

Imagining a new public space in the foreshore by re-creating the city-sea relationship

Design Research Project APG5058S

Submitted in partial fulfilment of the requirements for the degree

Master of Architecture (Professional)

by

Adam Graham Watson-Smith

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Brownfields rejuvenation.

City-sea connection.

Public waterfront space.

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- 2 - Scope and Methodology:
- 3 - Mobility and Terrain Vague in the Contemporary City:

- 4 - Speculation as to a Design Solution:
- 5 - Precedent:

- 6- Relevance Considering Cape Town's Foreshore:
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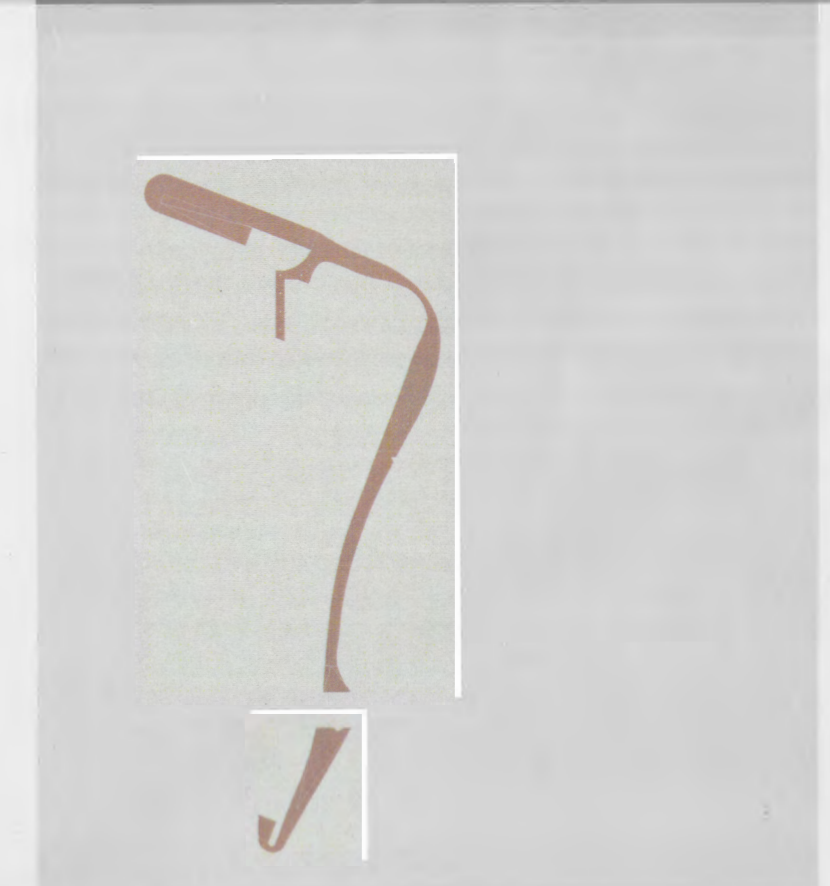
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A Quest for Re-connection by Recycling the Derelict Land of the Foreshore area.

Aim

Reconnect the City to the Sea through investment in the pedestrian and public space, supported by activity generating and accommodating architecture.

Theory question

What architectural methods are being employed in global port-side cities to reinvent and make use of large tracts of de-valued inner city land?

Technology question

What is the nature of the physical condition that the foreshore area presents and what impact has this had on the haphazard development of this inner city space?

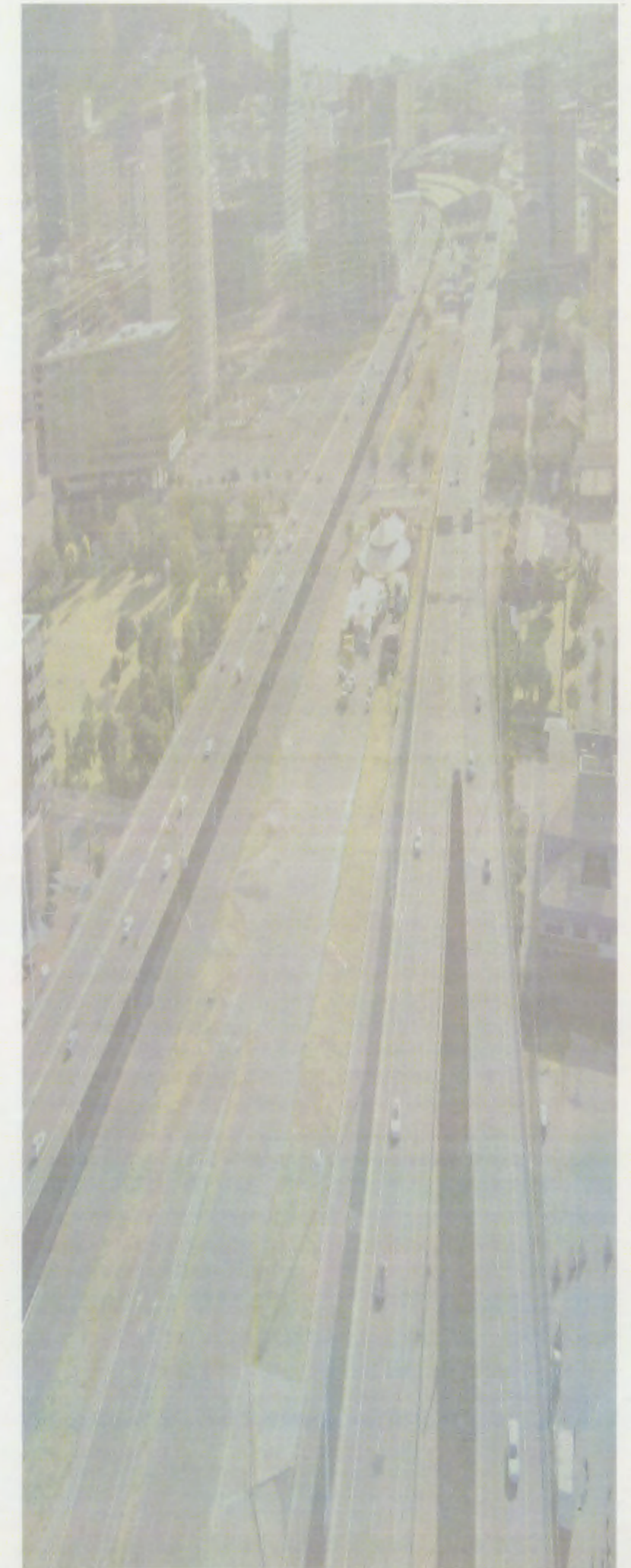
Sub Questions

What are the key factors in global cities' development and fabric which have resulted in large inner city tracts of undervalued land, and their condition?

What are the implications of different modes of mobility within urban space, and particularly their effects on the resulting urban form, and utilization of this space?

What negative effects of mobility in a global society are universal to all contemporary cities and societies, and what are some of the contextually derived typological solutions?

What are the primary opportunities and technical challenges presented by the unique conditions of the foreshore to development?



Theory component; introduction

- 03 -

The modern city is a product of the industrious nature of human development and from its fabric a society's history can be uncovered. Throughout history the methods and theory of constructing our urban environment have reflected the values upon which societies have placed importance at the time. Settlements and eventually cities present us with a chronological historical narrative.

Cape Town's development was marred by the over ambitious and speculative economic predictions of the post-great depression and pre-WW2 period of growth. The most important of the misguided principles involved predictions of vehicle ownership and use, which did not materialize as expected. This coupled with the land reclamation project which provided 400 acres of flat 'new' land within the inner city gave rise to an opportunity for the city to 're-invent' itself. The political climate and nature of the modernist era meant the needs of the living were so linked to the role of the machine that investment in the machine totally overshadowed investment in people. Cape Town's street grid and urban atmosphere was 'consolidated' into broad boulevards running across the foreshore while the primary mountain-sea view corridors (such as Adderly Street) were largely preserved. However the elevated freeways and privatized docks terminated this positive implication well before the water's edge.

The Inner City's relationship with the ocean and port in pre-reclamation Cape Town was much closer than it is today. This applied to the old port, but was also expressed powerfully with the development of the Adderly Street Pier. The pier stretched 1000 feet into the ocean; it was 18 feet wide and was a social and economic hub for the inner city of the day. By public demand the pier provided swimming facilities, a band stand and a coffee shop at the end. These were popular attractions, and coupled with the fact that the old pier's space was not socially or racially segregated, make the loss of this space and the role it fulfilled a tragic consequence of the land reclamation project.

The land that resulted from the reclamation effort has been tainted by its origin as sea-bed material, and the salinity and lack of healthy, plant growing, soil means that the new land struggles to support plant life. The result is a relatively flat and barren ground plane of a semi 'toxic' nature. This is sufficient basis upon which to label the remaining sites of the foreshore area as 'brown fields', and although they are historically young they can be analyzed in parallel with other 'brown field' sites globally, although many are 'formerly industrial' in nature. Most cities will contain some 'brown field' sites and it is reasonable that those which occur adjacent to a natural feature and near an urban centre attract the first developmental interest. The qualities of the two conditions (natural and built) will inevitably provide exciting spaces and design opportunities.

Many cities have looked to recycle these significant and redundant tracts of land that sit within them, and there is a trend towards producing a building of cultural significance. These interventions are intended to showcase the cultural integrity and character of the host city as well as to provide generous amounts of inner-city public space. They are meant to assume roles as social foci within an area and will usually be at the forefront of a greater urban regeneration scheme. I will examine some relevant precedents detailing different approaches to this intention in this component.

Adderly Street Pier: Social hub and very powerful reinforcer of Cape Town's primary mountain-sea axis. It is interesting to note that most historical photographs of the pier look back toward the city with the mountain backdrop. This suggests the psychological reward of looking back upon the city one has walked away from, particularly with a feature *mountain behind.*
(The Cape Town Foreshore Plan, Page 14)



Adderly Street Pier demolished: This has become an image synonymous with the loss of the pier and all that it meant, and the end of an era for Cape Town.
(The Cape Town Foreshore Plan, Page 14)



Image showing the extent of the reclamation and the new docks under construction in sufficiently deep water to be an important global port.
(The Cape Town Foreshore Plan, Page 14)



The Foreshore; a look at the problem

- 04-

Much of the dilemma afflicting the foreshore area results from the orthodox modernist planning ideals of the first half of the 20th century. These lent huge emphasis to new and improved mechanised mobility which was becoming more efficient and easily available. Massive city blocks and generous boulevards derived of the central planning policies of the time have resulted in large, stand alone office buildings offering little shelter or relief to the pedestrian. The foreshore's city block sizes were largely informed by the need to accommodate the motor vehicle, however the need to provide meaningful public spaces and boulevards was also considered. The major mountain – sea view corridors from Adderly street northward were maintained and will have informed the layout of the foreshore grid. Those streets occurring South of Adderly Street had the railway station to contend with.

The needs and habits of the pedestrian are more in keeping with short walking distances providing opportunities for way-finding, human interaction, choice and shelter from exposure. These aspects of an environment are largely qualitative. Urban fabric and form serve as site and stage for urban activity. This the planners of the foreshore knew all too well, and the influence and requirements of the apartheid system meant that significant large public spaces had to be easily accessible and lend themselves to surveillance by the police and other forces. This meant that the authorities required maximum visibility; the intended goal was in part crowd control, and in part awe at these over-scaled public elements.

The historic Cape Town city centre is composed of sixty meter square blocks: An appropriate size for inner city blocks as this size accommodates both the vehicle and pedestrian adequately. This logic suggests the need to break down the large foreshore blocks and develop them with a more human fabric, fragmenting the + 150 meter blocks to create pedestrian friendly inner streets. These would be on a scale compatible with the existing large blocks, and historical Cape Town's inner city fabric.

At a functional level the office buildings built in the 1950's and 60's were concerned with providing private cellular office spaces accessed via long corridors. The benefits of open plan office space were not yet widely recognized and as a result many buildings would eventually need to be 'gutted' and re-planned in order to provide better working space and economic viability. A very good example of this loss of value and therefore loss of significant tenure is the United States Embassy. As a result of unsatisfactory working conditions the Embassy moved to Westlake in 2005, where the working conditions and space are more appropriate to their 21st century needs and tastes.

The reclamation of the foreshore provided the city with much needed land. A negative consequence however was the resulting distance of the inner city from the port. The train station, the grand parade and the heart of the city are currently more than a kilometer from the water's edge, and a 16 minute walk for the +3000 dock workers who have to cover this distance from the train station daily. As a result of this, and the privatization of the dock edge, necessary pedestrian stimulators and incentives are entirely lacking in much of the foreshore area.

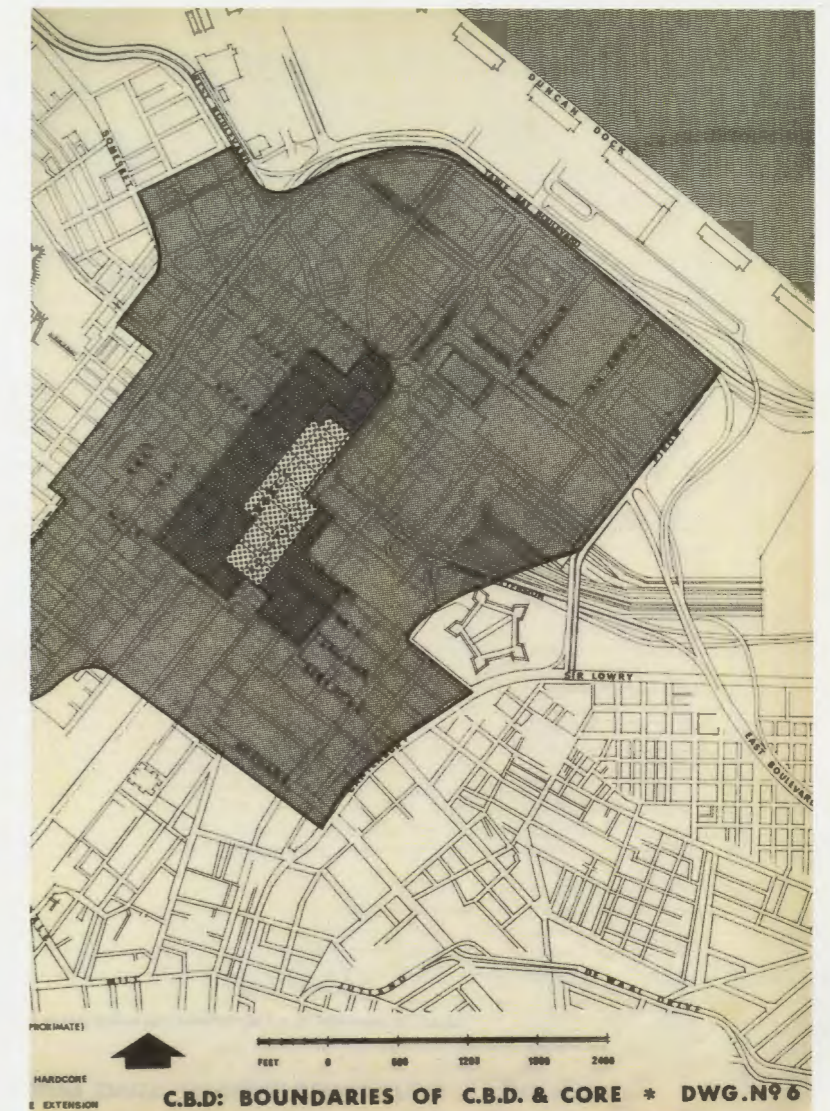
This Image shows part of the inner city precinct and it is clear that there is no intention to claim some 'sea frontage' for the city. Today this scenario is compounded by post 9-11 security requirements within port areas, which have resulted in tightened security as the image below indicates.

(Report on the Proposed Development of lots, 144-148, the foreshore, Cape Town)



This pre freeway image shows the extent of the reclamation. Evident here are the 'desire lines' which are generated by foot traffic, all emanating from the train station. These lines indicate the distances travelled by people across expanses of open ground without any urban relief.

(The Cape Town Foreshore Plan, Page 14)



Scope and methodology

- 05-

Historically the relationship between settlement and water has been more than one of just a healthy drinking supply for the citizens. Water as a body serves to compliment public space both visually and climatically.

An objective of this paper is to identify solutions and positions undertaken by prominent port cities worldwide which have sought to re-invent the nature of their post-industrial, undervalued, often contaminated, port side land. Those examples which are of relevance to the Cape Town foreshore tend to relate to 'rejuvenating' or 'recycling' this land and re-imagining its greater role in the context of that city. I shall examine a spectrum of precedent examples relevant to Cape Town's current urban condition and its relation to the port. Different design strategies and solutions are employed, however it emerges that most commonly such programs are very culturally oriented, and meant to showcase the arts. Society has always valued cultural manifestations, and the 'world class' opera houses and museums featured are intended to claim and reinvent a piece of their city's identity. Often the primary intent of these structures is that they serve as public space 'accompaniment': They are always part of a greater urban scheme drawing from, and giving quality back to, the adjacent urban space.

Cape Town is an important city in the global context and its development was derived of the need for mobility from the beginning of its life as a settlement. This is reflected in the audacious reclamation project which provided vast expanses of new 'inner city' space, and the planning for the mobility provided by the motor vehicle. The resulting under-used space today is reminiscent of many redundant industrial dockland areas globally.

As a result of this vehicular investment and the impacts of block sizes and elevated freeways that it gave rise to, this investigation is bound by a need to interpret the mobile forces active within modern cities. These forces have contributed to or accompanied these undervalued spaces. The goal is to draw conclusions as to the functioning and future intentions of these structures as public space support systems.

The foreshore provides an interesting terrain upon which to build. It is derived from a very unique set of conditions which for many reasons have made it very difficult for the city to occupy it healthily. Much of this is a result of its material composition, and for this reason I shall undertake a technical study of these elements. An understanding of the technical and material elements of the foreshore will prove crucial in the search for a meaningful design solution, as the conditions will provide both opportunities and constraints to the resolution of a realistic design. I will undertake a technical exploration (Component 2) into the foreshore's material condition and its effect on development as this relates directly to Cape Town's perception of the space. The knowledge gained through this exercise will inevitably guide many of the design and technical decisions

I believe that conditions in the foreshore are ripe for and offer developmental opportunities. The demand for the erection of a new convention centre further indicates the trend toward the rehabilitation of the area. In addition the city is currently experiencing a growth in inner city dwelling, increasing the vicinity's value greatly. When one considers the space which extends to the foreshore, and on the assumption that the port would relinquish land back to the city, the value of the water frontage both in terms of the land and of real benefits to Capetonians can be maximised.



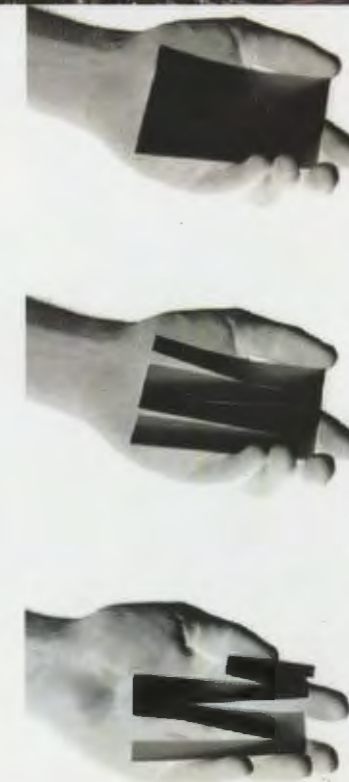
Darling harbor's relation with its elevated freeways is amiable and indicates the potential of water and bold planning to transform space. The Cape Town freeways currently lack such counter investment which would allow them to settle more harmoniously into the fabric.

(www.worldwale.com/aussie/days)



The Oslo Opera house and the Seattle Olympic Sculpture park are both based upon the principles of folding the ground plane into a new form resulting in an entirely new space. I believe that a similar strategy of terrain manipulation may be beneficial in Cape Town, to help break the monotony of the surface.

Terrain manipulation in this context begins to call for, or may simply result in, the return of water into the parched foreshore. This would have the added benefit of allowing the passage of water further into the city which would in turn allow the pedestrian easier access to it.



(http://www.arcspace.com/architects/snoehetta/oslo_opera/oslo_opera.html)

(http://www.arcspace.com/architects/Weiss_Manfredi/index.htm)

Mobility and Terrain vague in the modern city

- 06 -

The activities and nature of the modern city are largely derived of and dependent upon the technology of mobility. In today's society, access to varied modes of mobility provide the individual with the social, recreational and work related opportunities which are essential to a 'mobile society'.

Acts of production produce waste; this is matter we would usually 'dispose of', leaving immediate spaces 'cleaner, healthier and useable'. Sustainable practices involve the re-use of such by-products as useful material for alternative purposes. Much of the waste produced in the modern city is so large that it exists as an integral component of the cityscape. In some circumstances space itself can be understood to be 'wasted' and this is evident in the form of underutilized tracts of land within inner city limits. Clearly large areas of unused or 'wasted' space within a city can add to the distance pedestrians have to travel to get where they need to be, and walking as a mode of transport becomes increasingly impractical, the greater the 'wasted' space.

The French term Terrain Vague was first conceived by Ignasi de Sola Morales. It is a broad term which seeks to encompass the physical terrain and elements of the contemporary city which lie in neglect. The premise of the term, however, is that this space carries tremendous value as a result of the 'form of absence' it represents. The term can represent a historical narrative documenting a space, and its evolution and devolution, embodied within the 'remnants of activity' and 'evidence of intention' about that space. The lesson resides not only in the acceptance of unforeseen circumstance as crucial to development, but also in its potential as a valued historical lens and design informant.

Despite the developmental potential of inner city tracts of land there are still market forces, environmental factors and public perception, all of which can inhibit their development. Terrain Vague is the most significant example of 'immobile' city 'waste' being, as it is, a by-product of the development of modern mobility. As cities and populations expand, so distances and travel time between amenities tend to increase, as does the need for faster transport solutions. Increased speed of mechanized mobility means that larger tracts of land are directly impacted and the greater become the chances of imposing Terrain Vague upon adjacent spaces.

Terrain Vague

Terrain in the context of the term of Terrain Vague extends beyond the landscape to encompass structures, facades and urban elements as a part of the landscape. Vague evokes a conflict of meaning as it implies an impossibility to define the subject of which it speaks.

'Mutations and flows show us this new relationship between time and space. Containers and Terrain Vague identify for us the new spaces which the city generates, often as waste which needs to be recycled.'

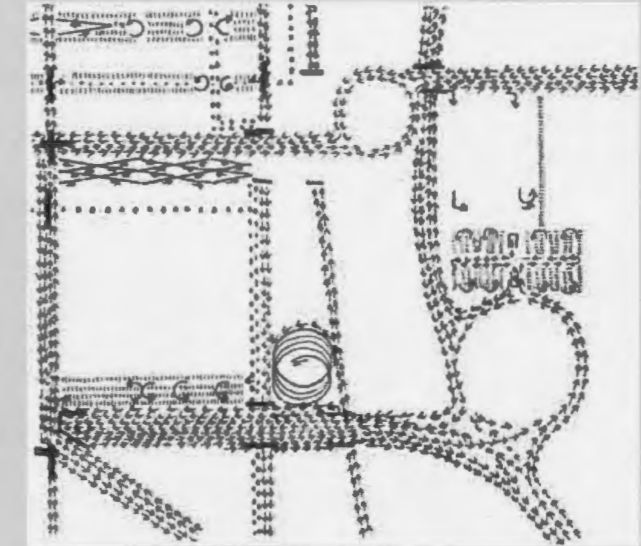
(P. 9. Present and future, Architecture in Cities. Ignasi de Sola Morales)

This realm of potential and redundancy is a good example of contemporary societal and urban history. This in turn makes it a key informant in the contemplation of society's current circumstance, and it is fair to state that no modern city is 'free' of Terrain Vague as it is essentially a product of the industrial era, a global phenomenon. The recession or relocation of industry has left derelict and often toxic tracts of land as Terrain Vague, 'brown fields' sites.

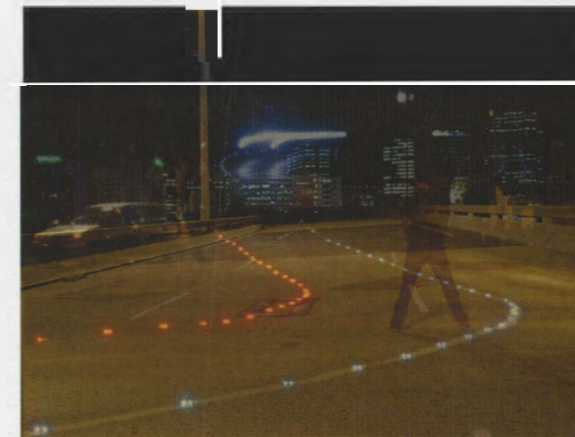
The current state of the site and much of Cape Town's foreshore would fall within this definition of terrain vague. It strongly indicates the need for a re-invention of the role of this space in the city's life and context.

This is a traffic movement diagram developed by Louis Kahn for Philadelphia. The movement represents a system developed for the easy movement of vehicles. The essence of the diagram is significantly different from one that would be generated by pedestrian movement through public space.

(www.intelligentagent.com)



This Graphic represents the conflict between the vehicle and the pedestrian in terms of sharing space.



The unfinished foreshore freeways are evocative forms, their presence speaking volumes of the ambitious original predictions as to their necessity.

(The Cape Town Foreshore Plan, Page 14)



Mobility

- 07 -

Entropy: 'Energy is neither created nor destroyed, it only transforms... Entropy always grows. This means that systems pass from a state of great order to one less so.'

(Metapolis dictionary of Advanced Architecture: City, technology and society in the information age. P.196, Federico Soriano)

Goods, information and people flows dominate our contemporary city and generate much of its form and character. Alex Wall believes that this has led to a "Polarized ideological struggle: The idea of the city of motorways versus the idea of the city of cut stone." The advantages that mobility provides the contemporary city dweller are quick access to employment, recreation, healthcare and entertainment, and for these reasons mobility must be facilitated in populated urban areas.

The global trend towards ever more efficient mobility is an essential part of contemporary culture and economics. This aspect of the contemporary city is the primary actor in the production of Terrain Vague environments, however the solutions to the problem also lie within the technology of mobility and its ability to shape and influence space. The investment in the vehicle is on a scale which cannot support diverse and individualized design solutions, and schemes are city wide and indiscriminate. An investment in the mobility of the pedestrian however immediately brings aspects of the quality of space to the fore, and its layout, scale and aesthetic become as important as its function. With the pedestrian in mind therefore, the design of space becomes individualized and incremental while diversity and differentiation of elements can enrich a public space.

Access and speed of mobility in modern society has provided opportunity and quality of life to those who are privileged enough to afford it. In a vehicle dominated urban environment, such as the foreshore, great distances between everyday amenities are the result. This restricts ease of access to those who drive vehicles, and disadvantages the pedestrian. To overcome this a more cohesive 'multimodal' intervention would render the space advantageous to both the vehicle and the pedestrian. Such an intervention would need to accommodate the wider social and economic spectrum of society, including the pedestrian, and should not inconvenience the driver unnecessarily.

Aspects of connection

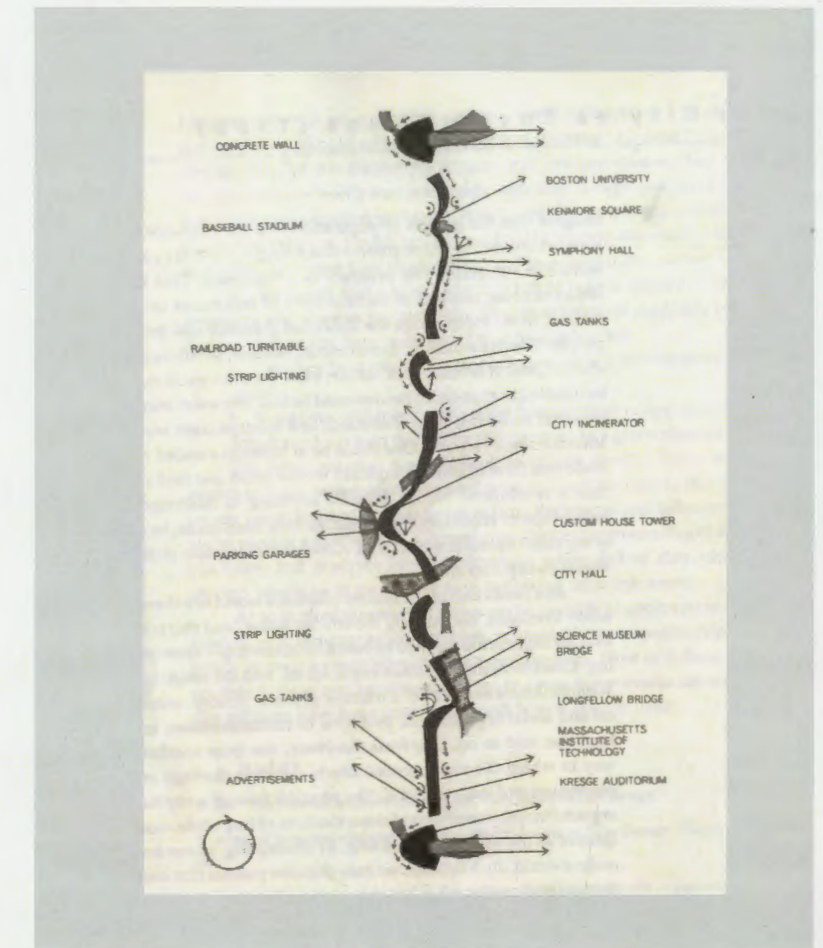
Associate, overlap, connect: 'It is about work that leans on something – that needs excuses to extend, unfold, and become seen.'

(Metapolis dictionary of Advanced Architecture: City, technology and society in the information age. P.65, Manuel Gausa)

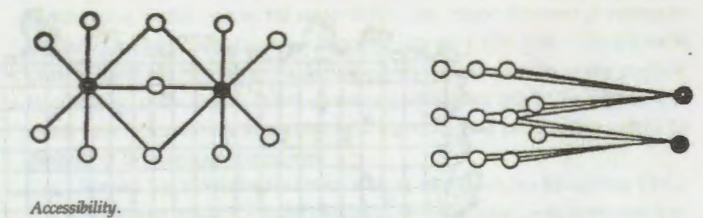
I consider all architectural work interrelated through the commonality of having been conceived and produced by man. The human legacy of 'knowledge passed on' indicates the incremental expansion of inter-linked knowledge that can be traced back into history. Our urban environment compels us to act within its fabric to continually revise its nature as society evolves new practices and values, and it is this competitive need to develop which defines human progression.

The Foreshore freeways are an essential aspect of the city's infrastructure and function. They are an aspect of the environment that is irreversible (especially if one considers what it would cost to bury them) and given their expansive influence, they are a powerful design informant and constraint. They collaborate with the buildings to shape the space and the success of the space relies on their continued expression within the fabric. Re-establishing the significance of a truly accessible foreshore in the lives of the people of Cape Town will need to occur at many levels and will need to 'connect' many disparate aspects of the City's life.

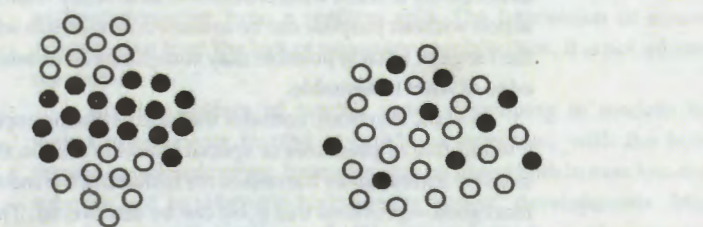
This diagram documents an approach to the analysis of qualities along a journey. A journey is experiential after all.
(City sense and City design, Writings and projects by Kevin Lynch.)



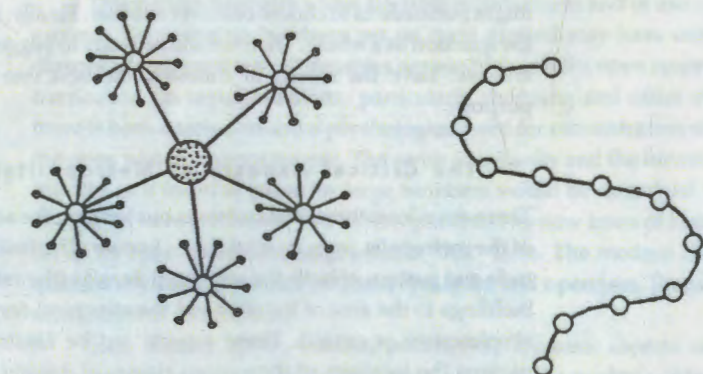
These diagrams show the effects of different locations of fixed activities on the spatial pattern of settlement. Fixed activities require a percentage of the population to visit regularly, sparking habit and familiarity amongst people. The influence of city wide activities affect the layout and settlement pattern.
(City sense and design, writings and projects by Kevin Lynch. Page 48 + 49)



Accessibility.



Grain.



Focal organization.

Aspects of the 'barrier'

- 08 -

Differing perceptions:

Why would an engineer consider the Foreshore freeways to be – “only a barrier for Sea gulls flying at the wrong height” while an Architect would term these a barrier on account of their spatial implications. (This comment was captured in a meeting (16-03-2009) with the city engineer in charge of storm water and roads, Ron Haiden, The comment illustrates the differing points of view as to the spatial consequence of form on society and its psyche.)

The statement illustrates two different perceptions of the effects of the elevated freeways on the spaces of the foreshore. The engineer understands the problem in a literal and direct manner while the architect perceives the problem in a consequential manner, both are of course right. An understanding of the influence of urban form upon the human psyche when experiencing public space is important in the search for a solution which reduces the nature of these 'barriers' to a state which is complementary to a new solution and attitude.

Currently the primary feature and 'focus' of the foreshore is the elevated freeway system and in the absence of a counter measure this shall remain the predominant spatial force acting on and within the area. Any counter measure and intervention would need to relate in equal measure to the inner city and the ports edge, to the vehicle and the pedestrian.

It is appropriate to assume that enough vehicular investment is in existence and the vehicle is catered for in the foreshore, so that the proposed intervention should be focused on the pedestrian. This should all be achieved while avoiding disruption to existing traffic flow and without influencing user preference as to mode of transport.

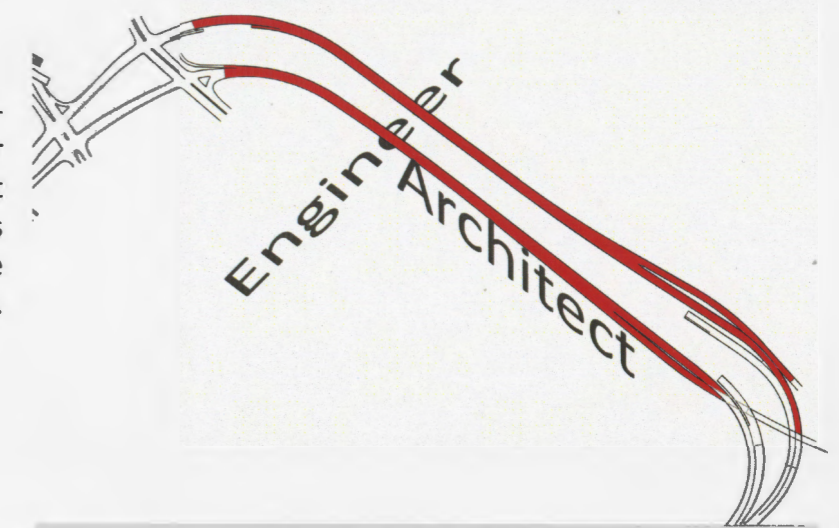
Speculation as to a design solution

The contextual constraints concerning the previously mentioned large size of city blocks and the investment in the vehicle are necessary design informants; they suggest the need for counter-investment in the pedestrian by means of contextually sensitive fragmentation of these city blocks to make for a more pedestrian friendly urban environment.

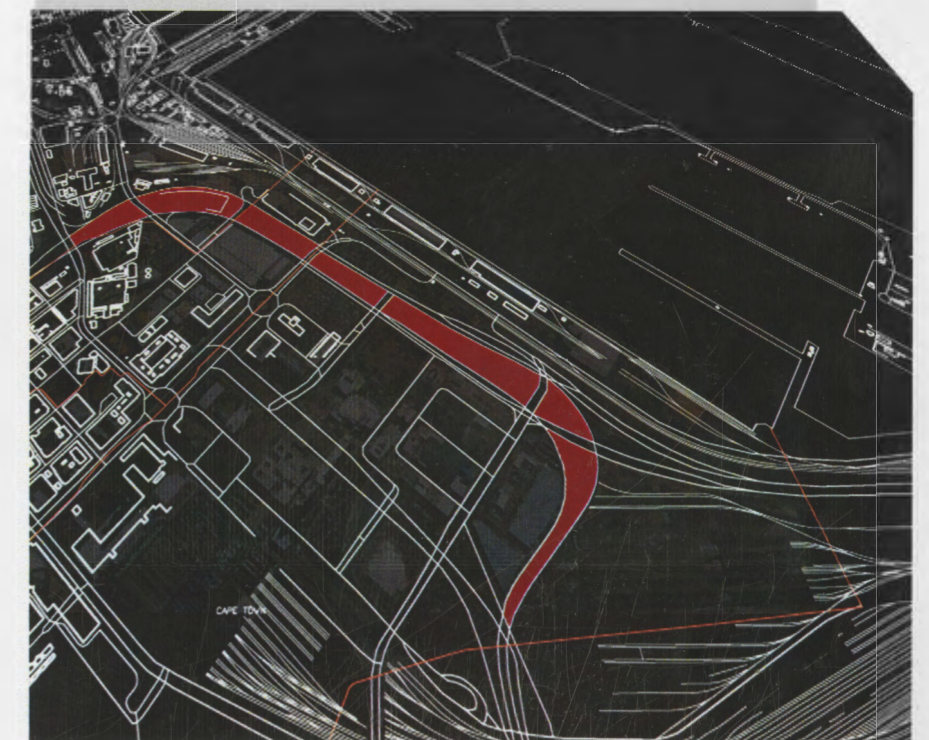
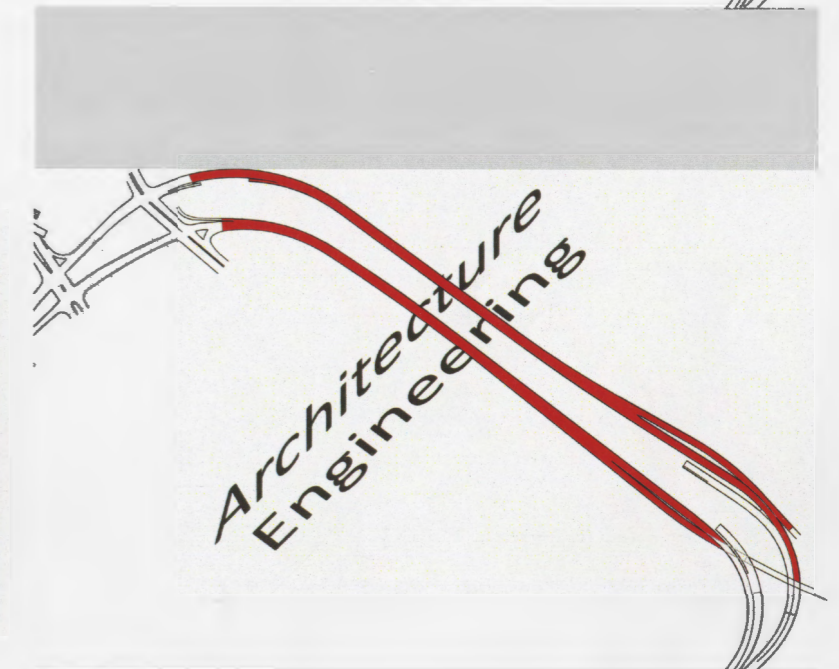
Another key consideration involves the possibility of exploiting the positive effects that a body of water can have when alongside a public space. The underutilized qualities of the sea, the underground rivers, and canals, and water table can all be captured and utilized for the benefit of the space and the public alike.

In the global precedents I will be looking at they have sought to implement investment in pedestrian friendly public spaces, and in particular in formerly vehicular dominated spaces alongside water. The success or failure of these projects has hinged on the satisfactory accommodation of the needs of the vehicle in a new pedestrian oriented space. As a result the design project shall need to transcend the scalar 'barriers' between the two modes. These demands indicate the need for a large scale architectural intervention on an urban scale, and assuming a role as a site of transfer from vehicle to foot as well as a destination and activity generator. It should provide generative public space and encourage private investment.

These graphics depict the two main perceptions of the foreshore freeways and their impact on the city. The graphic indicates that it will take collaboration between professions to begin to overcome the negativities of the space.



(http://monctonpixels.blogspot.com/2008_03_01_archive.html)



Olympic Sculpture park: Seattle, USA

- 09 -

Program: Cultural, public space and landscaped green space for recreation and art exhibition
Architects: Weiss/Manfredi Architects. 2007.
Size: 8.5 acres

"Our design is conceived as a continuous surface that unfolds as a landscape for art, wandering from the city across highway and rail lines to reach the water's edge. This new topography, sculpted to rise over the existing infrastructure, creates an uninterrupted landform for sculpture, offering settings to view the city and the sound".

(Weiss/Manfredi (ref:www.arcSPACE.com/architects/Weiss_Manfredi/))

The site used to be a contaminated brown fields site in downtown Seattle; it has subsequently been transformed into one of the more significant green spaces in the city. The 'Z' shaped design traverses a rail and highway link and connects three previously disparate sites. This project has transformed an area by effectively seizing this expanse of inner city land and transforming it into a unique cultural structure and public space.

The gallery is situated at the top of the landscape so that it may relate to the urban environment as well as to the environmental qualities of the landscape and vista. The building draws visitors to the entrance and has the effect of facilitating movement from the street into the landscape.

This intervention is clearly a landscape-building and it seems that it was a clear imperative to provide green space within the inner city. The building's role as a park carries equal pertinence to its role as an art gallery; indeed the structure is meant to be a sculpture in itself. It is this sculptural nature that I believe aids the building to effectively relate to both the civil infrastructure as well as the urban built fabric. It is a building designed to transcend the problems associated with modern mobility by investing in the pedestrian and public space.

The sections over page show the before and after scenario. The historical site conditions show where the road and rail links were developed, between which three industrial 'brown fields' sites lay redundant. It is clear that the drainage capacity of the soil held significance for the architects. The proposed section reveals that in order to achieve the elevated public planes, which afford the views and the height to get over the transport links, the contractors built the ground up to the required levels. This new ground and surface had the added benefit of burying the previously toxic ground with healthy new earth for better plant growth. Note too that the drainage capacity of the soil has not been compromised as much of the previously permeable surface area has been retained. The operation required 200 000 cubic feet of off-site fill, an extravagance obviously deemed worthwhile on account of the benefits the 'brand new' site would offer.

Contextual fabric
(www.googleearth.com)



Aerial Image looking South over
the river and the 'sound'.
(www.archrecord.com)



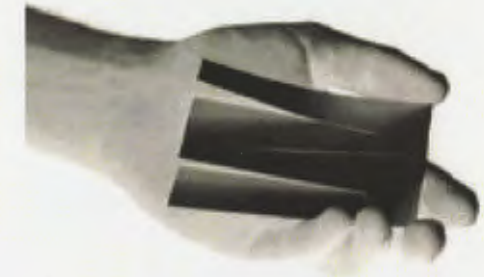
Site Image
(www.googleearth.com)



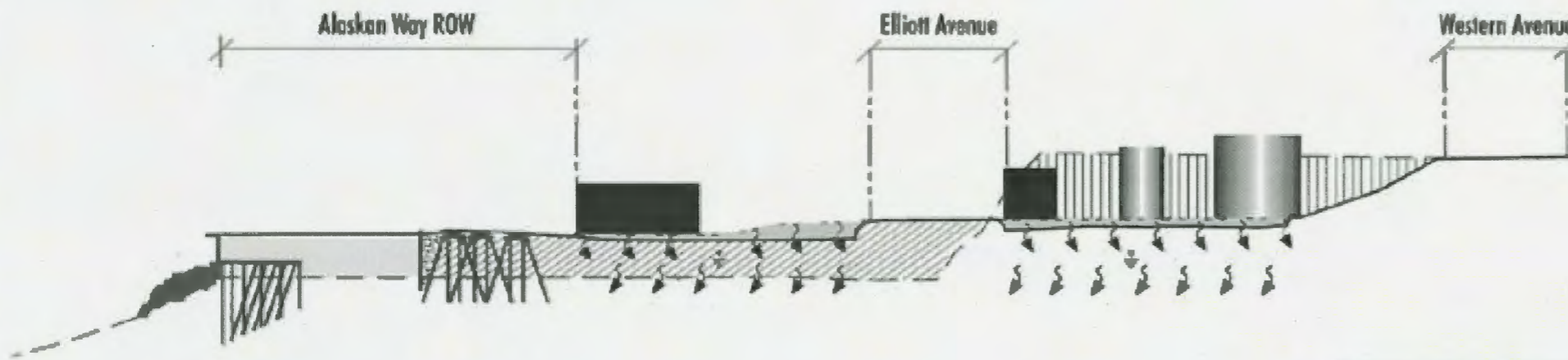
The building presents a clear entrance to the city, relating to the road through very robust concrete form-work which becomes a theme through the park. The surface is not only hard wearing but a subtle formal expression of the intended public nature of the intervention. Although the building presents itself as a landscaping element foremost, it is clearly an architectural structure but without many of the finer details and trappings of most buildings, such as windows and doors.



(www.archrecord.com)

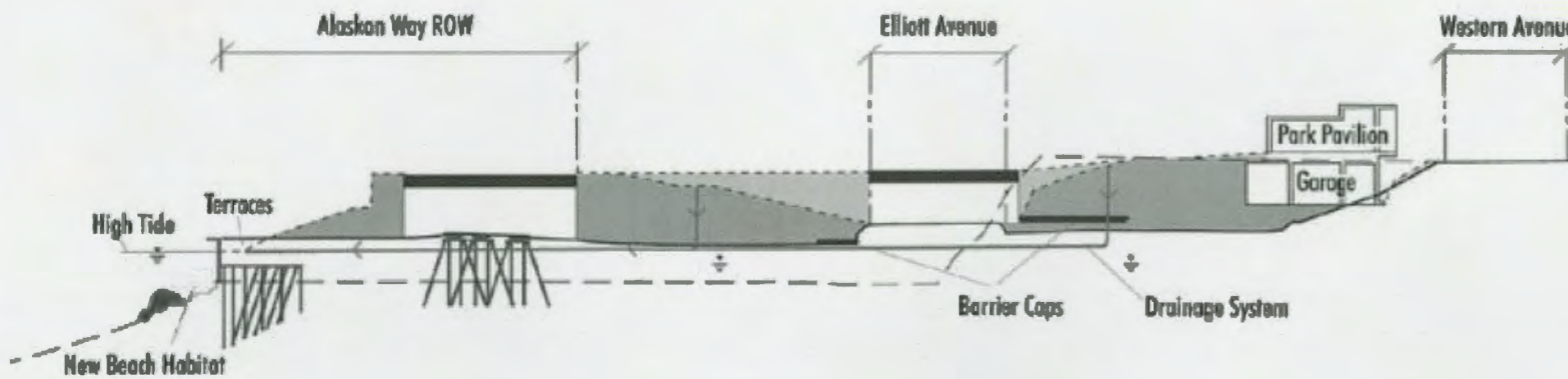


HISTORICAL SITE CONDITIONS



Original Ground Surface
Ground Surface 1910-1990
Existing Ground Surface
Proposed Ground Surface
Ground Water Level

PROPOSED OLYMPIC SCULPTURE PARK



(http://www.weissmanfredi.com)

(http://www.arcSPACE.com/architects/Weiss_Manfredi/index.htm)

(http://www.weissmanfredi.com)



Darling Harbor: Sydney, Australia

- 11 -

This precedent illustrates a strategy of transport mode integration through separation and unapologetic bold planning. The water's edge serves to connect and separate the city in a powerful way, as do the elevated freeways and trams. This indicates the ability of a significant body of water to fill an urban void and to initiate economic and social interest along its edge. In the early 1980's the dilemma of what to do about these post industrial 'brown fields' sites was hotly debated in Sydney, and the decision was taken that finance would be made available for the upgrade of the area. Construction began on the Sydney Convention Centre (designed by John Andrews) and the Exhibition Centre (designed by Phillip Cox) in 1985. This signaled the beginning of the Darling harbor regeneration project and would prove to be a broad based developmental catalyst. A contentious issue at the time was the proposed elevated tramway which traversed the front of the city's street edge, and despite the eventual inclusion of this element the site stretches fluidly beneath the highways, and in my opinion they have not negatively affected the public space.

Urban spaces adjacent to 'natural capital' within cities will attract investment and demand architectural sociocultural supporting structures, usually cultural, and harkening back to a nostalgic site-relevant past. Darling harbor used to be called cockle bay on account of the shellfish that could once be found at low tide, and this has influenced much of the design and thinking in the search for inspiration. I suggest that this historical design feature informant has had a bearing on many of the structures in the harbor, not just the sunken spiral and shell-like stage canopy (seen over page).

The success of this urban water's edge results primarily from the attitude of the creators and the city to both the urban component and the water's edge. The spatial integration of pedestrians and vehicular activity has been crucial in the realization of a people friendly space. The Highway becomes a sculptural supporting feature for the activity of the public space below; the elevated freeways here serve to define the space and serve as a backdrop to the focus which is the water. It is an urban theatre allowing for the appreciation of a little slice of nature; all elements are contributing to the sense of place.

The relevance of the Darling Harbor case to this study is particularly interesting because of the elevated transport links which coexist with the public space; this is illustrated in the image opposite which shows a main pedestrian link passing under an elevated freeway. Under the freeway is hung a framework clearly meant to provide the sense of a 'ceiling' within that space. The strategy is very effective in linking the two spaces by accentuating the route.

I believe that part of the success of this environment as a public space lies in the uniform red brick paving treatment employed across the site, visually linking the public space across the water and under the elevated structures, and making clear the pedestrian realm. A further successful tactic envisaged in the original master plan concerns the offsetting of smaller buildings against the dominant cultural buildings. These smaller buildings are meant to cluster to enclose a variety of public spaces.

The buildings are laid out around the harbor edge, a popular venue for water-side entertainment as well as a marina on one hand, and skirt the city's more historical inner fringe on the other, while the scheme is punctuated at its extremities by significant cultural buildings meant as destinations. This draws pedestrian activity across the length of the site. These factors all collude to make for a very positive public space.

Darling Harbor:
Note the integration of major transport links and natural features into the fabric of the city.
(www.googleearth.com)



Aerial photo of darling harbor:
Showing little evidence of its origin as a tidal lagoon.
(<http://www.digitalcody.com/photo2.html>)



Darling Harbor:
The 'red brick' hard surface treatment evidently runs uninterrupted through the area linking the ground surface through the melee of form and activity.
(www.googleearth.com)





(<http://www.digitalcody.com/photo2.htm>)

(<http://studentwork.hss.uts.edu.au>)



A hallmark of successful public spaces is their ability to host significant and spontaneous events. With a foreground of water this image shows a barge used as a stage for a Jazz festival. It is noteworthy that the people seem willing to endure what seems to be bad weather to be here.

The city's population and energy flows out onto the harbor's edge quite seamlessly. It is a simple yet generous pedestrian friendly surface which clearly supports much healthy activity and foot traffic.



(<http://www.digitalcody.com/photo2.htm>)

(www.worldwale.com/aussie/days)



Grand Canal Square:

Dublin, Ireland

- 13 -

Program: - Theatre, public space, mixed use retail, offices and a hotel.
Architect : - Daniel Liebeskind
Landscape Architect: - Martha Schwartz
Public space size: - 10 000 square meters

This is a good example of a 'centre piece' building sitting in a complementary landscaped public space. Collaboration through clear separation seems to have been the strategy. The composition of the building is directed at a dialogue with the public space, space that the theatre and the adjacent office buildings together serve to frame. The Landscaping is bold in a manner that does not detract from the adjacent structures. In fact it serves to define its own language, and the two could be said to be engaged in a dance about one another. This precedent displays the social and economic value that can emanate from cultural architecture and public space collaboration. The Theatre is intended to aid in the regeneration of the area, and the landscape is clearly meant to enliven the space with a sense of adventure and journey. The space is 'cris-crossed' with granite paths which allow pedestrian movement in any direction across the site. The spaces between these paths are either treated with a red resin to form the 'red carpet', or the space is occupied by a raised planter which serves as the 'green carpet' and seating.

The scheme is in fact part of a much greater docklands regeneration project in which the landscape intervention is responsible for linking many of the separate developments in a coherent and interesting manner. The Theatre is sited between two office buildings, also designed by Liebeskind, having been intentionally designed in a simple box like manner as a back drop and setting within which the theatre becomes the centre piece.

The landscape extends from the street on the westerly edge of the site through the building to become the public square on the water's edge. The 'red carpet' provocatively enforces this axis and pulls this line through the building and over the water's edge. The theatre, a five star hotel and the office block all overlook the square. The ground floor of the built edges facing onto the square are populated with restaurants, shops and cafés. This generates activity around the edges of the space throughout the day while the theatre will be expected to generate night activity. The hotel and office block serve to formally frame and lend maximum attention to the theatre building, reinforcing the 'centre piece' nature it so clearly demands.

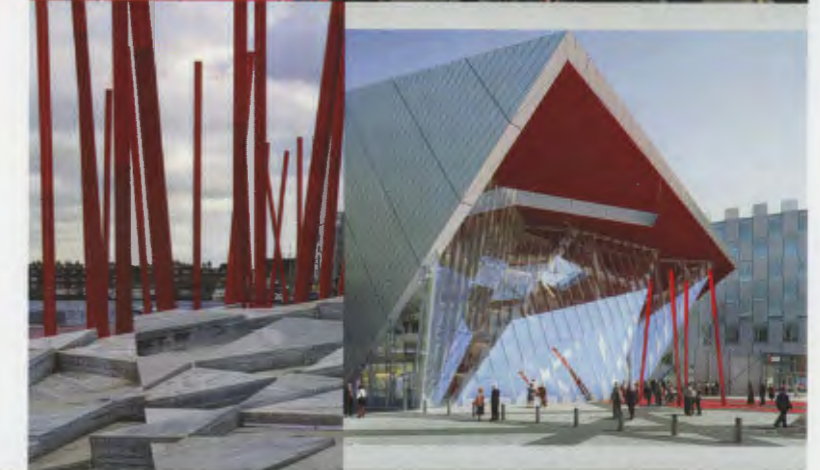
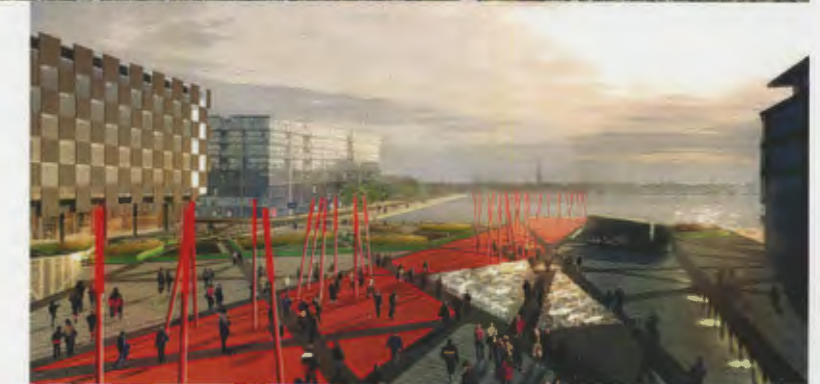


(http://www.e-architect.co.uk/dublin/jpgs/grand_canal_square_dublin_sdl151008)

Showing the extent of the non-tidal canal upon which the new square is being constructed.
(www.googleearth.com)



The landscape element is a haphazard field of large red poles sitting in the public space. It is a powerful unifier and an evocative element; it is a memory making aspect of the design.
(www.skyscrapercity.com)
(http://www.e-architect.co.uk/dublin/jpgs/grand_canal_square_dublin_sdl151008)

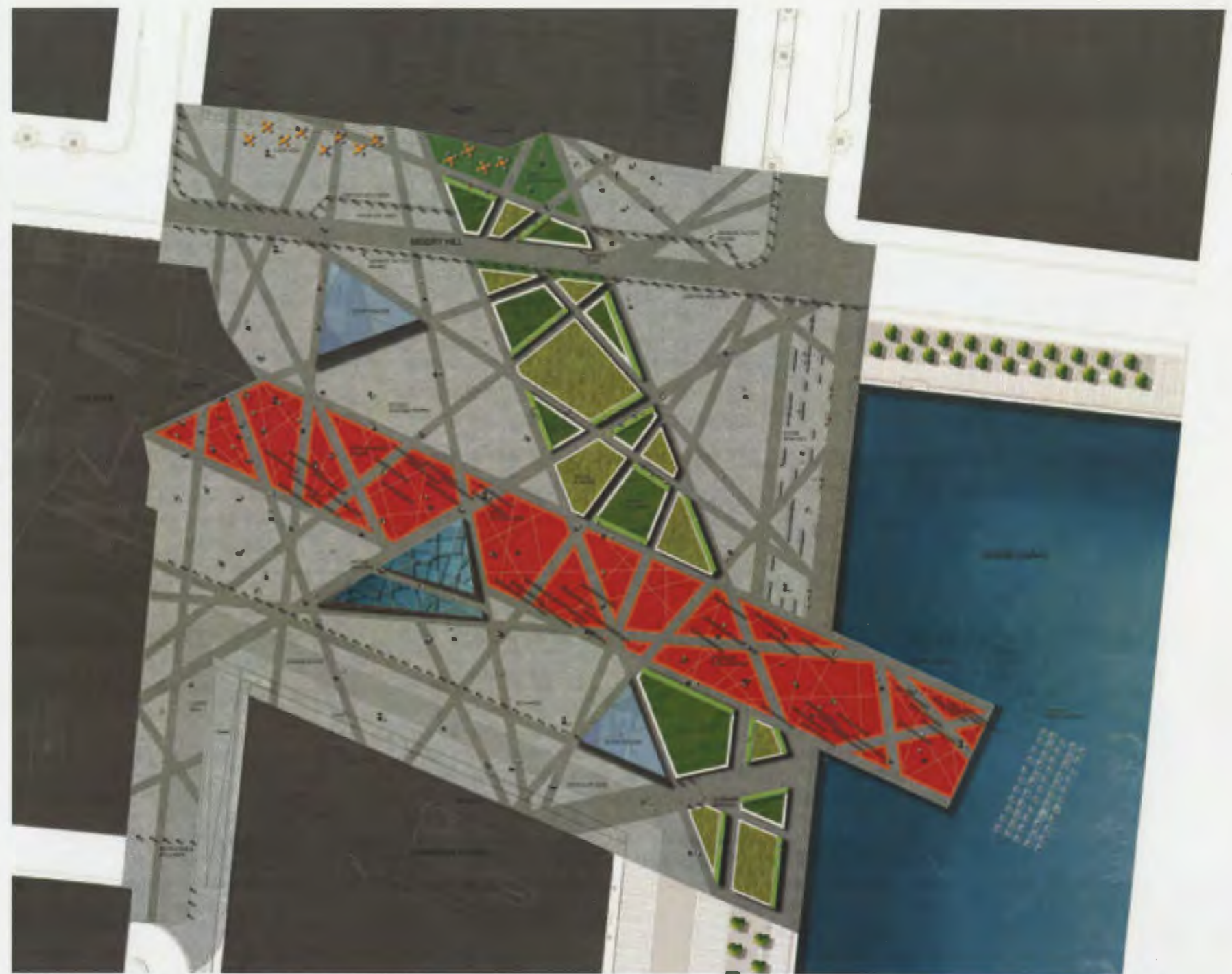


The site chosen looks directly eastward across one of the larger expanses of water as a result of the canal turning at that point.
(www.googleearth.com)



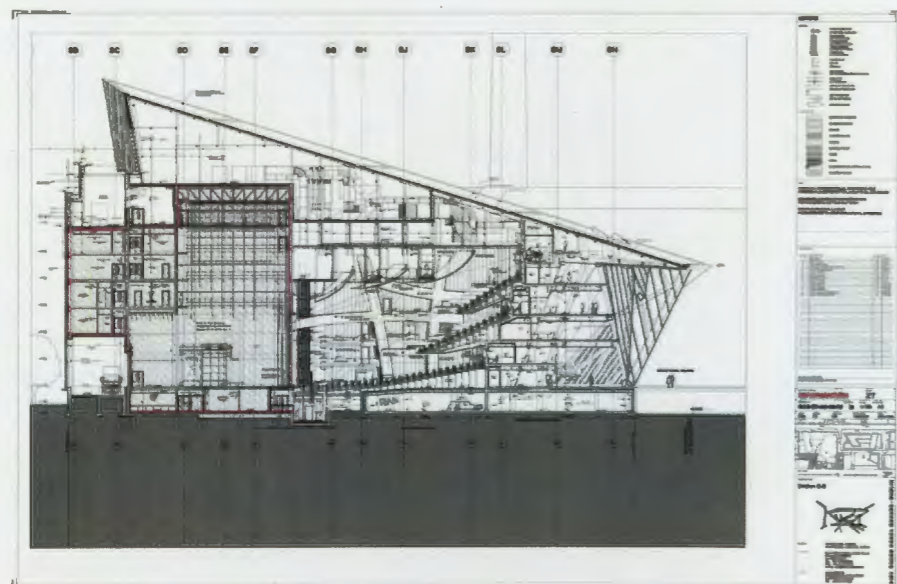


(http://www.e-architect.co.uk/dublin/jpgs/grand_canal_square_dublin_sdl151008)

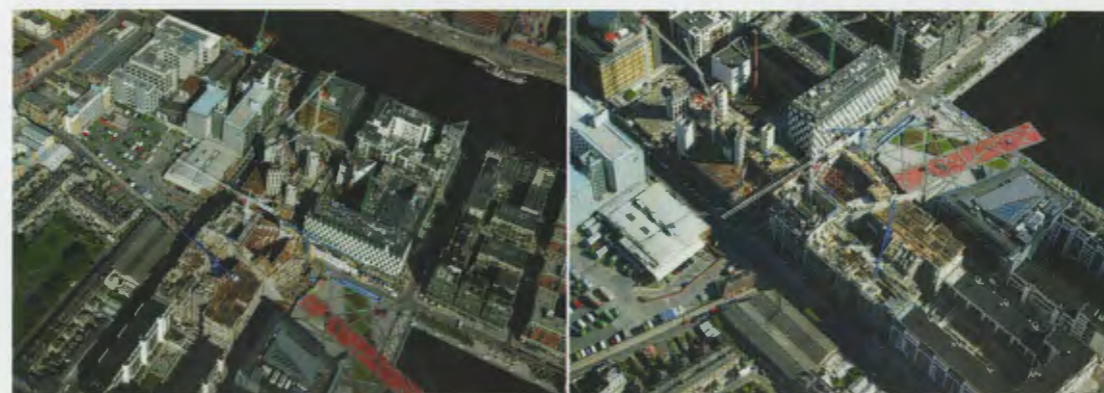


(<http://ireland.archiseek.com/news/2006/000014.html>)

(<http://www.dezeen.com/2008/09/05/grand-canal-square-by-martha-schwartz-partners/>)



Picture © Peter Barrow Photographer, from Bannion 171008



New Opera House:

Oslo, Norway

- 15 -

Program - Opera House and public space.
Architects - Snohetta.
Size -38 500m2

“The building shall stand as a representative institution presenting both Norway’s cultural traditions and the Norwegian National Opera’s significance in the Nation’s culture and society.”

(Parliamentary Bill number 48, 2001-2002)

The project is the result of an international competition in 2000 in which the city aimed to find a cultural building which expressed and showcased the opera and ballet as valued aspects of Norwegian culture. The main concepts put forward in the winning competition entry are the ideas of ‘the carpet’, ‘the wave wall’ and ‘the factory’. These three elements are purposefully kept separate and expressed by using different materials and form rationale.

The ‘carpet’ is constructed of Italian Carrara marble and takes the form of an undulating landscape of acute angles and folded planes. The landscape roof links the different areas of the site in sweeping movements and culminates at the lapping water’s edge. The more powerful analogies liken the building to an ice floe or ice berg, and white marble aids this perception.

The free-form ‘wave wall’ is constructed of oak wood paneling and houses necessary human circulation and theatre itself. It serves to define the transition from inner public space to inner private space, and provides the visual and acoustic protection which performance venues require.

The ‘Factory’ is aluminum clad and is intended as the working engine of the complex. It needed to be functional and flexible. It provides the space for the 35 meter high stage tower which houses the supporting structure for performances; this can be seen as the engine room of the performance and bursts through the roof - landscape unapologetically as an expression of the function within.

This project is part of a greater regeneration scheme which will involve burying the adjacent highways to create more public space alongside the theatre. More importantly it will serve to connect the areas of Bjorvika and Fjordbyen with each other and the waters edge. The opera house is intended to aid the redevelopment of the area and it is obvious that it would manage this better without the fast moving highway separating it from the mainland. The structure is intentionally set in the water to maximize the expression attainable from water’s edge collaborating with a public space and surface.

An arts committee was set up to work in close collaboration with the architects and together they were responsible for the integration of the art theme into the construction and building as a whole. In some instances art pieces are integrated into the fabric of the structure and in others the structure serves to emphasize the work on display. This theme dominated the foundation laying ceremony marking the beginning of the building process. The ceremony was punctuated by an act named “Hyperoverture” in which the music of thirteen opera overtures of Swedish origin were condensed digitally. This was then played through loud speakers and directed at the newly laid concrete. The resulting impressions on the slab are a part of the atriums floor today.

The opera house sits conveniently alongside the train station but is inconveniently seperated from it by a freeway system. There are plans to sink this below ground for this section, freeing up much of the neighborhoods access to the water and the new opera house.

(www.googleearth.com)



One of the primary principles employed in the design looks at the idea of the folded plane as providing public space and elevation. Thee image opposite shows a part of that process, the principles and lines clearly evident in the final built form.

(http://www.arcSPACE.com/architects/snohetta/oslo_opera/oslo_opera.html)

The Opera house asserts itself as a new element of the cities forshore, immediately dominating the adjacent freeway system as a result of its scale, treatment and cultural significance.

(www.googleearth.com)



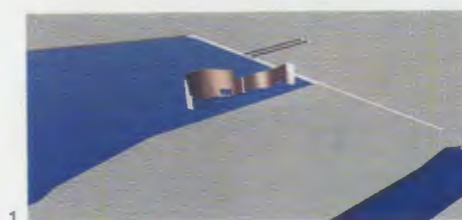
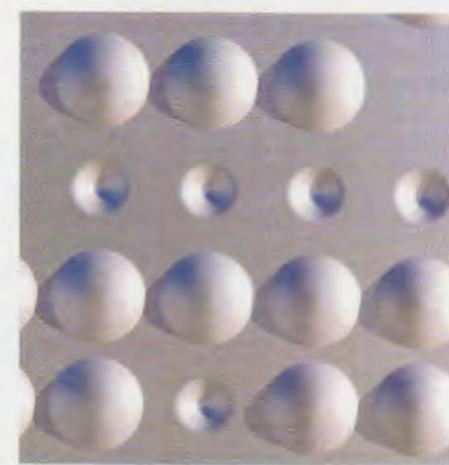
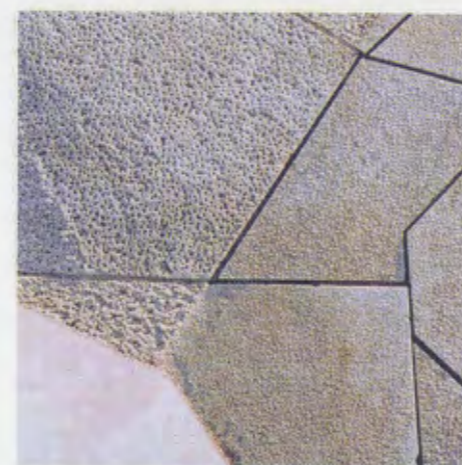
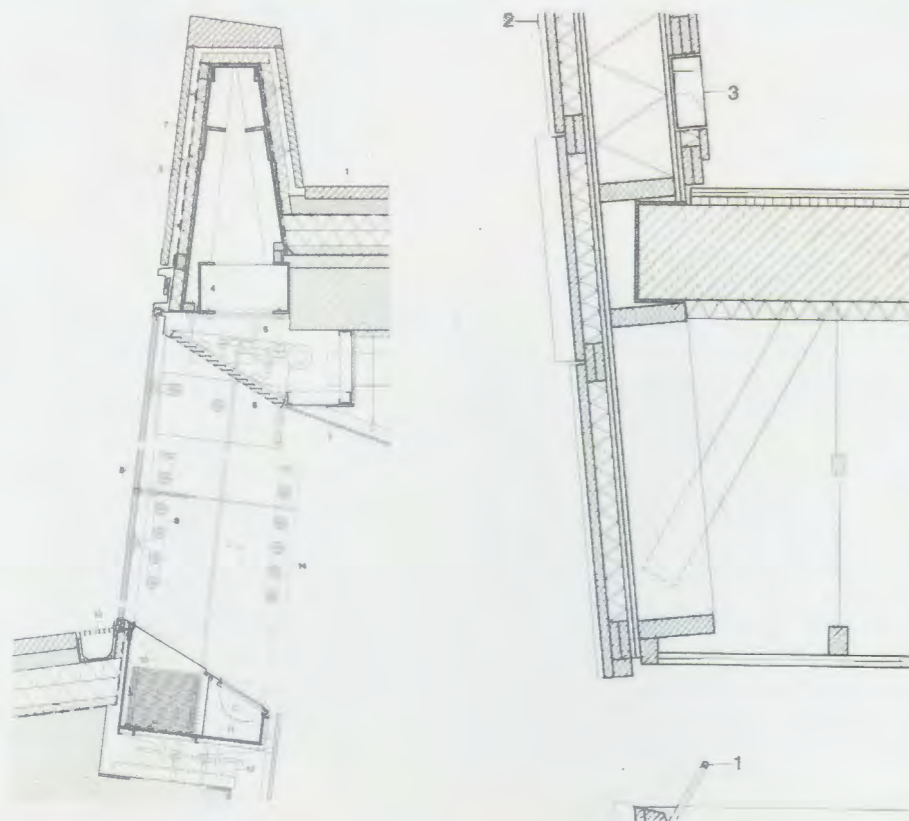


(http://www.arcspace.com/architects/snoehetta/oslo_opera/oslo_opera.html)



(<http://archide.wordpress.com/2008/11/30/opera-house-in-oslo-by-snoehetta/>)

(http://www.arcspace.com/architects/snoehetta/oslo_opera/oslo_opera.html)



Relevance considering the foreshore

- 17 -

The abundance of precedent pertaining to the idea of regenerating derelict inner city land, in particular waterfront dock area, demonstrates a change in thinking toward the potential role embodied in such 'brown fields' sites. Cape Town has a 'brown fields' condition existing in its foreshore, and it is clear that these sites lack the development stimulators that generate healthy public activity. The precedents analyzed are all built on previously toxic industrially utilized land, and all now support significant public spaces which serve to complement their respective built structures. In the cases of the Oslo Opera House and the Seattle Olympic Sculpture Park, the 'landscape' and building are inseparable. The landscape derives from the built form and vice versa. Their essence is of a new terrain, folded into planes which elevate and transport the pedestrian on an experiential journey making the built structures seem almost secondary.

The Darling Harbor scheme is an urban design in the city's fabric. There is no particular 'centre piece' building although there are significant structures in the scheme (the Sydney Opera house already fulfills the centre piece role for the city). The Grand Canal Square and Theatre are totally separate elements designed by separate offices, and this lends a charged atmosphere to the dichotomy between the two. Indeed all these precedents are searching for a new dialogue with their respective bodies of water and the pedestrian realms they create. The cultural trend of these buildings generally encourages night time activity within the area, although most also have shops and cafes set up to support informal day time activity too. The interface between land and sea is the perfect setting for recreation and globally cities with disused water frontage are looking to use these spaces to implement iconic cultural buildings and ambitious regeneration projects.

Foreshore: 'the part of the shore between high and low water marks, or between the water and cultivated or developed land.'
(The Concise Oxford Dictionary, Ninth Edition: p.530,)

Beach: 'The beach is the scene of the most celebrated and inexhaustible synthesis between nature(sea) and culture(city).'

(Metapolis dictionary of Advanced Architecture: City, technology and society in the information age. P.75, unknown contributor)

These definitions are very similar in their subject but different in their interpretations. The foreshore as an area of inner city Cape Town emerges as a misnomer considering that the dictionary places this land between the high and low tide marks. Perhaps more relevant is the alternative interpretation that it is 'between the sea and cultivated or developed land'. The term 'foreshore' has deep correlations with the term 'beach', the definition of which (above) is in keeping with the role I expect to develop for the so called foreshore as a result of positive development and regeneration, that being a new role of an urban beach.

The historical relevance and significance of the loss of an important connection to the city is further reason for a new typology of intervention. As is the habit with 'developing' countries (and cities), they seek to follow the example of those already 'developed' ones, and I fully expect Cape Town to follow this lead. It should recycle its disused, inner city, sea-side terrain and reinvent the way that Capetonians use this significant and yet significantly under-utilised space.

This image shows the current location of the yacht club tucked away into the folds of the industrial area of the harbor, the large machinery around it diminishing its significance.



This image shows the distance of the yacht club from the inner city, its remoteness further exacerbated by freeways and industria.
(www.googleearth.com)



This Aerial image shows the Royal Cape Yacht Club in its current position alongside the N1 and to the side of the main harbor. The space is currently sought for oil storage, and this fact coupled with its disadvantageous location call for a rethink of its meaning in Cape Town. Yacht basins serve as intensely rich contextual backdrops and indeed economic participants for many cities.
(www.googleearth.com)



Theory component conclusion

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In a world where human and urban development progress at a rate which sometimes seems exponential and unsustainable it is not surprising that less and less detail is 'noticed along the way'. I think this idea can be attributed to economic and social trends within society. I do not think that the process can be reversed but it can and must better incorporate the smaller details, the 'in betweens'. Through the course of the development of modern mobility 'left over spaces' have become more common and expansive, and they tend to get neglected once they have been 'made' into 'spaces along the way'. They are simply a physical circumstantial state and as such people will look past or through this 'terrain vague', its presence accepted without the knowledge or the thought that it is a by product of their cheap modern mobility. It is evident that our mobile society is continually mobilizing and this results in underappreciated in-between spaces losing their spatial value to the human psyche. The result is wasted space. I consider the extent of under valued space in the foreshore shameful, especially as it is at the fulcrum of the major mountain-sea axis and is site of the historically important Adderly Street Pier.

I believe that it is time for a reinterpretation of the role of the foreshore space in Cape Town's society, an effort already underway with mixed attitudes and results. It is in grave danger of continuing its development in a disjointed fashion, along similar guidelines and constraining orthodox ideals to those which led to its planning and haphazard development thus far. What we see so far demonstrates a disregard or inability to understand what is required to return qualitative meaning to the area, and to the people of Cape Town. It would be a sad outcome if it were allowed to continue. The global precedents pertaining to inner city land regeneration are testament to the possibilities that exist where a historical legacy has left behind a hostile context. These precedents have employed new methods of thought and design deduction to enrich their space with a new layer of history separate, but in tune with the old.

Cape Town is once again presented with a golden opportunity to reinvent its foreshore, not by reclaiming 400 acres of land but by reclaiming some inner city foreshore for the pedestrian and the water. Positive solutions shall not only come from good design sensibilities and spatial restructuring but will also require an in depth knowledge of the unique physical conditions which make up the area and contribute to its status.

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Oslo:

Drawings and information: (www.arcspace.com)
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Glossary of Terms:

'Green' in this context refers to the perception of the space as vegetated.

'Mobility' I refer to as a shift of mass and/or energy in space and time but in relation to human activity and endeavor.

'Transfer' as described by Manuel Gausa in the Metapolis dictionary of advanced architecture - 'places of absorption which are converted into effective - hybrid - substitutes for the city: quasi spontaneous para-urban mutations developed as condensers and couplings of programatically-mixed functional grids.'

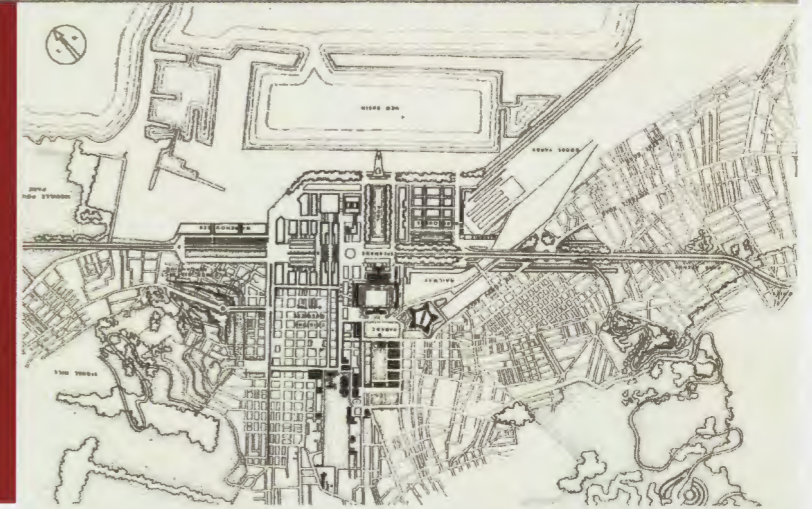


(*'The Cape Town Foreshore Plan', Page 14*)



(*'The Cape Town Foreshore Plan', Page 65*)

The artists painting above and plan opposite are useful in the attempt to understand the design and development mode of thought which prevailed at the time of the reclamation. The illustrations indicate the ambitious intention of the time. The swathe of 'new land' would turn out to be a canvas for speculation as to new modes of urban living and travel for designers worldwide, le Corbusier also tried his hand at a Cape Town Urban design.



(*'The Cape Town Foreshore Plan', Page 24*)

Historical significance: The Foreshore and its context

- 20 -

It is not possible to analyse any aspect of the foreshore without first gaining a comprehension of its short history. Key in understanding the physical development of the foreshore and the methods used is an understanding of the economic and developmental needs of the city at that time. The reclamation of new land was driven more by the necessity for deeper and better Docks than the need for more land. The resulting terrain would serve to provide a canvas for planners to devise a new urban layout into which Cape Town's foreseen future development would expand to fill. Planning began in 1935 and the dredging of Duncan Dock commenced in 1938, the resulting dredged material would serve as land fill which was laid using a 'hydraulic pumping system', the material laid evenly and as directed. The Docks were completed and foreshore reclaimed in 1945.

The first Pavement kerb stone was laid in May 1951 and the foundation stone of the Maritime Terminal was laid in 1952. The terminal was to be the "Gateway to Africa", the centre piece of the new foreshore. It was supposed to finish a 'monumental approach' to the city. Until this time most people still arrived in Cape Town by ship. The plans for the terminal were shelved when it became clear that the trend towards air travel had begun and the funds were reallocated to build an Airport.

Since the reclamation, Parcels of land have been developed intermittently and indeed there are some city blocks still awaiting development, this is reflected quite fittingly in the occupation of the easterly edge of the Foreshore by 'Auto traders'. These types of specialist businesses would usually occur further out of the city.

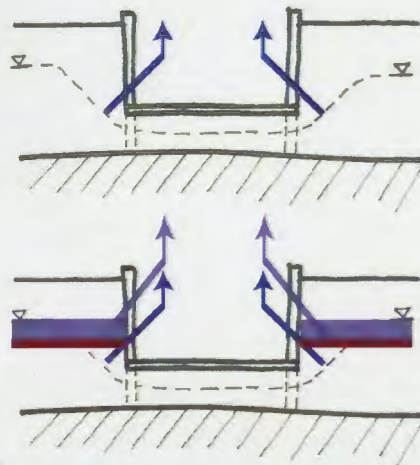


The last of the Union Castle passenger ships set sail from Cape Town's Harbour in 1977. The port continues to expand and develop larger and more efficient facilities, and this is clearly in the city's best economic interest. The development is indiscriminate however, as was the reclamation itself, but there continues to be the need for deeper berths for the bigger ships. This is the reason that Ben Schoeman dock and container terminal were built. This Dock now too requires blasting and deepening.



(*'A Tale of Three Cities', Page 43*)

(*'A Tale of Three Cities', Page 42*)



Water Pumped from base of on going construction in order to lower the water table.

Water build up above a silt layer. The only solution is to retain extract pipes above the water table as well as at the base of construction.



(Image sourced from Gregg Crumm, Frankipile.)

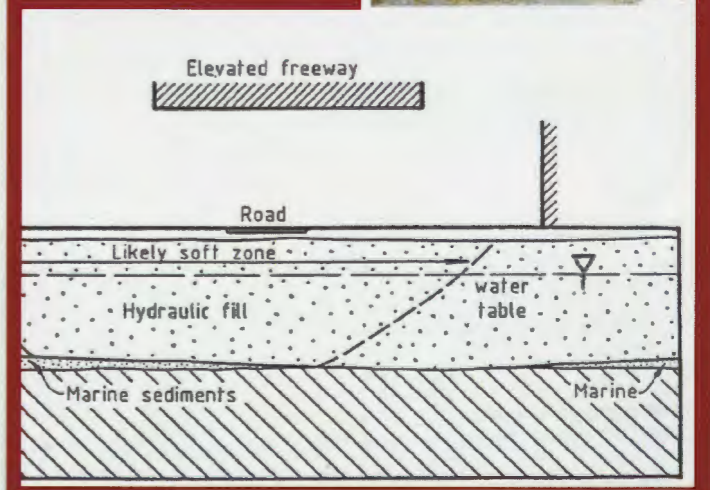


Water always seeks a 'true' level and this is especially pertinent when considering the canal system which is viewed as a major linking feature between different areas of the city. Its surface needs to be continuous and uninterrupted so that small craft can pass easily. The maintenance required when working within salt water conditions cannot be underestimated, the corrosion, particularly of metal derived objects meaning that these facilities require constant repair.

The shallow water table is the main reason for the difficulties experienced in constructing basements of more than one level below ground. There are two main basement strategies employed to prevent ground water flooding in. The CTICC makes use of a 'drainage basement', meaning that there is little investment in keeping the basement water-tight, however there are pumps employed 24 hours a day to rid the basement of the permanent 'seep'. The Westin Grand Hotel employs an alternative strategy that makes use of a 'diaphragm wall' which is expensive to construct however it does not require the long term maintenance of 24 hour pumping.

This sealed basement is the preferable although more expensive method of constructing basements below the water table requiring little to no energy once constructed. The sandy make up of the ground of the foreshore means that water has a very easy passage through the ground and this compounds the water table issues of the foreshore.

This image and drawing are from the CTICC Geotechnical investigation. Test pit 13 in the investigation established the water table at 2.85 meters at that particular point. This report confirms the water table at approximately three meters. The Water table below the CTICC ranges from 3.3 to 4.5 meters above mean sea level.



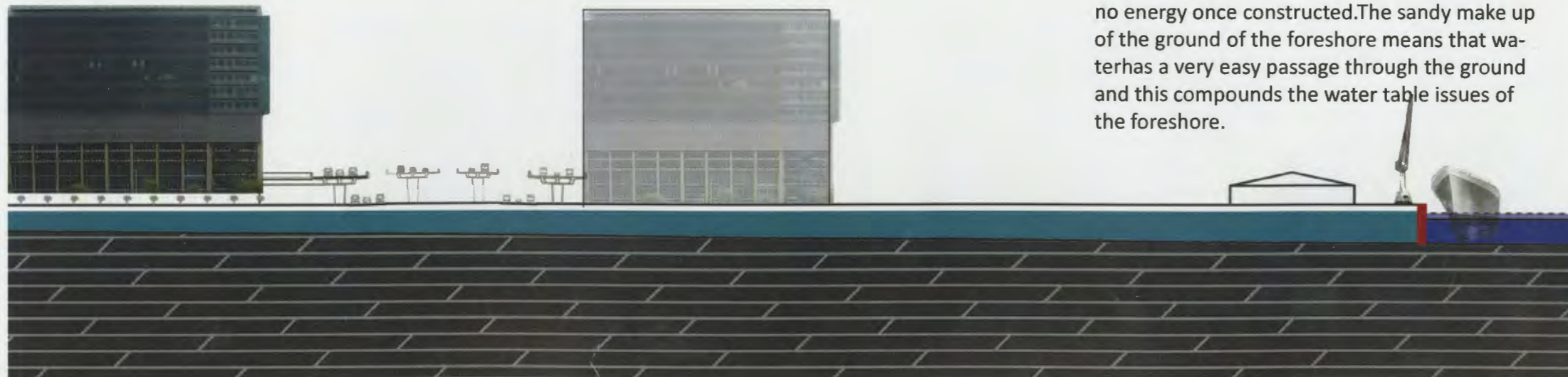
(Geotechnical investigation for the Cape Town International convention Center)

This sealed diaphragm basement project was carried out in the foreshore on lots 9 and 10. The adjacent ground needed to be drained in order to continue construction deeper, this is achieved by using small plastic pipes which are fed under the gunnite wall, the flow is then reversed and the pipes drain the immediate water logged soil and temporarily lower the water table. In this case there was a silt layer below the water table, silt is largely impermeable to water. Once construction had progressed below the silt, there was a build up of water above the silt layer. The pumps were extracting only water from below this. the result was that the water pressure forced its way down the side of the gunnite wall and burst through the floor.

Hydraulics and Water

- 21 -

Cape Town has a tidal fall of approximately 1.2 meters which coincides with the lunar cycle. The Water table below the foreshore does not fluctuate with the tides, as the moons gravitational effect will be miniscule here and the rock walls of the quays are built on bed rock and form an almost impenetrable barrier to water. As a result the foreshore underground water is largely fresh and its level seems to vary between 3 and 4 meters below the surface. The water source for the foreshore water table is rainfall and this must therefore fluctuate with the seasons more than the tides. The water table currently dictates much of what is physically constructible on the foreshore and is certainly the primary obstacle preventing the elevated freeways being sunk in a 'Boston big dig' type manner, a 'solution' that would "cost the city five billion US dollars" according to Ron Haiden (roads and storm water city council).





-The Tidefall at Cape Town is 1.2 meters.
 -The density of the sea water in the harbour is 1.025g/cm³.

This information affects the behavior and capacity of the vessels to some degree. it will affect all ocean related related infrastructure through bouyancy height variables.

Port services and technology

Duncan Dock Terminal handles a variety of produce and raw materials including refrigeration facilities for fish and fruit. It currently has docking space for 6 large vessels and has the ability to load and unload three at any one time and the docks are operational 24 hours a day so that all facilities can be used to capacity. Cape Towns marine department has four Voith Schneider tugs with bollard pulls of up to 55 tonnes. There are 14 qualified pilots who shepherd the large vessels into berth. The harbor master, Captain Ravi Naiker, and his team ensure the safety of about 9000 vessel movements a year. These operations are run from the Transnet port authority building constructed at the end of the north arm. It is eleven storeys high which provides the necessary panoramic view as well as a necessary platform for the lights to aid in the vessels' navigation.

'Second hand' bull-dozer tires are used as 'cushion' protection for berthing vessels. These are used by the seals as rest stops, they break up the monotony of the ports edge and distance the on-looker from moving equipment and vessel extremities. The cranes which service the 'commodity' vessels such as those carrying fruit and fish run on rails along the quay side. These require uninterrupted mobility along the length of a ship as well as space for movement of machinery and container organization.

There are a host of marine engineering companies operating within the docks, the most prominent of which are Globe engineering works, SA five Engineering and DCD-Dorbyl Marine. Most of the work for which they are contracted involves maintenance and repair of vessels and oil rigs from all over the world. Cape Town has proven to be a cost effective place for global companies to repair and maintain their ves-sels.This has resulted in much investment in this area and it is an important role that the port must play.



(<http://www.transnetnationalportsauthority.net>)



(<http://www.transnetnationalportsauthority.net>)

Quay-side facilities are fast approaching capacity. In an effort to sustain growth Transnet have deepened the Ben Schoeman Dock and expanded on the Quay side to accommodate the new container terminal. The method of increasing space and providing the necessary structure for the new cranes on the 'Schoeman arm' involved precast concrete traverse beams, these are pictured opposite. They were transported on trucks to the quay-side where rebates had been cut into the existing concrete to receive them.



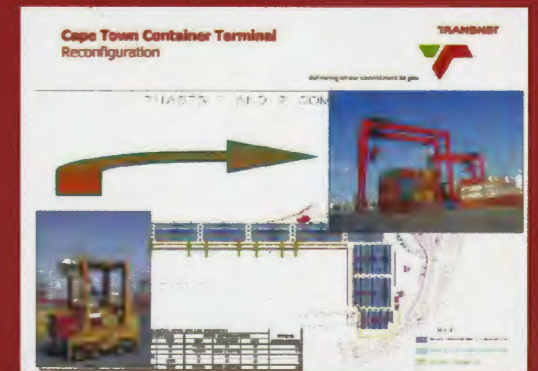
(<http://www.transnetnationalportsauthority.net>)

Four new 'super post panamax' cranes have increased the efficiency and capacity of the container handling facilities, each have replaced the equivalent of 6 of the previous motorised mobile cranes.



(<http://www.transnetnationalportsauthority.net>)

The Port has clearly shifted its focus away from the older and shallower 'Duncan dock' and its city-side berths. It is foreseeable that with dock activity ebbing away from the inner city - Sea edge, the dock may relinquish land back to the city without much contestation.





Canal system

- 23 -

One of the biggest decisions facing the planners of the waterfront canal system involved whether to attempt the construction of a tidal canal connected to the sea. The cost and logistical implications of doing so rendered that approach unfeasible. Fortunately there exists an old intake pipe which provided the historic power station with cooling water. This had to be sealed and rendered redundant with the demolition of the power station. This pipe drew water from approximately six meters below the oceans surface at the base of the Duncan dock quay wall. The canal planners proposed 3 pumps be attached to the previously redundant and sealed pipe, with two main pumps operating alternately and the third kept running as an emergency back up. Between them they have the capacity to replace all the water within the canal system every three days. This also forms the primary strategy for maintaining the health of the canals' ecosystem, and pleasingly there are a number of species which have taken up residence in the canal system including some small shark species, endemic fish populations, crab and rock lobster. The other obvious advantages of this 'closed' system involves the ability to control the water levels, clean the system and avoid the complications of tidal control.

The floor of the canal is lined with a two millimeter plastic membrane, this is built into the canal walls to ensure decent water retention for the canals. The membrane is protected by a layer of sand approximately 10 centimeters thick, and then onto this layer of sand were laid 20 millimeter thick concrete tiles that form the canal bed. These tiles protect the membrane from anchors, barge poles and other debris, and they provide a surface onto which sea plants can attach.

The 'Life ring' and rail stairs pictured are more than just a safety measure they also serves to indicate the intent to encourage the use of these canals as a public space amenity. Obviously a pleasant and safe atmosphere is desirable at night, so spot lights illuminate the surface.



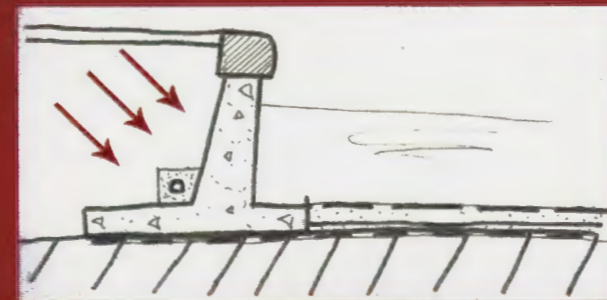
1 This is the most recently completed section of the canal system, it has been awaiting the simultaneous completion of the new luxury hotel developed in the water front and completed recently. This is the deepest section of the canal, it is however separated from the ocean by the spill way system, this is the larger of the two spillways and together they flush excess water into the Victoria and Alfred basin.

2 This stretch of the canal is still relatively deep and feeds a spill way placed with the intention of maximising the circulation potential that the canals could have on the yacht basin. Much of this stretch of canal is privatised to encourage residential investment, there is some 'apparently' public space on the main access rout to the water front, however, this stretch is still privately controlled.

3 This section of canal was completed early 1999 so that the 'city lodge' hotel could be built. The southerly section of the canal houses one of the inlet pipes from the pumps attached to the historical cooling water inlet.

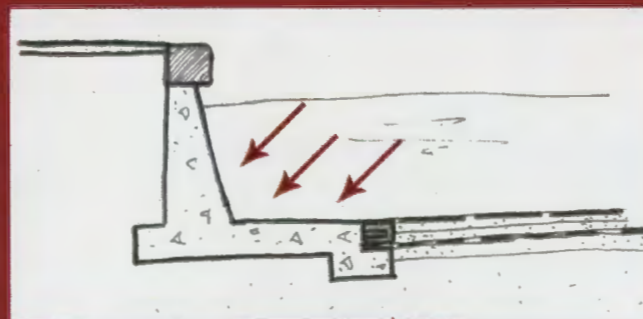
4 This section of the canal system was completed in conjunction with the Convention centre development. Grand West casino sponsored the development as a way of 'giving back' to the city for its own development. One consequence of this was a compromise on the minimum depth of the canals, the previous minimum depth requirement for small craft was 2 meters, this section is only 1.5 meters deep.

The canal system's relatively shallow depth limits the craft able to pass to small usually pleasure cruise boats, however, there is no reason why a more extensive system might not provide the conditions for a more commercial water based transport system possibly along a public space urban spine. The maintenance required when working within salt water conditions cannot be underestimated. The corrosion, particularly of metal derived objects means that these elements soon revert to a constant state of repair.

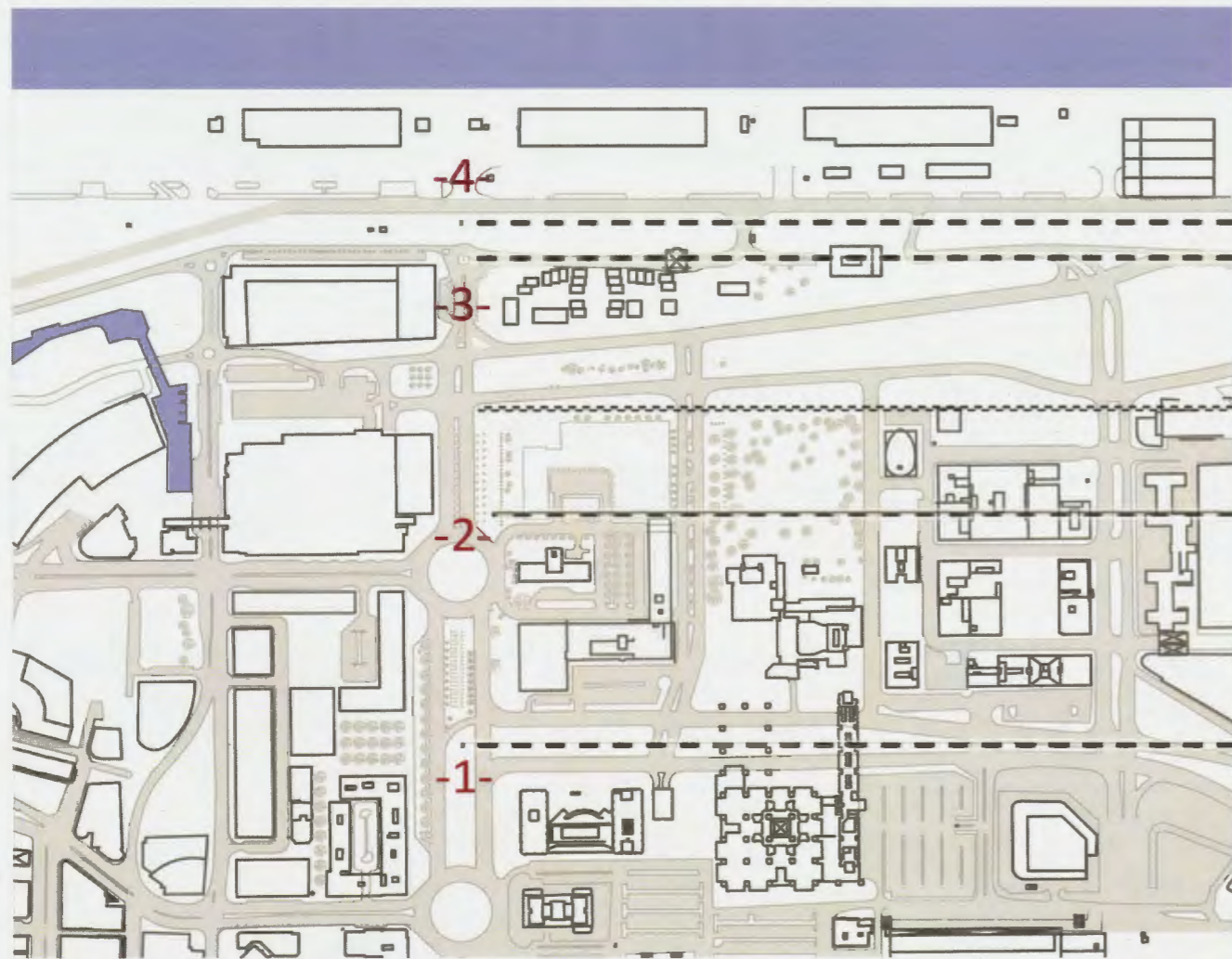


These sketches were drawn after a meeting with Philip Smith, Engineer involved with the Canal development, on 12/05/09. These walls are essentially retaining walls as well as canal sides.

The top sketch illustrates the method employed when the retaining wall is founded on rock. Obviously there is a drainage requirement, the canal will have inhibited underground flow. The sketch below illustrates the different strategy employed when the wall is founded in soft sand. N.B. The pivot point of the wall has been shifted underneath the water body.



These images illustrate a dissappointing lack of activity in the vicinity of these newly claimed public spaces along the canals. They do carry huge potential if utilized correctly and that may require more extensive influence in the city.



Surface, pavement and road treatment

- 24 -

The city's investment in surface treatment is possibly the best indicator of the health of an area and the importance placed on space by the city. The images opposite reflect the different levels of investment that the city has put into Heerengracht boulevard over time. Heerengracht is the post-reclamation continuation of Adderly Street and is the most influential and grandiose land-sea axis Cape Town possesses. The surface treatment and pedestrian comfort level change considerably over this 400 meter stretch of Heerengracht street and indicates the present and future plans for this public spaces.

Image 1: Depicts relatively recently landscaped areas, established and relatively pleasant in the harsh context of the foreshore. It shows the space at the intersection of Heerengracht Street and Hertzog Boulevard where the organized planting of climatically robust plants and pleasantly laid paving make for a pleasant space, despite the adjacent spaces being dominated by traffic and a general lack of pedestrians.

Image 2: Depicts earlier surface treatment of foreshore areas which are little-used and ageing. The attention to detail in the paving layout is very poor, the walkway is obviously a temporary measure and is designed as a thorough-fare, there is nowhere for anyone to sit, and the large paving blocks provide a monotonous surface texture with little variation or thought to the design.

Image 3: Depicts the current surface treatment strategies being implemented in the run up to the construction of the second convention centre. It is interesting to note that the paving strategy for the road surface is more in keeping with pedestrianised space than with the usual implementation of tarmac. Trees are being planted at five meter intervals and a meter off the curb-side which will result in a future tree canopy that will inevitably-overhang the road. This has the positive effect that it will slow traffic to a pace where the driver engages more with the adjacent landscaping.

Image 4: Depicts the space around Duncan Road which skirts the edge of the transnet port facilities and 'city edge'. This route is viewed as a thorough-fare which services the extremities of the Port and provides private access to port operators at strategic points. There is a powerful air of neglect especially as the focus of the facility is to do with traversing rather than experiencing. The road is flat and featureless, void of speed humps and limits for the traffic, and it does not provide a suitable surface for side-by-side walking let alone shelter or public transport.



Unprotected corners of pavements in the foreshore are mounted by vehicle drivers seeking cheap parking. I expect truckers will occasionally make their left turn easier by cutting across these corners too.

This indicates a lack of damage preventative street furniture that would not only protect the city's public infrastructure but would provide a sense of protection for the pedestrian as well.

The need for a coherent foreshore 'urban surface' strategy is highlighted, this is of course only the case with increased public presence.

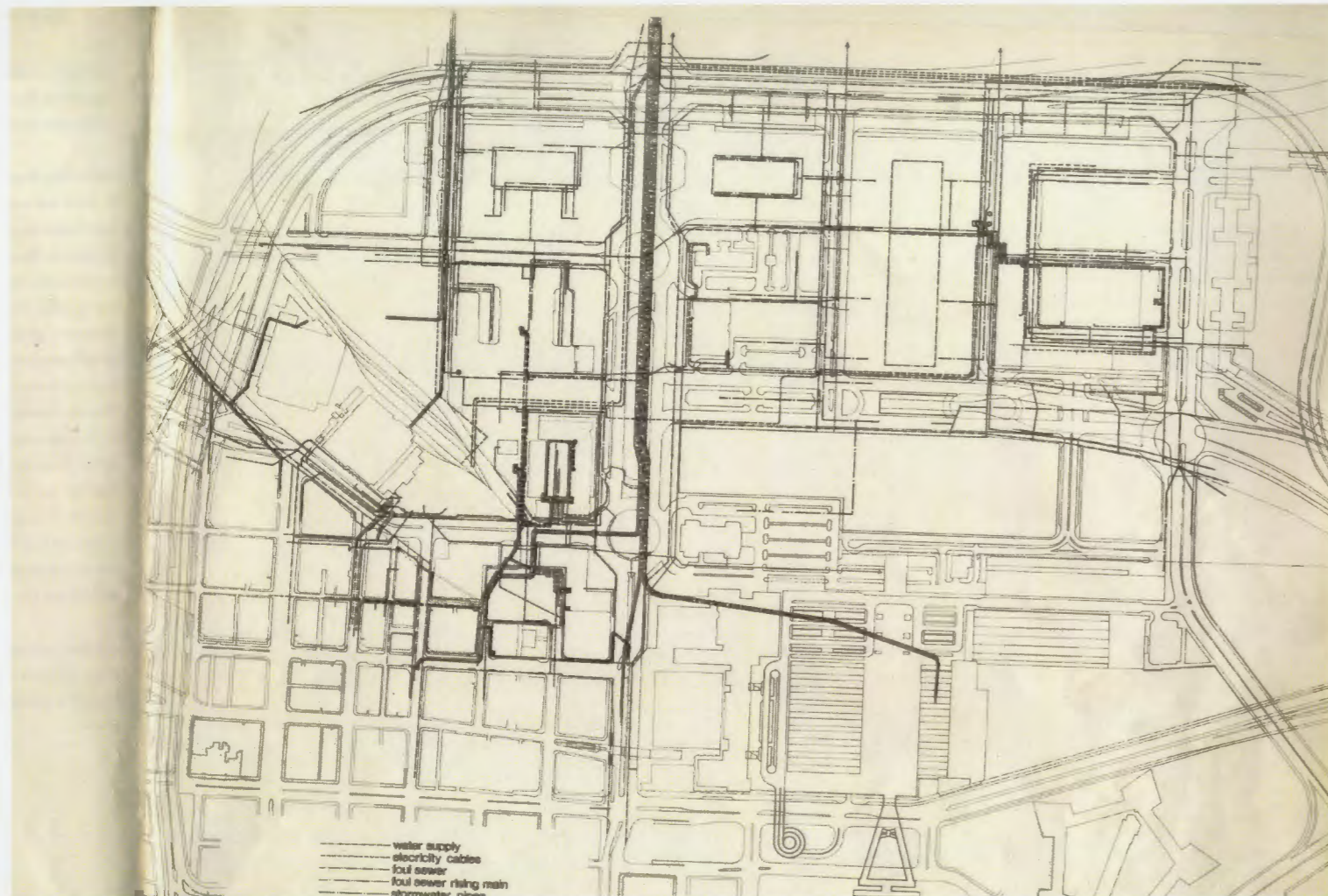


-4-

-3-

-2-

-1-



Historical service layout for the foreshore: *(Planned development for Roggebaai; An examination of the foreshore and proposals for its effective development. Roeloff Uytendogaardt. March, 1966.)*

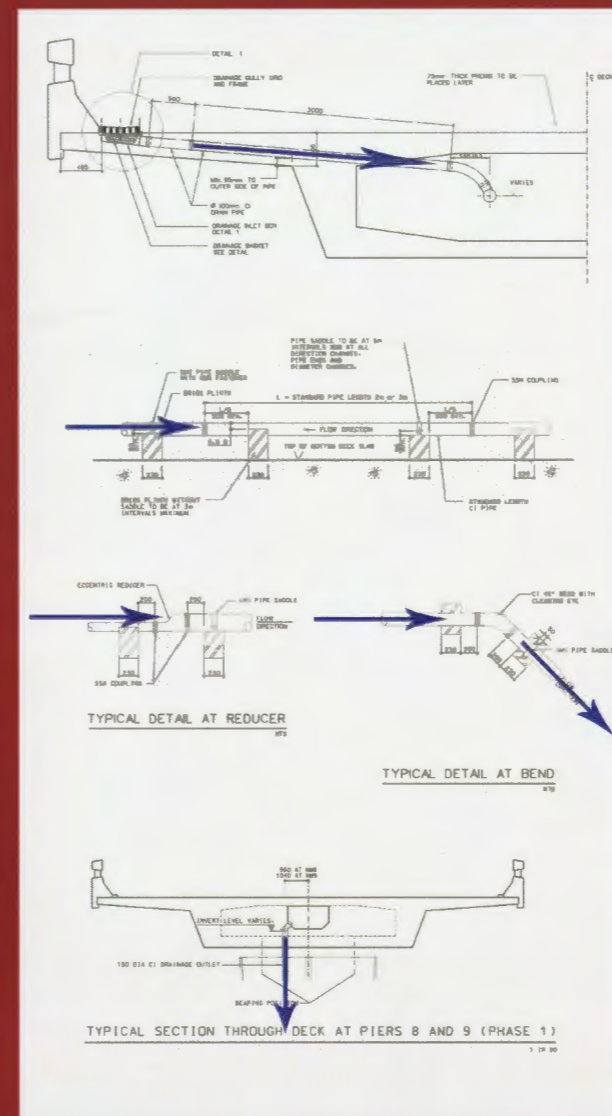
Storm water and run-off

- 25 -

The Port of Cape Town was originally established because of the presence of perennial water from the rivers which flow off Table Mountain. This water still runs under the city in concrete channels. It is unused but constitutes the basis of the city's storm water system. There is an obvious difference between the drainage strategy on the elevated freeway to that of the city street. The street looks to get the water under the pedestrian pavement to where the storm water drains are. The Freeways however need to channel runoff underneath the road surface and into the columns both for aesthetic and practical reasons. The drain pipes are protected within the concrete and are only visible in the crook of the top of the column.

Much of the water falling does not fall on roadways nor will it all run off the land but will infiltrate the sandy soil contributing to the water table from where it will eventually seep into the sea through tiny gaps in the harbour wall. The flat topography of the foreshore means that the storm water system has to function well in order to rid the land of excess surface water. It is not uncommon to see workers cleaning sand and debris out of the roadside drains. The problem will inevitably be a lot worse where the ground cover is sparse and soil condition bad, leading to erosion problems.

As a result of the need for a smooth driving condition, the drains on the freeways are dispersed evenly along the road side along a continuous gradient meaning there is generally a single fall. The drain hole is covered with a 'gully grid' which sits in a frame cast in the roadside. A 'drainage basket' strains the runoff water of debris, this strainer sits in the inlet box below the 'gully grid'. Standard 110 mm diameter Plastic PVC drainage pipes are cast into the concrete freeway columns, these channel this water into the city's storm-water system. Where the pipe takes a bend it does so by 45 degrees or less and does so within the service tunnel, it is punctuated by the presence of a rodding eye 'cap'. this provides access to the rodding eye in case of blockages.

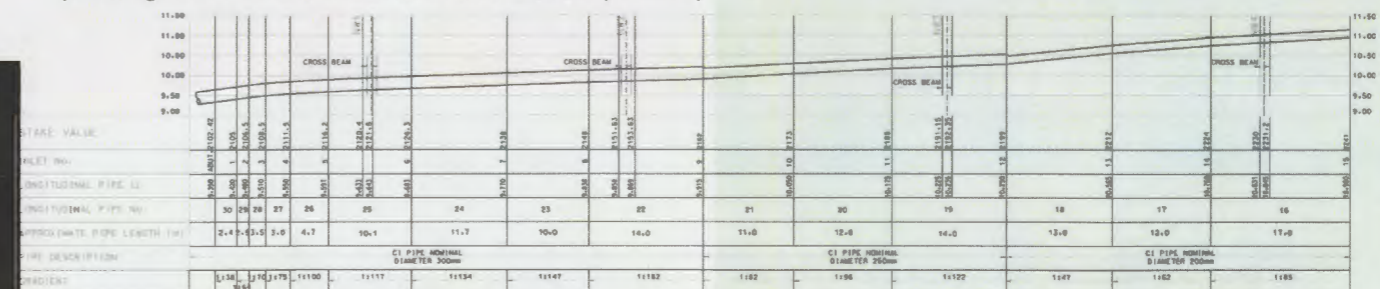


Drainage details for the foreshore freeways. *(Source - Ron Haiden, City council,)*

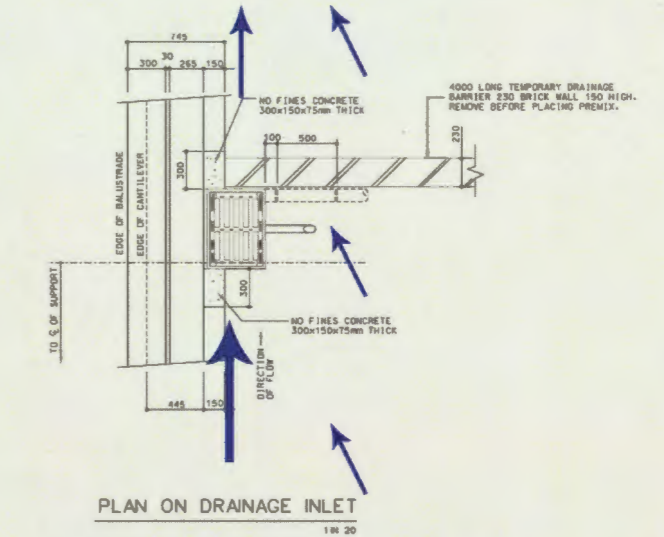
The Drainage sections indicate the strategy for removing rainwater off the road surface as quickly as possible. There is a column approximately every 30 meters along the freeways length, the 3 lane freeways are generally 16 meters wide, this indicates that each 110 millimeter pipe is clearing the runoff of about 480 square meters of road surface.

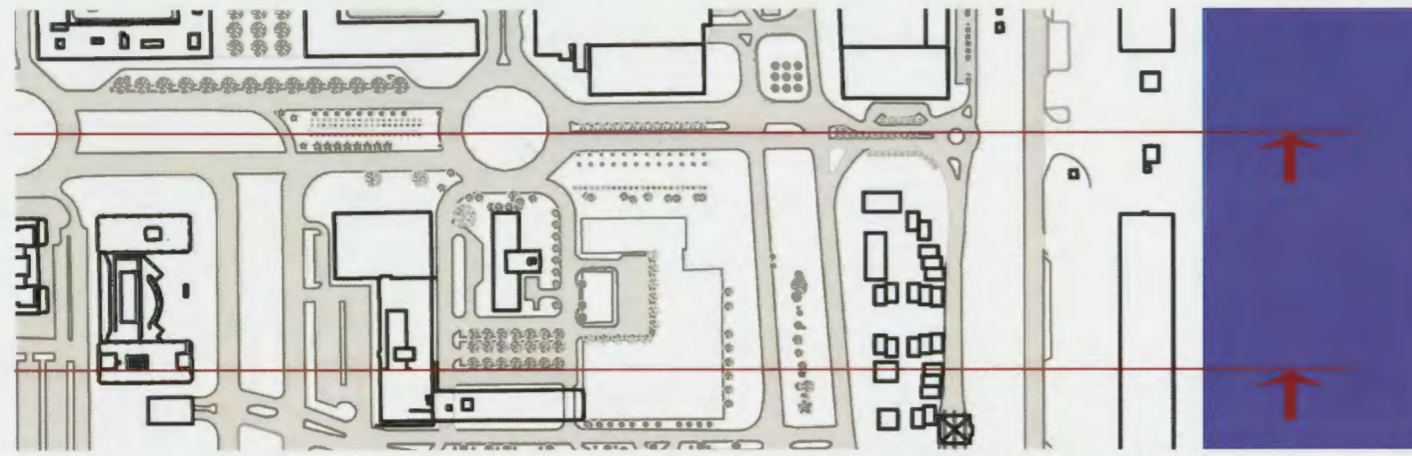
Example of a Longitudinal Drainage section for the foreshore freeways.

(Drawing - Ron Haiden, Stormwater and roads, city council)

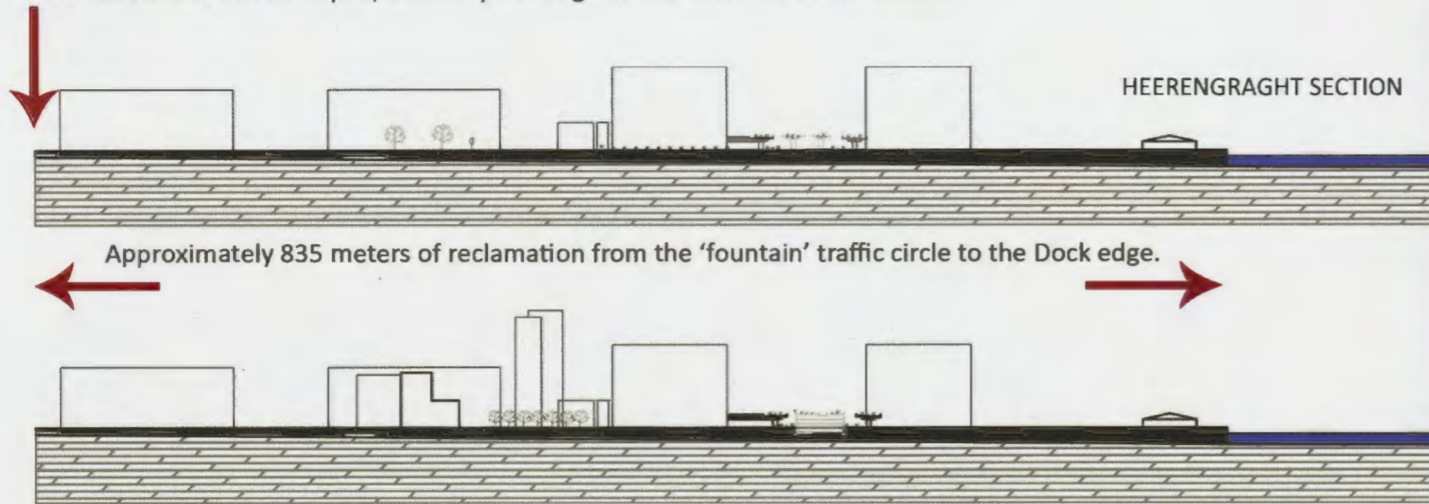


(Drawing - Ron Haiden, Stormwater and roads, city council)





The start of the historical peir, currently the edge of the 'fountain' traffic circle.



Duncan Dock was dredged and the resulting material was used to contribute to the reclamation project as fill. This means the soil is of a very poor quality as the current condition testifies.



Soil condition: The foreshore condition

- 26 -

The walkway level of the Adderly Street Pier was 2 700 mm above the spring high tide level. The Pier was supported by Pile foundations to support its Ferro-concrete structure, these were sunk through 20ft of Alluvial deposit before founding in bed rock. This was the foundation strategy for the entire length of the pier, but one can assume this condition continued further offshore. As Cape Town's tide fluctuates by as much as 1.2 meters and the shallowest point along the Duncan dock edge is 9 meters below low tide Level.

The alluvial matter used as reclamation material accounts for the majority of the soil component. By the various exfoliation holes and the new electricity cable laying operations I was able to determine that there is a layer of rubble material approximately 300mm in depth. This is directly above a layer of coarse material consisting primarily of sand and shale, this must be Duncan docks material and fittingly appears almost sedimentary.

In areas which have not yet been gardened by the city there is a distinct lack of healthy soil, however even in the thoroughly neglected areas there is a darker surface layer more reminiscent of soil. It is approximately 5 cm in depth and represents the beginnings of new soil. In a scenario where healthy activity occurs on site, the build up of healthy soil deposit over time will be far more productive and the process of enriching soil will be accelerated.

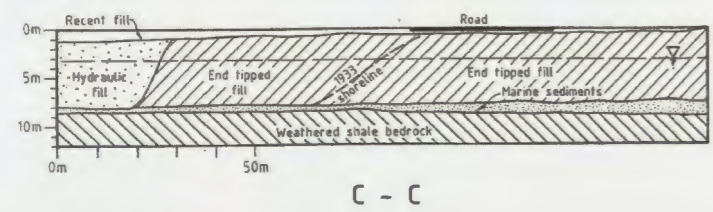
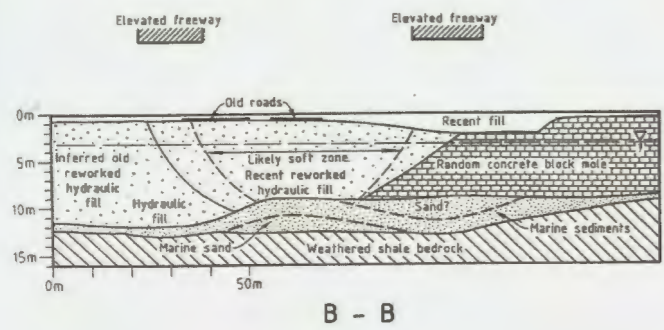
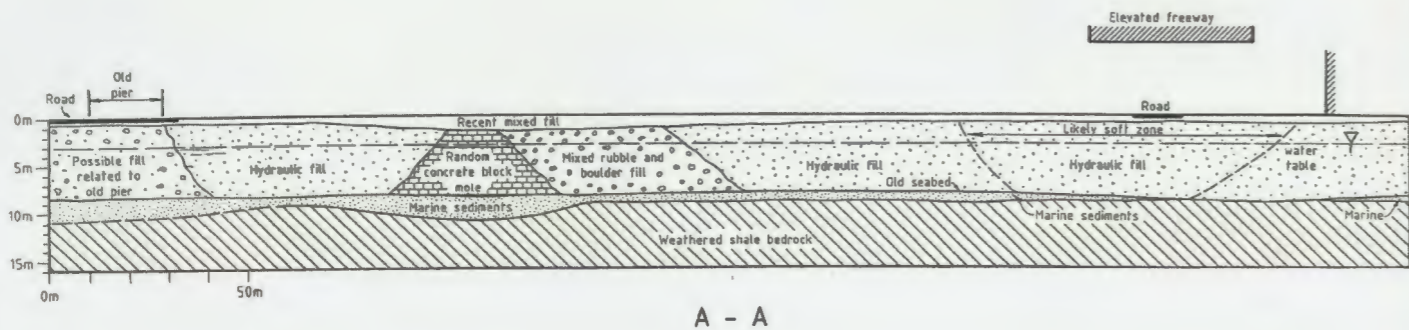
'An archeological study of three locations for proposed footings has been carried out and no areas of significant archeological interest found.'
(EIA Application form for the department of the Western Cape: 'completion of the Foreshore Freeway Inner Viaducts', Page 15. 2003)

These three study areas must constitute a comprehensive sample of the ground condition and as this is reclaimed land it highly unlikely that exceptional areas of archaeological significance might occur.

The surface composition in the Foreshore can be seen as artificial if one considers natural features appropriated and rearranged by man as artificial. Through this lens the dredging and depositing process removed and re-made a feature. Any aspect of sedimentation has been lost and as such the strata or ground structure is reduced to a mass of alluvial material lacking the usual composition and consistency associated with settled natural ground.

There is a phenomenon occurring beneath one of the elevated freeways where fences have existed for a long time. The notorious winds of the cape have contributed to the deposition of matter which has built up a mound of earth over time. This has provided an anchor for the roots of large bushes and has instated a natural noise and wind barrier, effectively protecting the maritime college from the wind itself.



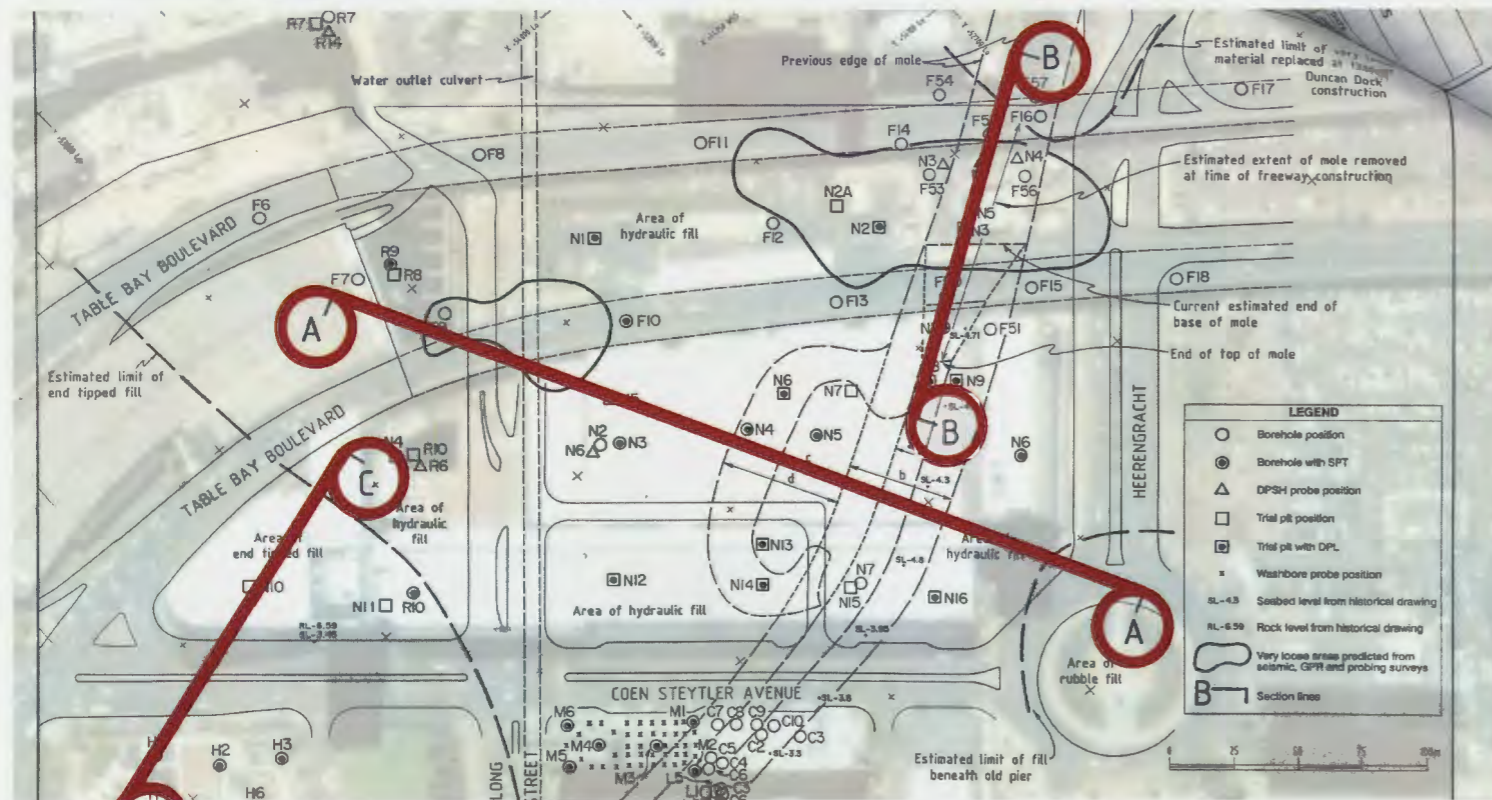


PROJECT	CAPE TOWN INTERNATIONAL CONVENTION CENTRE		
TITLE	GEOLOGICAL CROSS-SECTIONS		
CLIENT	CONVENCO		
CONVENCO GEOTECHNICAL ENGINEERING ASSOCIATION	TRACED BY	DATE	
drawing	SHWBY	2010	
Scale 1:100	DATE	SCALE	
2010	2010	1:100	

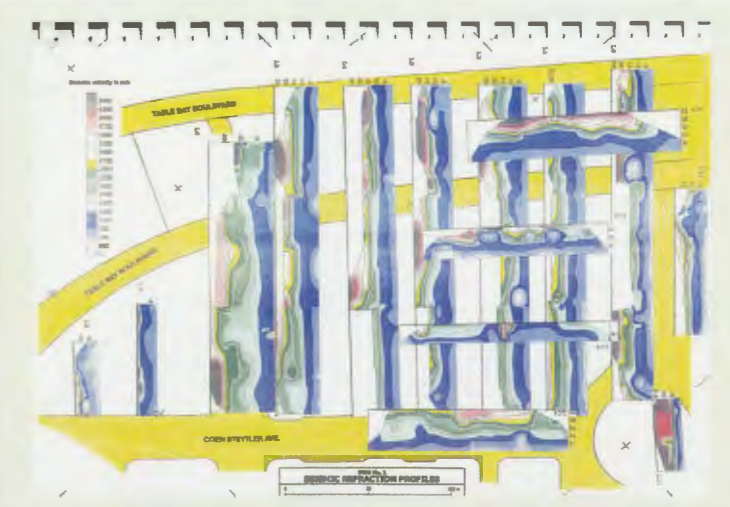
Geological cross-sections. Derived of the information gathered as part of the geotechnical investigation. ('Geotechnical Investigation for proposed Cape town international convention centre'. Page 56.)

Soil condition: the convention centre condition

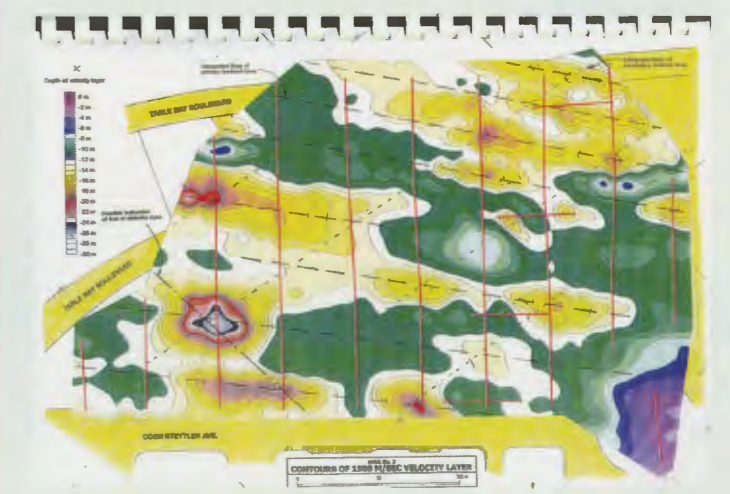
Plan showing sampling points and soils distribution of the Convention centre site, evident are historical Port structures. ('Geotechnical Investigation for proposed Cape town international convention centre'. Page 55.)

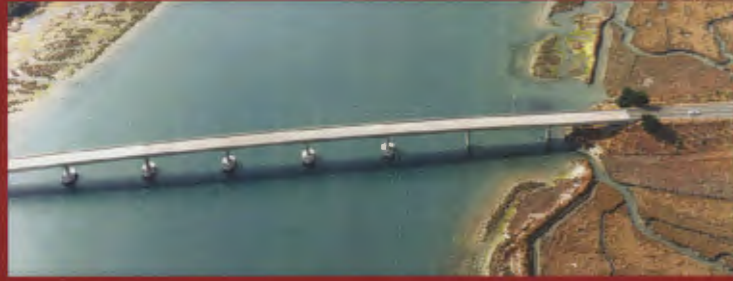


Drill rig in position at 'BHN5' one of the fifty five or so bore holes sunk into the ground in the vicinity of the convention Centre. The matter is extracted sequentially, as 'logs', and is kept in order in trays. Pictured below is a tray of logs taken from BHN7, the black and grey matter on the right is the result of concrete molls from the breakwater of the historical harbor arm, subsequently located. REF: ('Geotechnical Investigation for proposed Cape town international convention centre'. BHN1 + Photo 29.)



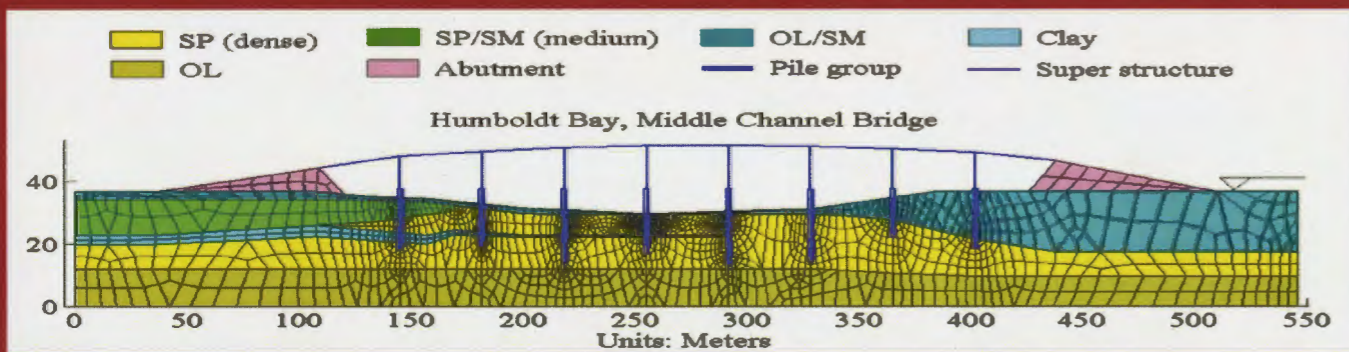
In addition to ground condition analysis by test pits and drilling bore holes, the 'Convenco Geotechnical Engineering Association' commissioned further analysis through Ground Penetrating Radar. The image above indicates the area of ground scanned with the radar, the test area was divided up into equidistant bands to be scanned. These scans are sectional and their position on the plan represents the scans location. This cross-sectional information was used to compile the plans pictured below.





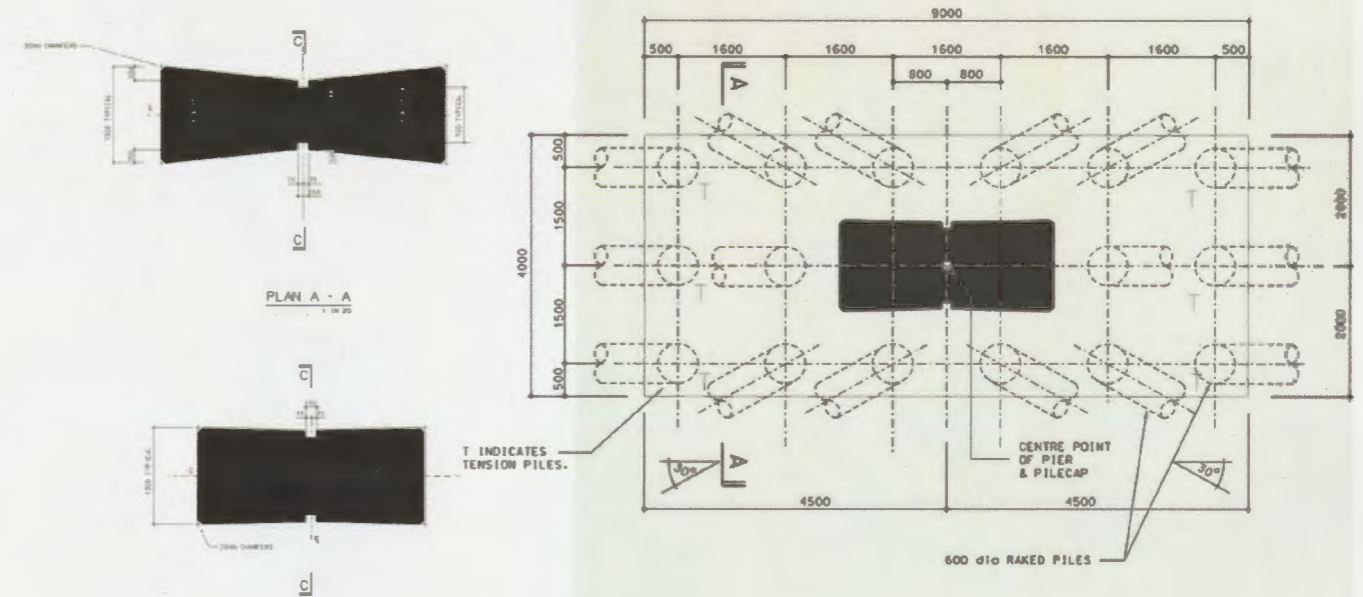
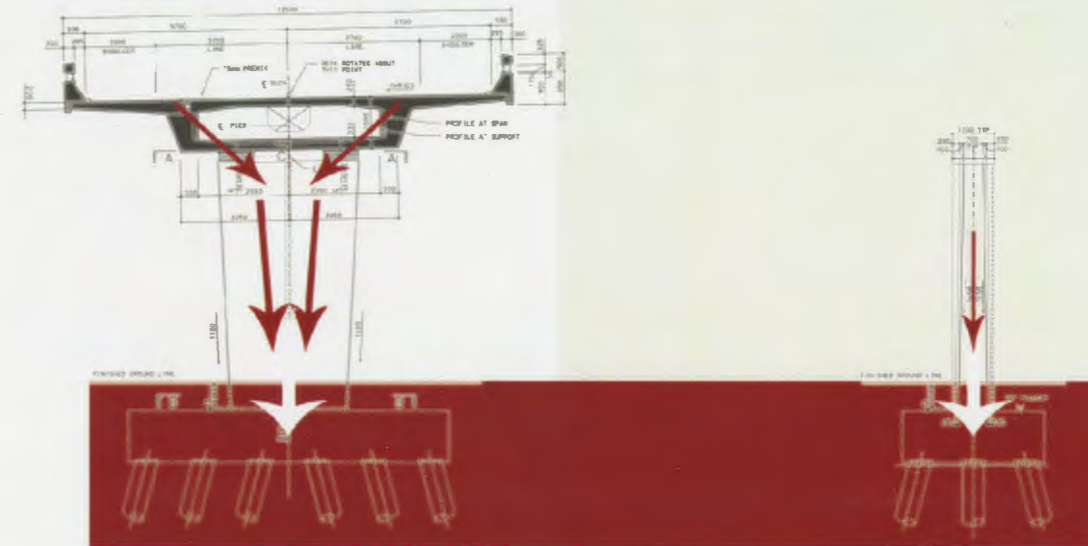
Humboldt middle channel bridge - Seismic study: This study analyses the alluvial deposit which the foundations are set in, this scenario is not very different to the unstable alluvial ground condition of the foreshore.

The Soil condition diagram below indicates the effect of load being transferred from pile to ground. Similar soil conditions result in the foreshore. Pile foundations are a necessity because of unstable soil conditions, they are an incredibly versatile method of founding as they can penetrate the ground as far as is needed to provide stability. The intensely 'fractured' nature of the soil around the foundations indicate the already stressed nature of this ground. This shall affect any other foundation strategy in the vicinity of pile foundations, this is relevant to any new structures.

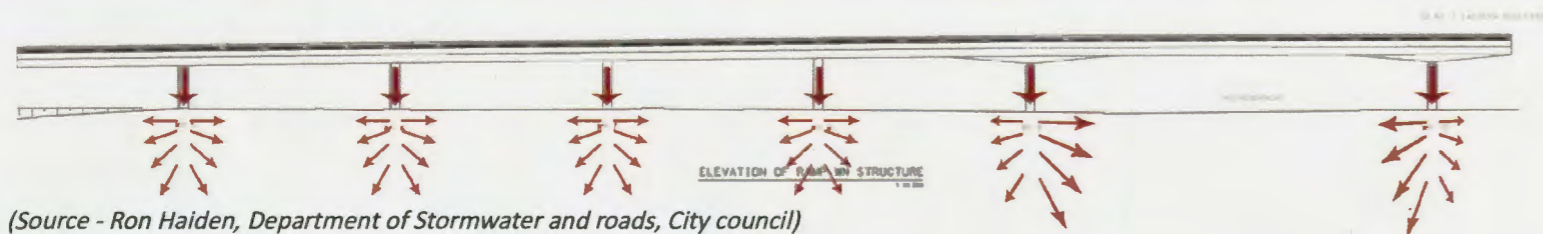


(<http://www.civil.columbia.edu/em2002/proceedings/papers/417.pdf>)

The foundational requirements of most civil work of a large scale will usually require solutions employing a type of pile foundation, this is especially true where ground conditions are unstable or sandy. This is largely due to the dangers of spanning large distances repeatedly over variable ground condition, these are often 'top heavy' structures as is the case with the elevated freeways, these were built to be as economical as possible.



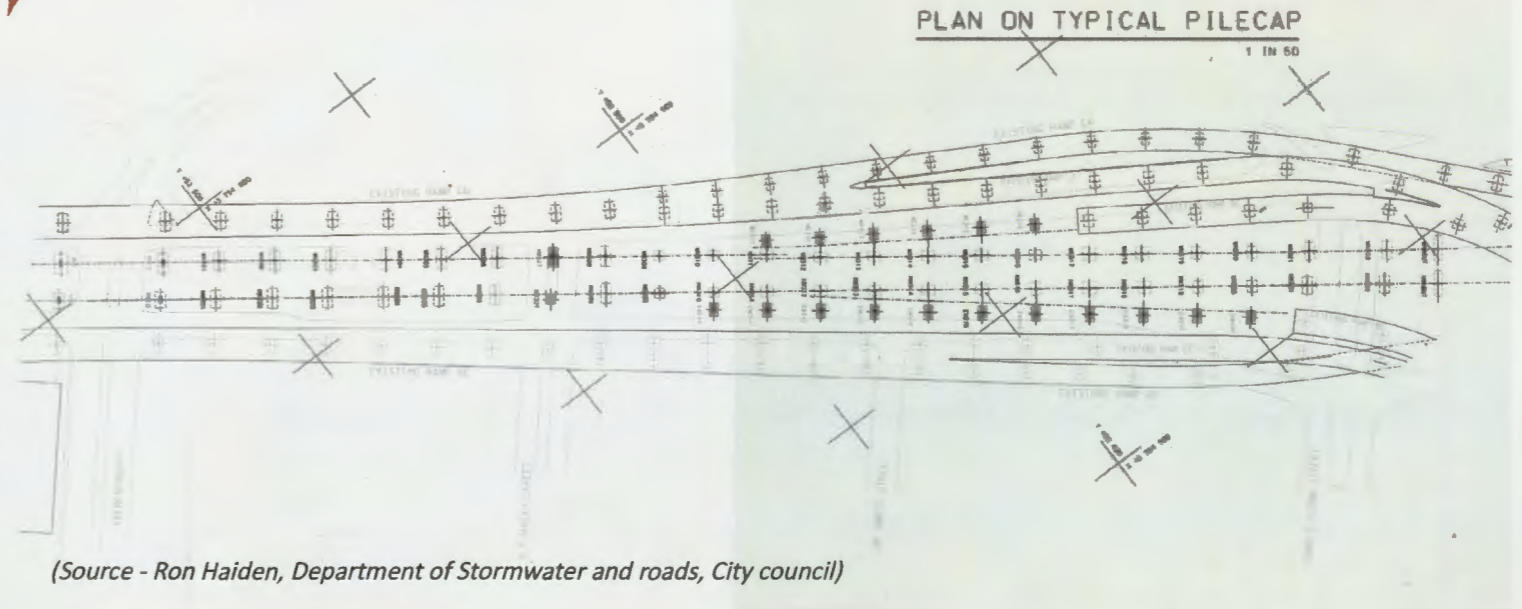
Foundation requirements and strategies



(Source - Ron Haiden, Department of Stormwater and roads, City council)

The foundation requirements for structures in the foreshore have usually resulted in the implementation of pile foundations as the best solution. This is dictated by the structural integrity of the soil. Pile foundations require a large investment in time and energy. Additionally some piling processes carry the drawback of noise pollution as a result of the pile driving process, and this is unpopular with the public. Pile foundations alter the structural make up of much of the adjacent ground as can be seen in the diagrams above.

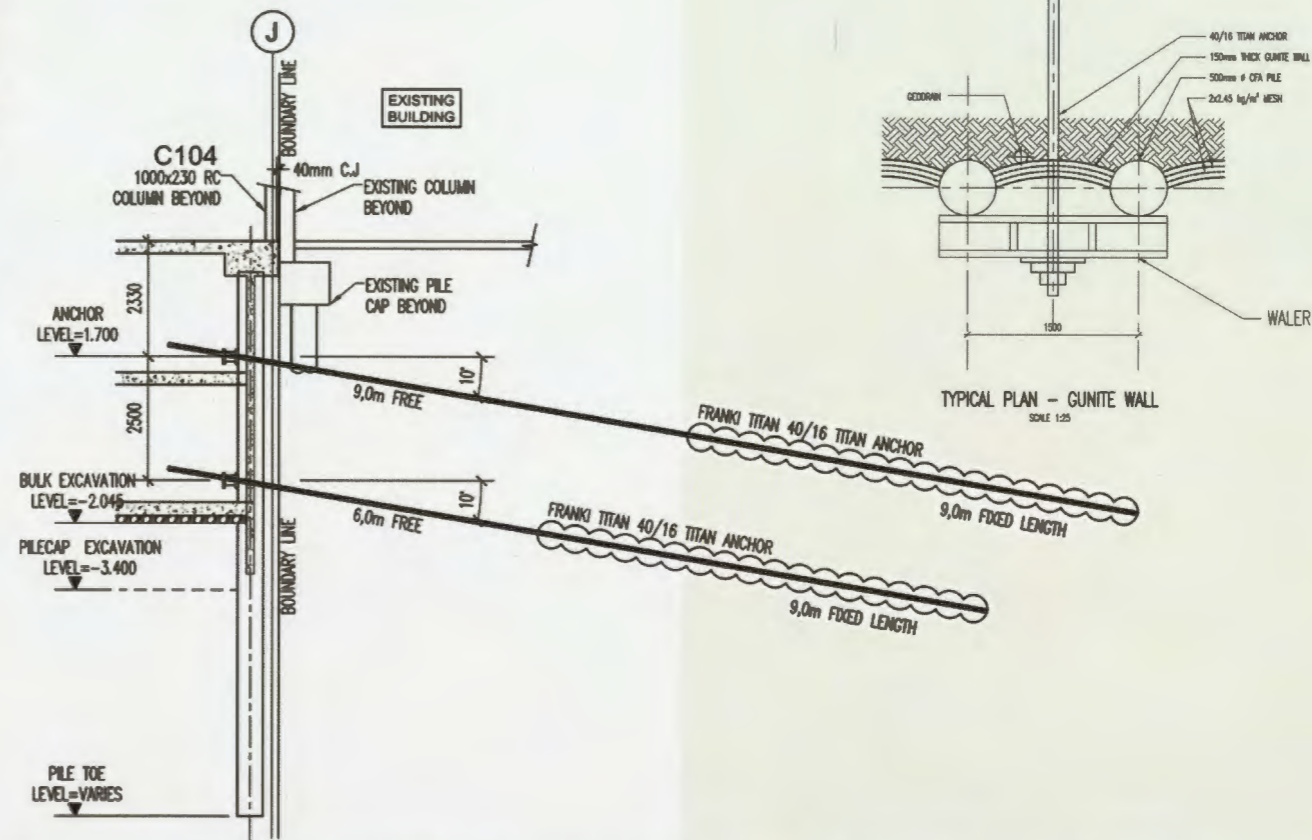
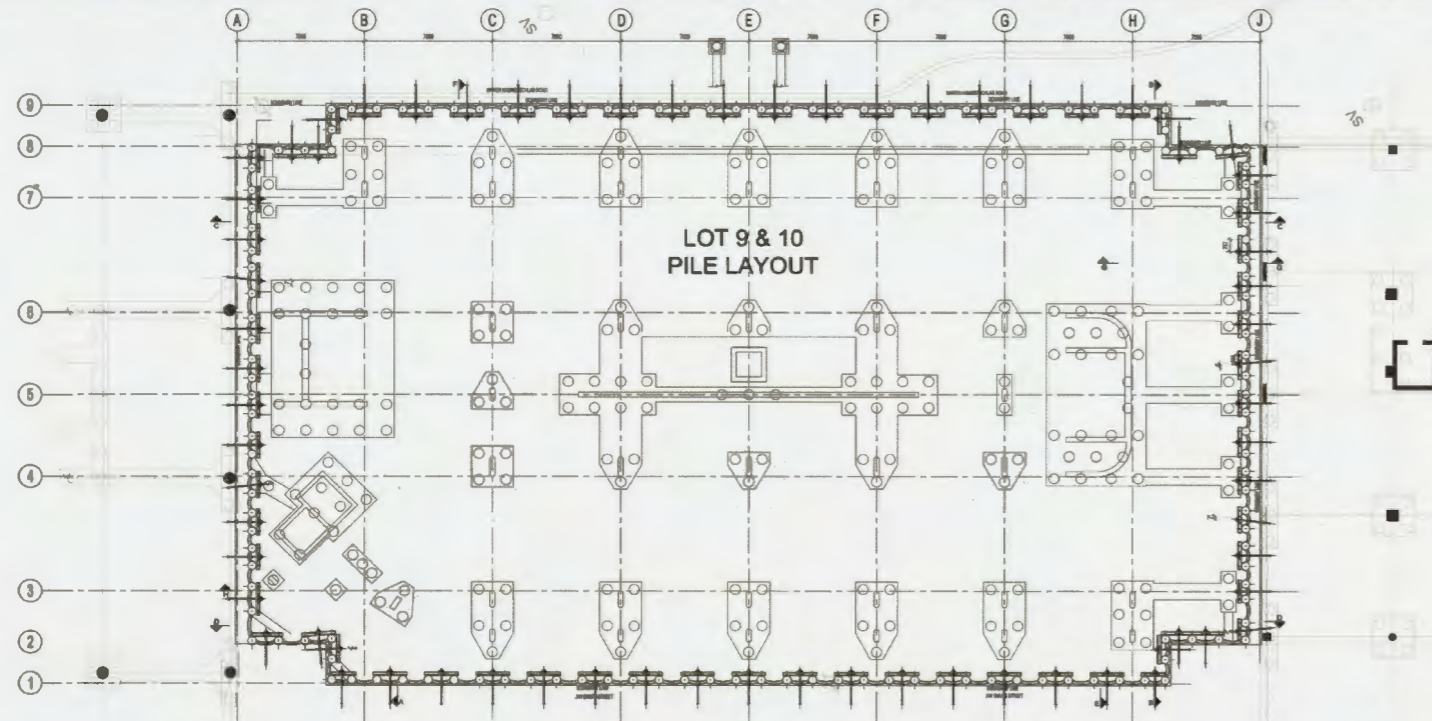
It is not possible to load the elevated highways themselves as they are set on sensitive bearing joints. Note that the piles splay from the base of the pile cap as a counter seismic measure, as the system serves to distribute load more evenly. It also contributes to a better centre of gravity for the structures as a whole. Another negative implication of the splaying pile foundations is the fact that they begin to impinge on adjacent plots, hindering foundation strategies in the immediate vicinity of the columns.



(Source - Ron Haiden, Department of Stormwater and roads, City council)

This example of a diaphragm wall enabling a sealed basement is on the foreshore and serves as an example of the necessary measures needed in order to construct deep basements in the area. These 'soldier' Piles are strategic in the function of the diaphragm wall, they are at a spacing of 1.2 meters because of the poor ground condition. The piles are anchored back with lateral support provided by the anchor cables, these can vary in length and angle as they are required to avoid striking service lines and must gain purchase in the ground. The piles are linked with outward facing gunnite arches which provide the necessary strength to retain the ground as well as keep water out.

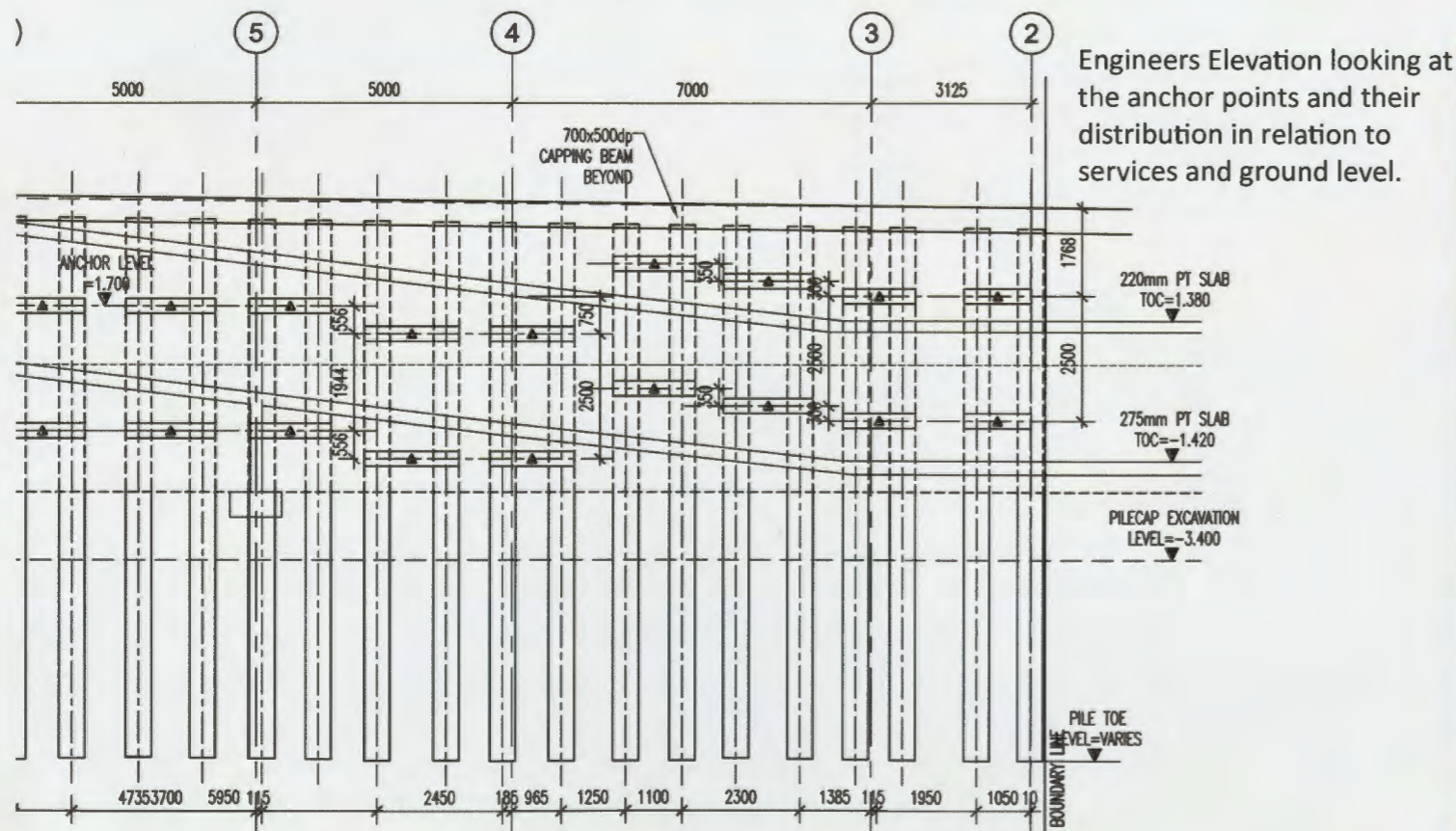
These drawings detail the method of anchoring the Basement Walls back against the lateral forces of the lateral ground pressure. (Drawings sourced - Gregg Crumm, Frankipile.)



Pile foundations

- 29 -

(Drawing source - Gregg Crumm, Franki Pile)



There are a number of reasons why the need may arise to use pile foundations and these are always related to the bearing capacity of the ground surface and its predictability or lack thereof. The foreshore's primary ground constituent is that of the hydraulic land fill. The dredged material does not handle point loads well and so the piles must usually extend to the bed rock. In some areas such as above the old breakwater and end -tip dumping areas the presence of anomalies of the city's past can drastically affect the progress of construction.

Franki Pile employ a pile system which doesn't use the classic 'pile driving' process associated with major noise pollution, rather, this method requires a hole be bored into which the concrete and reinforcing are poured and set. The process relies on an auger to bore into the ground while Bentonite slurry is pumped into the hole. This effectively seals the sides of the hole walls before the concrete is poured, when the hole is deep enough the hollow auger-bit pumps in the concrete and retreats out of the hole. The concrete is heavier than the Bentonite slurry and therefore settles in the bottom of the hole forcing the excess slurry out of the top, The concrete is then allowed to set and must achieve a strength of more than 40 Mpa.

(Images sourced - Gregg Crumm, Franki Pile)





(Ariel Images Source - Bruce Sutherland, city council.)

Civil vs. structural concrete

- 30 -

The primary differences in the quality and construction of civil and structural concrete occur as a result of the differences between the type of brief and the client, which in the case of civil work is the state.

Most structural concrete is meant to be purely structural, the texture and aesthetic of the concrete not mattering too much as it is usually required to be clad in a finish material such as steel or timber. Consequently the type of shuttering used and the jointing of that shuttering is not as important in structural concrete, and this will affect the skills pool of that sector of the building industry. As a result the skill involved in pouring concrete is more developed in the civil sector of the industry.

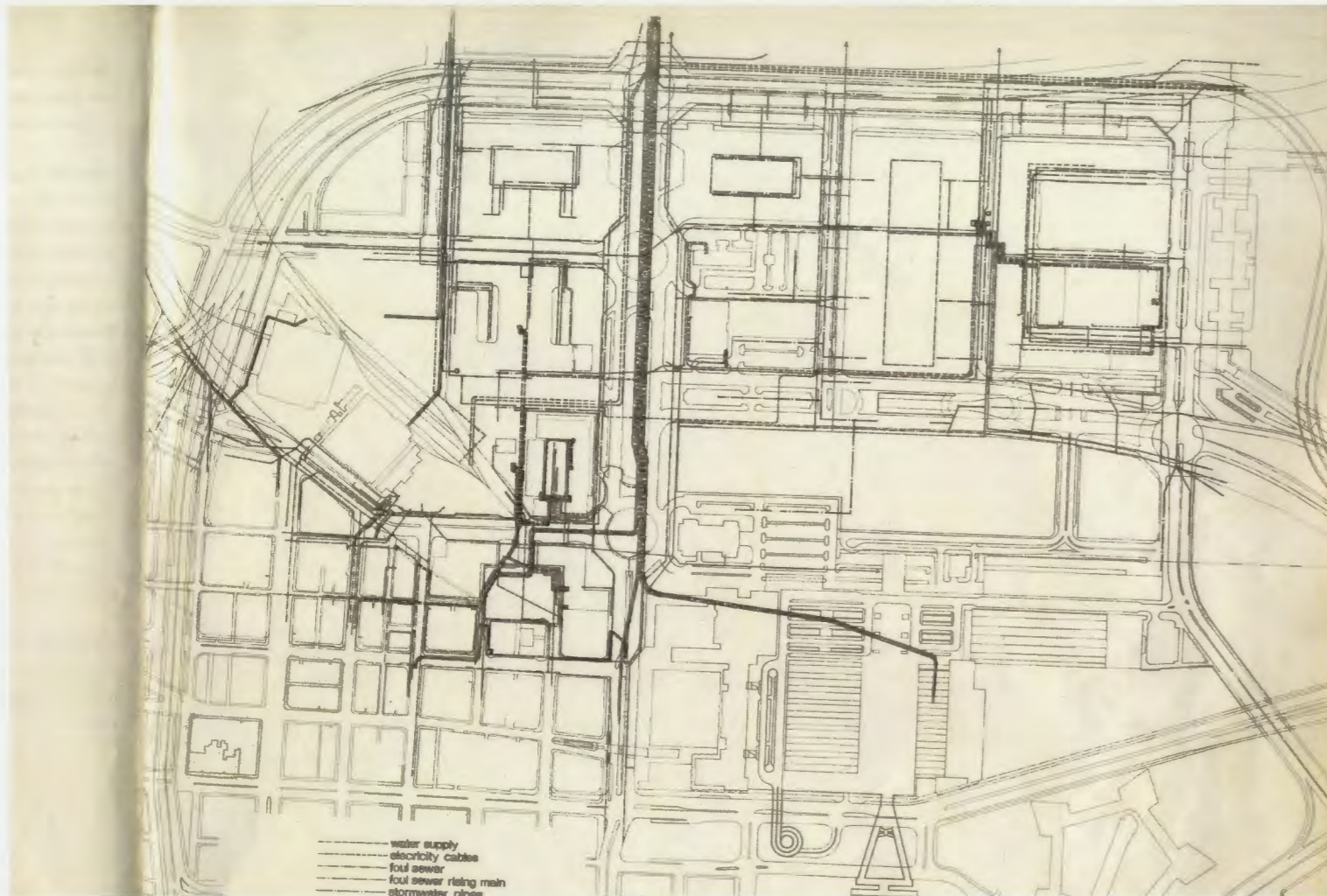
Civil concrete is required to present the concrete surface as a finished product. The room for error in the world of civil concrete form work is very small and visible shutterboard jointing in the formwork of the freeways for example is not acceptable. If it were visible the work would be torn down upon inspection. The shutter-board used on civil work is usually expensive because of the quality required of the surface of the finished form. The ongoing freeway construction project at Hospital bend on the N2 uses 'black-board' shuttering which is largely responsible for the pleasant surface and textures. It is as stated more expensive and the material is tailor made to the job, whereas other forms of structural concrete will use the cheapest shutter board available. The form work of freeways is 'fluid' and as such requires individualized shuttering and pouring processes which puts further emphasis on the careful execution of the job. Structural concrete by contrast is usually modular with the shuttering being recycled over and over as the form work remains largely the same.

The concrete used in civil work generally conforms to a higher strength requirement of 40 mpA as opposed to structural concrete which is only required to perform at a level of 30mpA. This is not a determining factor though as it is simply the concrete's formula which affects the strength rating.



The need for functionality on these roads imparts a grace upon the structures, their form reflecting the motion of the function. The construction of Freeways in an Urban Environment requires that the existing activities and traffic flows are maintained and not interrupted, the public would not tolerate delays which can be avoided. The measures taken in the hospital bend case include temporary support structures which support the shuttering and form work while it cures. It also serves to provide a safe working platform for the workers building the structure. The exposed nature of the surface of the concrete means that it weathers and will begin to show signs of this with time. The image of the underneath of the foreshore freeways shows where water has seeped through the joints in the road. The effect is a streaked and textured surface, this has occurred over time and shows where minerals and pollution have washed off the roads above and run down the soffit.





Historical service layout for the foreshore. (*Planned development for Roggebaai; An examination of the foreshore and proposals for its effective development. Roeloff Uytendogaardt. March, 1966.*)

Services: water supply

- 31 -

There are existing water supply services in the area that are largely suffering from neglect, which is understandable when one considers the expanse of the area and the lack of pedestrian use. It is however possible to identify where the city does invest in water for its gardens; the contrast between watered and dry ground is clear in the image below right.

The historic gurgles still pass beneath the city's streets and through the site albeit in a pair of 2 x 2 meter concrete concrete's, and these elements must be looked at as a possible water supply, although not for human consumption. The images below show the workings of the irrigation system set up along the edge of the Maritime College's premises and underneath the elevated freeways. It is clear that as a result of the overhead freeways, this partly vegetated mound receives no rainfall and possibly no fog either. The result is a new irrigation system, obviously in working order, placed high up on a mound of wind blown debris. The water seems to erode the dust and sand between the cracks of the debris.



The Image above shows what is clearly a standard fresh water outlet pipe. I expect that it once had a tap attached however it is currently a ghostly remnant of a service once, or still to be, provided to this area of the foreshore. Had this tap originally been usable, does its current redundancy indicate a lack of funds or will to service this area? Or is it that this neglected 'terrain vague' type space is that difficult for the city to service? This indicates that the planners of the Foreshore fully expected a demand for the water services and intended to provide one, hidden neatly in the recess of the column.

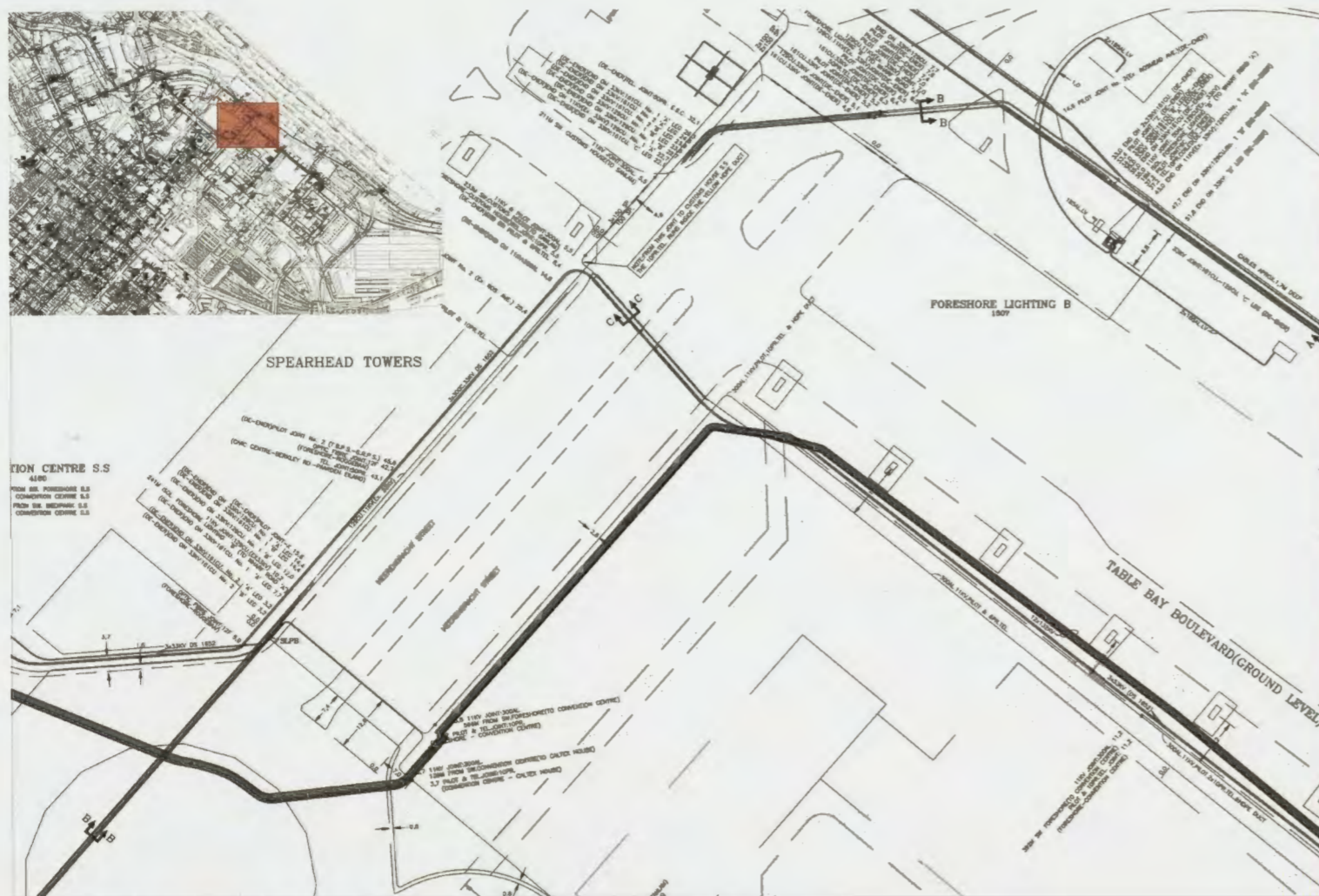
The lack of public oriented economic and cultural significance is essentially the main factor delaying investment in the public realm of the foreshore. The problem clearly perpetuates itself until a large enough tract of land can be developed with city-wide influence and significance.



The above image indicates the potential of water to transform the feel of a space, the bird life is nice however the ability for water to reflect the sky and instate a bright sheen to a surface is alters the perception of the space. Interesting that the Egyptian geese choose to be here, is it a case of 'any bit of water will do' or the absence of suitable pond's elsewhere?

This issue of the poor water services was raised during the xenophobic attacks of 2008 when more than 100 displaced persons used a single tap. What about this area attracted people here during those trying times? Or was it that the city's 'waste land' was the safest place to be? Was this the only place where people wouldn't contest their right to be there?





Foreshore Electrical Drawing: (Source - Dave Smith, Electricity Board, City Council)

Services: Electricity

- 32 -

There are presently a host of electrical services running through the foreshore, much of it currently being relayed and repaired. Work is also underway to reposition cabling in the way of the completion of the inner viaducts which indicates that the city is looking to enable future development by maintaining this aspect of the foreshore's infrastructure. The electrical services follow the major block and road edges, and will generally run beneath pavements and in ground which is to be paved in the future. The major power cables running through the foreshore service the Atlantic Seaboard as well as supplying the foreshore's requirements. Major cables are housed in 110 mm diameter black plastic sleeves and these are laid on rows of sand bags to ensure a better drainage condition and level, approximately 1 meter below ground, allowing for future paving or gardening strategies. The image of the trench under the awning opposite depicts a method of keeping the walls from falling in on the re-laying operation. This is obviously an issue in the sandy soil as it is far more inclined to 'slump' into holes. The awning indicates the need to keep electrical work dry.

The general nature of the distribution in Cape towns Foreshore follows the same as that of the rest of the CBD. -132 kV is channelled to the Roggebaai Transformer on the corner of Buitengracht and Coen Steytler. -From the Roggebaai transformer 3 x 66kV cables route through more transformers to 33kV cables.-A further distribution of transformers convert this to 11kV cables, these are the cables which eventually service the large city blocks and structures of the foreshore, one is shown being repaired opposite.



The image above highlights the limited adaptability of the freeway structures as the exposed flood light cables testify. These images suggest the power usage of the foreshore freeways. I expect this and the refrigeration plants and industrial facilities of the dock yards are the chief drains on the 'grid'.

('Night-shot': Carson Smuts)





All site images are taken by the author and graphics are the work of the author, except where alternate contributors are specified.



Technological conclusions

- 33 -

There are many harsh conditions acting on and within the foreshore area. These are to a large extent derived of the technology of the modern era, and more significantly the technologies of mobility. The development of Cape Town has been linked to the development of mobility and its technology from the start, and this continues to shape the city and its image today. Particularly those surfaces upon which mobility relies.

Without an innovative approach to a new method of land use within the remaining under-used areas of the foreshore, the boulevards and significant public spaces of the foreshore are doomed to remain void of healthy public activity. The ground and surface conditions serve as key indicators in the search for the history and circumstances behind the state of this space. What has become apparent through this investigation is that the foreshore, left alone, is likely to develop in a direction consistent with original policies and other failed developments nearby. This would be a sad fate. The city's investment in mobility must and will continue in the name of development. The city has an opportunity to affect the course of its development into the future and for the better and this can be achieved through a new attitude to terrain treatment.

The primary strategies which I believe should be employed in the reclamation of the foreshore for the pedestrian involve an understanding and manipulation of the terrain there-in. The circumstances which have governed the nature of these spaces are unique, and as such require an alternative understanding of how to operate within such expansive and indeterminate areas. The primary inputs that the city has already invested in the foreshore are largely the services and structures for mobility. These are the necessary prerequisites to further development and together they compose a condition with a structure and framework which needs to be accommodated in development designs. Once the scope of these requirements are realised the designer should be empowered with a creative freedom to work within parameters. This is the point at which innovative solutions and proposals shall derive a new foreshore fabric in keeping with the needs of the pedestrian.

Primary Sources:

Ronald Haiden - 16/03/2009, Department of roads and Storm water, city council.

Carson Smuts - 2007 B-arch graduate. 'A new Port of Entry' thesis.

Dave Smith - Department of Electricity, Ndabeni.

Zurayda Christians - Research manager, 'Transnet Terminal Port Authority'.

Phillip Smith - Canal Engineer, 'Prestige Retief Dresner Wijnberg' consultants and Engineers.

Gregg Crumm - Design Engineer, 'Frankipile'.

Kenwyn Street - Site Agent, Haw and Inglis Civil Engineering (pty) Ltd.

Documentation:

EIA Application Form and Checklist in terms of Section 21, 22, 26 and 28A of the Environmental Conservation Act, 1989 (Act No. 73 of 1989). 'Completion of the Foreshore Freeway Inner Viaducts': 2003. (Sourced digitally from Ron Haiden, 16/03/2009, Department of Roads and Stormwater, city council).

'Completion of the foreshore freeway conceptual design report executive summary': 2003. (Source - Ron Haiden, 16/03/2009, Department of roads and Stormwater, city council.)

Port of Cape Town handbook and Directory 2008/2009: Published for Transnet National Ports Authority by Meridian Publishers Ltd. (Source - Zarayda Christians, 27/04/09)

Drawings:

Proposed inner viaduct development drawings for the completion of the Foreshore Freeways: (Source - Ron Haiden, 16/03/2009, Department of roads and Stormwater, city council.)

Engineers Drawings of sealed basement on Lots 9 + 10.: (Source - Gregg Crumm, 12/05/2009, Frankipile.)

Geotechnical drawings: 'Geotechnical Investigation for proposed Cape Town International Convention Centre'. (Source - Brian Richardson (14/05/2009.)

Canal Layout Drawings: (Source - Phillip Smith (12/05/09,)

Book References:

'A tale of three cities'. Susan de Villiers, Published by Murray & Roberts 1985

'Cape Town Foreshore Plan' final report produced by a joint technical committee, June 1947. Published by the government printers of the Union of South Africa.

Outline of Scheme (Foreshore) for Cape Town (South Africa). By E.E. Beaudouin. 13th June 1940.

Web References:

The Port Authorities web site, information on the status, facilities and function of the Port: (<http://www.transnetnationalportsauthority.net>)

Information blog for Cape Town, Information provided on various buildings and general city functions. (<http://www.skyscrapercity.com/showthread>)

Seismic analysis of the soil conditions and structure around pile foundations, Humboldt Bridge. (<http://www.civil.columbia.edu/em2002/proceedings/papers/417.pdf>)

Capacity, statistics and information pertaining to the Port facilities. (<http://ports.co.za/cape-town.php>)

General Information on the Cape Town Docks and some important links. (http://en.wikipedia.org/wiki/Port_of_Cape_Town)

'The Foreshore Freeway completion Project', public participation web site, 2001. (http://www.commonground.co.za/ffcp/issues_matrix)

Journal References:

'Adderly Street Pier' Thesis.

'Connections'. Thesis

'RF Project Association, Convenco, Cape Town, May 2000.'

'Planned development for Roggebaai'; An examination of the foreshore and proposals for its effective development. Roeloff Uytenbogaardt. March, 1966.

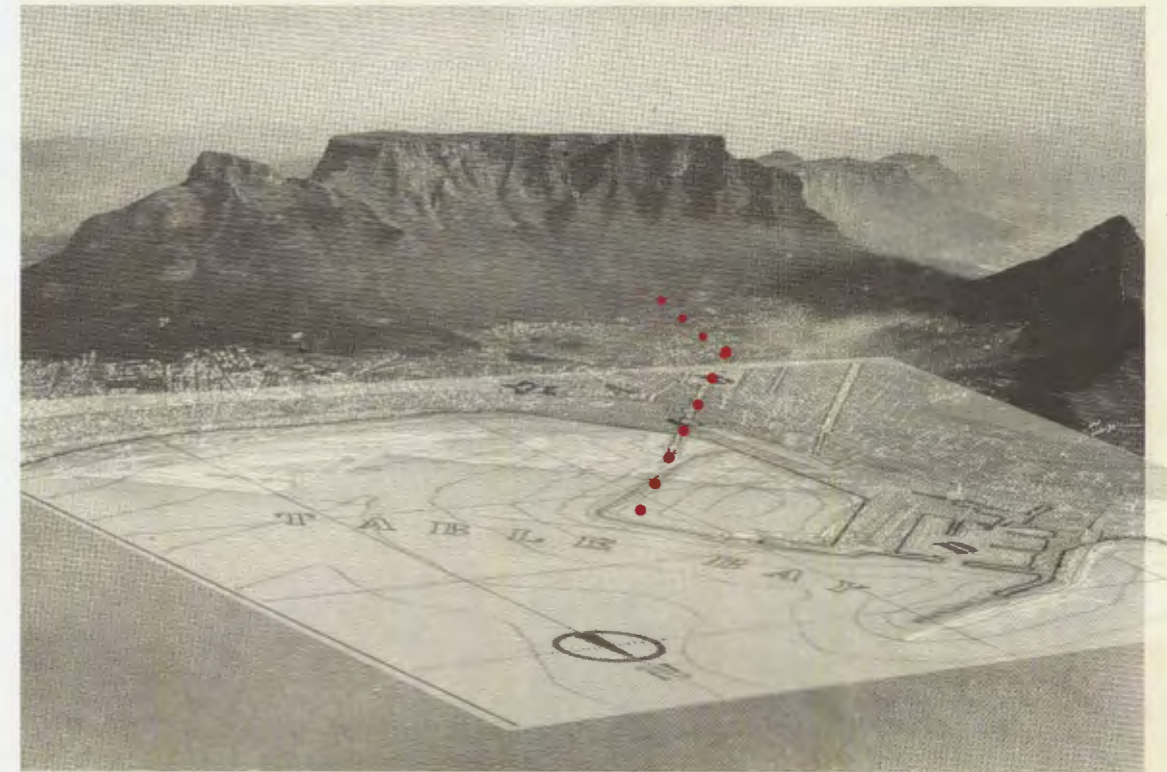
'Report on Proposed development of lots 144-148 The Foreshore, Cape Town.' E.W.N. Malloes, Julian Beinart, Herbert Penny (PTY) LTD, Penny Haywood & CO. December 1964.

'Transport and its effect on the morphology of early Cape Towns.' G Jacobs,

The design is first and foremost to be a sheltered healthy and enjoyable public space on the waters edge. The significance of the design to the city shall lean heavily on the historic reference to the Adderly street Pier, which was such a successful social and cultural place for the people of Cape Town. As a result of the torrid past associated with this land and its origins the design shall look to lend emphasis to ideas involving the 'play off' between key elements of this 'scape'. This should inspire interesting relationships and contrasts, the kind which make unique spaces of varying character resulting in a kind of urban enrichment by paying attention to the detail.

This area is vast and relatively flat, the design shall look to provide elements upon which public space can gain elevation for full view appreciation. This strategy shall later be counterpart to the idea of a landscaped berm to protect the space from the elements.

A number of strategies exist through which to create a spit of land or island from the foreshores' land as the below 'thinking' diagrams indicate. The simplification of this strategy to its core necessities is what drove the design thinking which in turn would inform much of the layout of the complex. The primary concern was to provide a social public space with supporting infrastructure at the foot of Adderly Street, visual cues for the pedestrian are important as is the protection of the spaces. Secondary are the commercial and retail programs which are intended as public space accompaniment or support.



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(The Cape Town Foreshore Plan, Page 41)

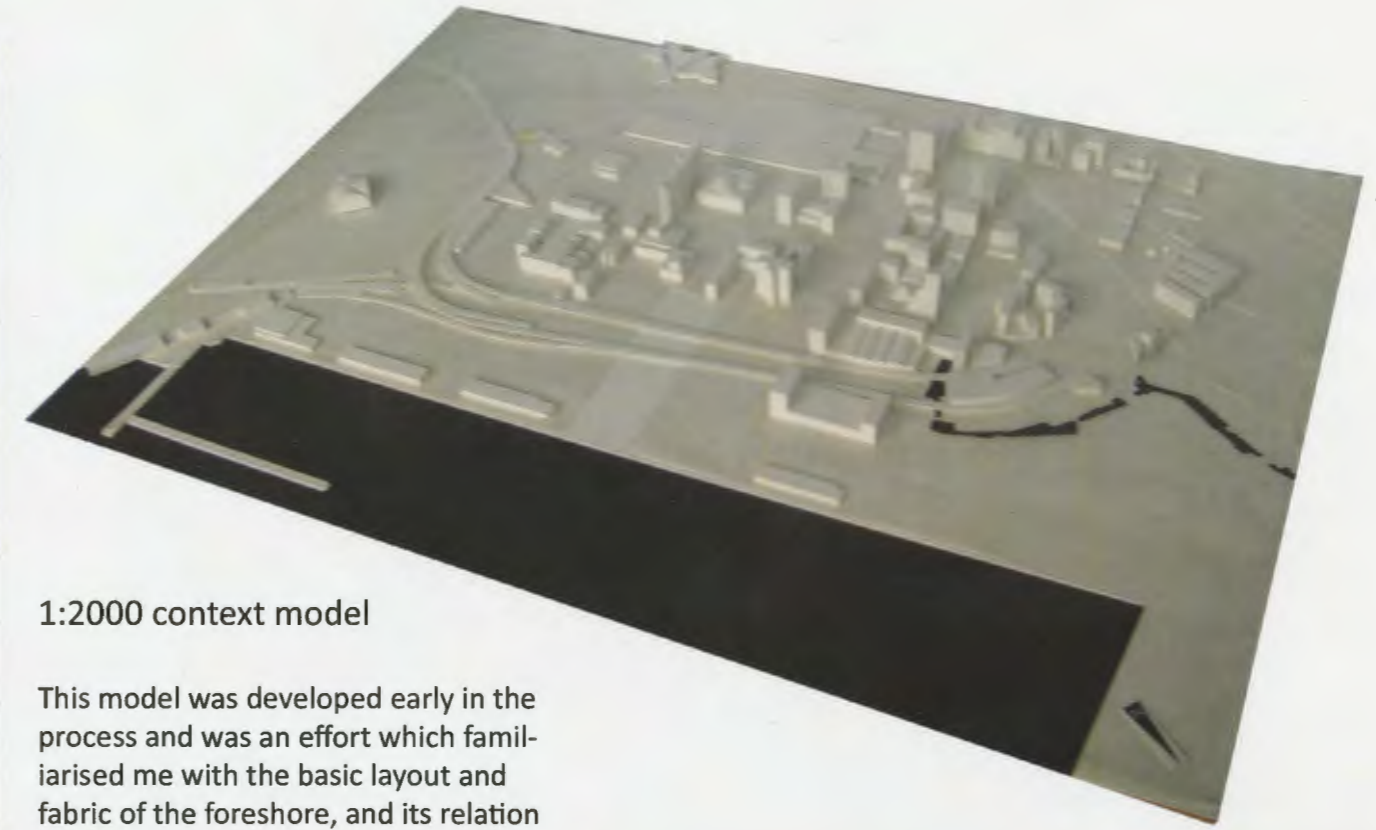


(The Cape Town Foreshore Plan, Page 17)





Site conditions



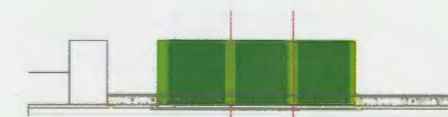
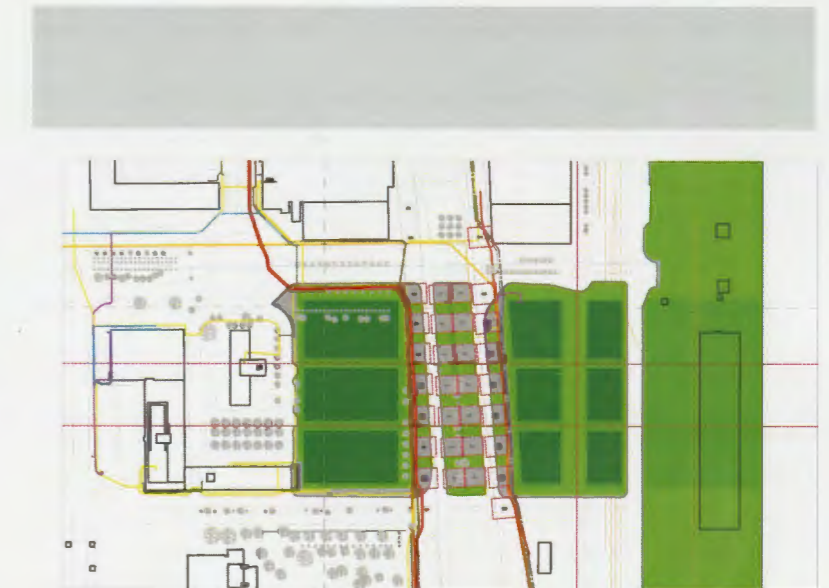
1:2000 context model

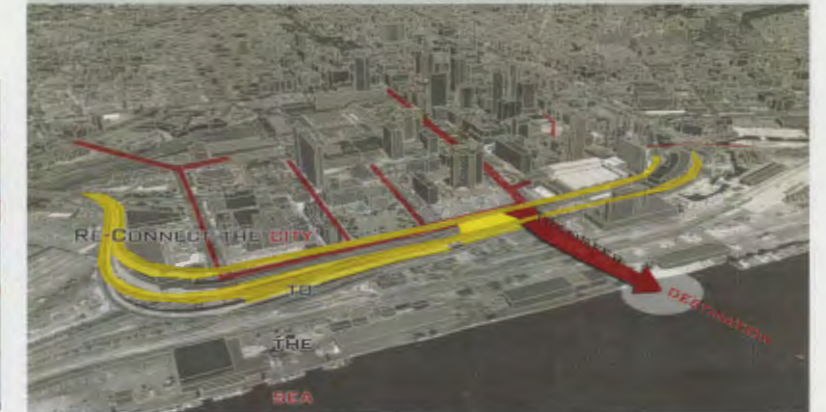
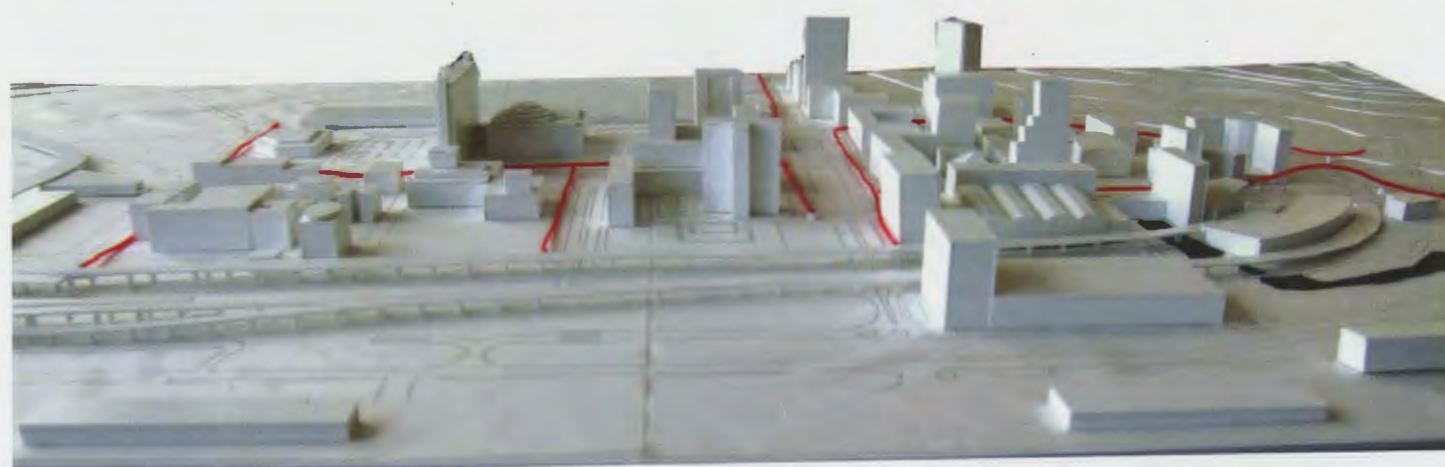
This model was developed early in the process and was an effort which familiarised me with the basic layout and fabric of the foreshore, and its relation to the port.

The current fabric and conditions of much of the foreshore are developmentally very unfinished. The marine colleges and Northlink are an unsuitable form and fabric for the development of a new foreshore area, this is why I have indicated their positions in dotted line and I expect these buildings will be demolished.

The hatched area indicates the site which would be chosen and developed, it is a single mid-sized shipping berth. I chose to use the current Duncan dock road as the starting point since the maintenance of its port function is important and its workings may add to the space.

The diagrams, pictured right, were meant to aid in understanding the building constrictions affecting these super block sites of the foreshore.



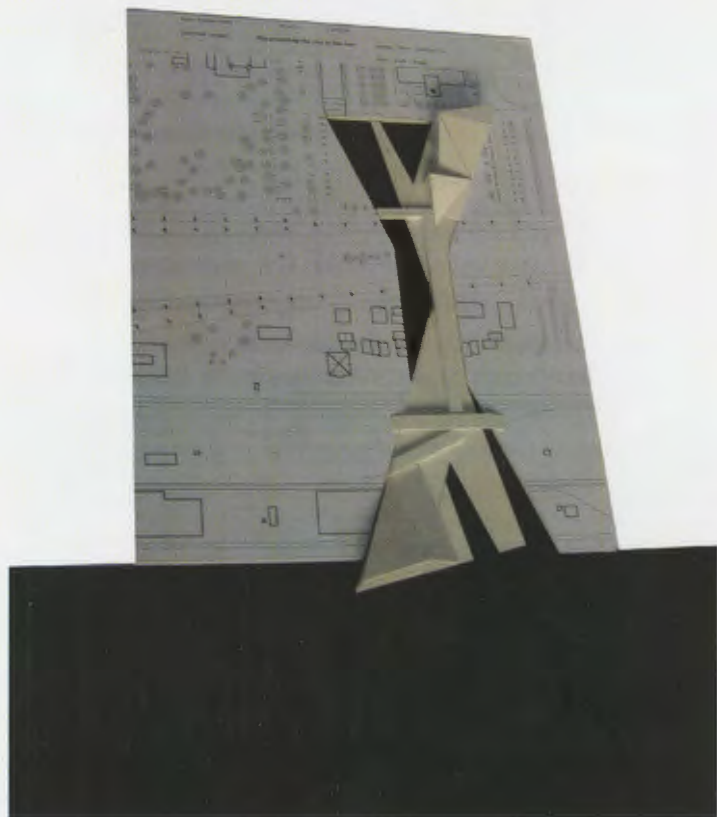
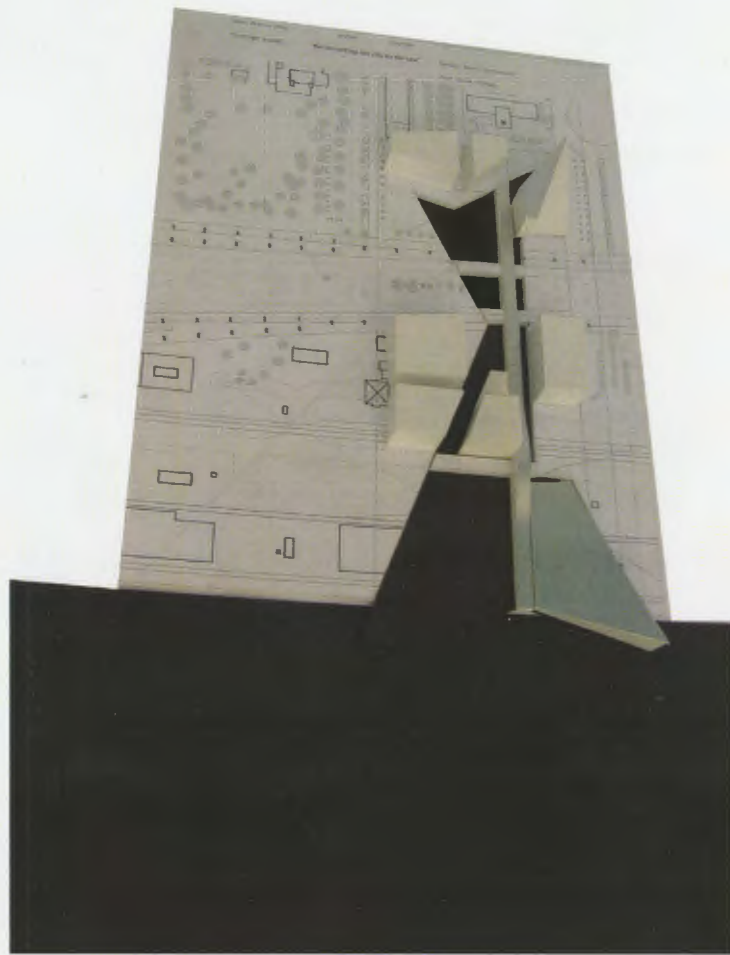


This 1:2000 model was built early in the process to begin to analyse and understand the foreshore area, methods of re-connection were being investigated.

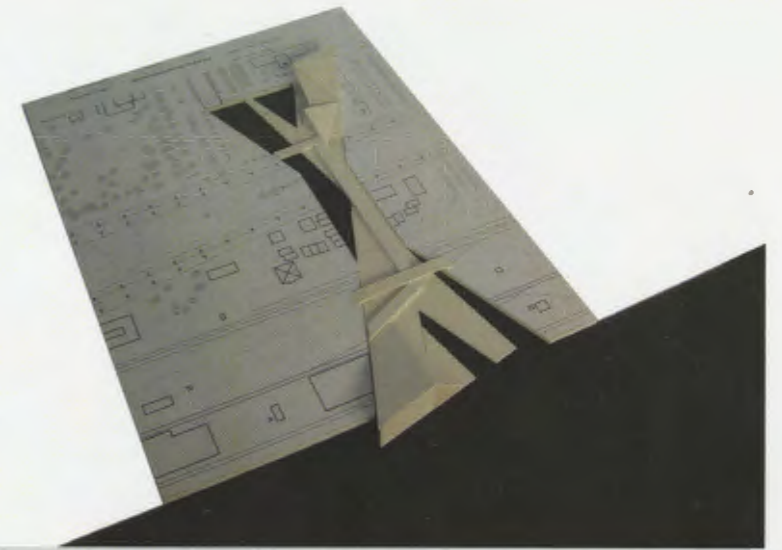
These are early conceptual graphics generated begin to indicate the general intention to establish a new sea front.



(www.googleearth.com)

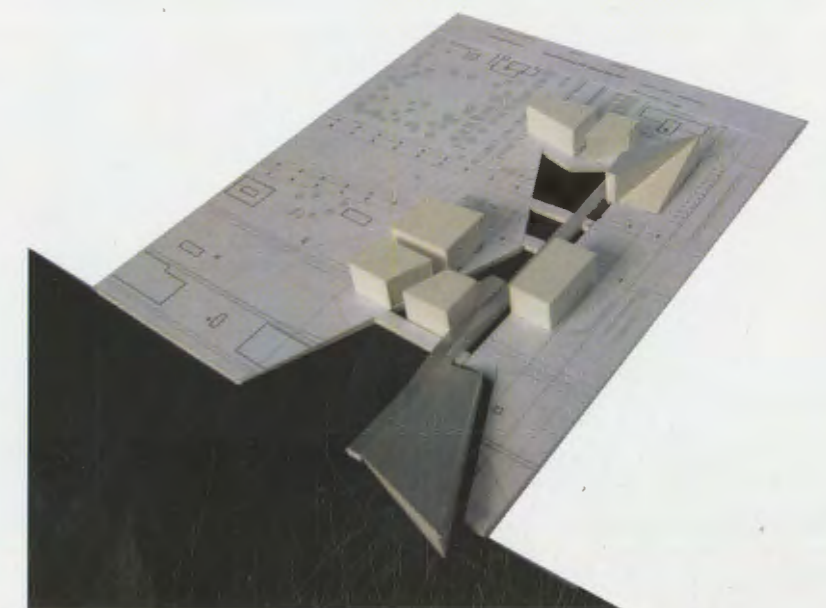


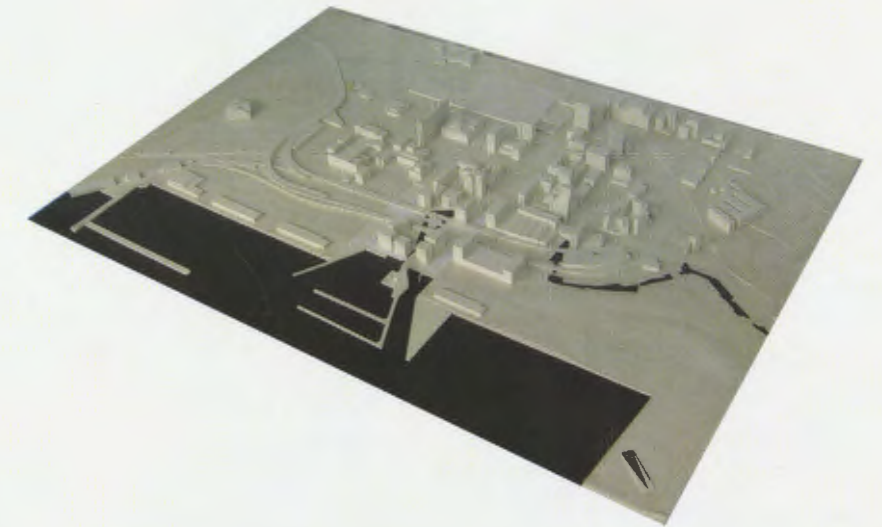
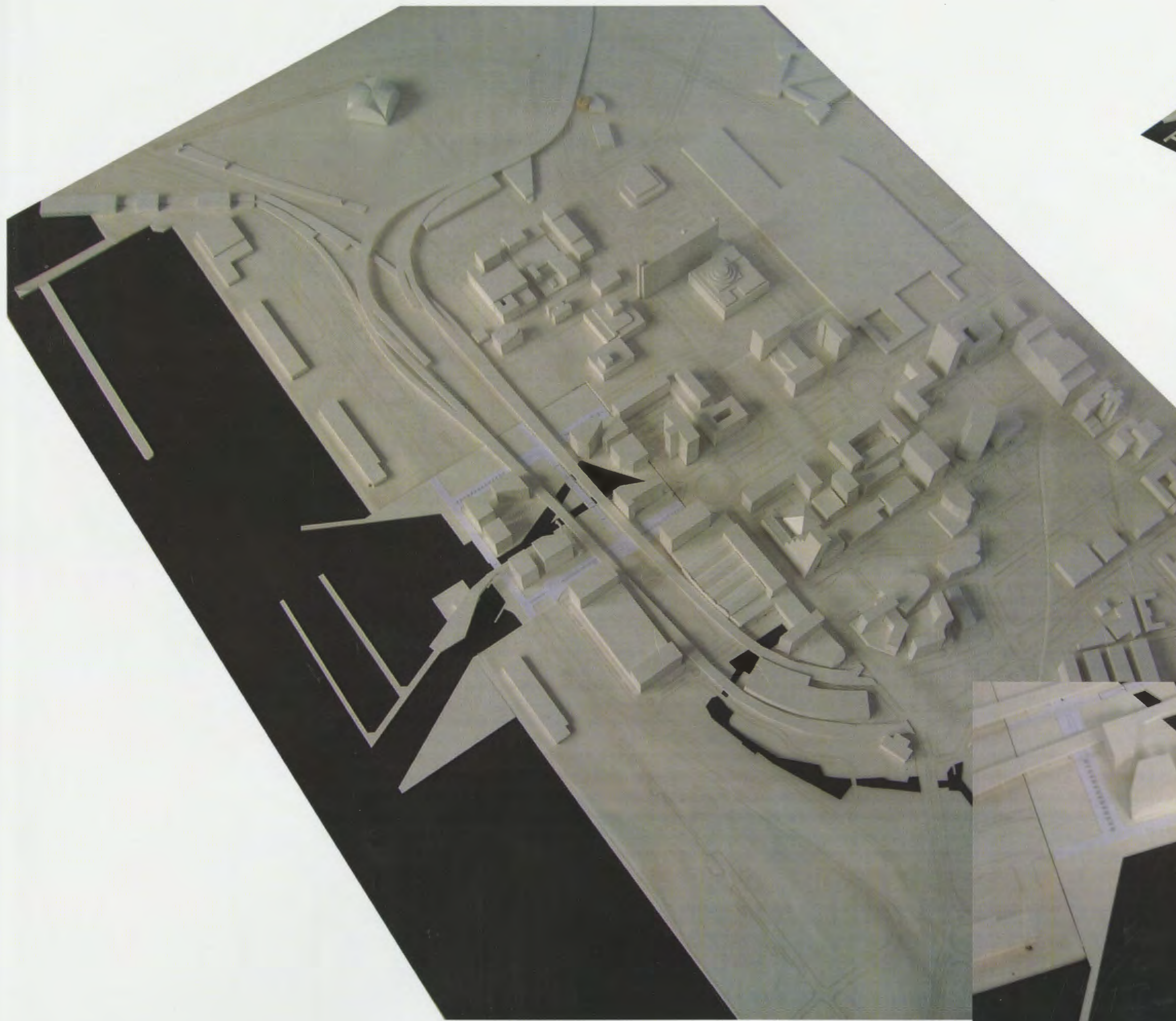
Early site making exercises



These exercises were primarily concerned with developing an idea of the scalar challenges and the nature of some solutions. The intervention was from the start intended to relate in equal measure to aspects of industrial and civil infrastructure as well as that of the pedestrian. The main objectives involved the idea of connection, the main intention was to express the 'journey' of connection. I sought to design a transfer device that in itself was a kind of activity generator and street, flanked by water. Other important ideas in these models involved the concept of inter-locking or 'dove-tailing' the elements of land and water, expressing the reclamation of water into land.

These methods wasted much space in the pursuit of form, additionally the impetus of the project was drawing the energy off the bottom of Adderly Street. I would later decide not to allow the sea in land further than Duncan dock road, canals would suffice beyond this point.



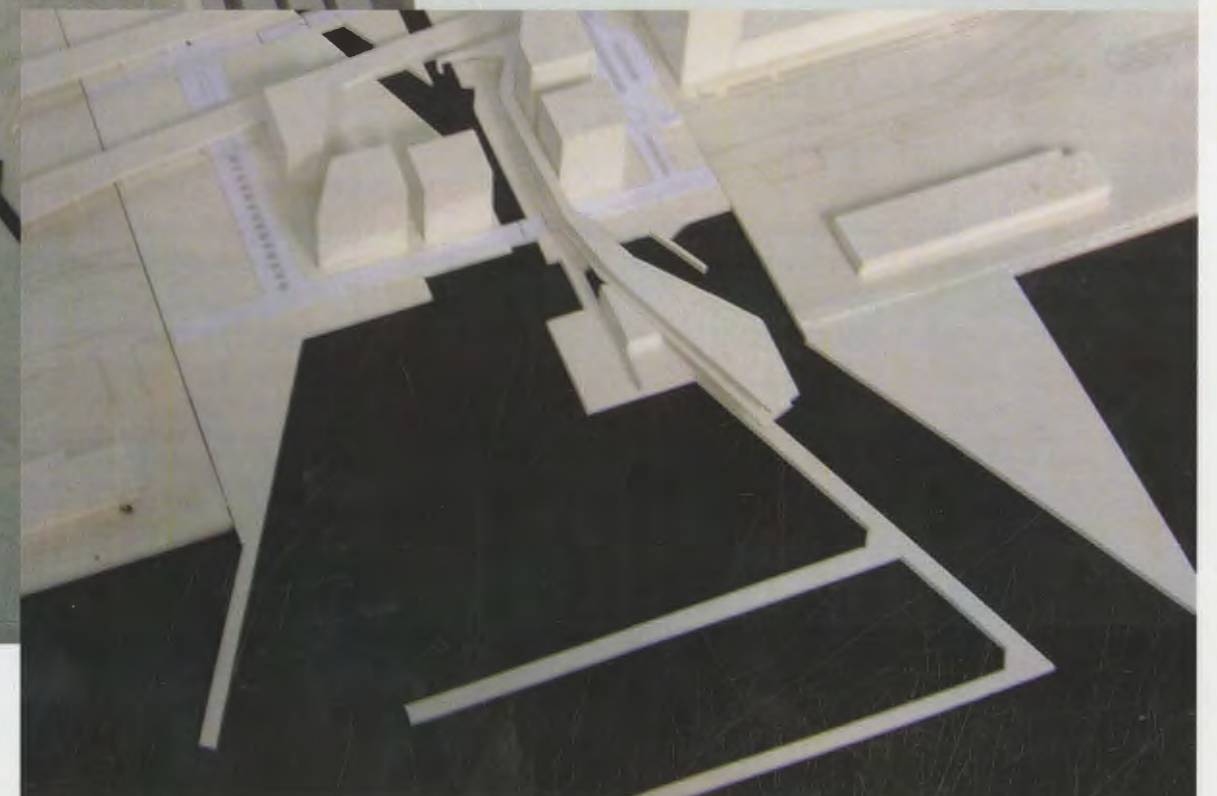


1:2000 Context model; Early developments

This model was developed as part of the intermediary submission of the June review. The project was still attempting to reconnect the city with the sea by allowing the sea into the city, counterpart to this idea was a built element which would offer shelter interest and passage to pedestrians.

It was to form a gateway at the Heerengracht and Coen Steytler traffic circle and extend to meet the freeways and project beyond into an expressed Pier element.

The main problem here was the conflict between the private aspects of the yacht club and the need for public space on the waters edge.





This study identifies the possibility for a new public space capable of supporting large gatherings, 14 000 m² occurs conveniently between 5 500m² (Heritage square) and 20 200 m² (Grand parade).



ArtScape and Civic centre squares:
3600 m² + 4500 m²
(http://www.siyasanga.org/files/node_images/ARTSCAPE%20front.jpg)



Thibalt Square:
4500 m²
(<http://www.flickr.com/photos/51035677132@N01/3042758067>)



Grand Parade:
20 200 m²
(<http://www.expatcapetown.com/south-africa-world-cup.html>)

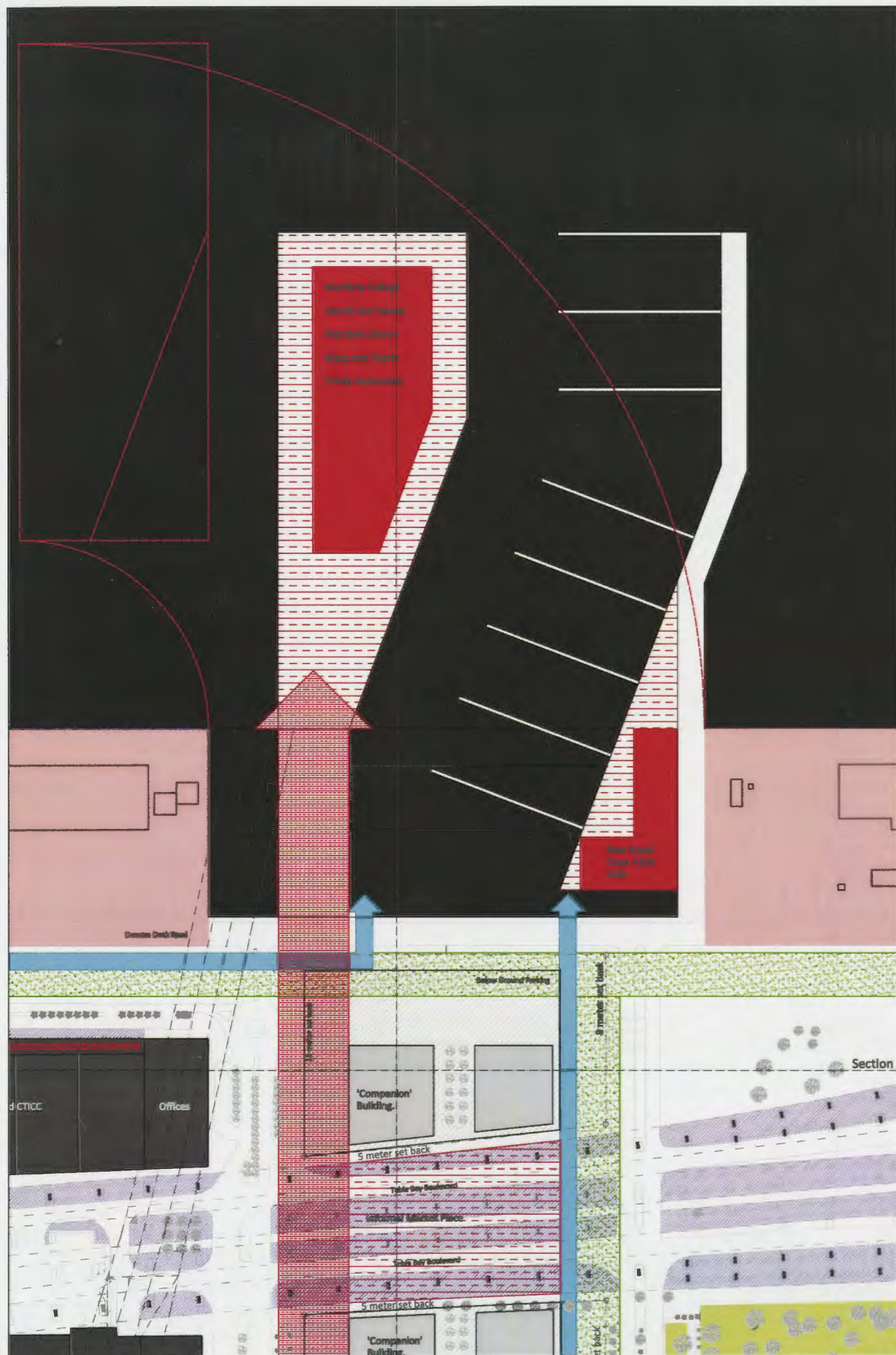
Green market Square:
2 800 m²
(http://z.hubpages.com/u/883712_f520.jpg)



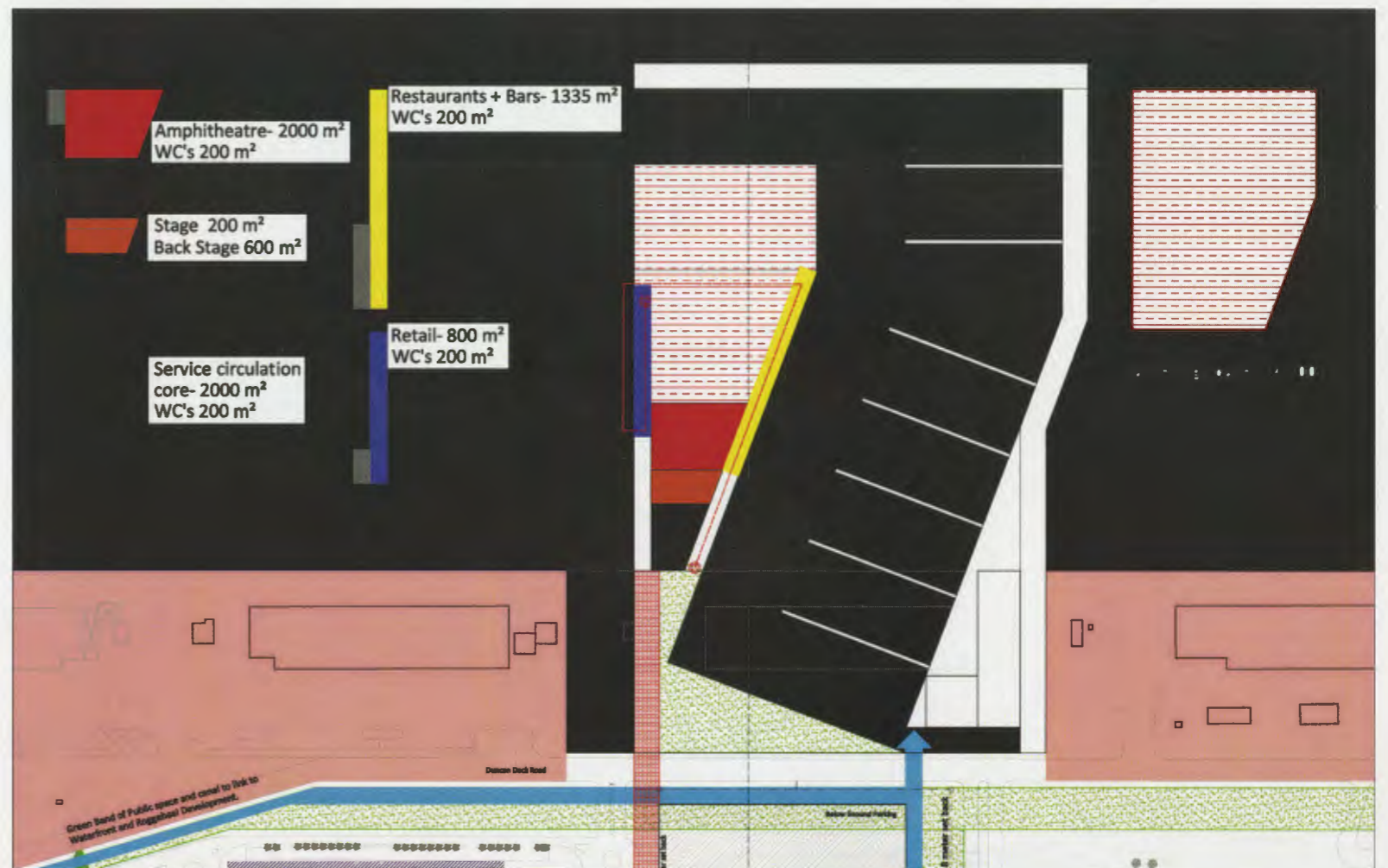
Heritage square:
5 500 m²
(<http://static.panorama.com/photos/original/1263276.jpg>)



Hard surface public gathering spaces in the city

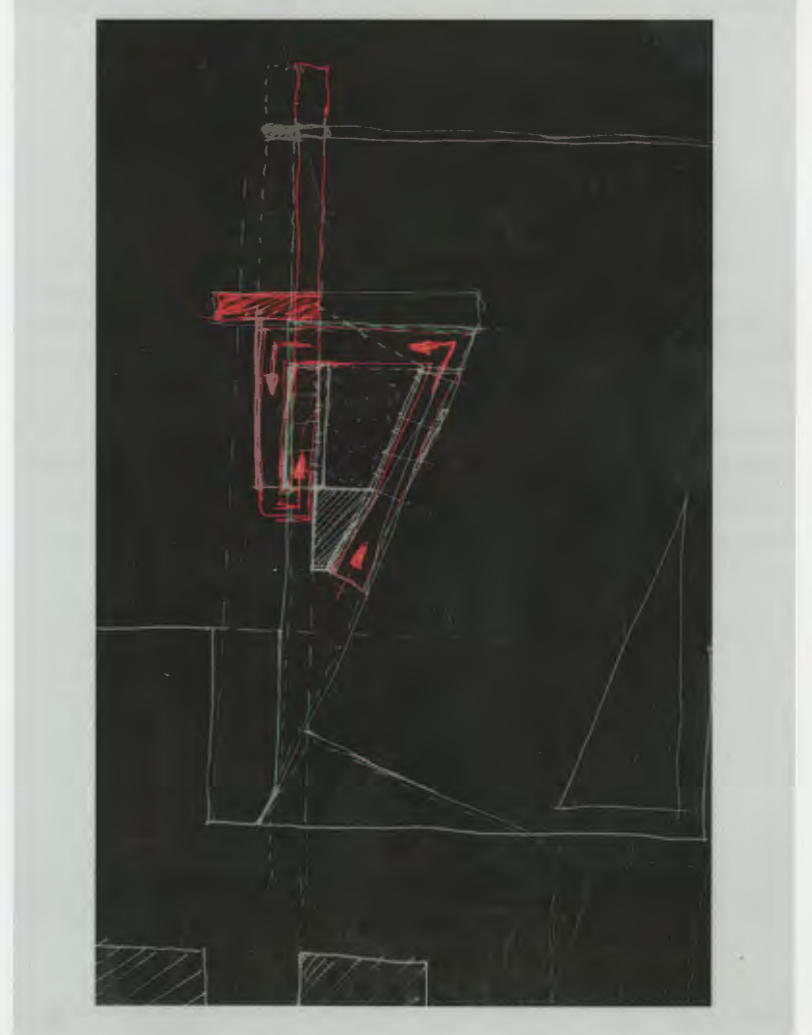


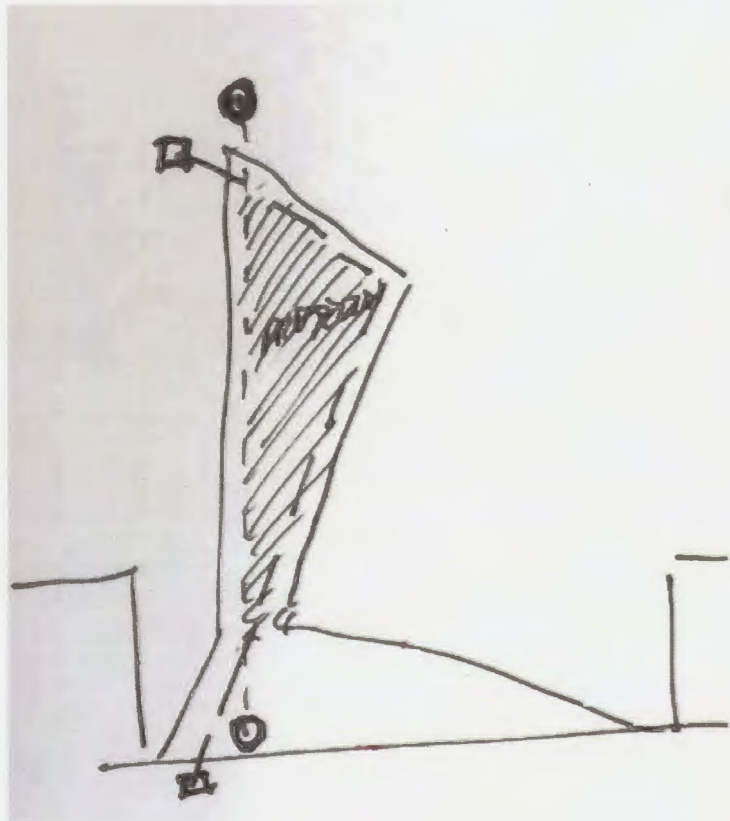
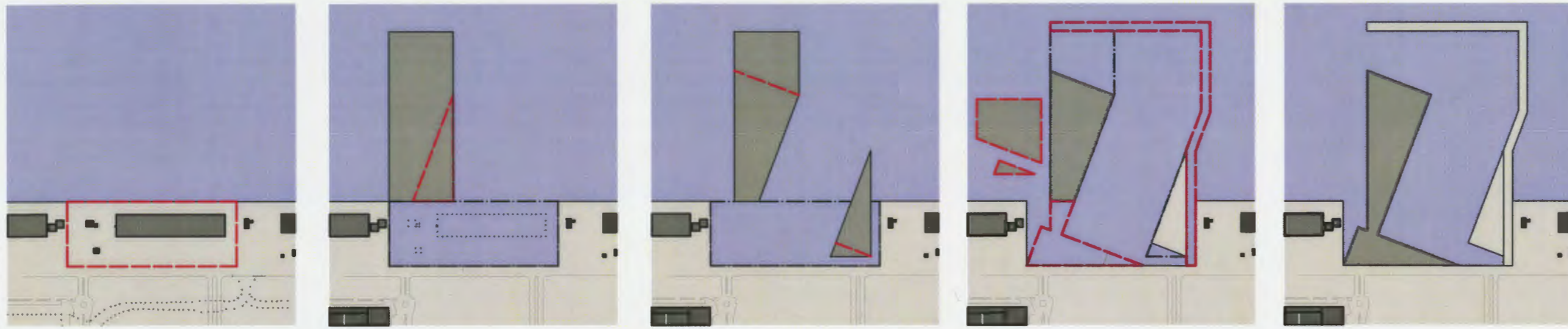
Early programming exercise



The main breakthrough at this point was the conception of a strategy whereby a set portion of land could be re-configured into a spit of land providing more water frontage and land of greater qualitative value. This strategy would provide for a significant public space and performance venue with activity generating architecture to lend value and activity.

Emphasis was still being placed upon the journey of transfer from city to water as well as the possibilities that foot-traffic would provide for built edges on the route. Later I would conclude that the essence of the project was the interface of public space and water, the sites closer to the city would develop in a healthy manner to complement the city's axis. These interventions would be mixed use and set in a coherent urban design upon fragmented super blocks.

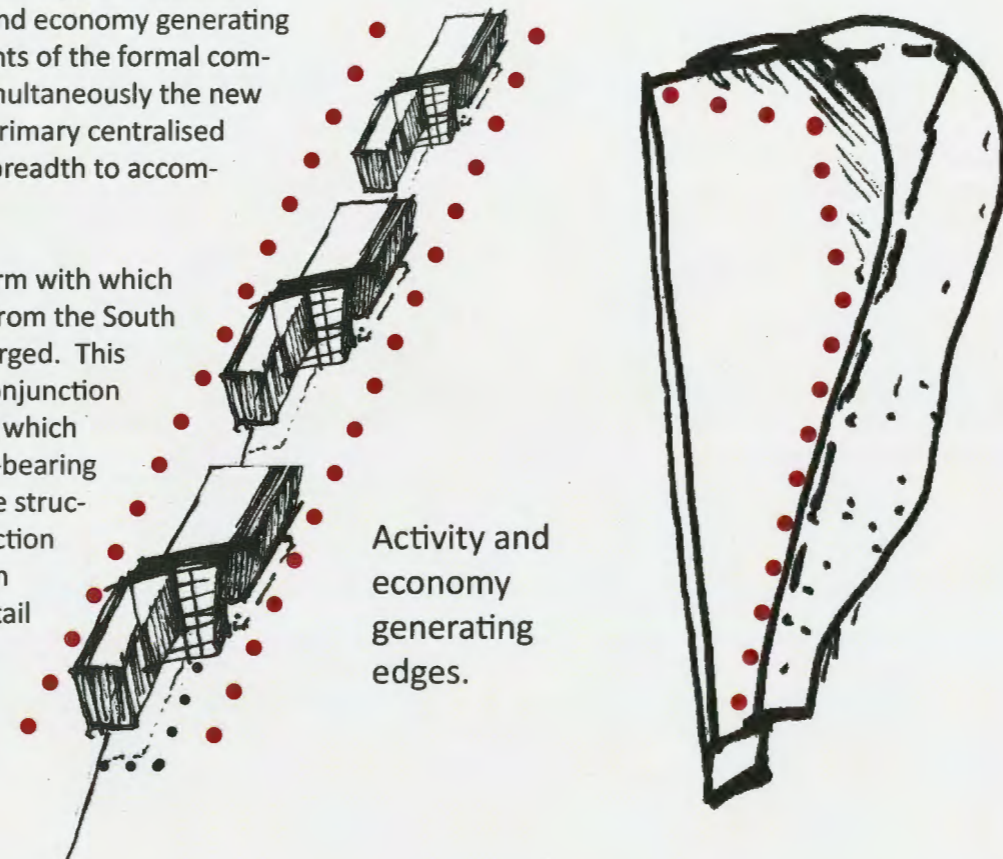




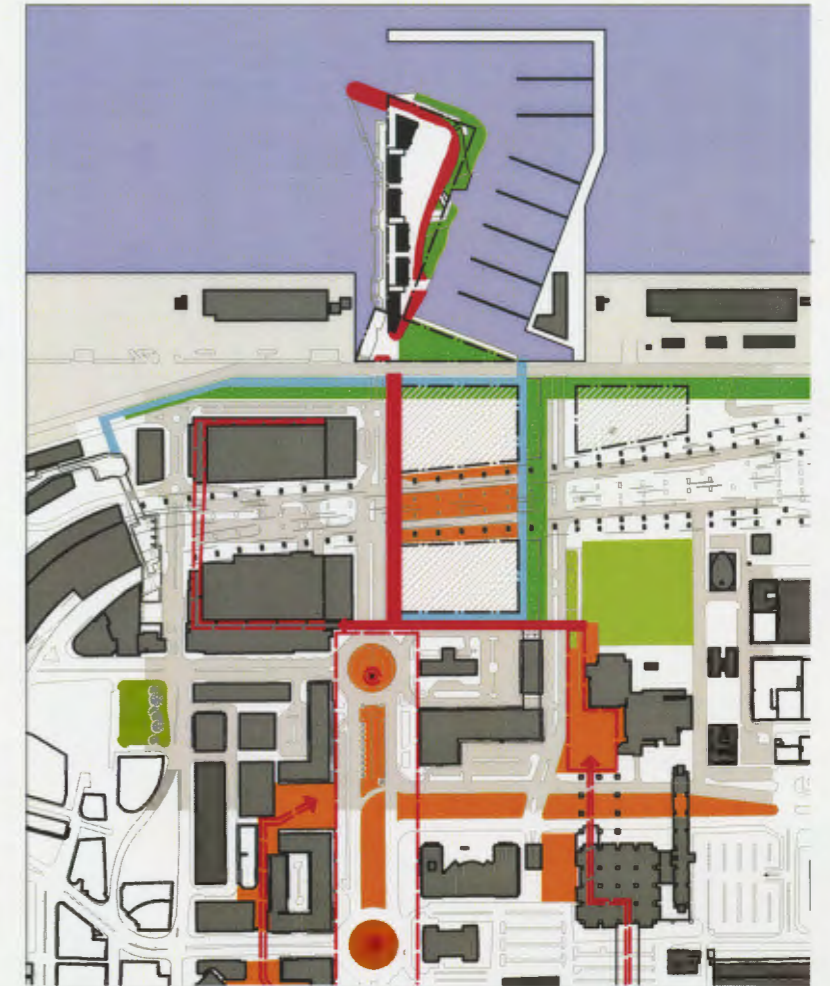
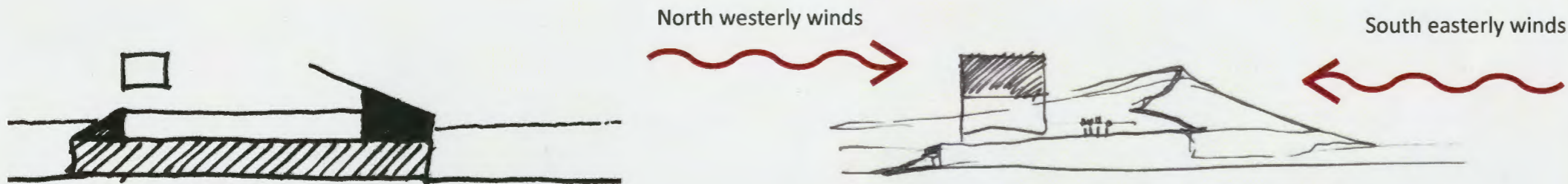
The exposed position of the new public space and the need to provide active and economy generating edges were the key informants of the formal composition of the complex. Simultaneously the new public space would need a primary centralised gathering area of sufficient breadth to accommodate crowds.

The idea of a landscaped berm with which to protect the public space from the South easterly summer winds emerged. This would be implemented in conjunction with a formalized 'built' axis which would protect from the rain-bearing North westerly winds. These structures provide physical protection and hard edges which in turn provide opportunities for retail and recreational activities.

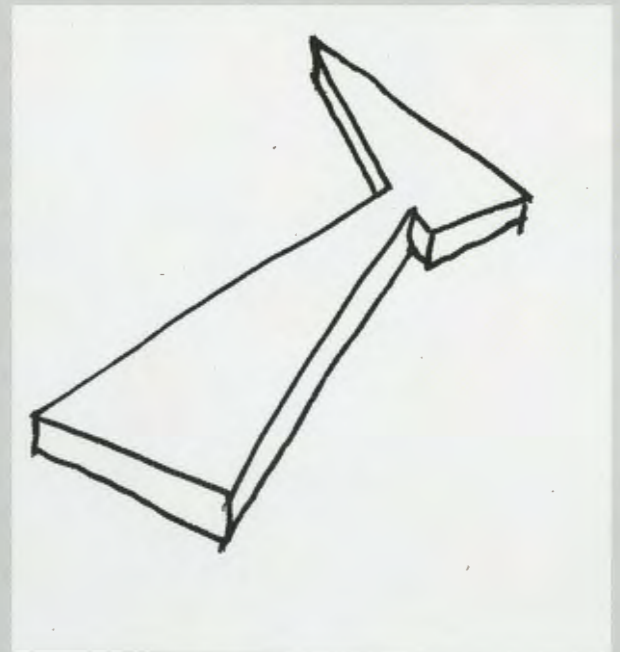
The site's shape allows for underground parking across the extent of the vast complex.

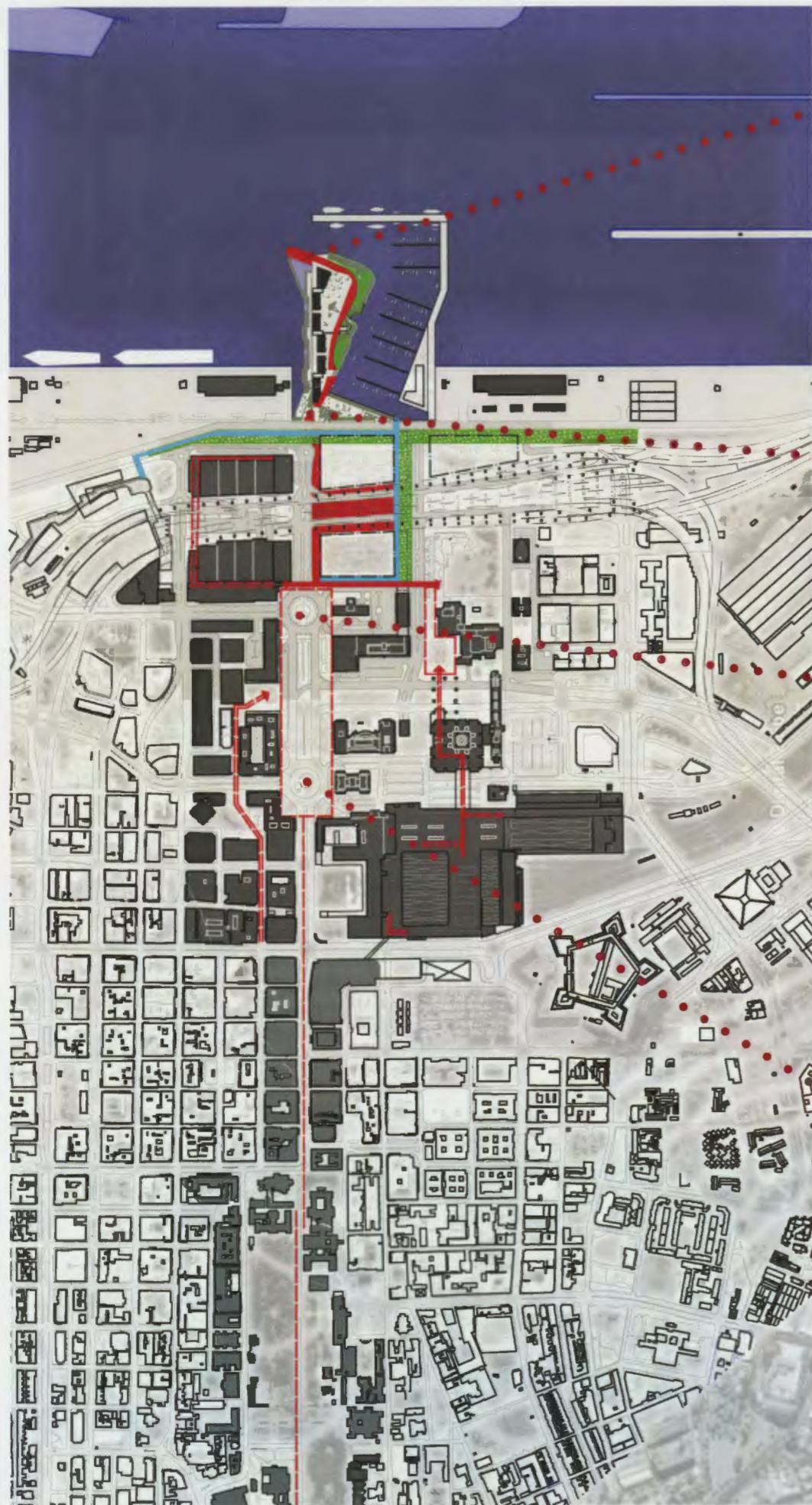


Activity and economy generating edges.



A key design generator from the start has been the idea of terrain manipulation particularly with the goal of providing passage for water to reoccupy areas of the foreshore. This concept looks to rearrange a set area of the foreshore's terrain in order to create a 'spit of land' as a public space emanating from the public space of the city. The counter part programme for the project is a maritime centre and new small craft basin for the new Royal Cape Yacht club.





Visual reference rhythm

350 meters

6-7 minute walk

380 meters

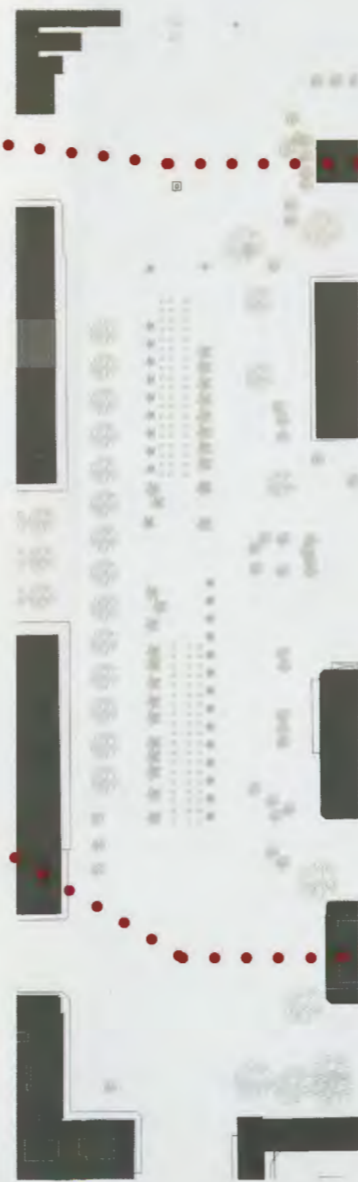
6-7 minute walk

320 meters

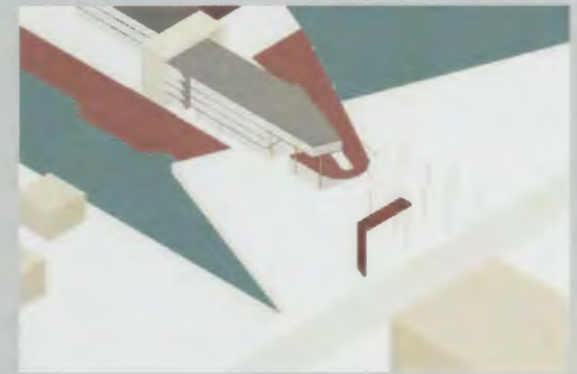
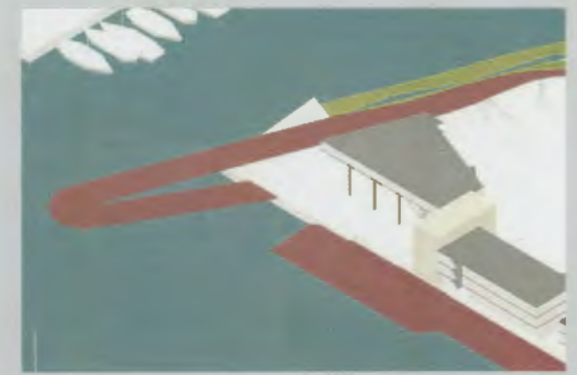
5-6 minute walk



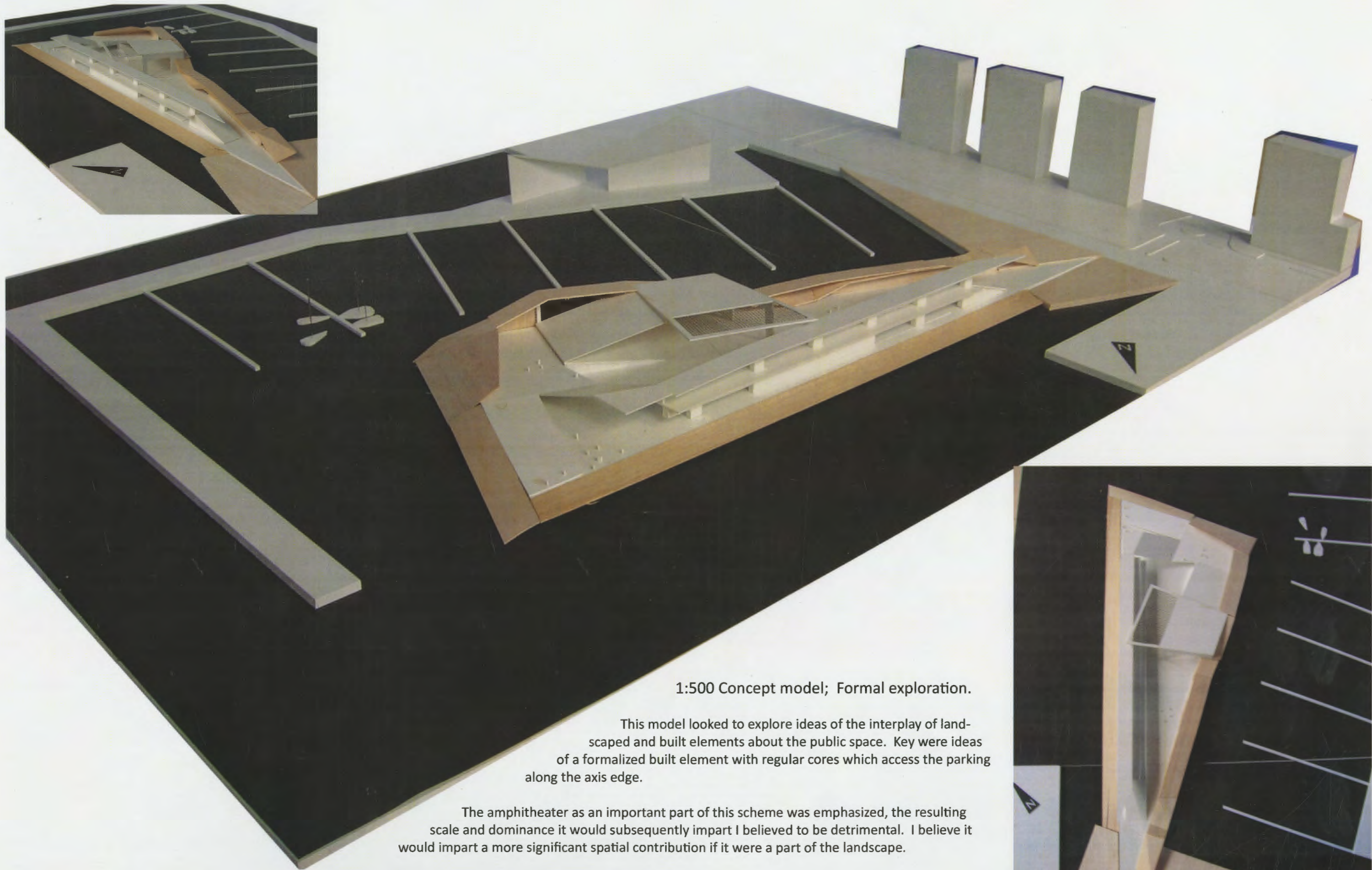
This is a traversable walkway, it links the opposite ends of the complex in this literal manner. It serves to introduce the structure to people arriving and its appearance across ones field of view in the distance provides a visual link.



Adderly street has an existing rhythm of visual reference points stretching back up its length. The most significant are the two traffic circles pictured below, the intervention shall pick up on and reinforce this rhythm.



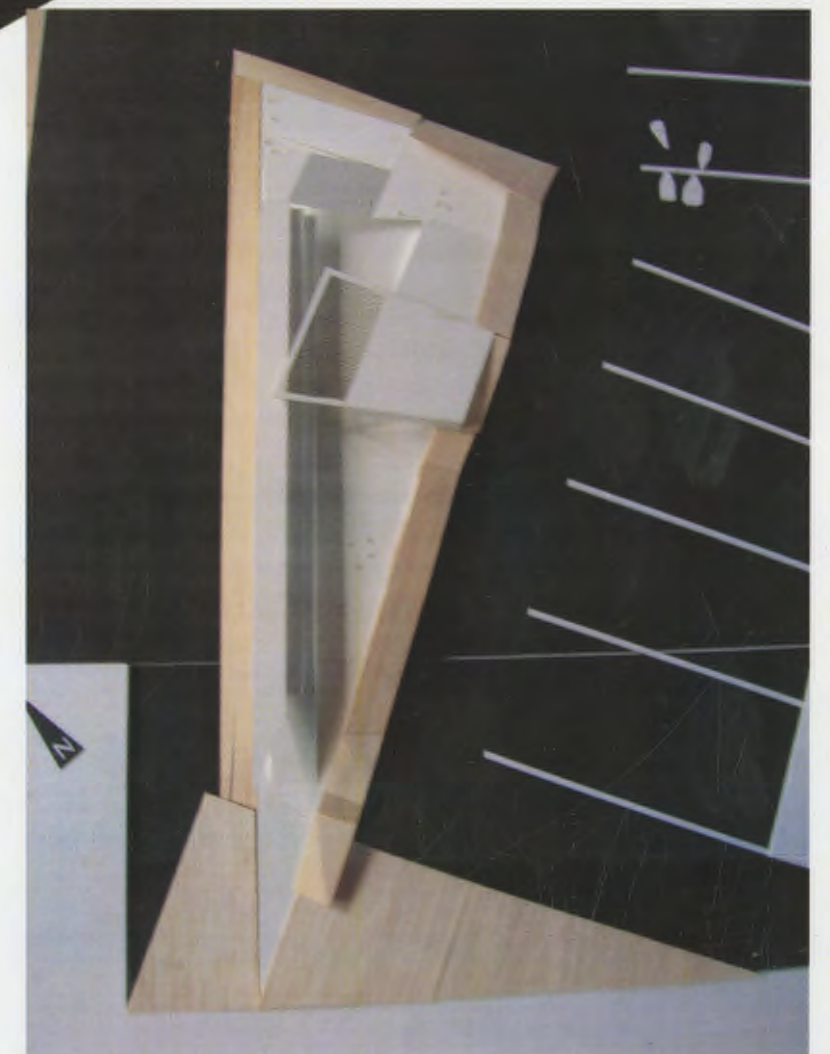
(http://farm3.static.flickr.m/2556/3909248383_5cf5b70444.jpg)

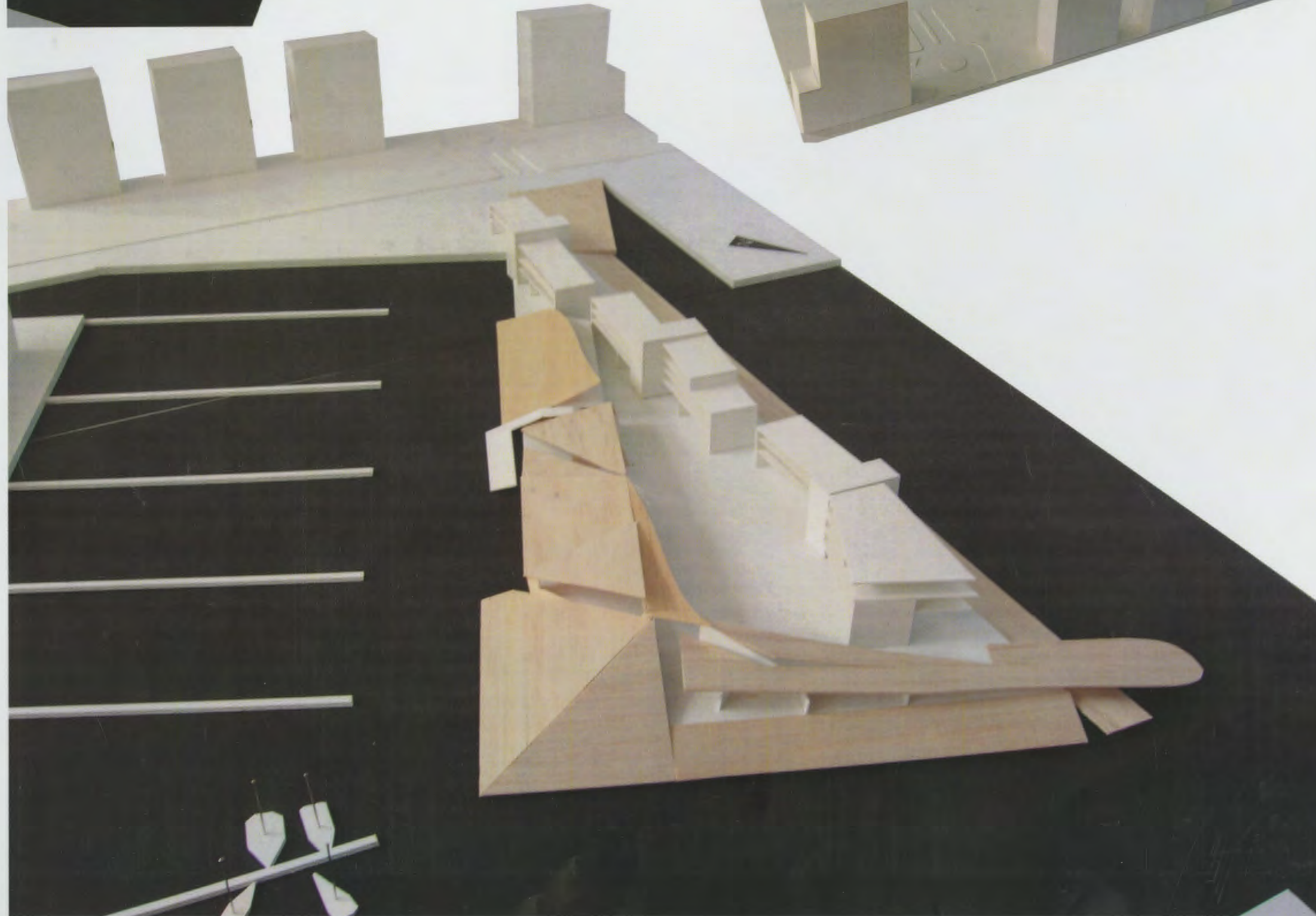
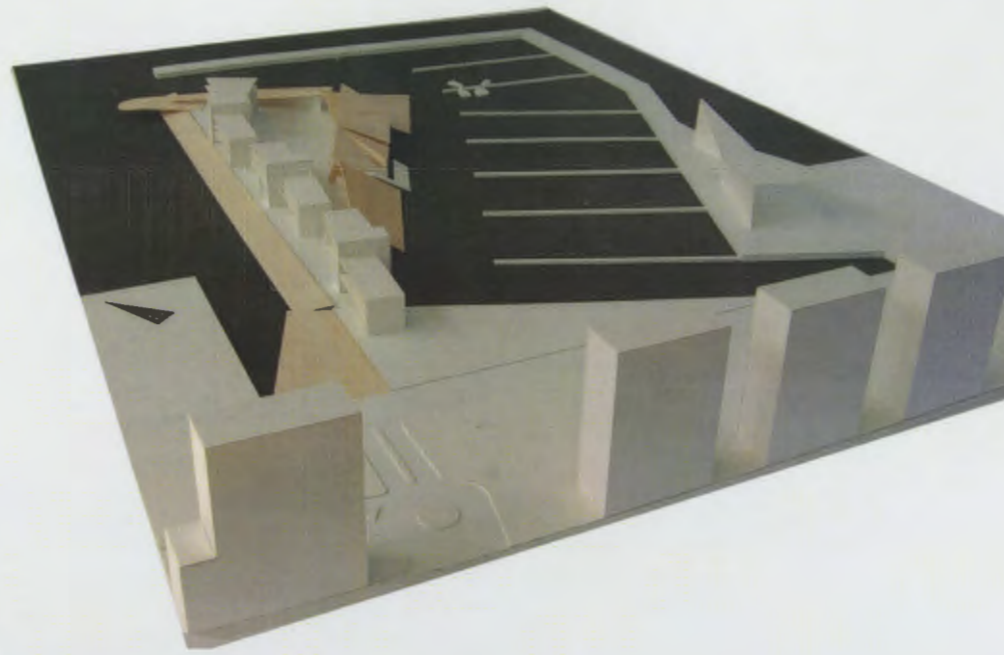
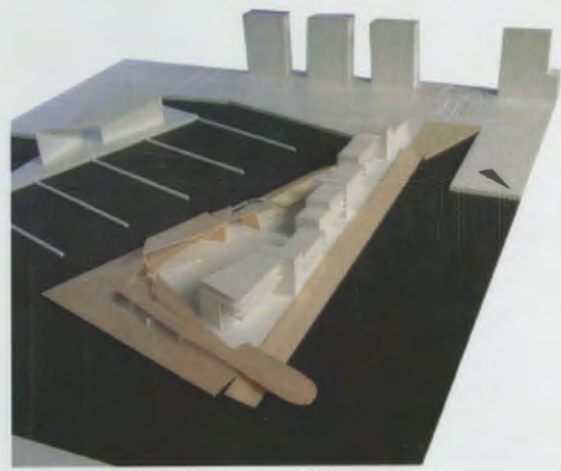


1:500 Concept model; Formal exploration.

This model looked to explore ideas of the interplay of landscaped and built elements about the public space. Key were ideas of a formalized built element with regular cores which access the parking along the axis edge.

The amphitheater as an important part of this scheme was emphasized, the resulting scale and dominance it would subsequently impart I believed to be detrimental. I believe it would impart a more significant spatial contribution if it were a part of the landscape.





1:500 concept model; Formal exploration.

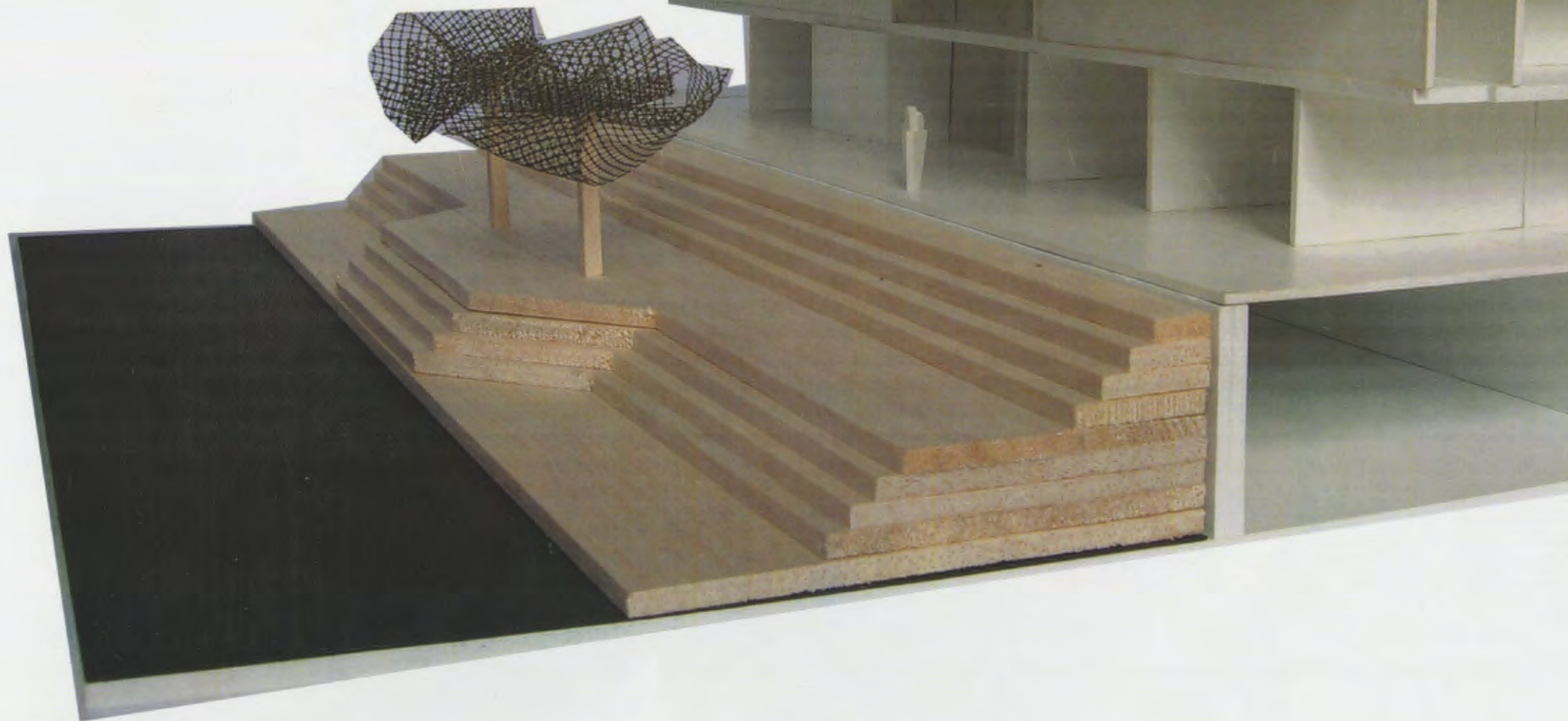
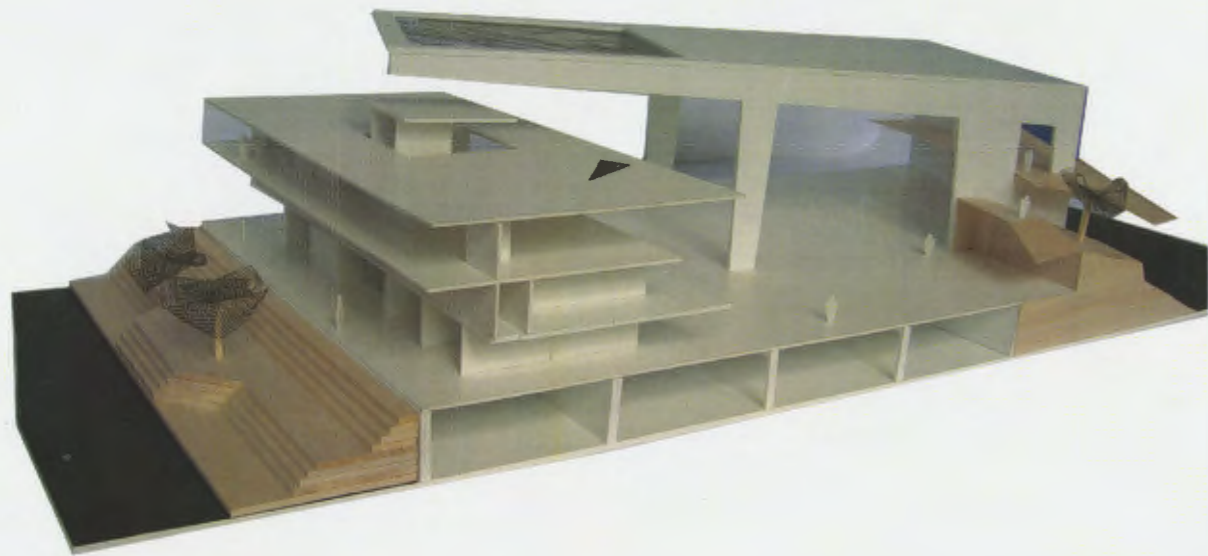
This model represented a breakthrough, the relationship between the primary elements of built, landscaped and water were beginning to arrange themselves about the public space in a complementary manner.

The landscape element has been fragmented, this has the advantage of dissipating much of the 'south easter's' force, selectively protecting many small areas as well as generally protecting the extent of the space. The fragmented landscape also allows for people to move more freely about the site and access the water's edge with ease.

The Built element has also been fragmented into three separate units, this is due to its length, 280 meters. Each unit has a circulation and services core, these cores are how the underground parking is accessed. The buildings are kept deliberately low and walk up in nature for the benefit of the public space.



Concept model



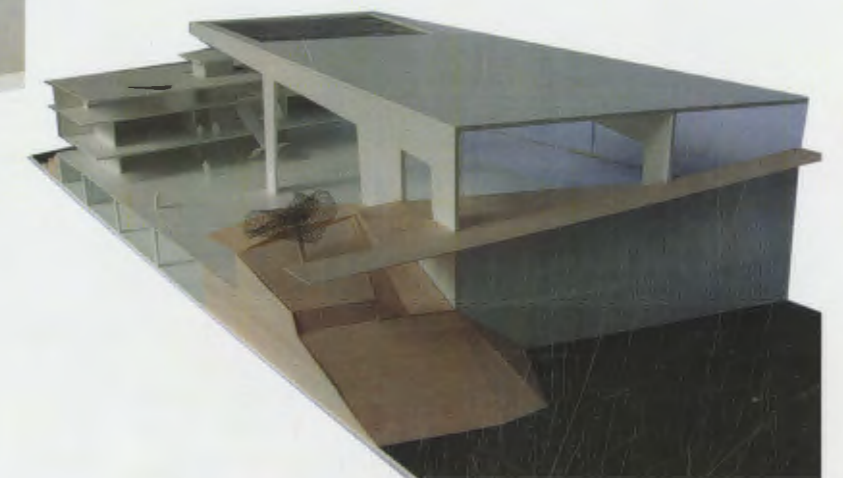
1:100 Concept Model; Detail resolution.

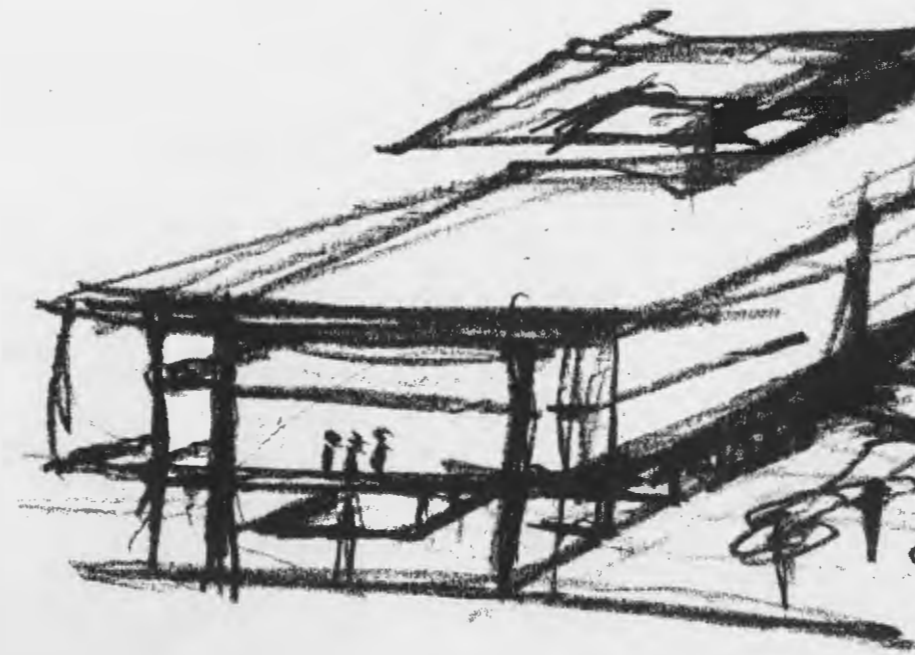
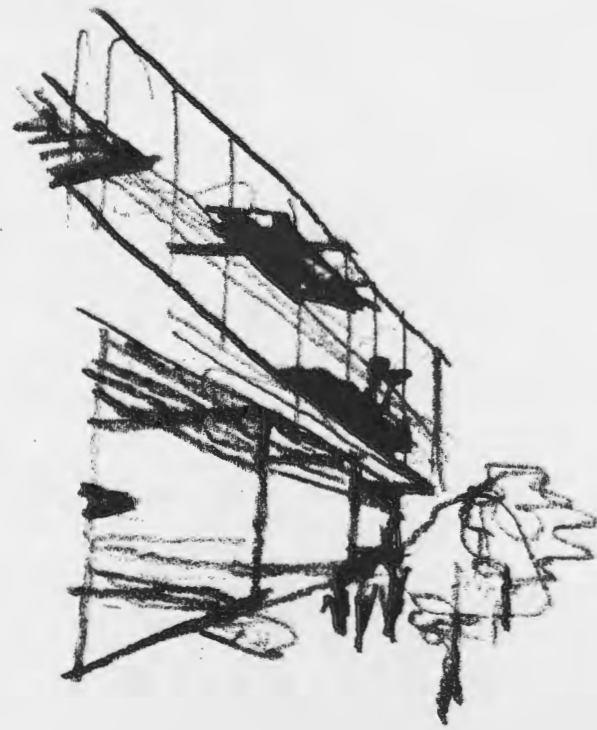
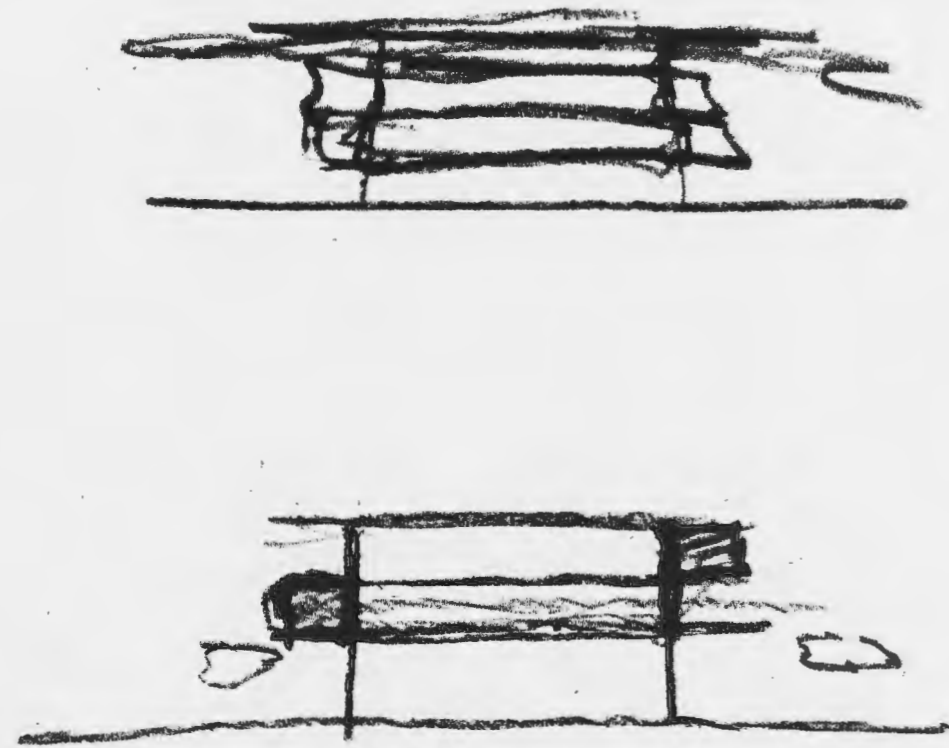
This model was counterpart to the model pictured on page 42. The investigation was crucial in acquiring a better sense of scale and required thought be given to structural resolution and treatment.

This model emphasized the over scaled nature of the amphitheaters canopy, I subsequently abandoned the attempt at an extravagant gesture towards sheltering this area. The resulting approach was that the landscaped element would gain scale and significance from providing for this activity.

Clear in this model is the attempt to establish two completely separate methods- by which each edge meets the water. The formal edge of the built element is reflected in the linear terraced treatment which provides space for trees to be planted in front of the circulation cores. The landscaped element assumes an organic nature, undulating and selectively planted, selective areas would be lawn for public enjoyment and the remainder would be planted with local, water-hardy plants.

The parking and fill strategy is evident here, the berms enclose the parking and provide soil for the growth of large trees. This surface would be punctured selectively to afford the basement suitable ventilation.





Built element; concept development

Build element; formal exploration.

These buildings are concerned with providing active edges to present to the public space, these are mostly comprise small retail and cafes. The first and second floors consist of open plan office space, this will add commercial impetus to the complex and increase daily presence.

The whole structure can be treated in a very utilitarian manner. A structural framework conducive to a flexible working environment and a skin of protective screens shall aid climate control are the main concerns at these levels.

Both the main edges of units have balconies hanging over the public space.

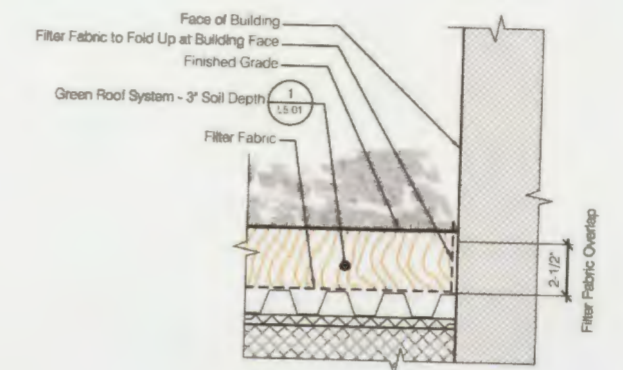
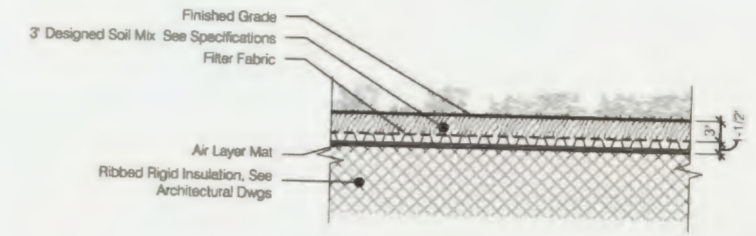
Each unit is able to operate independently and each wing is able to operate independently as well.



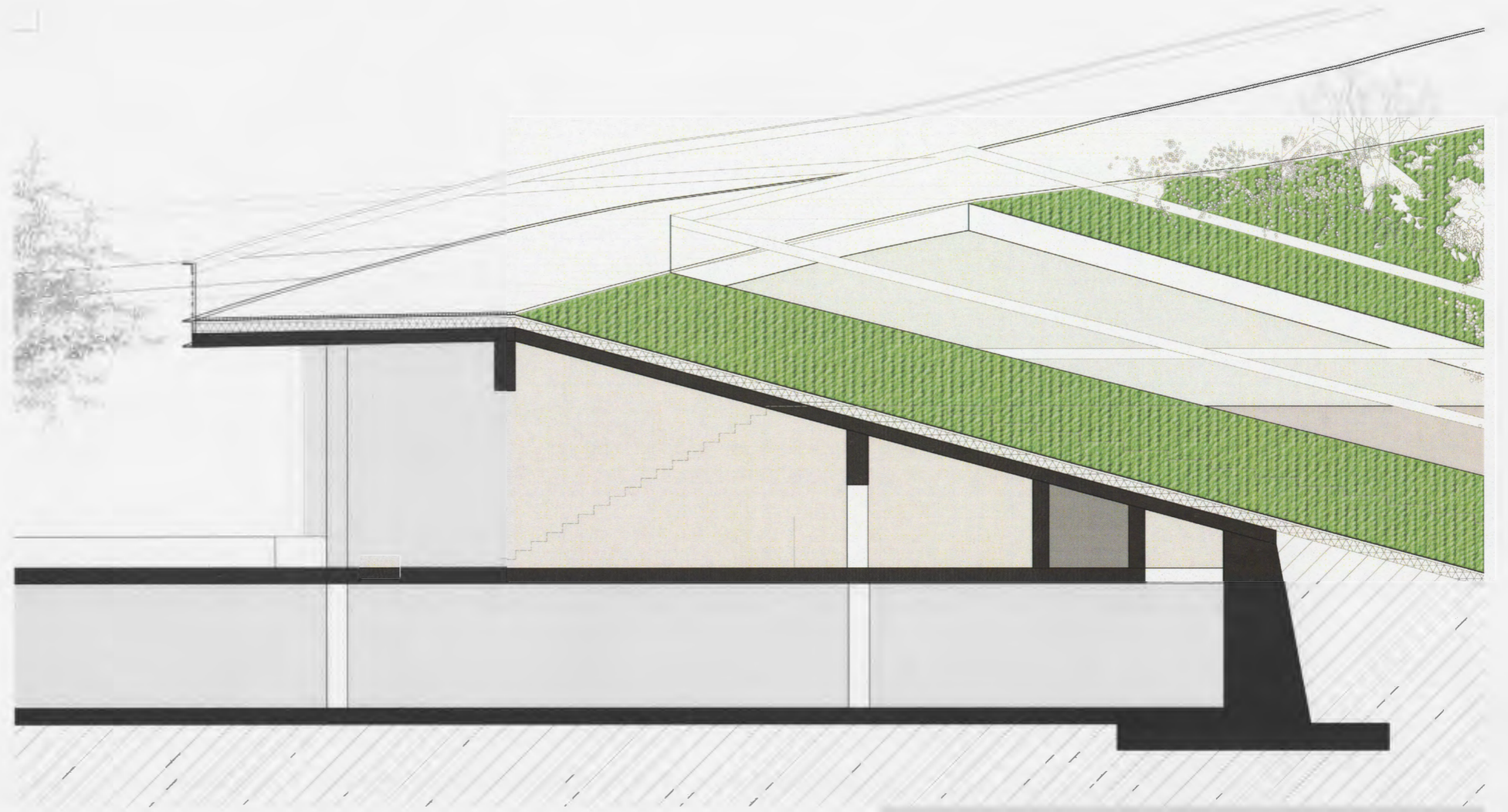
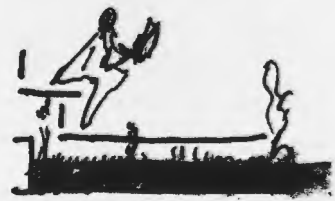
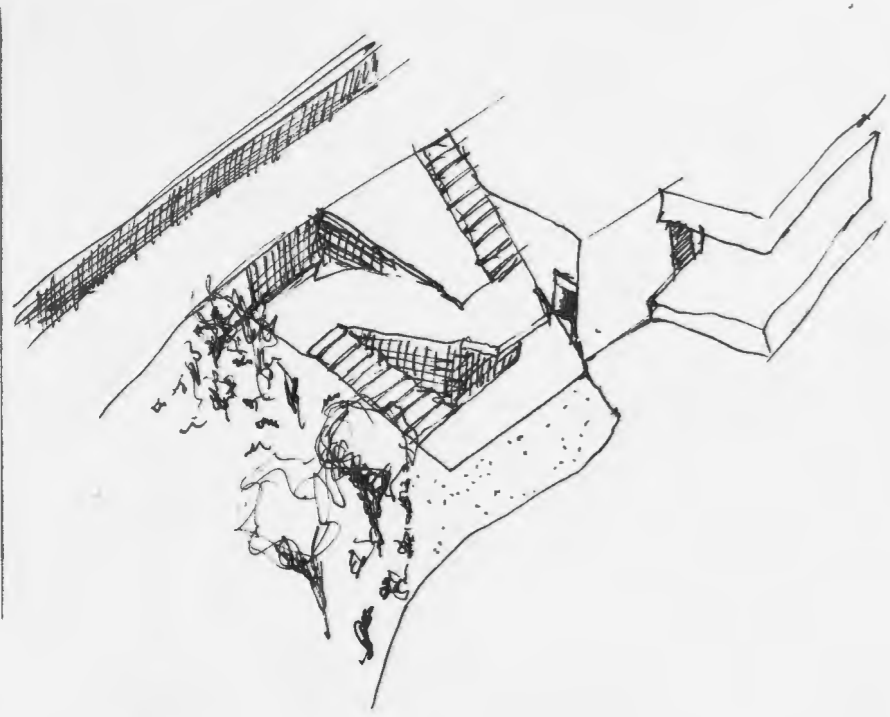
This Case study of a green roof in the US shows the potential for sloped landscaping upon form work. The images below left indicate the method of retaining soil depth on steep slopes.

Soil depth relates directly to the type and size of plant that can be supported, as the images opposite right indicate.

The image below indicates a method of spanning steel grating a minor distance above shallow earth which can support stone plants, cacti and grasses. These plants will grow through the grating, the areas most trod shall remain bare of growth, an interesting effect. ('Green roofs case study', various pages)

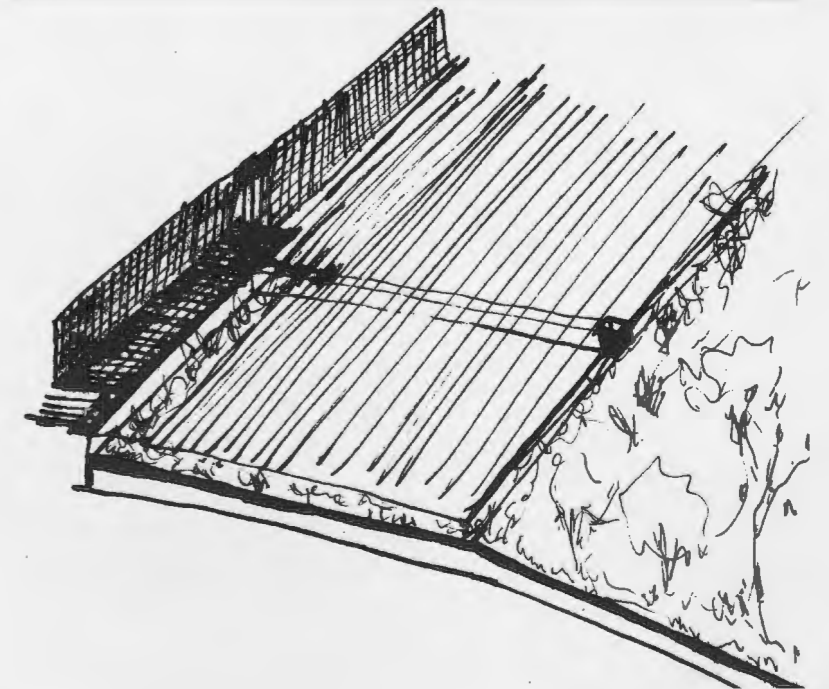
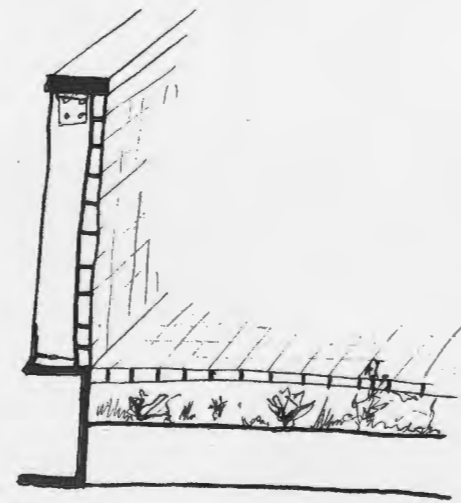
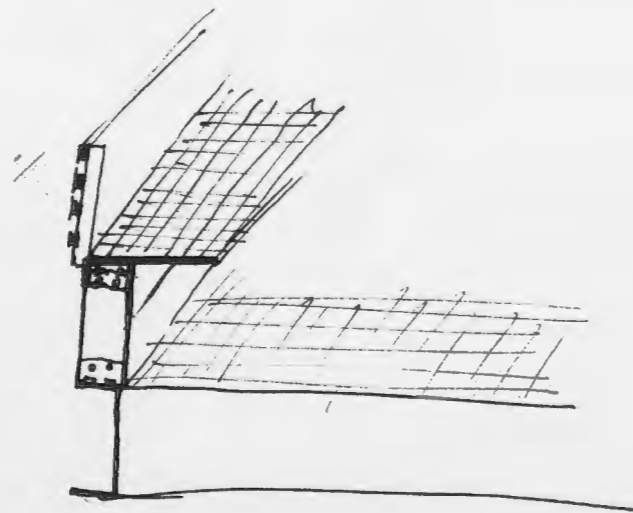


Landscape precedent study



This drawing indicates necessary soil depth requirements to grow relatively small water efficient plants and lawn.

These sketches indicate thoughts towards resolving the technical aspects of the landscaped berm element. The idea to span the steel grated walkway above plant bearing soil is primarily informed by the 'Green roof case study' on the previous page, this elements purpose can be extended to become the balustrade and seated areas too.





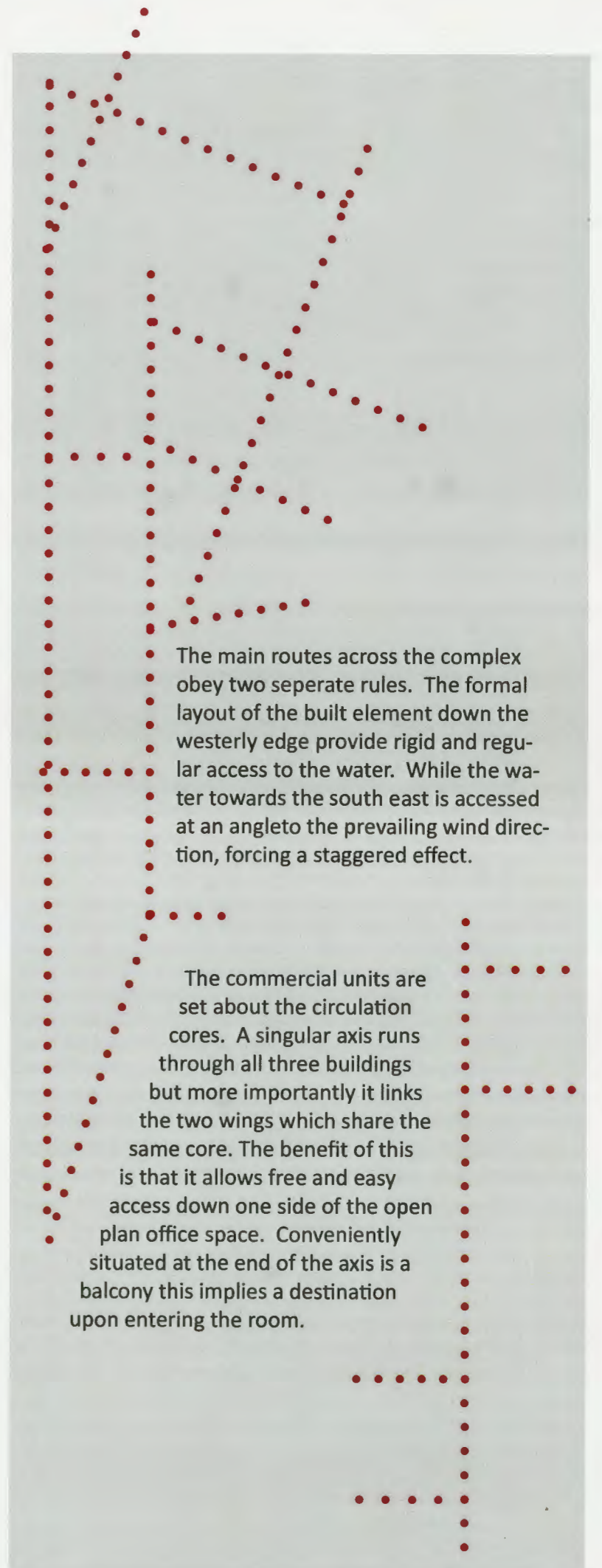
- Restaurant or cafe operating into the evening, these shall be allowed to have tables spilling into the public space.
- Storage for mixed the retail and backstage props and scenery.
- Backstage and change rooms for the performance venue.
- Small mixed Retail outlets.
- Circulation and service cores.
- Information Centre.
- 2 floors of art gallery for African art and a high-end restaurant over. The two restaurants at either end of the complex are mean to compete.
- 280 square meters of Open plan office space per wing per floor. (2520 square meters total).
- 3 - Male
• 2 - Female
• 1 - Disabled toilets



Movement routes and axis

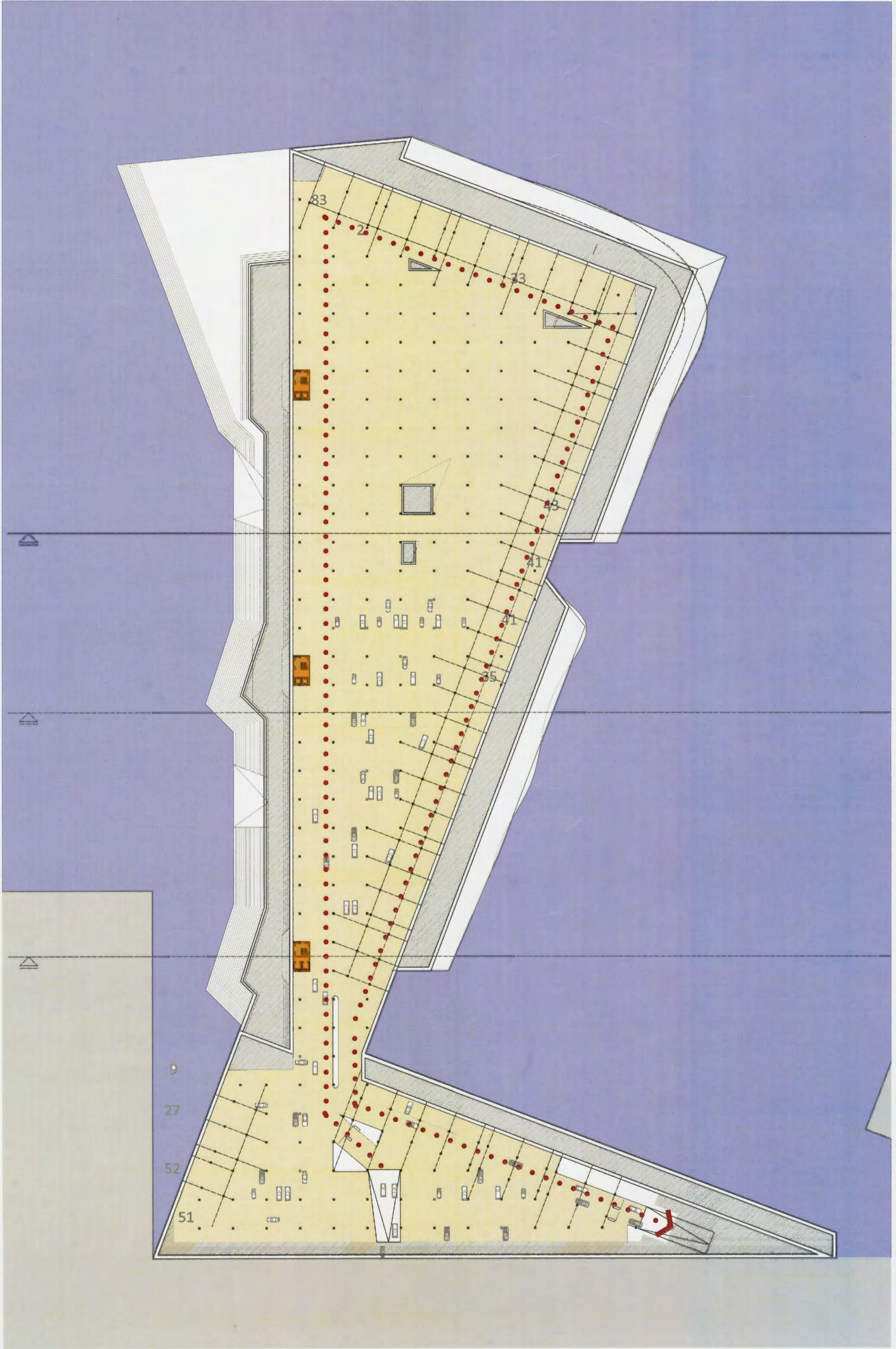


These graphics denote the main movement axis and routes.



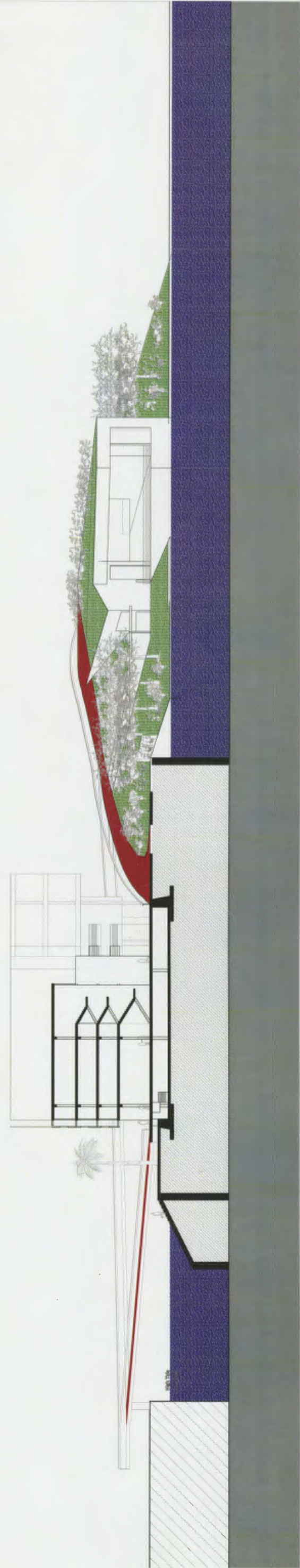
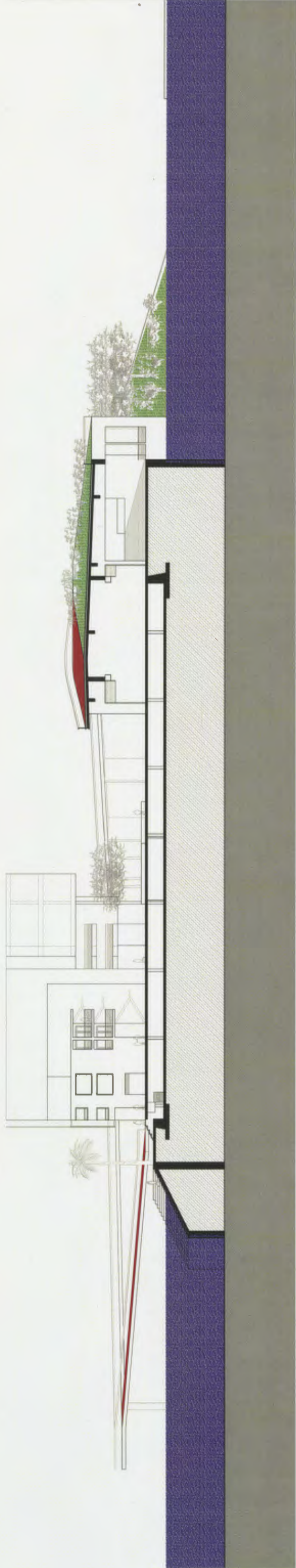
The main routes across the complex obey two separate rules. The formal layout of the built element down the westerly edge provide rigid and regular access to the water. While the water towards the south east is accessed at an angle to the prevailing wind direction, forcing a staggered effect.

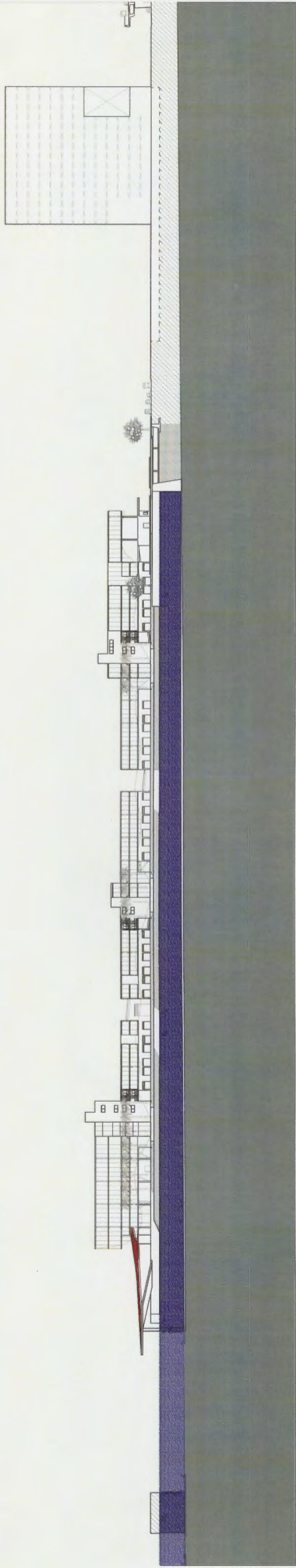
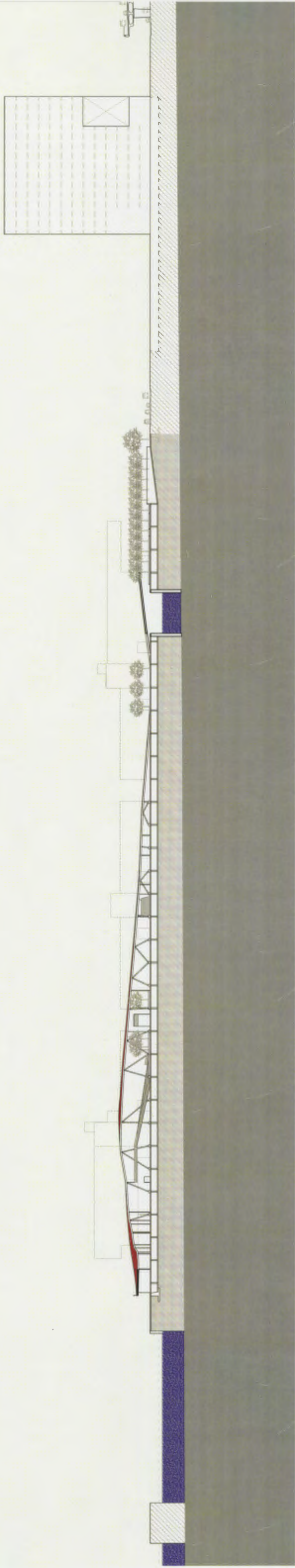
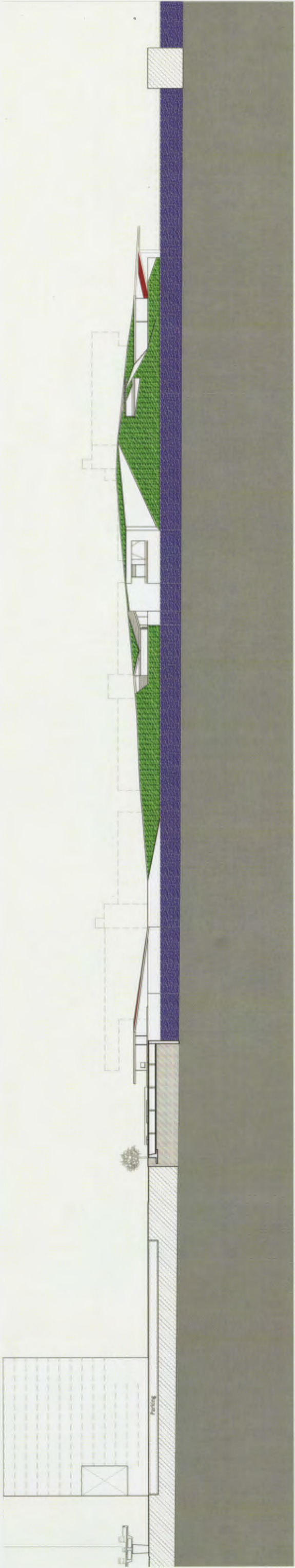
The commercial units are set about the circulation cores. A singular axis runs through all three buildings but more importantly it links the two wings which share the same core. The benefit of this is that it allows free and easy access down one side of the open plan office space. Conveniently situated at the end of the axis is a balcony this implies a destination upon entering the room.





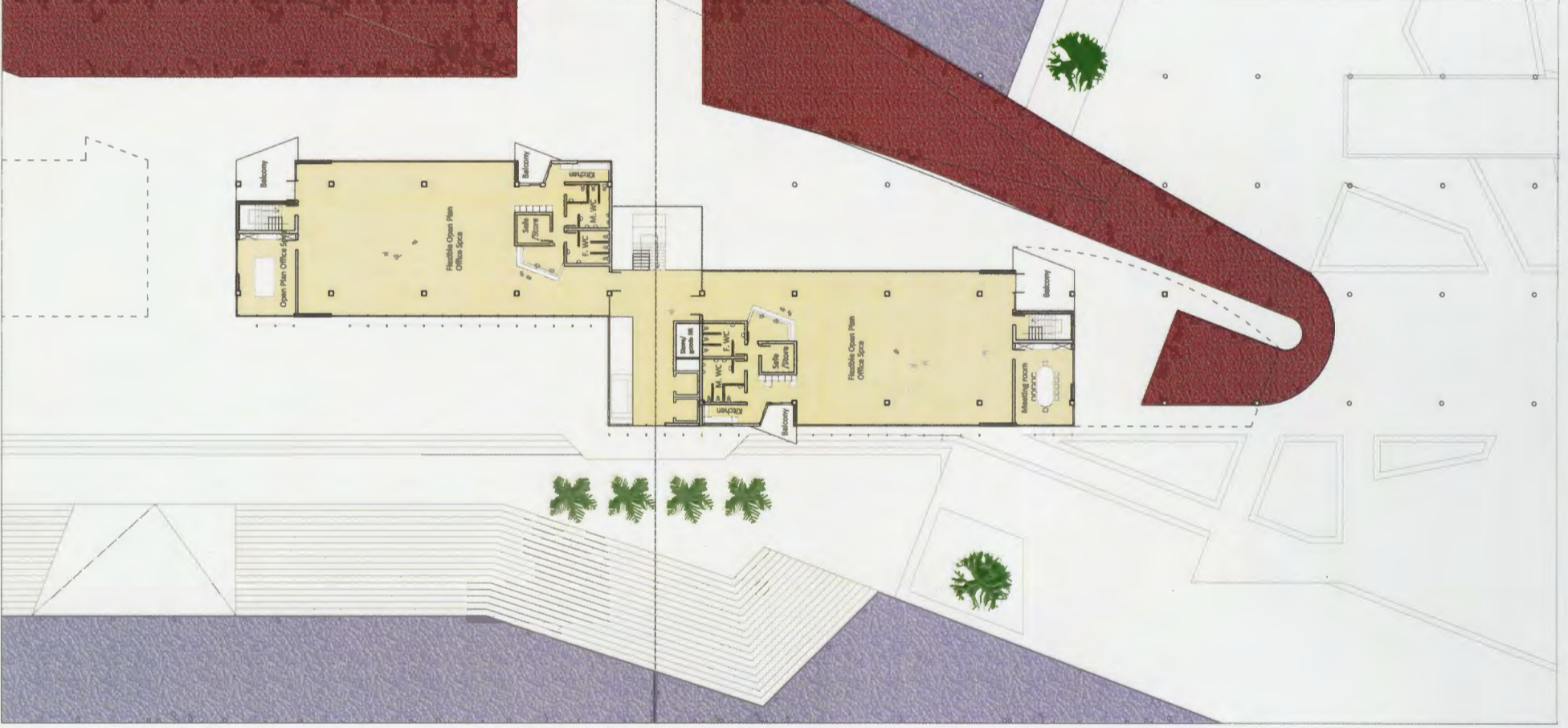




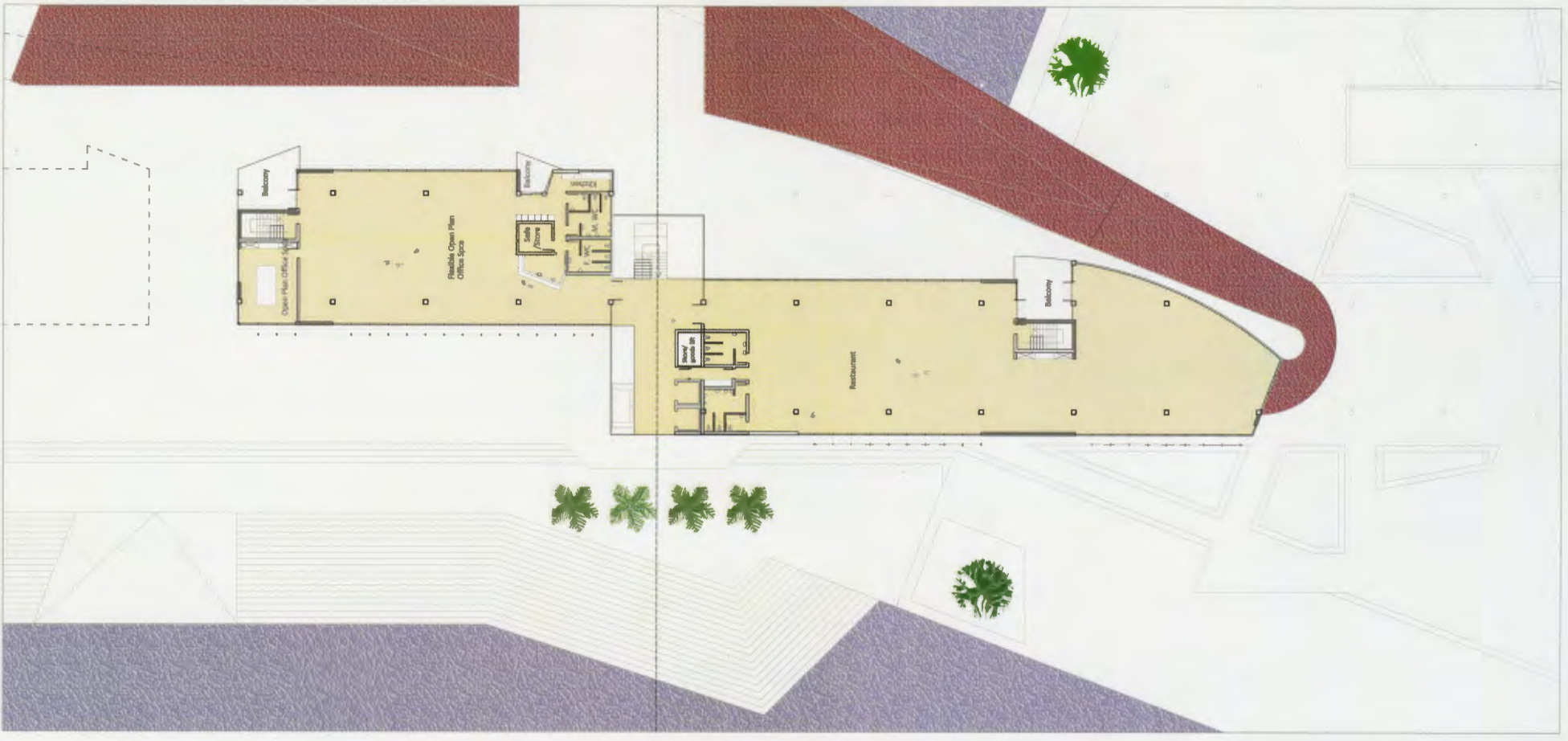


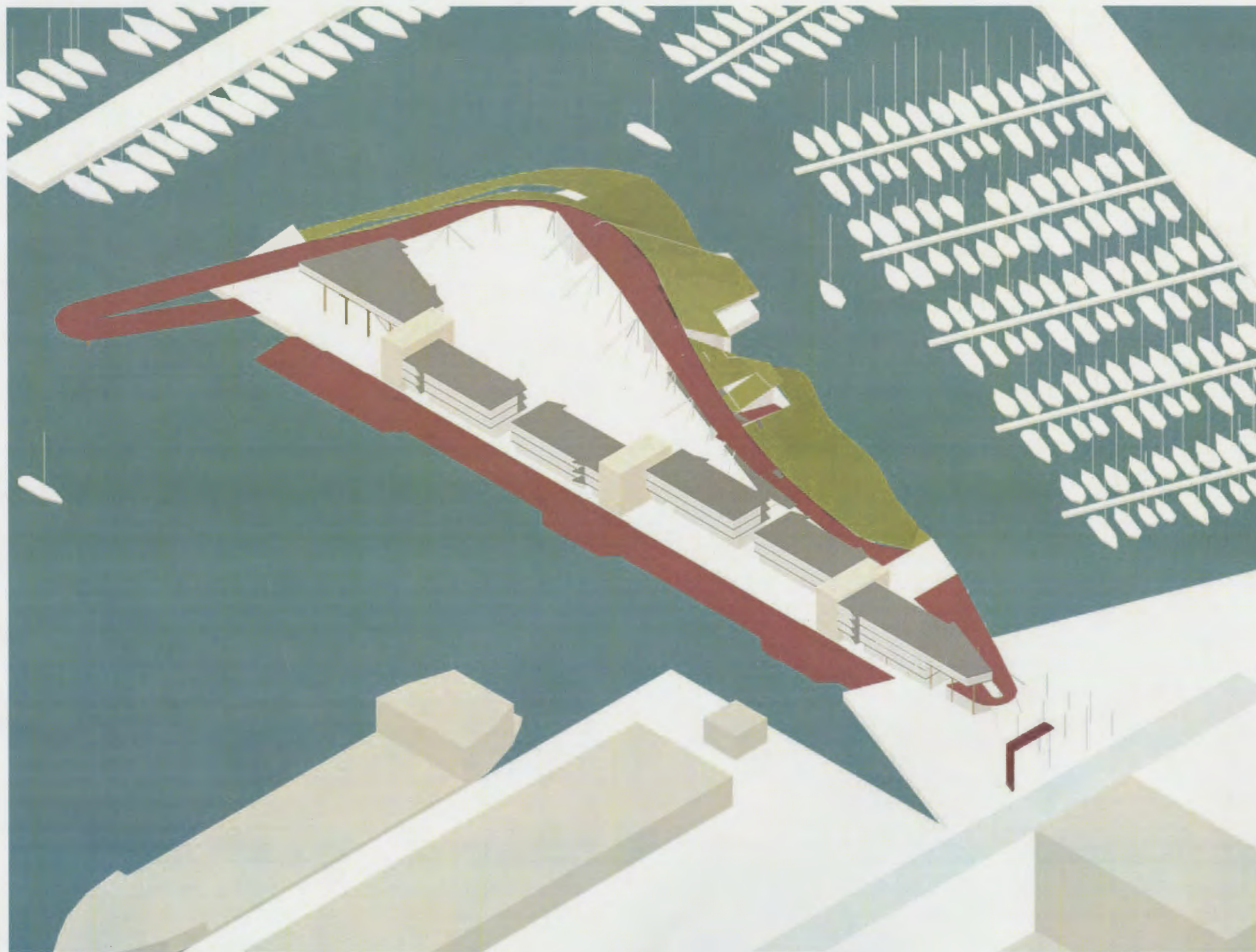


Plans; unit 1



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I believe that the success of design solutions about public space in the foreshore mostly lies in the ability of this space to be made accessible, protected and pleasant for the public to enjoy. To me the 'interplay of opposing elements' is in part a reference to the controversial nature of the development of the foreshore, the land and the water, the built and the landscape, all are set about one another creating an interesting new sheltered public space. The site is expected to operate all year round and accommodate major events and unplanned flows of people. I expect a site and development such as this would attract many events both of the arts, political and possibly even sporting in nature, large events would solidify its role in the city.

References:

Books:

'Green roofs case study' - Christian Werthmenn, Princeton Architectural press, 2007.

'Report on Proposed development of lots 144-148 The Foreshore', Cape Town. E.W.N. Mallows, Julian Beinart, Herbert Penny (PTY) LTD, Penny Haywood & CO. December 1964.

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<http://www.flickr.com/photos/51035677132@N01/3042758067>

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www.googleearth.com

