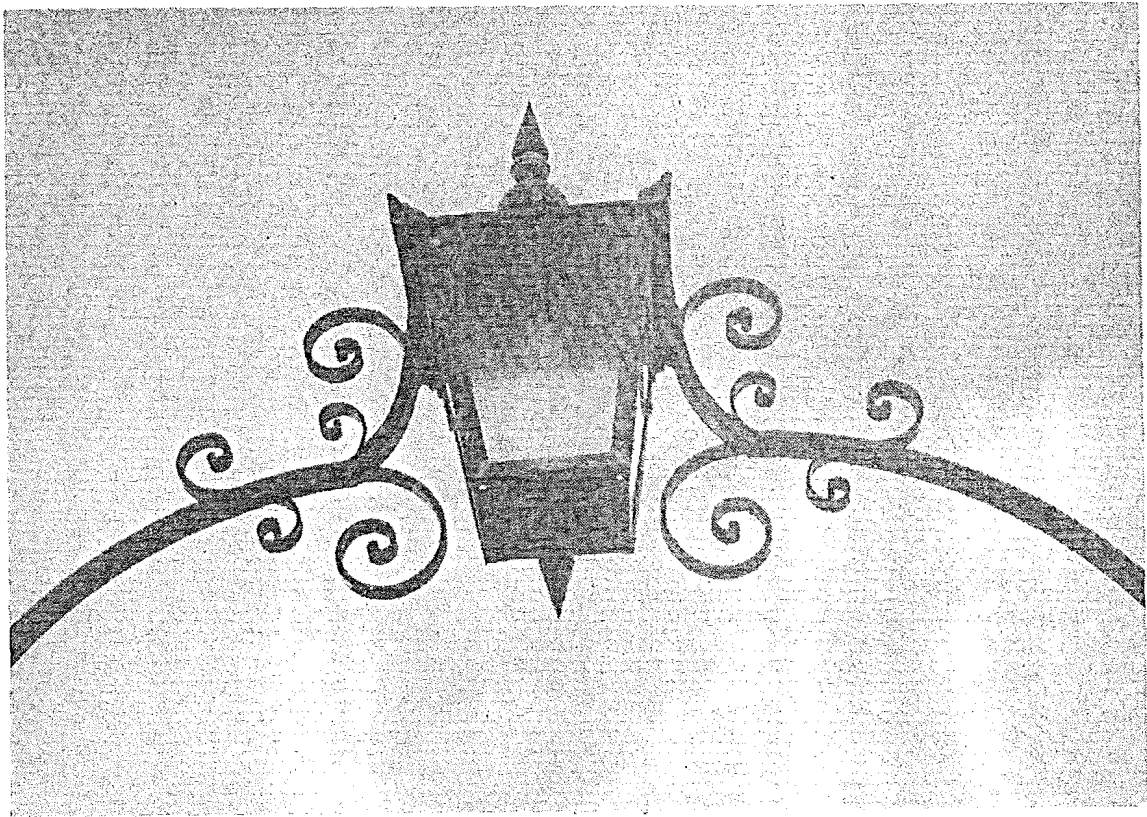
The atmosphere, appearance, and to a large extent the function, of a marina changes after dark. Light thrown from clubhouses or other entertainment centres is often sufficient to cast a dull light in the marina.

Individual standard lamps on piers can emphasise paths by illuminating their edges (refer Section 2.1.3). This increases the safety and convenience of a marina after dark, while providing some protection for property. Marinas seem to suffer from theft and vandalism more than most places.



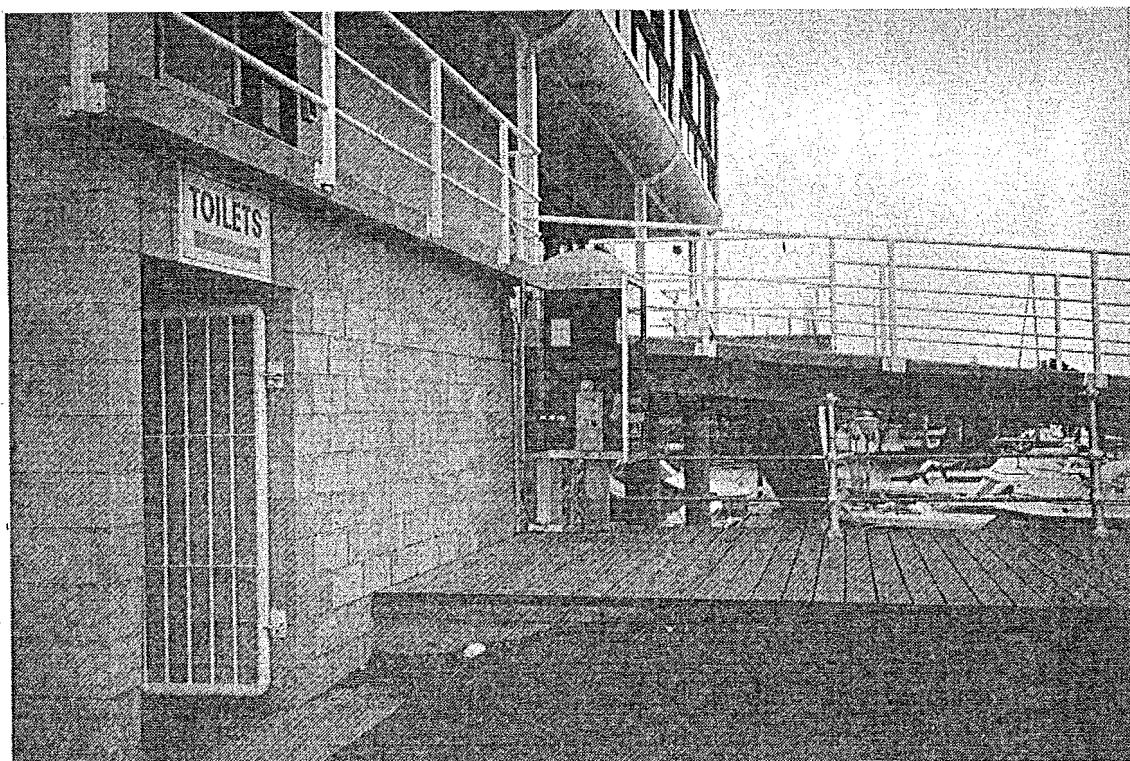
Interesting and artistic effects can be created by the reflections of light on the sea, or by back lighting the movement of water, which reflects the change in mood of a marina at night.

Vistas from the water, as well as from the land, can easily become cluttered with too many light columns. These must, wherever possible be incorporated into the design. If a high number of light columns are required, some could be attached to the sides of buildings or be incorporated into paths as low-level lighting. If light standards are to be used they should be chosen to blend in with the maritime character.



Devonport, Auckland, NZ

The number of telephones on a site will vary according to the status of the marina. Each should be located near groups of amenities, such as changing rooms, toilets or lockers. A public telephone should be included within or near the yacht club for safety and convenience. Wherever possible phone booths should be attached to buildings or at least blended into the environment.



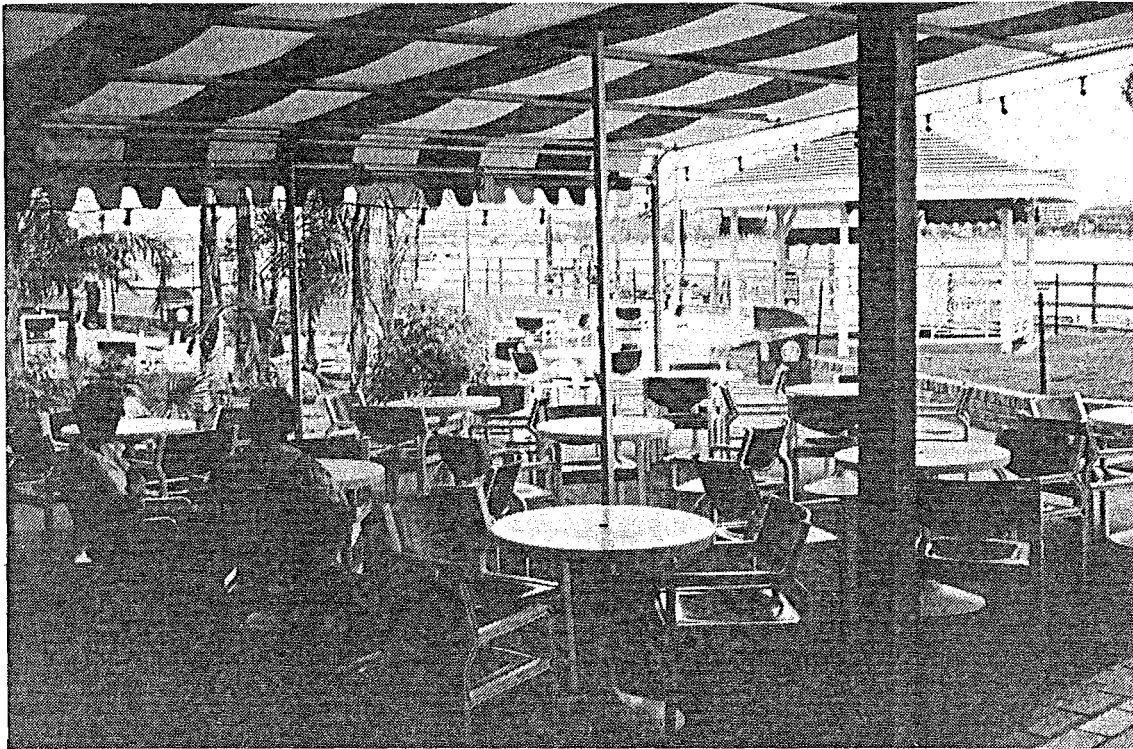
Westhaven, Auckland

Bins and other service items should be nestled close against buildings to limit the effect of visual clutter. Garbage collection areas are typically placed at the end of piers and in areas of intense public use. Rubbish can then be conveniently removed by contract services eg. Mogal "Buzz-a-bin". Frequently rubbish receptacles do not resemble or harmonise with the marina design. They look like an after thought (often they are), as do oil disposal units.

The photo below shows poor siting of a phone booth and oil bin. Considering the amount of money being invested in these projects this design flaw is disappointing.



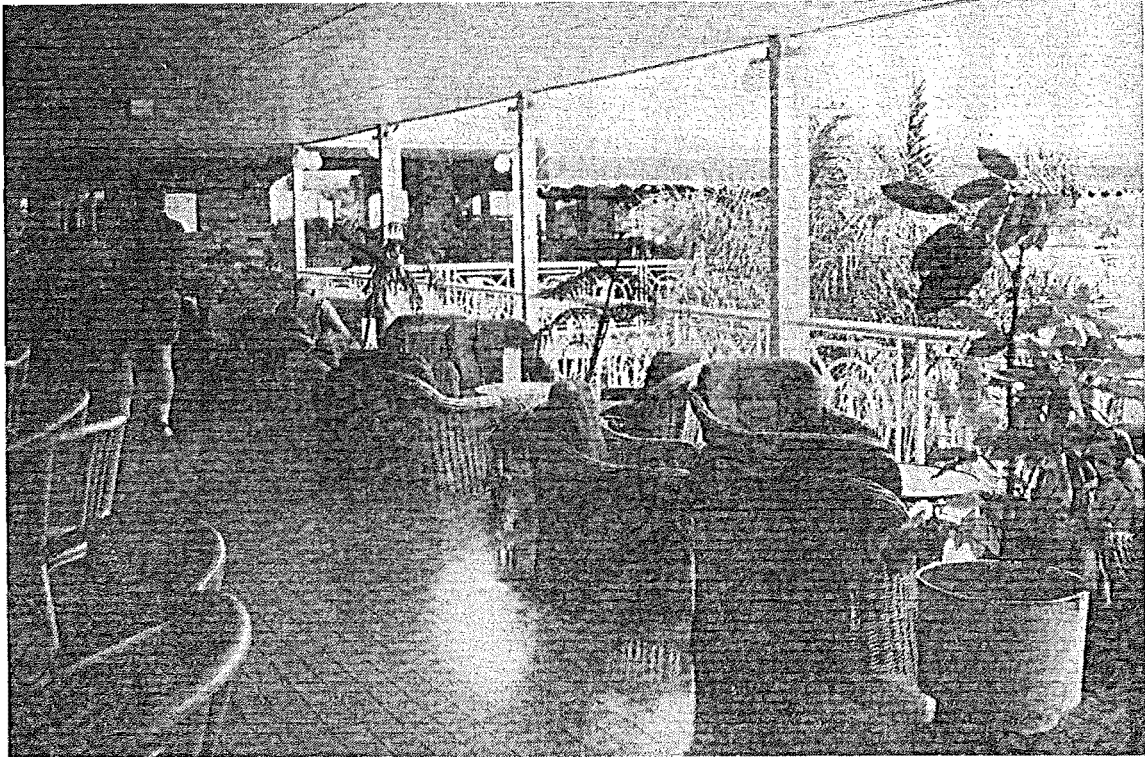
The types of site furniture eg. seating can also give an indication of the atmosphere they can create within the marina.



Fisherman's Wharf, Southport, Aust.

Protected under an awning, customers can sit quietly and observe the surrounding activities in an informal setting and view the bay and boats.

In the same marina, Fishermans Wharf, furniture was also used to change the setting from informal at the ground level to semi-formal on the first floor.



Fisherman's Wharf, Southport, Aust.

2.3.6 Conclusion

Planting, surfaces, construction materials, utility items and site furniture affect the atmosphere created within the marina. The final details of the design will be largely dependent on the owner's and designer's tastes.

The designer must be allowed some freedom to develop a particular style for the project. Details can be used to reinforce the chosen style. However, they must be appropriate to the function and location of the marina. If mutual understanding exists between those parties involved eg. investors, developers and the public, optimal choice and implementation of detail may result.

MANAGEMENT AND GROUND MAINTENANCE OF MARINAS



SECTION THREE : MANAGEMENT AND GROUND MAINTENANCE OF MARINAS

3.1 INTRODUCTION

The management and ground maintenance of a marina are often associated with the completion of a project, but must be thought out well before this stage. Careful management decisions made when details are planned can drastically reduce future maintenance costs.

3.2 MANAGEMENT

Decisions made at the planning stage have a great influence on the marina's future management. A development which is appropriate in scale and design, meets environmental and community needs, with efficient equipment and services, will be easy to operate and maintain at an economic level.

The sole purpose of a marina is to provide a service, and other associated businesses are derived from this source. The task of management is thus to provide this service:

- efficiently and economically to the boat owners
- profitability to the investors/developers
- sympathetically to the environment
- with an understanding of the public's needs.

The facilities that could be established in a marina are vast. What is difficult to decide is which facility to include and at what stage of marina construction. Decisions should be based on information attained from research on the needs of all parties prior to development. Many studies have investigated the physical and sociological requirement in a marina, but equally important are the less definable qualities brought about by the attitudes of the management and staff. A close relationship between operators and users can:

- give the development its individual character and personality
- allow management and staff to receive feedback from customers
- be the best form of advertising - the sailing community is very closeknit and recommendations (or criticisms) spread quickly through informal communication channels.

The number of staff in a marina is likely to be small, therefore they must be competent and versatile. Furthermore, it requires skilful management to bring together successfully a wide range of professions in one development.

The success of any marina demands a high level of skill from the management team as they must be proficient in both the social and business world.

Today the industry is still young and continuing to grow; demand is rising and exceeds supply – the very provision of moorings creates the need for more. Improved facilities can only attract more people to marinas, which in turn is likely to lead to an increase in boat ownership.

Management includes an element of ground and plant maintenance among other activities.

3.3 GROUND MAINTENANCE

Maintenance costs of marinas are continuously rising, therefore investors like to see "low maintenance" design. Only when considered at an early stage can the correct design and detailing be incorporated, so that costs are minimized.

The total landscape design concept ie. paving, planting and ground modelling determine to a large extent the marina's overheads for many years. For example, plant material used to create a natural setting can have high establishment costs but will require little attention after its initial 2-3 year period of establishment. Formal flower beds, rockeries and ponds, on the other hand, will always demand a high level of maintenance, even though instalment costs are low.

Materials chosen also affect future maintenance costs. Paving stone and brickwork have a high initial outlay but once in place require little attention. In contrast, lawn areas are cheap to sow, but continually require mowing.

Simple bed shapes, paths and boundaries, with careful detailing of edges can further reduce costs. The major cost of any landscape

maintenance being labour. This can be reduced by:

- planting species that require little maintenance such as pruning and staking eg. *metrosideros excelsa*.
- specifying plants suited to the local climatic conditions and soils.
- avoiding numerous annual and herbaceous borders, except in special areas of high use
- using ground covers of mulches, eg. raw bark which suppress weeds and retain moisture in the soil.
- selecting large plants - trees and shrubs can have a significant impact on the site while requiring little maintenance.
- maintaining a regular schedule especially in the initial planting stages, where watering and weed control are essential for rapid plant establishment. "Low maintenance" may mean higher initial costs, but reduced maintenance makes this approach cost effective.

Other expenses can arise through purchasing equipment, or from the effects of vandalism.

The equipment eg. spades, hoes, lawn mowers, is minimal, but where necessary should be of good quality. This equipment itself will require maintenance.

Design against vandalism can often be achieved by avoiding vulnerable plants and site furniture. Any grounds that suffer deliberate damage should be replanted as quickly as possible. Peter Shepard's "Law of Diminishing Vandalism" suggests that persistence in replacing destroyed plants until the offenders get tired of destruction, will be rewarded.

It is therefore essential that the maintenance component of a marina be discussed when the details are planned. The correct use of plants and materials can effectively reduce problems and costs during the life of the marina.



Nelson, NZ - bitumen is monotonous, but low maintenance.

A CRITICAL EVALUATION OF TWO NEW ZEALAND MARINAS



SECTION FOUR : A CRITICAL EVALUATION OF TWO NEW ZEALAND MARINAS

4.1 INTRODUCTION

A comparison of two different marinas located in the Auckland region will highlight the main points discussed in previous sections.

For this purpose I have chosen:

1 Westhaven

A well established urban marina, containing 1470 craft, that has expanded over many years.

2 Pine Harbour

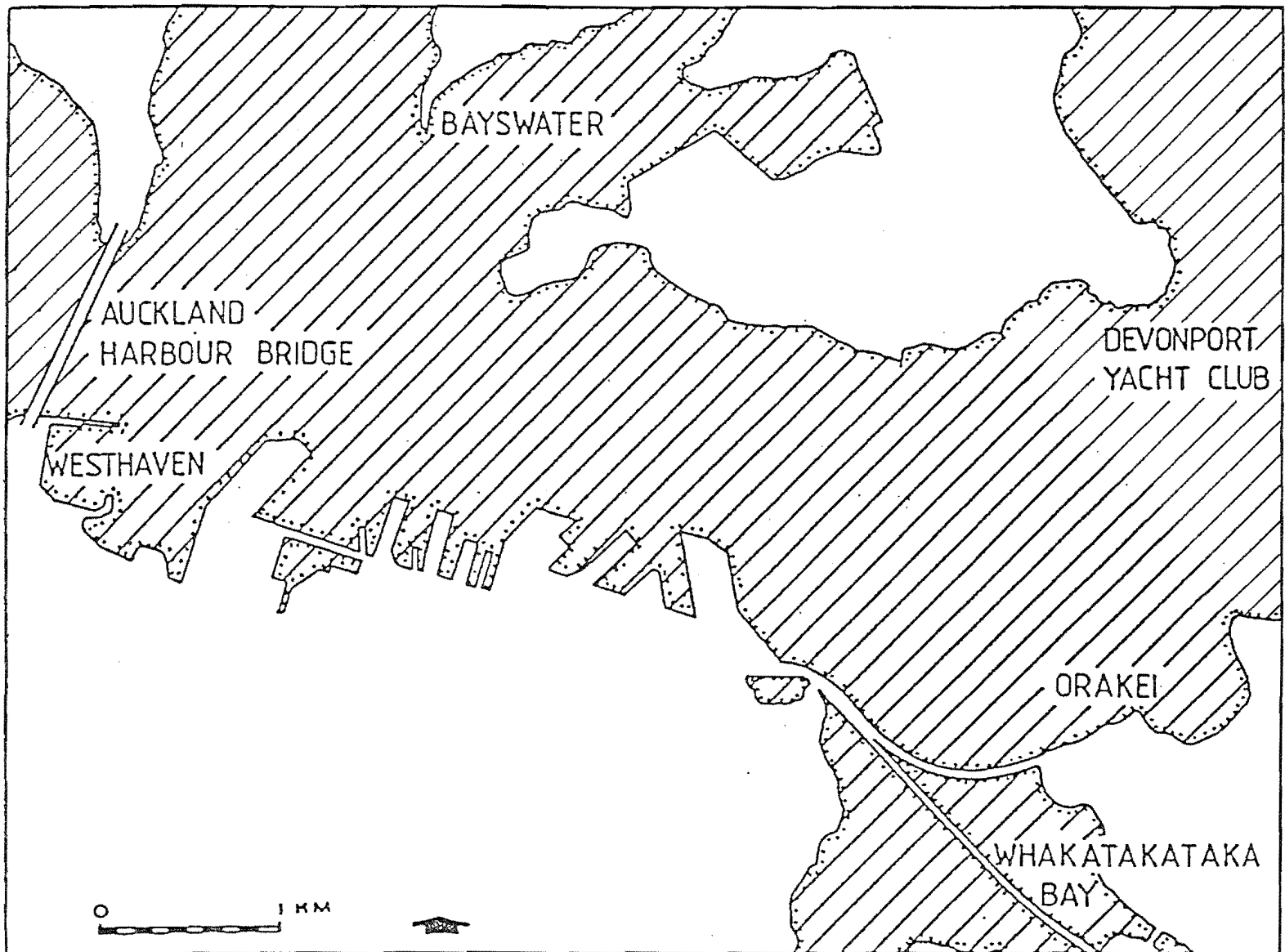
A marina presently under construction, designed to accommodate 570 craft. Due to constraints imposed by the site, expansion is unlikely.

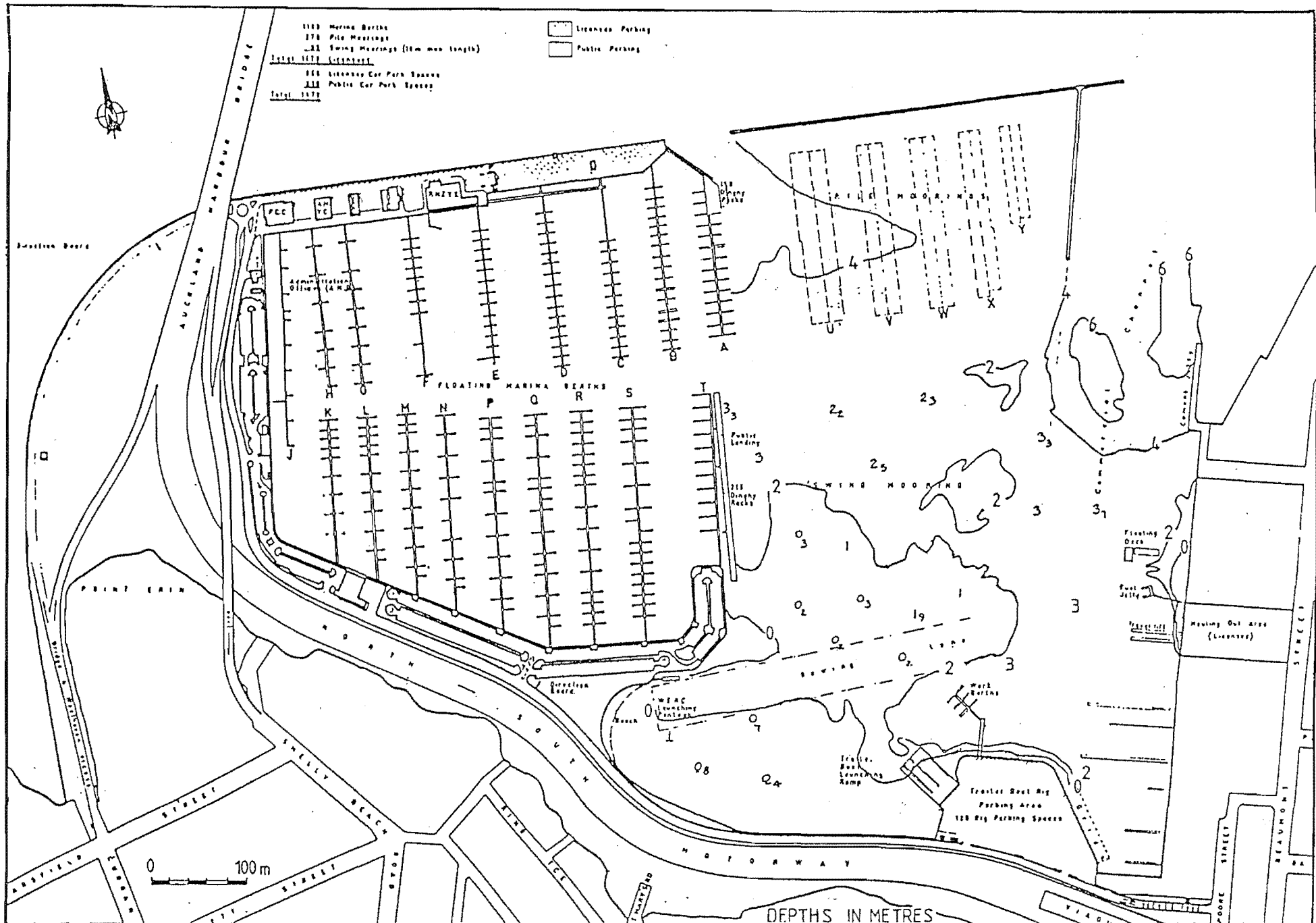
The following comparison examines the planning, design and development of the two marinas. How well do they meet criteria discussed in earlier sections? How could they be improved

4.2 WESTHAVEN MARINA

Westhaven is an established marina located next to the central city in the Waitemata Harbour. It is the largest marina in Auckland providing berthing facilities for a total of 1470 craft: 1109 marina berths, 276 pile moorings, 85 swinging moorings.

Originally it was designed to handle 722 craft, but in the late 70's the Auckland Harbour Board saw the potential for expanding marina facilities. Their waiting list for berths and moorings had already grown to more than 1000. Extensions were completed in the early 80's but the expansion, not planned for initially, did create problems.





* Siting

Landscape Character: The landscape character was not assessed or established within the marina. Materials, planting, etc do not provide a theme for the marina; bland areas and buildings stand isolated within the site. The harbour bridge and views into the Waitemata alleviate an otherwise dull setting.

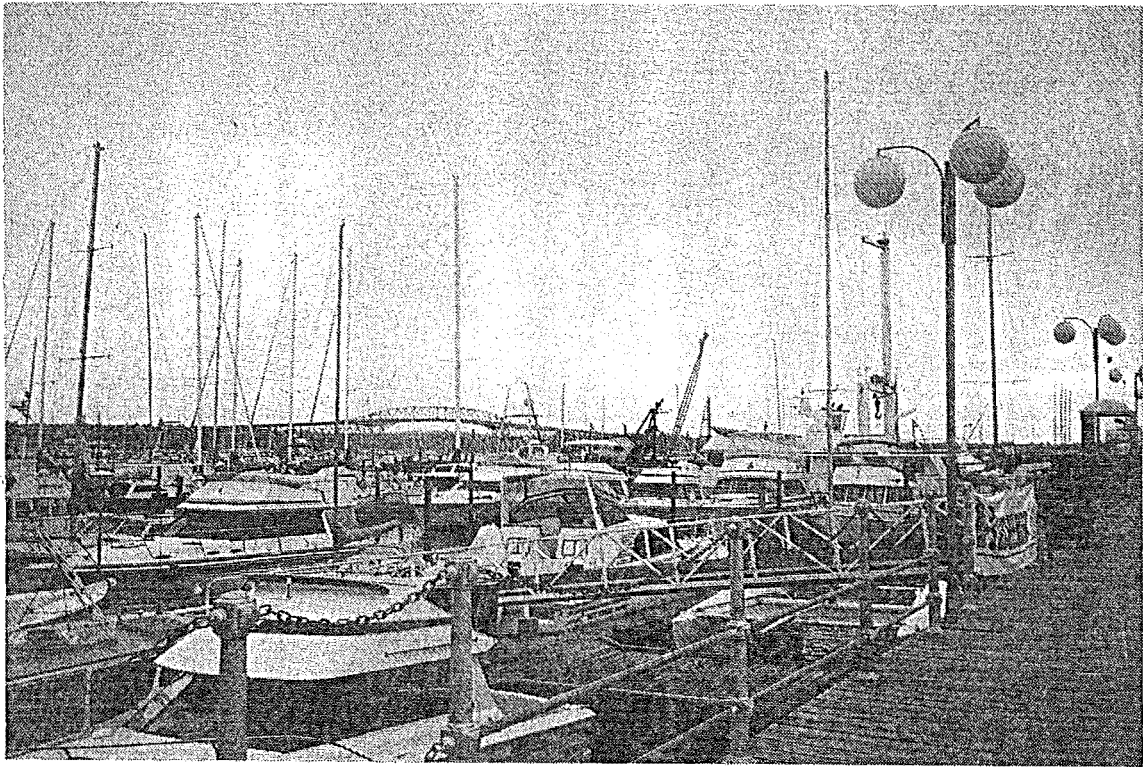
If objectives had been set for the character of the development, the marina reorganisation could have been better co-ordinated at the detail level.

Scale and Visual Impact: The scale of the marina suits its setting. The marina harmonises with the large scale features of the harbour bridge, industrial area and motorway surrounding it. Neither does the marina jut out into the harbour, but is visually contained within St Mary's Bay.



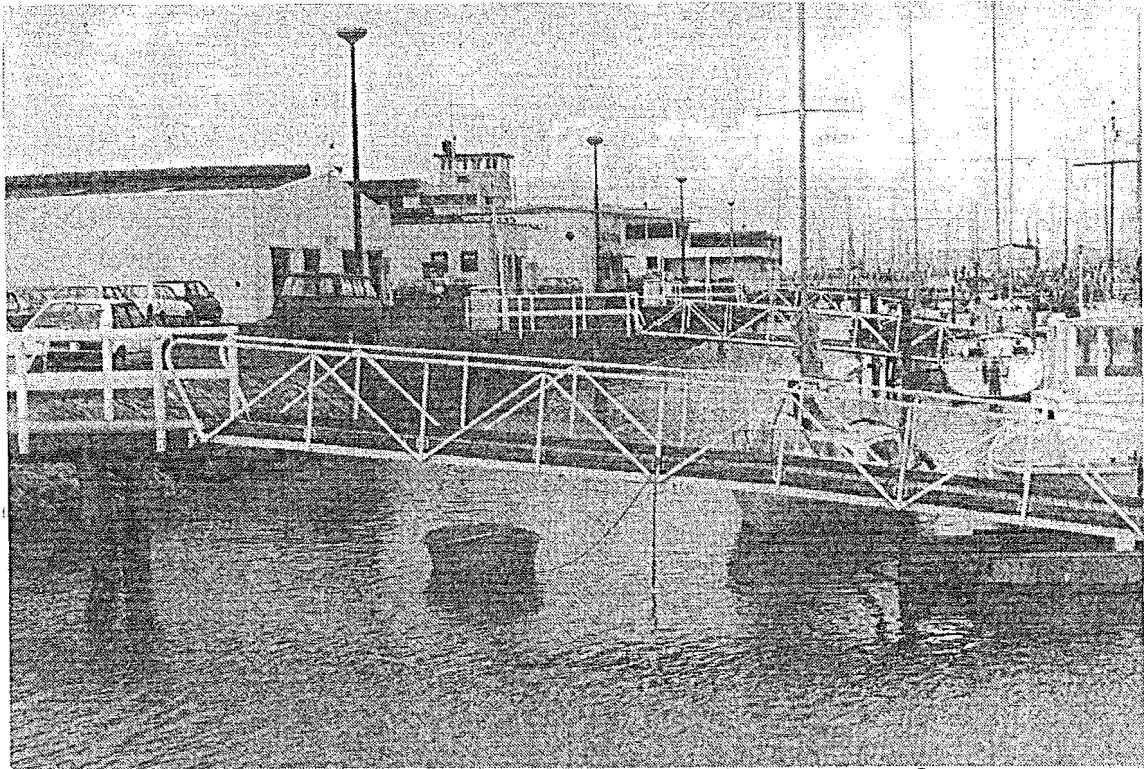
Auckland City provides a backdrop for Westhaven

The harbour bridge and motorway effectively isolate the residential area to the south from the marina.



Auckland Harbour Bridge can be seen beyond Westhaven

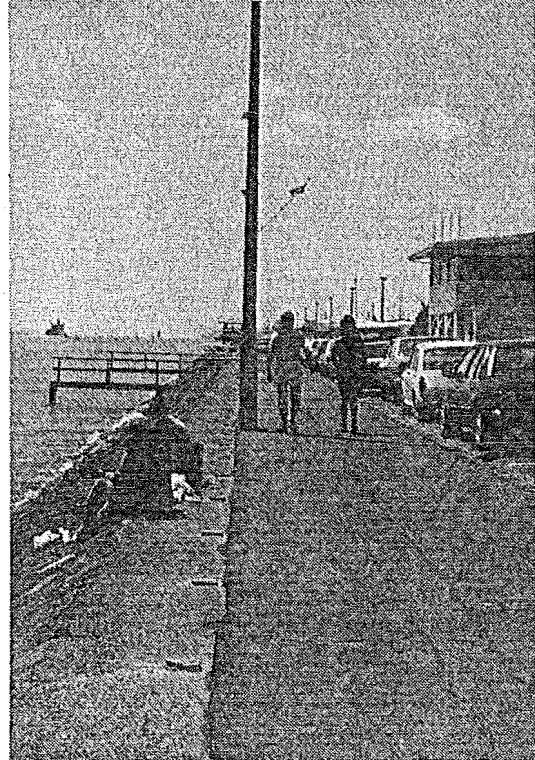
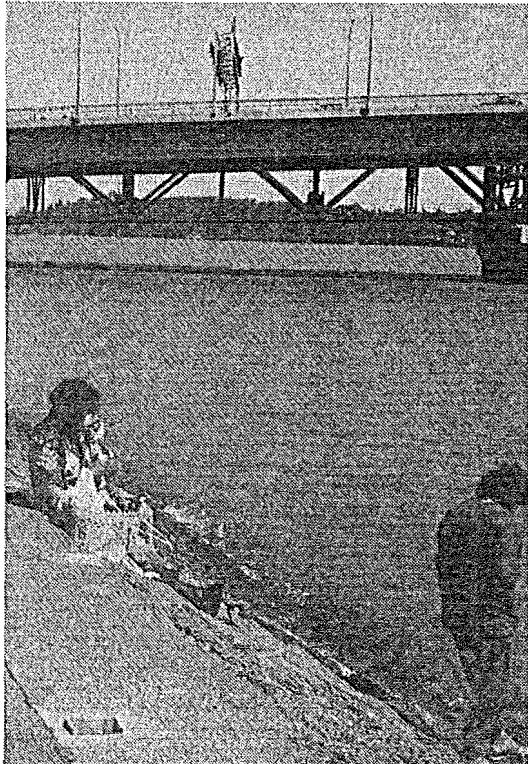
Focal Area: The overall setting of the marina is very successful, but it lacks a focal area. Without this central area in which to congregate, the public lack a sense of direction and wander around aimlessly. Boat owners head straight for the yacht club, and later move to other facilities in the vicinity of the marina eg. restaurants. Their activity and reason for using the marina replaces the need for a focal point for boat owners.



Yacht clubs, Westhaven, Auckland

Space is a constraint in marina design often leading to the lack of a focal area. This is particularly evident at Westhaven. Focal areas have not been provided for the community.

The north western wall containing the yacht clubs provides a centre of activity which could incorporate public areas, not just a small cafe eg. 'Sitting Ducks'. Any type of outdoor protected seating could be utilized. A pedestrian area where one can sit outside, watch the boats go by and have a beer is very relaxing. This could be provided at the end of the breakwater, near piers A, B and C (which would be very exposed); or otherwise within the protection of one of the existing buildings.



Local residents utilize the breakwater for fishing

* Planning

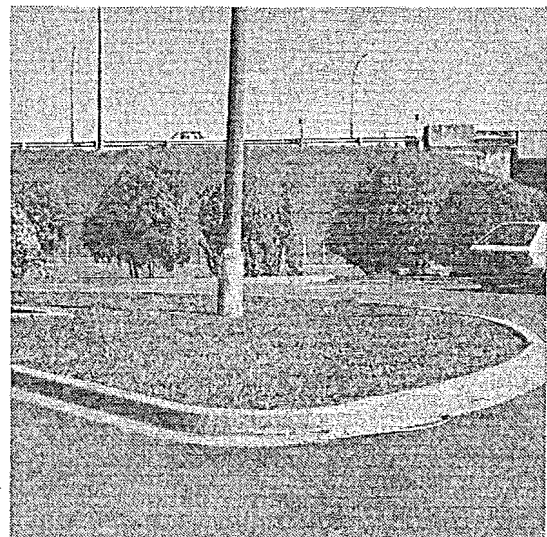
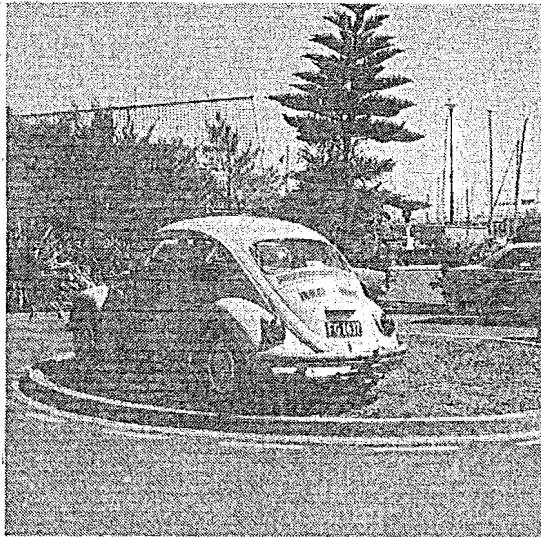
When looking into the planning of this marina ie. access, circulation, parking, and facility location, problems that have developed as a result of the expansion are obvious.

Access: Increased moorings/berths generate increased traffic. As suggested by St Mary's Bay Association Inc. access was upgraded by, "providing a slip road direct from Westhaven to the north bound lanes of the Auckland Harbour Bridge." (Submission on Westhaven Boatharbour Development)

This resulted in a reduction of the anticipated traffic at Fanshaw /Beaumont Street intersection, one that already carries a high density of commuter traffic.

Circulation: Circulation does not create major problems, due to efficient access provided at both ends of the Westhaven site.

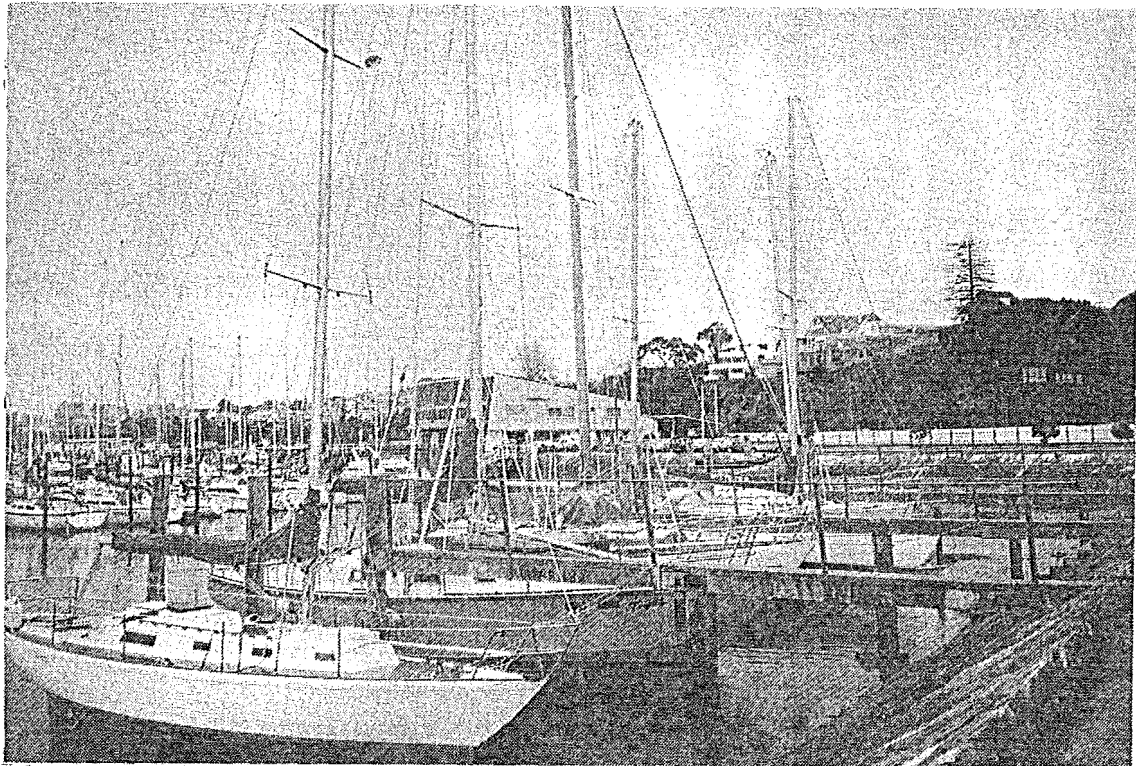
Parking: As mentioned earlier, space is particularly scarce in Westhaven and a fluctuating flow of boating enthusiasts does not help. With this in mind, additional parking (foreseen as essential to the extension) was located evenly around the foreshore. This also reduced the congestion of cars being located in one area. However, large roundabouts incorporated at the foot of some parking bays and areas of grass planted at the end of the parking rows lead to inefficient use of some valuable space. These areas could have provided extra car spaces rather than resulting in increased maintenance from mowing. On race days the marina is chaotic; cars are parked wherever they can be, including all over the grass.



The use of vegetation to visually reduce the scale of parking has not been considered. No one enjoys viewing bare bitumen parking lots, or finding one's way through complicated one-way systems to park. Simple right angle parking, without roundabouts is more suitable and would provide more parking spaces.

Facility Location: Generally parking is available near any facility except on major race days. Buildings, like parking areas, are scattered around the shoreline of the site, wherever space permits.

The formal restaurant 'Sails' is a great success. It brings on site people that would not normally enter a marina. Yet boat owners were disgruntled at not having a 'casual place to eat' after racing. They felt offended that people not even associated with a marina had been catered for, in preference to them.

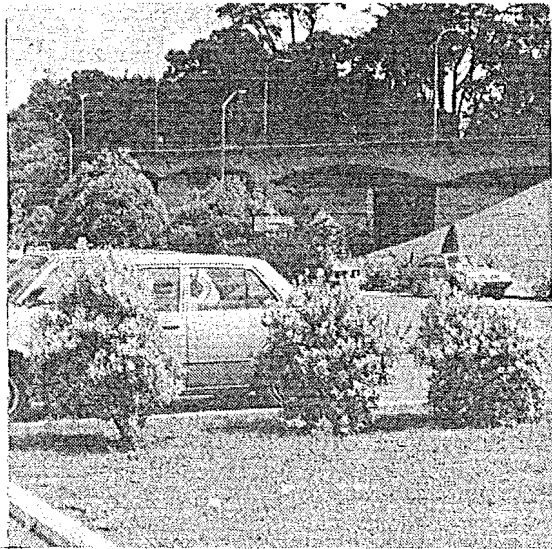


'Sails' Restaurant, Westhaven, Auckland

The argument stated was that developers must put things into perspective and see that without boat owners there would be no marina. Any visitors should be looked upon as enthusiastic supporters, and their presence handled with care.

* Details

Planting: The bleak marina shoreline consists solely of concrete and rocks. Appropriate plantings could easily improve this and the entire site. Instead, what vegetation was chosen appears out of touch with what a marina represents. 'Lolly-pop' trees, have no place in a marina, neither does Agapanthus or variegated flax on the marina walls. These plants do little to reinforce a nautical theme.



Plants must be salt and wind-tolerant or otherwise placed in a protected microclimate to survive. The variegated flax had neither characteristics and soon succumbed to the harsh conditions.

Species such as Casuarina - a member of the pine family - found on site, drops needles. Once needles settle on the boats they can be difficult to hose off, inevitably getting stuck under the toe rails or around other deck fittings.

The cost of enlisting a consultant's services to produce a planting scheme is minimal compared with the overall costs of the marina. The visual impact of effective planting outweighs any costs.

Materials and Surfaces: There is little variation in the use of surface materials to add detail at Westhaven. Changes in texture between pedestrian and vehicle flows (as indicated in Section 2.3.3) would add flavour and character to this development.

Utility Items and Site Furniture: Utility items and site furniture insensitively placed near piers, have an immense visual impact on the site. As mentioned earlier, these should be thoughtfully placed and well designed, a factor developers should consider. If they must remain where they are, then vegetation can be used to soften the rigid lines, for example, oil waste containers. Where a number of utilities are required, they should be grouped together in one area, rather than being dispersed throughout the site. Sign posting can also indicate their location.

Conclusion: Westhaven is a popular marina in the yachting world. Situated in a protected harbour it provides easy access to racing and cruising grounds.

Parking is a problem that will have to be addressed in the near future. Existing parking may have to be redesigned, and additional areas west of the harbour bridge utilized. Replanting with appropriate species would reduce the harshness of parking areas, enhance the character of the site, and be cost effective.

This marina does not acknowledge the presence of the community and their requirements on site. This can be seen in the poor facilities provided for the public which do little to help the public enjoy the activities of the boating community.

4.3 PINE HARBOUR MARINA

Pine Harbour Marina is presently under construction on Auckland's Hauraki Gulf coastline, about 1 kilometre south of the settlement of Beachlands.

This marina is sited upon land owned by the company Wilkins and Davies, and Kaipara Excavators Ltd. It will contain 570 berths plus a wide range of marina-related activities. These will include facilities such as a hardstanding area, fuelling jetty, car parking for approximately 645 cars, and commercial and administration buildings.

BROWNS ISLAND

WAIHEKE ISLAND

TAMAKI STRAIT

NORTH

PINE HARBOUR

MOTUKARAKA ISLAND

BEACHLANDS

HARAETAI

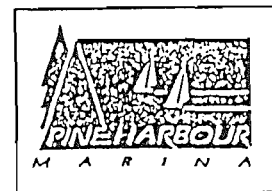
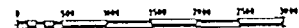
HOWICK

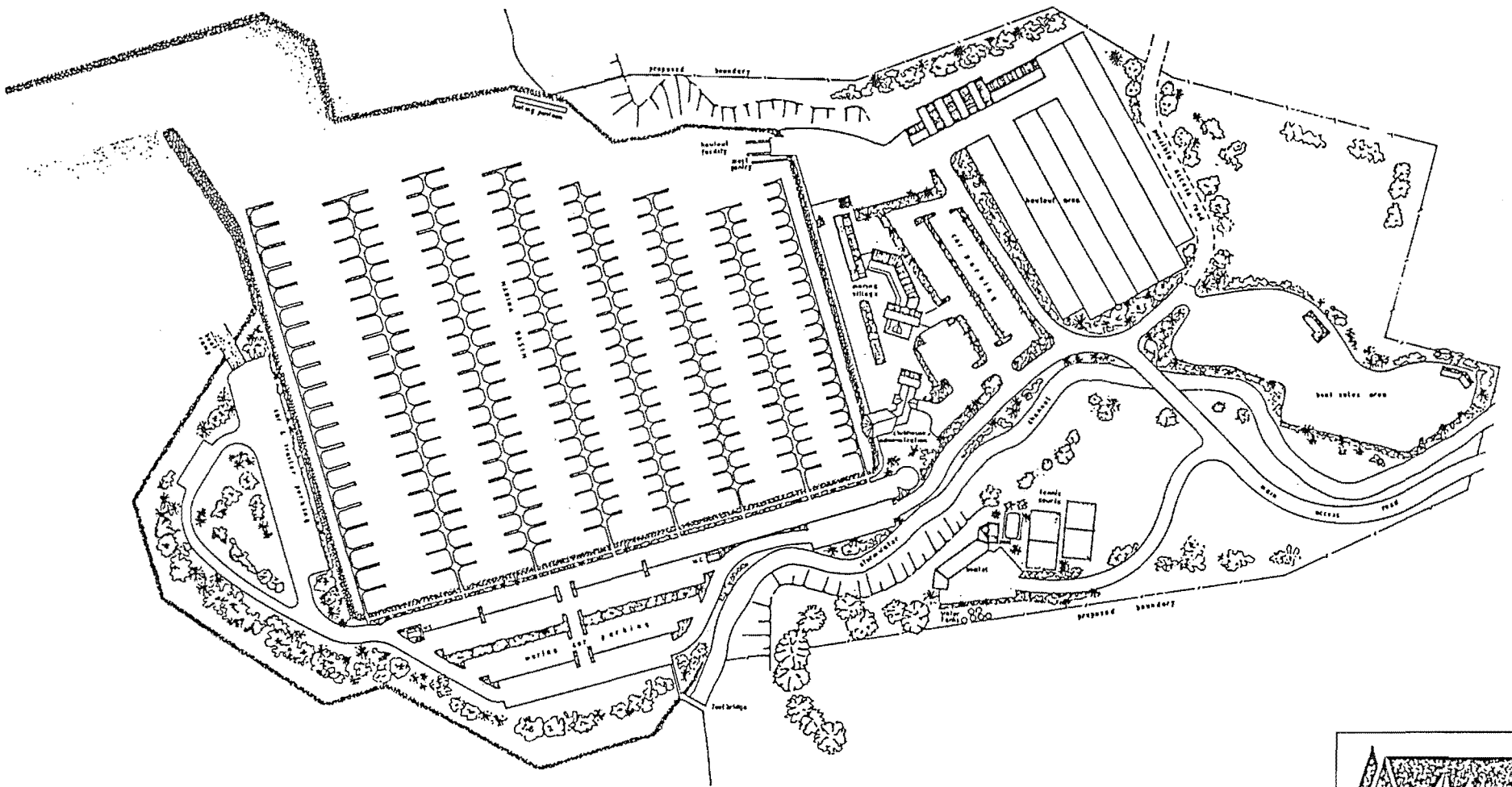
Waikopua Creek

Turbo Creek

WHITFORD

LOCALITY PLAN





Wilkes & Davis MARINA DIVISION

1	OWNER	2.00	Copyright ©	Reference Date	Drawn	1/1	Scale	Project	TAB	Project No	Dwg No	Rev
2	DESIGNER	2.00	This drawing (including copyright) and its contents are the property of Wilkes & Davis Construction Company Ltd. Any unauthorised copying or reproduction is forbidden.		Checked	2/1	1:1250	PINE HARBOUR MARINA	CONCEPT PLAN	PHM	01	C
3	APPROVED	2.00			Approved	2/1						
4	DATE	2.00			Date	2/1						

* Siting

Landscape Character: The rural character of the area will change to some extent due to the development, but much will be retained by duplicating existing vegetation within the site.

Visual Impact: The principle objective of siting is to:

"locate and plan the various elements in areas where they can be visually contained, visually integrated, or can stand alone as elements or features in the landscape".

Boffa Miskell Partners, 1986

To reduce the overall visual impact of the development, particularly from the water, the distinct escarpment that follows the coastline has been extended. Earth modelling has effectively increased protection against the south westerlies while providing a public recreational and viewing area, out into the Hauraki Gulf. This has also solved the problem of the breakwater becoming visually dominant at low tide.

Scale: The actual scale of the development does not reflect the surrounding rural features which are small scale. The shape and configuration of the earth modelling, in combination with location, visually contain the marina so that it cannot be seen from the main residential area of Beachlands. In this instance, the large scale of the marina has been well handled to produce a low visual impact. Low developments eg. buildings, berths and car parking, reflect the horizontal plane of the surrounding pastures in such a way as to make the scale compatible with the existing features.

Focal Area: The marina village provides a focal area on the site, that is closely associated with the clubhouse and other marina-related activities. However, a stronger link (pedestrian access) between the focal and recreational areas would have improved the movement of people through the site. Currently, the car parking tends to isolate the village like an island within the marina.

* Planning

"The 'internal' shape of the marina has been planned for berthing efficiency and economy of layout."

Boffa, Miskell and Partners, 1986

This statement applies to all marinas. Generally the internal shape of the marina is fixed while the external breakwater may be modified to complement the existing coastline.

This flexibility has been employed to good effect at the Pine Harbour Marina with the construction of the earth modelling following the distinct coastal escarpment.

Access, circulation, parking and facility location have been planned at Pine Harbour sensitively.

Access: Access to the site is to be achieved by a road across private land. This ensures that traffic generated by the marina does not trail through a residential area. The road leads directly to the village and adequate parking areas. This is beneficial to residents and marina users, but access should be carefully sited as roads cutting across rural land can be visually obtrusive.

Circulation: Circulation on the site is simple and consistent, making site facilities and services accessible. Conflicts could arise between pedestrians and vehicles, in moving from the marina village to the mounded breakwater, but these are expected to be minimal.

Parking: By distributing parking spaces around the site, the size of cells created is reduced. Visually the impact of such parking, in association with appropriate screening, mounding and planting, is reduced and appears to work well on the plan.

If parking had been located further back from the marina walls, larger areas of planting could have been used to soften the interface between the water and the land.

New Zealand marina designers would be advised to avoid placing parking on the marina shoreline. There are far more appropriate uses for this land, such as providing social areas or expanses of vegetation that will visually reduce the harshness of the marina interface.

Facility location: Car parking and servicing areas have been located against features that visually contain them eg. the haul-out area to the north of the site is tucked below the escarpment. This greatly reduces its visual impact.

Commercial facilities and the clubhouse have been located centrally to guide visitors/members, initially into this area. This works well, as people have the option to see what is available on-site before moving into a specific area.

The proposed motel, to be sited above the escarpment, overlooks the marina. This in itself will attract occupants who find viewing the activities of a marina interesting. Isolated from the main road, the motel also retains some privacy.

Overall, pedestrian access around and through the site links these separate services and facilities together. The designer, has been aware of the visual impact and function that proposed areas are to perform.

* Details

Planting: Planting lifts the entire development and is used effectively to screen parking and services while enhancing the marina village.

Pohutukawas are the main framework species, along with other native plants. These extend throughout the site, creating a unique rural New Zealand character within the marina.

The density of planting varies according to its use. In the haul-out area, surrounding shrub cover will be dense to form an effective screen. In the parking areas canopy trees will provide relief and the thinner shrub layer, will soften the horizontal lines of cars.

Sensitive planting, similar to this, should be carried out in every marina, allowing the setting and density of planting to reflect the particular landscape.

Surfaces, Materials, Utility Items and Site Furniture: Consideration has also been given at Pine Harbour Marina to the treatment of surfaces, materials, utility items and site furniture. However, at this stage of development many elements have not been finalised.

* Conclusion

From marina plans the visual impact of this development appears not to be significant. Public access to the coast is improved, and any loss of amenity has been compensated for by providing public recreational areas.

Developments such as this involve high consultancy fees, but their results far outweigh their costs. It is hoped that Pine Harbour Marina sets a precedent for future marina developments.

4.4 COMPARISON AND CONCLUSION

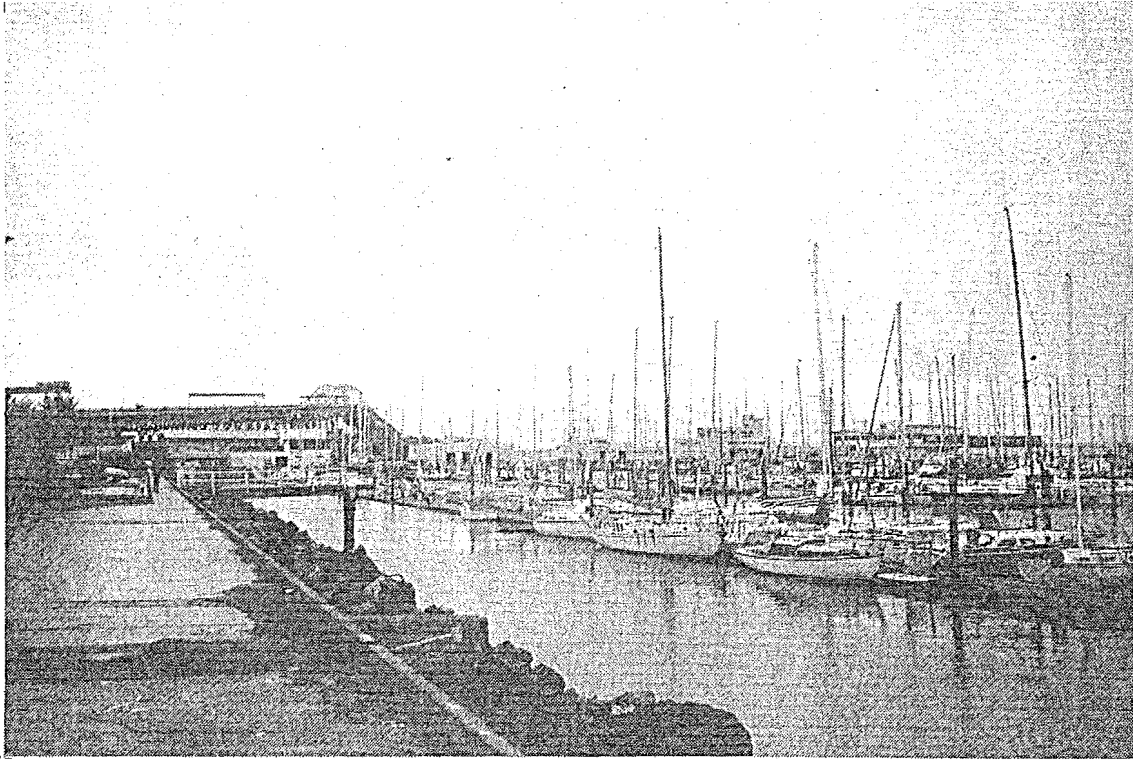
The main issues in marina development are:

- 1 community involvement, and
- 2 the planning of development.

Attention has been focused on these issues because of greater social awareness of the potential impacts of development.

The concept of Westhaven, developed over many years, is vastly different from Pine Harbour, indicating how the approach to design has changed over time. Communities are now more involved than in the past. Their right to understand what is proposed in their neighbourhood/city has finally been acknowledged.

Staged developments do not just 'appear' but are planned in advance to ensure adequate space for expansion has been provided. Westhaven, however, an established marina, is sited in a convenient location, and developed to a scale proportional to its surrounds. It therefore attracts little public interest over its visual impact or aesthetics. Neither has pressure been exerted on the marina management to involve wide sectors of the community in its development.



Westhaven, Auckland

On the other hand, Pine Harbour development is an innovative design, resulting from public pressure. Such social awareness did not exist when Westhaven was built.

Opposition to Pine Harbour by residents was high, thus the developers Wilkins and Davies, and Kaipara Excavators Ltd. saw the opportunity to accommodate the public's needs by employing professional services. The design approach involved a multi-design team, rather than one or two designers.

Residents had the design concept explained to them and in return were allowed to express their point of view.

The visual impact of the breakwater was greatly reduced by Frank Boffa, a landscape architect, by using earth mounding to form a more natural shape. This led to less objections concerning the visual impact of the marina.

Expansion is unlikely to occur due to site constraints, though suitable surrounding land is undeveloped at present. It must be realised that it is easier to achieve an integrated design when the number of berths in a marina does not alter greatly with time.

In Westhaven this is not the case, and problems are typically associated with marina expansion. Parking can be inadequate but space itself is a limiting factor, indicating that general planning appears not to have always kept pace with changes. There has been no pressure from the community to expand parking under the harbour bridge, or to improve the aesthetics of the marina. This could be achieved simply by commissioning a consultant to rectify the inadequate or inappropriately placed planting.

Today the community is able to define the type of marina development that proceeds. Developers and members of the community, are aware of the natural and cultural implications of a marina. Dialogue between groups involved in marina design and development has never been more important.

CONCLUSIONS

SECTION FIVE : CONCLUSIONS

5.1 FUTURE DIRECTION FOR MARINAS IN NEW ZEALAND

The developer must be aware that a team approach is the only way to adequately develop a marina. From an early stage both the team and developer can set clear objectives of what to achieve in design. This should be reinforced by research into community and environmental requirements.

Implications of developers' decisions should be openly discussed with affected parties. Any planning decision made in the public interest must also satisfy other factors involved in marina design eg. biological, economic. Predictions are that the average size of boats will continue to grow, as will the number of people looking for berths in a marina. In the future we should consider not only accommodating larger boats but also alternative methods of boat storage. Our coastlines are a finite resource that is rapidly diminishing.

Additionally, efforts should be made to change the image of a marina to create an atmosphere found in a public meeting place. This will only come about if developers respond to community needs. A focal area in a pleasant setting will draw various members of the community together on equal terms.

Finally, behind every successful marina is a devoted design team that works well together. All members must use their expertise to design and integrate their work with other members, to create a unity within the development.

Communication should extend beyond the boundaries of the design team to capture the spirit and enthusiasm of both the developer/investor and the community. Marinas are a vital local asset to any community and while occupying public land the developer and design team have the responsibility to provide a marina for the community's enjoyment.

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BIBLIOGRAPHY

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appendix

APPENDIX I : PRE-GROWING CONTRACTS

Large numbers of quality specimens of the correct species are difficult to obtain at short notice. It is thus imperative that plant pre-growing contracts be organised for all large developments. This should preferably be carried out at least 18-24 months before required.

Plant production contracts are a major cost economy, as supply nurseries can be selected under tender. The supplier, able to produce large quantities of plants for an assured market, will offer competitive prices.

Today there are a number of supply nurseries set up just to meet such plant production contracts.

APPENDIX II : RECOMMENDED COASTAL AND SEASIDE SPECIES

The following lists of plants are considered suitable for coastal and seaside margins.

Exotic species other than Eucalyptus species have been excluded. Exotics frequently dominate developments, isolating rather than integrating the marina into the existing landscape. This indicates that there is a lack of understanding as to what native species will survive in these harsh conditions.

Eucalyptus species can be used if shelter is required immediately. These trees blend well into a native understorey and many can withstand severe exposure and high salt levels.

Soil conditions, temperature, and even cost may eliminate the viability of some species. Many may not be readily available from commercial nursery outlets, particularly seaside species, making pre-growing contracts essential.

Finally, these lists are not extensive and other native and eucalyptus species may well grow in areas along the coast.

Seaside Plants

Seaside plants are found growing on rocks and sand hills along the sea coast, in close proximity to the water. They are hardy and will withstand strong winds and frequent drenching with salt spray, making them suitable for coastal margins of the marina.

Brachyglottis latus [Shore groundsel]

Coprosma repens [Taupata]

Coprosma propinqua [Mingi mingi]

*Craspedia uniflora var. maritima [Woolyhead]

*Disphyma australe [Horokaka or Maori iceplant]

Fuchsia procumbens [Creeping fuchsia]

Hymenanchera crassifolia [thick leaved Hymenanchera]

*Minulus repens [Maori musk]

Muehlenbeckia complexa [Pohuehue]

Pimelea prostrata [Pinatoro]

*These species may not be readily available.

Hardy coastal species [Front line]

The following list of trees and shrubs will tolerate salt spray and are recommended as front line plants. There may be some damage to the foliage in this group, particularly growth but plants will usually recover.

Brachyglottis compactus [Castlepoint groundsel]

Brachyglottis Dunedin Hybrids

Brachyglottis reinoldii [Muttonbird scrub]

Cassinia leptophylla [Tauhinu or Cottonwood]

Coprosma kirkii

Coprosma repens [Taupata]

Corokia cotoneaster x virgata

Corokia macrocarpa

Corynocarpus laevigatus [Karaka]

Hebe dieffenbachii

Hebe elliptica

Hebe x franciscana 'Blue Gem'

Hebe obtusata [Northern koromiko]

Hebe speciosa [Napuka]

Hebe stricta

Metrosideros excelsa [Pohutukawa]

Myoporum laetum [Ngaio]

Olearia angustifolia [Tete a weka or Muttonbird scrub]

Olearia Chathamica [Keteterehe]

Olearia lineata 'Dartonii'

Olearia oporina

Olearia paniculata [Akiracho or Golden akeake]

Olearia traversii [Akeake]

Phormium tenax [New Zealand flax]

Phormium cookianum [Wharaiki or Mountain flax]

Pittosporum crassifolium [Karo]

Plagianthus divaricatus

Coastal Species [Second line]

The following list of trees and shrubs will tolerate some degree of salt exposure, but need the protection of front line plants. The latter may be used in these places too, but will grow larger than they would in more exposed areas.

Brachyglottis laxifolius

Brachyglottis repanda [Rangiora]

Coprosma lucida [Karamu]

Coprosma robusta [Karamu]

Cordyline australis [Cabbage tree]

Dodonaea viscosa [Akeake]

Entelea arborescens [Whau or Corktree]

Griselinia littoralis [Kapuka or Broadleaf]

Griselinia lucida [Puka]

Hebe 'Andersonii'

Hebe barkeri

Hebe parviflora [Koromiko]

Heimerliodendron brunonianum [Parapara]

Hymenanthera chathamica

Hymenanthera crassifolia

Hymenanthera novae-zelandiae [Hemsl]

Kunzea ericoides [Kanuka or White tea tree]

Leptospermum scoparium [Manuka or Red tea tree]

Linum monogynum [Rauhuia]

Macropiper excelsum [Kawa kawa]

Melicope ternata [Wharangi]

Melicytus ramiflorus [Mahoe or Whitey-wood]

Meryta sinclairii [Puka]

Metrosideros umbellata [Southern rata]

Olearia albida [Tanguru]

Olearia solandri [Coastal tree daisy]

Pachystegia insignis [Rock tree daisy]

Pittosporum ralphii [Karo]

Pittosporum tenuifolium [Kohuhu]

Pittosporum umbellatum [Haekaro]

Pomaderris apetala [Tainui]

Pseudopanax lessonii [Houpara]

Rhopalostylis baueri var. cheesemani [Kermadec nikau]

Solanum aviculare [Poroporo]

Vitex lucens [Puriri]

Coastal Plants requiring protection

The following plants will require some protection from wind and sea spray but will thrive if located behind front- and second-line species.

Arthropodium cirrhatum [Rengarenga or Rock Lily]

Carmichaelia williamsii [Native broom]

Clianthus puniceus [Kaka beak]

Cyathodes fraseri [Patotara]

Hibiscus trionum [Perennial hibiscus]

Libertia ixioides [Mikoikoi, or New Zealand iris]

Parsonia heterophylla [Maori jasmine]

Planchonella novo-zealandica [Tawapou]

Pomaderris kumeraho [Golden tainui]

Pomaderris rugosa [Wrinkled-leaved pomaderris]

Rhabdothamus solandri [Creeping taurepo]

Vittadinia australis [Vittadinia]

Eucalyptus Species

Introduced eucalypts may be used to provide immediate shelter while native plants attain the required height.

Eucalyptus Species [Front line]

Eucalyptus anceps

E. globata

E. gomphocephala

E. lehmannii

E. robusta

E. rugosa

Eucalyptus Species [Second line]

Eucalyptus botryoides

E. cornuta

E. diptera

E. gummifera

E. haemastoma

E. leucoxydon

E. occidentalis

E. platypus

APPENDIX III : MARINAS VISITED DURING DISSERTATION PREPARATION

Bayview Harbour, Southport, Australia. February 1987.
Evans Bay Marina, Wellington, New Zealand. December 1987.
Fisherman's Wharf, Southport, Australia. February 1987.
Halfmoon Bay Marina, Auckland, New Zealand. December 1986.
Magazine Bay Marina, Lyttelton, New Zealand. March 1987.
McLaren Marine Village, Queensland, Australia. February 1987.
Mariner's Cove, Southport, Australia. February 1987.
Picton Marina, Picton, New Zealand. March 1987.
Riverside Centre, Brisbane, Australia. February 1987.
Royal Queensland Yacht Squadron, Manly, Australia. February 1987.
Sanctuary Cove, North of Gold Coast, Australia. February 1987.
Southport Yacht Club, Southport, Australia. February 1987.
Westhaven Marina, Auckland, New Zealand. January 1987.
Westpark Marina, Auckland, New Zealand. January 1987.

