



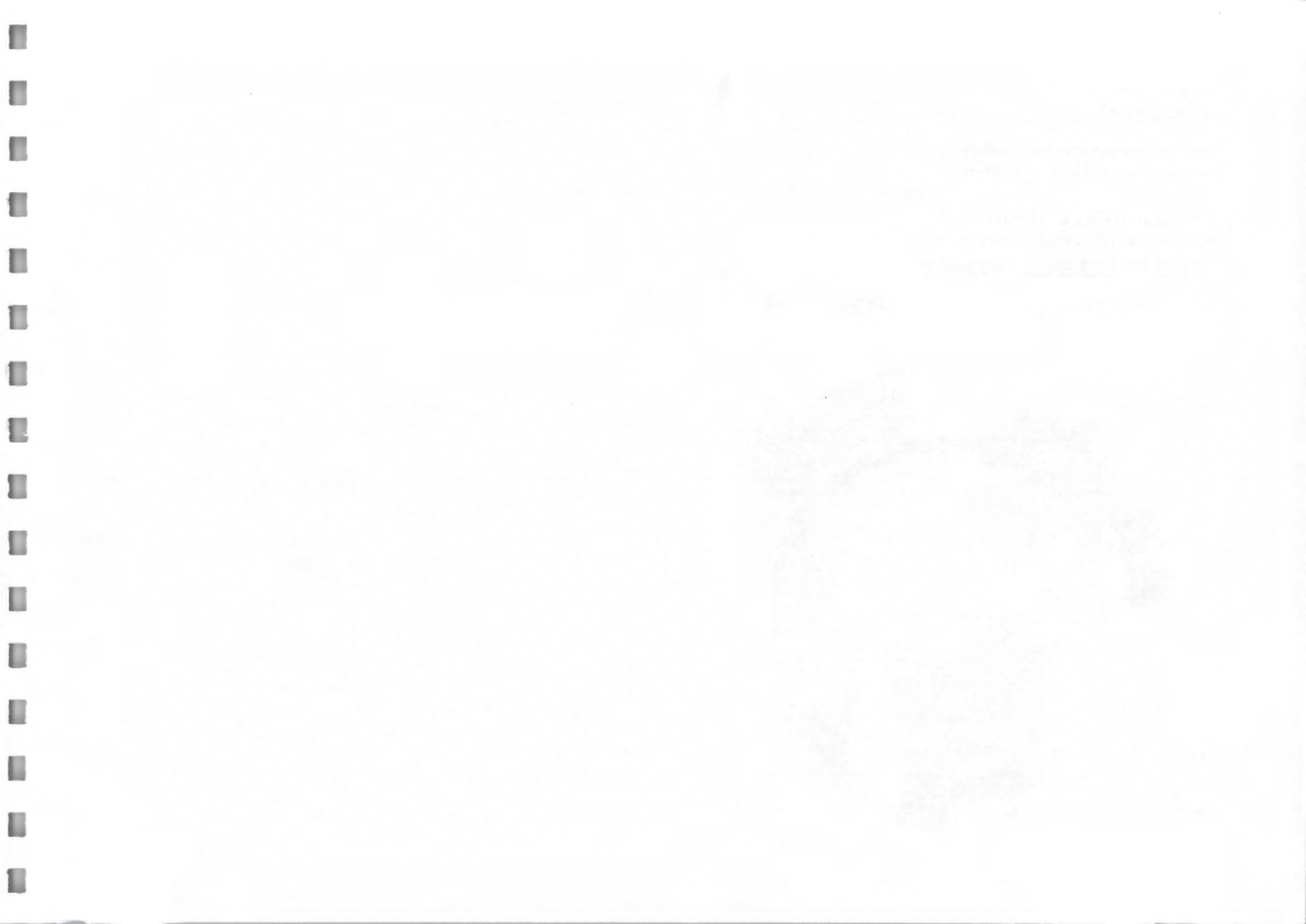
**FLUIDITY & TIME-BASED  
ARCHITECTURE:  
A COMMUNITY CENTRE IN  
HOUT BAY HARBOUR**

Design Research Report APG5079W  
Master of Architecture (Professional)

Sven Pilzweger  
October 2014

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## **ABSTRACT**

The dissertation process began as a personal one for me with the choice of Hout Bay harbour as the context for my site and eventual design approach. I have been part of the Hout Bay community my whole life and have come to appreciate the smooth and gradual fluidity of the area. Yet with constant transformations over its history the fluidity of the space has become negatively impacted upon with notable spatial disconnections within the harbour and between the harbour and the broader Hout Bay community.

The main focus of this design dissertation is therefore fluid time-based architecture specifically that of a sensitive “passive” nature which is easily adaptable to change and demand yet recognises that a design is still part of a greater context and must respond responsibly as such. The approach rejects high technology and gimmicks which can arguably make any design time-based. The emphasis is rather placed on “true” programmatic flexibility, seeking strategic and well thought-out planning and relies on small changes to garner larger perceived effects.

This approach thus seeks to not just create a fluid time-based design but one that will truly respond responsibly to its surroundings as well - bridging

these current divides and reconnecting the harbour and the surrounding area.



DISSERTATION TITLE:

Fluidity & Time-based architecture: A community centre in Hout Bay harbour

STUDENT'S NAME:

Sven Pilzweger

SUPERVISOR NAMES:

Associate Professor Nic Coetzer

Melinda Silverman

Tiaan Meyer

This dissertation is presented as part fulfillment of the degree of Master of Architecture (Professional) in the School of Architecture, Planning and Geomatics, University of Cape Town

Date:

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## **INTRODUCTION**

The focus of this dissertation study is Hout Bay harbour and the fluidity thereof – dealing with how the space changes over time. There is an apparent disconnection between space within the harbour, the land and sea, the people frequenting the space, as well as between the harbour and the broader Hout Bay community. The reestablishment of a Hout Bay historical activity route and a new community centre serving as the base for this route seeks to address these issues. In addition, the proposed design will seek to capitalise and improve on the existing fluidity of the harbours spatial experience.

## **INSPIRATION – FLUID SPACE**

### **Fluidity of Hout Bay:**

The dissertation process began as a personal one for me with the choice of the “Republic” of Hout Bay as the context for my site and eventual design approach. I have lived and been part of the Hout Bay community for my whole life and have come to appreciate the fluidity of the area. It is constantly abuzz with activity and has undergone considerable change and growth throughout its history – constantly reinventing itself.

The area’s local colourful history and beautiful scenery set in a fold of sea-lapped protective mountains helped lead Hout Bay in becoming a premier tourist destination. Hout Bay welcomes in tens of thousands of both local and international tourists a day when in season. It has one of the busiest, and arguably liveliest, working fishing harbours in the Western Cape with authentic traditional timber fishing vessels supplying the South African fishing industry with fresh tuna, snoek and crayfish; as well as having one of the largest established Pelagic fishing industries in the country.

The area is home to many popular recreational activities and events such as the internationally acclaimed annual Red Bull Big Wave competition held at “Dungeons”, one of the sixteen big wave hotspots in the world.

These diverse activities and movements transform and shift the atmosphere of various spaces - going unnoticed at first glance as the fluidity of the area is one of a smooth and gradual time-based nature; merely creating a transition of experience.



Image 1: Hout Bay context

### Fluidity and time-based architecture:

Much like I have observed in the case of Hout Bay our environment and society is constantly changing and in a state of motion; be it natural forces, human activity, the cyclical events which change throughout the course of a day, or even the rapidly changing social demands and needs of a society. In comparison to the fluidity of changes in our environment, architecture should similarly respond to change or resemble an evolution of sorts; eroding the metaphorical boundaries that appear to currently exist between the architectural “artefacts” and the rest of the ever-changing world. Architecture should go beyond its normative static state and become an “evental” act attending to a void in architecture – that of time. Time-based architecture can take many forms and character traits, yet I find the more “passive” or sensitive approach to the archetype more valuable to the average architect. High technology and gimmicks are not needed; those are arguably easy ways to make any design “time-based”. The real challenge as a designer are strategically and well-thought out designs which are easily adaptable to change and demand, whilst still realising that the design is part of a greater context and must respond responsibly as such.



Image 2: Fluidity and Time-based architecture

Site:

The site in question which will house such an archetype has been vacant from the time when it was “created” in the early 1950’s when it was reclaimed from the sea for the purpose of the industrial expansion of the fishing industry in Hout Bay. With a change in direction of the development of the harbour the site is now physically dividing Hout Bay harbour in two opposing parts: the industrial and the tourism sectors. This is negatively affecting the fluidity of the harbours spatial experience. This design dissertation will thus seek to not just create a time-based design but one that will truly respond responsibly to its surroundings as well - bridging the current divide and reconnecting the harbour and the surrounding area with a community based programme that can link in both adjacent sectors. The result should seek to capitalise and strengthen the fluidity of the affected area’s spatial experience.



Image 3: Site of disconnection between industrial (orange) & tourism (red) sectors

## **INDICATORS OF CHANGE**

This delves further into the fluidity of Hout Bay harbours time-based nature by investigating the area's various indicators of change focusing on

1. Contextual history
2. Local Industry
3. Present harbour condition
4. Weathering and materiality

## Contextual History

(NOTE: letters adjacent to dates correspond to contextual history map pg 09)

- 100-500AD First knowledge of man fishing in Hout Bay. (remains found in the late Stone Age cave in the Kranz on the Western side of the bay.
- 1510 The Portuguese set up ship at current day harbour position to barter with the Khoi but misunderstanding leads to Battle. The Viceroy of Portuguese India and 57 of his men killed. Battle presumed to take place in Hout Bay and the Portuguese graves lie in the valley. The "strandloopers" documented the Portuguese returned years later with a canon as a gift for the Khoi, only to set it off once they were carrying it – killing most of them.
- 1607 First entrance into Hout Bay recorded – John Chapman, Master's mate, on the English boat, the consent, noted promise of natural harbour for ships docking in Cape of Good Hope.
- 1652 Salted fish caught in Hout Bay – replenish passing ships through Cape Town's refreshment station. Dutch East India Company set up woodcutter's post (first one along with Kirstenbosch) for their replenishment station in the Cape.
- Ⓐ 1657 Constantia Nek established (Cloof Pas). Note constant threat of Hottentot incursion therefore men had to "hold" the pass as wood was obtained from the Bay.
- 1672 War between Netherlands and France
- 1674 Steady supply of 4 shiploads/month of timber arrive from Hout Bay to Cape Town harbour to be used to finish Castle (against possible French invasion).
- Ⓑ 1676 4 woodcutters posts established in Hout Bay
- Ⓒ 1677 First farmers inhabit area (large demand for wheat due to continuing war) – exploit sea to feed slaves and workers. Fish used as bartering between farmers.  
Fishing method of "Trekking" and handlines used.  
Issue of lions killing cattle in Hout Bay
- 1684 No trees left and Hout Bay name change considered
- 1687 Simon van der Stel has Oaks planted in Hout Bay to recover lost vegetation
- 1693 New road between Constantia and Hout Bay established
- 1689 Last elephant in Peninsula killed in Hout Bay
- 1710 All woodcutters gone

- Ⓔ 1780 England declares war on Netherlands – sends fleet to attack VOC ships in Cape. VOC ships take refuge in Saldanna Bay and Hout Bay yet only ones in Hout Bay remain safe and uncaptured.
- Ⓕ 1781 Hout Bay seen as “soft underbelly” of Cape’s defences due to privacy afforded by its sheltered bay. VOC decided to privatise Bay as potential refuge spot for ships in case of a storm or attack.  
West Fort built (during war between Netherlands and British). Twenty cannon battery at western entrance to Bay. 200 khoi soldiers stationed at West Fort and main farm (Bierman Farm).
- Ⓖ 1783 East Fort with Blockhouse erected - covered entrance to bay therefore heavily armed  
Another attack made on VOC ships in Hout Bay harbour but British retreat due to Hout Bays line of defence and naturally safe bay.
- 1786 First concept of turning “fortified bay” into commercial harbour – considered one of safest landing and sheltering spots in Cape Town
- 1798 West Fort abandoned and East Fort becomes headquarters of Hout Bay defences.
- Ⓕ 1800 First “REAL” exploitation of fish in Hout Bay. Trade started with Mauritius – dried Snoek in exchange for yellow sugar. Sheds built to dry and salt Snoek caught by local fishermen.
- 1806 British gain control over Hout Bay
- 1819 British site Hout Bay as safest harbour and place to dock in Cape Town
- 1830 Blockhouse of East Fort no longer functional – leased out on yearly basis. Falls to ruin over next 50 years
- 1890 Successful and consistent trade between Hout Bay and Mauritius
- Ⓖ 1903 First “INDUSTRIAL” exploitation of harbour – supplies overseas market with canned lobster. Hout Bay Canning Company aboard the “R Morrow” – an old salvaged shipwreck off Mouille Point auctioned off, bought and converted into Canning Ship. Anchored and wharfed at present day harbour – gangplanks connected to additional constructed buildings on land.
- 1914 Explosion at “R Morrow” and becomes prominent wreck.
- 1920 Hout Bay becomes recreational and community “playground”

- 1935 Hout Bay harbour approved
- (J) 1937 Harbour construction begins with a southern breakwater (200m long)  
Last leopard seen in Hout Bay on Little Lions Head
- (K) 1938 Road to harbour hardened due to traffic issues with wet sand and high tide.
- 1939 World War 2 - West & East Forts rebuilt with new weaponry
- (L) 1940 Wooden jetty to repair boats built (NOTE: no longer timber - now concrete).
- (M) 1943 Hout Bay part of Cape Town main defence - radar station "Fort Collins" built on top of Karbonkelberg - purpose to detect enemy submarines.
- 1945 Timber boats/trawlers used to locate mines around Cape Coast (wooden structures impervious to magnetic mines).
- 1946 South African Sea Products Limited (SASP) formed - combination of Trans-African Fisheries, Duikerskip, Trautman, and Stubbs Fisheries. SASP improves conditions in Hout Bay and constructs most modern cold storage plant in entire Southern Hemisphere.
- (N) 1947 Hout Bay Canning Company joins SASP incorporating their quota of lobster and has largest quota of lobster in South Africa. Built first smoker and fish plant to process Rock Lobster Offal in RSA. 17m Slipway built by government
- (O) 1949 "R Morrow" buried beneath concrete of new quay.
- (P) 1951 Extension to existing breakwater
- (Q) 1952 Reclamation of over 10 000m<sup>2</sup> of land from sea to expand wharf facilities
- 1958 New company, Da Gama Fisheries, formed and builds new factory. SASP builds additional factory to their existing factories.
- 1959 Protest from residents over smells from factories. Scrubbing towers installed to alleviate odours but residents still left angry over odours on odd occasion.
- (R) 1963 Leopard of Hout Bay - memorial to wildlife which roamed the mountains.
- 1964 Da Gama Fisheries joins SASP
- (S) 1967 Extension of breakwater and construction of new jetty to alleviate congestion in Hout Bay harbour.
- (T) 1984 Floating Marina opened - berth for 45 boats
- 1985 SASP constructs deodourising plant which sorts out "smell" issue in Hout Bay.
- (U) 1987 Floating Marina extended - berth for 68 boats
- (V) 1988 Land fuel tank removed (stood for approx. 20 years)



**Government asked to stop expansion**  
**HOUT BAY SEEKS INDUSTRY CURB**

A RESOLUTION asking the Government to stop any further reclamation of land and industrialisation of Hout Bay harbour, because the existing services of the harbour were already over-stressed, was unanimously accepted by a special-roads conference on the future of the harbour in Cape Town today.

**Slow Down HOUT BAY**  
**Say Hout RESIDENTS**  
**Bay Owners TO PROTEST**



**Ratepayers Want Valley to Remain 'Rural'**

GOVERNMENT plans to develop Hout Bay into a water fishing and industrial area were opposed today by a lively, sometimes rowdy, public meeting at Hout Bay last night. A representative by the Department of Commerce and Industries that the fishing industry there be expanded was totally rejected.

Image 6: Contextual history map

Primary Outcome

1.) Hout Bay has continuously undergone changes in terms of its primary use.



What is even more eye-opening is that this is on a large time scale looking at the whole area, thus many more changes were most likely taking place within these "generalised" time periods.

2.) Throughout all these various transformations Hout Bay has remained very much COMMUNITY based and orientated and this will most likely remain intact when the next "shift" in Hout Bay's primary use occurs

3.) The Hout Bay community seems to have the overall say in which direction the valley will head in a relatively 'rural', sensitive approach to the bay, which is of primary concern

### Local Industry

The fishing industry is highly unpredictable and is currently in a “recovering” stage with a potential fishing boom predicted on the horizon

- 1920 – 1000ton harvest increased to 250 000tons up to 1970. Crashed to only 100 000tons within only a few years with the hake harvest half of its previously expected catch.
- New steady growth of approximately 2.5% annually up to 1990 to 138 000tons and growth has now increased to 5% since 1990
- Crayfish on the other hand has shown few signs of recovery from its 50% harvest crash in 1960.
- The Pelagic fishing harvests have proved to be the most unpredictable illustrated with the 1960’s decrease in pilchards where nets were made even finer to harvest the smaller anchovy. It was noted that as the pilchard numbers decreased, the anchovy number increased, yet with the slow recovery of pilchard a slow drop in anchovy was then noticed.

Attempts have been made in order to combat the unpredictability of the fishing industry such as the new fishing regulations and 200 nautical mile South African fishing zone established in 1977. This sought to regulate

catch amount and prevent other countries from fishing in South African waters. Although these regulations being beneficial to maintaining a steady harvest recent weather pattern and sea temperature changes are thought to have an unpredictable affect on future harvests and the harvests food resources.

### Summary of South African harbour output

HARBOUR	1987 (ton)	1988 (ton)	% of total (1988)
St Helena Bay	341 113	344 340	39.4
Saldanha Bay	150 916	150 459	17.2
Cape Town	102 270	106 529	12.2
Hout Bay	63 125	62 857	7.2
Rest of RSA (20 harbours)	241 186	208 799	24
<b>Total RSA</b>	<b>898 610</b>	<b>872984</b>	<b>100</b>

As is evident, Cape Town, Saldanha and St Helena Bay are the most important fishing harbours in the country. Hout Bay is also very important with its primary focus on the Pelagic fishing industry. The Pelagic fishing industry involves the processing of fish into fish meal, canning and has a low land value before this process – hence the fish processing factories in Hout Bay harbour add about 210% to the Pelagic fish land value.

**Breakdown of fishing sectors**

SUB-SECTOR	DESCRIPTION	TYPES	VALUE	PROCESSING
Demersal	White fish	Hake, kingklip, snoek, maasbanker	High	Low
Pelagic	Small fish caught with seine net	Pilchards, anchovies	Low	High
Lobster		Lobster, crayfish	High	Low
Other high-value fish	Variety of remaining sea products with high land value	Tuna, Chokka	High	Low

Noticeably the Demersal sector is beneficial as it requires low processing, merely the cleaning of the fish, and has a high land value. It is also more stable in terms of harvesting fluctuations, an easier fish to catch due to its size and makes up the main market of the South African fishing industry. Crayfish, although now only making up 1% of the total harvest has a very high value making up 15% of the total fishing industry income. Hout Bay deals with both these sectors yet not on such a large scale as the Pelagic industry – possibly pertaining to the low competition in the Pelagic industry which means maximum benefits.

The South African Fishing industry is however still lagging behind other meat industries in South Africa due to marketing problems – future of fishing industry seems unlimited yet availability not made visible enough. The local fishermen of Hout Bay are therefore forced to work for larger

companies where they are “pressed” in terms of capital earned. At present there is less room for smaller operators and thus a need for strategies to be employed in order to improve opportunities for small independent fishermen.

**Primary Outcome**

- 1.) Hout Bay makes up an important part of the South African fishing industry
- 2.) The Hout Bay fishing industry deals primarily with the Pelagic sector – the most unstable sector.
- 3.) Waters rich with Demersal fish which can be overlooked in Hout Bay waters therefore creating a gap in the market and a good entrepreneurial opportunity for struggling local fisherman.
- 4.) Fishing industry highly unpredictable and therefore might not always be the primary function of the Hout Bay area. The harbour must therefore be developed with this in mind in order to withstand any drastic transformations.

**Present harbour condition**

Motion changing the spatial experience through:

- i. Sense of “ownership” of the harbour environment
- ii. Day “events”
- iii. Special “events”
- iv. Visibility
- v. Natural light

**i. Sense of “ownership” of the harbour environment**

The sense of “ownership” over the Hout Bay environment changes throughout the course of the day along with a change in the harbour experience.

Time period	Week days	Weekends
22:00 - 06:00	Fishermen/workers	Fishermen/workers
06:00 - 09:00	Local residents	Local residents
09:00 - 16:00	Tourists	Tourists & Local residents
16:00 - 22:00	Local residents	Local Residents



FISHERMEN/WORKERS ● weekdays  
● weekends



LOCALS ● weekdays  
● weekends



TOURISTS ● weekdays  
● weekends

- shipyard/ slipway
- religious
- clubhouse
- boat trips
- food
- formal market
- informal market
- retail
- NSRI sea rescue
- private



HUMAN MOVEMENT: TYPICAL WEEKEND



HUMAN MOVEMENT: TYPICAL WEEKDAY



BUILDING/ STRUCTURE FUNCTION (FACTORIES SPACE LEFT OVER - INDUSTRIAL SIDE)



INDUSTRIAL VS TOURIST AREA'S OF HARBOUR



Image 7: Combined map showing connecting patterns

The fishermen tend to disperse throughout the whole harbour environment and are present throughout the day (Image 7). Their “ownership” over the space is most concentrated during off-peak harbour times from late evening to early morning. During this time the harbour has a very unwelcoming and threatening atmosphere to the average member of the public with most of the harbour having been shut down. The harbour is now the local fishermen’s playground and only the ships docked along the piers having any real activity when they are prepping their ships and getting ready to go out to sea. This is dependent on the moon and its tidal effect but the fishermen depart on average between 01:00 and 04:00am and returning to the harbour after sunrise to offload their morning catch.

From approximately 06:00am the local residents of Hout Bay descend upon the harbour before work for their morning walk or run thus changing the hands of ownership with the sunrise. The harbour is now welcome to all the residents of Hout Bay. During this time the harbour environment is rather quiet and calm with the harbour getting ready for the late morning influx of tourists.

When the tourists arrive the harbour is still very much a “community-based” harbour yet it becomes a separate entity from the rest of Hout Bay

– no longer part of the environment but now a destination. The dynamics of “ownership” over the space seems to have changed. The harbour becomes a tourist destination with crowds of foreigners being offloaded from buses. The atmosphere of the harbour is suddenly abuzz with electricity making even the locals feel like tourists experiencing the area. The tourists tend to stick to the Tourism sector of the harbour and only being shuttles to the Southern most end of the harbour during weekends when the local Bay Harbour Market is open.

When the crowds die down and the tourist aimed local businesses close for the day the harbour falls back into a sense of calmness with the day drawing to a close. The ownership shifts back to the local residents coming home from work once again and the harbour loses its “electricity” becoming an extension of the Hout Bay environment once again. The local restaurants and eateries becomes the main focus during this time frame. Once late evening approaches the cycle starts up once again with ownership shifting to the local fishermen and workers.

ii. Day “events”: activating the ordinary

Many “events” occur and evolve throughout the course of the day creating fluid and transformative spaces which would otherwise be of no real significance.

- Fish supplier – the various stages of the local industry process become a constantly evolving event drawing in crowds of curious bystanders.



Image 8: Transforming space in front of local fish supplier

- Local residents from the Hangberg settlement above the harbour draws in crowds to an otherwise irrelevant space along the waters edge by feeding seals and garnering trained tricks in return.



Image 9: Local residents activating space along with local seals

iii. Special “events”: brief occurrences signalling change

These could be best described as “point” events as they happen very briefly become a fleeting occurrence and thus immediately steal public attention changing the fluidity of the space in an instant.

- Informal traders – the transportation and process of stall and good setup.



Image 10: Informal trader's set-up process

- Fishing boats arriving back in harbour contrasting against the open sea and surrounded by seagulls scavenging for unattended fresh fish.



Image 11: Fishing boat returning with fresh fish

iv. Visibility: Hidden vs. exposed

This results in different spatial impressions and thus experiences of the space.

- Low tide – witness alarmingly heavy pollution submerged in sand bank and between rocks creating a negative impression of the harbours current state. Once high tide comes in little or no pollution is now visible thus romanticising the harbour once again.

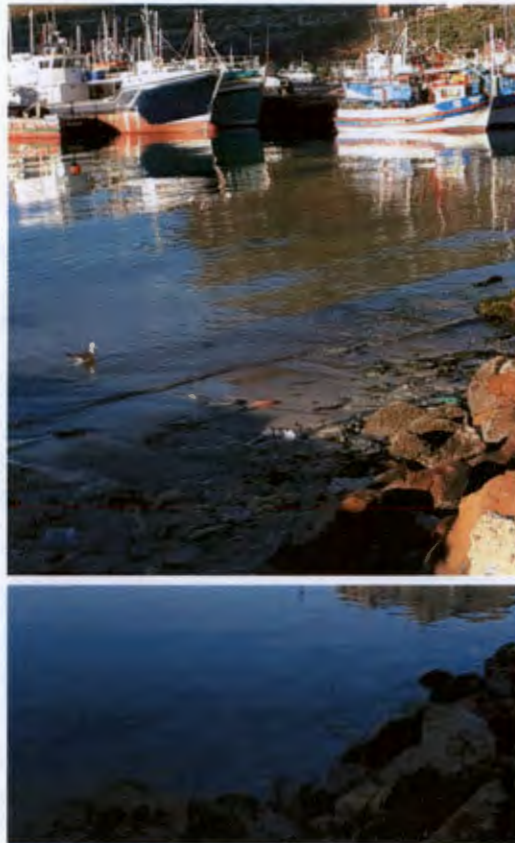


Image 12: Low tide vs high tide exposure

- The harbour environment is heavily littered in the early morning before being swept completely clean for the day's new arrival of tourists.



Image 13: Littered environment before daily clean-up

v. Materiality and light:

The combination of materiality and light result in changing fluidic perceptions and spatial experiences - controlled in part with the choice of the material being affected by the uncontrollable weather patterns.

On a cold overcast day, late in the afternoon, the light quality could be dim such as in the case of the space around this rusted steel boat docked in Hout Bay harbour – possibly bringing out emotions of sadness or a sense of morbidity. Then on a warm summer's day, early in the morning, when the light quality is bright, sharp and penetrating the aged



Image 14: Cold overcast day vs. warm summer's day



materiality detail of the ship – emotions of joy, merriment and an energetic quality may be expressed. It's very interesting to note that the same boat in the picture which had an arguably daunting or depressing quality to it can be completely changed in its perspective. Now, when immersed in morning sunlight, you start to appreciate the rusted quality as it gives the ship character and a 'quirkiness' which contributes to the rich narrative of Hout Bay harbour. This is what makes the aspect of materiality so amazing. By exploring materiality in architecture you are able to express so many different experiences, meanings and emotions – each one being unique.



### Primary Outcome

- 1.) There is a sense of changing/transforming “energy” apparent in the harbour through various “events”, man-made or natural, taking place.
- 2.) What this “energy” from the event appears to articulate with regards to time-based architecture, is that a building on its site is part of a much larger fluidic system. The architecture should therefore not be limited by the site’s boundaries as it should “give” and “take” from the energy of its whole context - such as its people, culture, weather conditions, special events happening else where, and so on, i.e. encapsulating the fluid experience of the changing space of the area as it transforms over time.
- 3.) Materiality and its connection to weathering in particular is a form of “passive” time-based architecture which can really create a connection to a site and its contextual surroundings.

## **WEATHERING & MATERIALITY: HOW TIME MAINFESTS IN BUILDING MATERIALS**

### Effect of coastal salt particles on materiality

When waves crash in the sea or in generally high winds, sea-spray occurs. Sea-spray is a spray of saltwater which contains a high concentration of mineral salts, predominantly chloride ions. These salts do not dissolve in the air directly and are carried throughout the coast in the form of particulate matter or in the form of microscopic airborne water droplets. Salts accelerate the corrosion processes of materials and therefore when in these forms, the salts are largely responsible for the corrosion of primarily metallic materials along the coastline. Material endurance therefore becomes of great importance along the coast, especially if the material is to be outdoors and to perform a critical structural role within a building. These salt water environments may often cripple local marine and fishing industries through the corrosion of their factories, equipment or even boats. The degree of the salt contamination or corrosion decreases in relation to the distance from the sea and is greatly affected by wind currents as these can often blow salt particles inland. Extreme wind

conditions can even lead to “salt-crusts” forming on materials which are highly corrosive in comparison to mere salt deposits on materials.

There are many new technologies and developed materials which have been designed to combat the corrosive properties of airborne salt particles. This allows the continued salt build-up and deposits on the actual material as before but no harm comes to the actual durability of the affected material.

The salt deposits and the build up thereof does bring a fourth dimension to the material – that of time. The salt ages the characteristic outer-appearance of the materials due to the consequence of the salt deposits leaving behind a stain or a mark which starts to create various layers of colour shades which act as traces of salt build up over the years. These traces left behind are further emphasised against an otherwise arguably dull and solid coloured background [*Architectural Metals*]. As the appearance of the material continues to change over time so does the material’s character – creating a changing experiential quality.

The build up of salt for instance may lead to rust forming on a metallic material if not treated correctly. While for some the rust might represent decay and have a depressing and/or solemn experience for them, others

may find the rust beautiful as it adds a sense of character and “life-experience” to the material. Everyone may have a different response and these may intensify over time as the rust begins to do the same over time.



Image 15: Rust “Wall Art”

### Case study

A great precedent of this would be the Third Wave Kiosk, in Australia, designed by Tony Hobba Architects. It is located on a beach and has a simple programme of changing rooms, toilets, and a café and has become a beacon of a meeting point in much regard for the prominent beach. The structure is made out of weathered self-supporting Cor-ten steel sheet piles which had previously been used as flood barriers in the local area with regards to seawalls and piers. The steel sheets have created an oversized corrugated wall profile and have been merely slotted together with no additional fixings.

As is evident in the photos alongside the design has actually become coastally identifiable through its materiality and various colours which were intentionally left in their original reddish-brown oxides of weathered steel sheets in order to harmonise with the surrounding colours of the cliffs in the area. What is more is that the rust has given a character to the material which not only already emphasises an aspect of time through the materials reuse and current oxidised state, but as the outer surface continues to oxidise the history behind the material will become that much more rich in terms of its aging process and character.

The rusted surface of the Cor-ten steel, although an effect of coastal weathering, is now actually said to act as a barrier to protect the rest of the structure from any further erosion due to the unique distribution of alloying elements which make up the Cor-ten steel. The rust is now not only striking in its appearance with regards to telling a history and creating a visual experience but now it has a function as well.



Image 16: Third Wave Kiosk



Image 17: Up-lights highlighting rust effect at night

### Weathering of metals

As metals age the surfaces roughen with layers of oxides and hydroxides and other compounds. These surfaces which are now at a rougher quality will now absorb less light and therefore their reflectivity will decrease thus resulting in an somewhat more 'dull' and matt appearance.

The roughness of the surface also plays a role in the corrosion of metals. The rougher the surface quality the easier it is for salt to build up on the surface and therefore the more prone it will be to corrosion. In effect, as is evident, the older the metal the more susceptible to corrosion as well.

Airborne salts will accumulate in dew and other moisture and form on a metal surface along the coast. During the morning the dew/moisture accumulate and as the temperature rises the moisture will essentially start to run down the metal gathering up salt deposits along the way. Overtime this process may lead to stained streaks developing down the surface of the metal. The deposits of salt become concentrated as they begin to gather and collect at any edges, horizontal ledges or drips. Once these gathered salt deposits turn into a soluble solution its corrosive properties become much more intense and localised than before. Unless the metal has been treated/galvanised in order to protect itself from the effects of

corrosion, the metal will develop a barrier of oxides, which is the reasoning behind the gradual colour changes of the metals.

This aspect can arguably completely change the appearance of a building and give it that reading of time to represent a history and ageing process of the building in question. An example of this would be copper which generally takes on a common green patina in more industrial areas, yet along the coast has been known to take on an almost slightly bluer tint in appearance.

A case study where the weathering of copper has strengthened the design is a perforated rain screen designed as a façade system on the exterior of de Young Museum in San Francisco (2005) by Herzog & de Meuron. The rain screen is made from over 7000 copper panels and their perforated cut-outs have been abstracted from the surrounding tree canopies. Whilst being decorative, the screen is also functional, as it protects and hides the buildings ventilation system behind the screen from the rain and for privacy reasons. Due to the copper material the metal screen will show its aging process over time through its slow and uneven change in colour and texture. Thus the rain screen is using its function – protection against rain – to not merely repel the water but utilise it to allow the material to evolve.

The aspect of time is also visible through the perforations in the rain screen which diffuse and filter natural light into the building creating the illusion of a textured pattern on the interior of the building which will change and move as the day progresses. This will then be inverted at night allowing the building's interior artificial light to glow through these pore-like perforations.

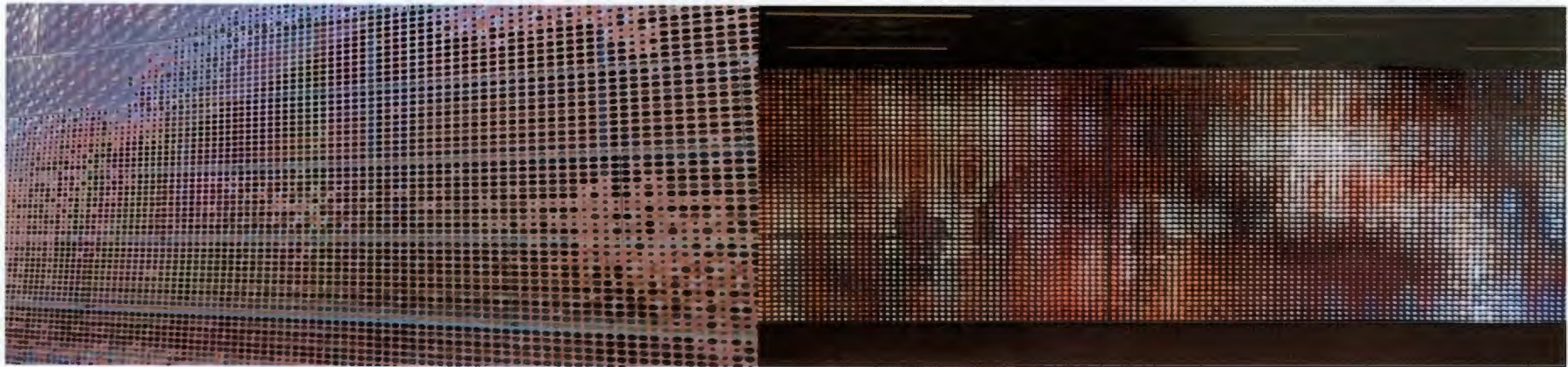


Image 18 & 19: de Young Museum – copper rain screen showing signs of weathering

### Weathering of Timber

The time it takes for timber to be fully weathered depends upon its degree of exposure; but once fully weathered it will remain completely unchanged in appearance (with the exception of special circumstances such as stain, mildew or decay). With weathering the colour is not just affected but the timber may warp in some instances – depending on the timber width to thickness ratio (the wider the width and thinner the timber the more likely it is to warp). When timber warps the individual boards tend to ‘cup’ and fixings may become loosened and therefore compromised. In the case of a coastal region with salt particles airborne the timbers surface comes under a biological attack by tiny micro-organisms (mildew) which contribute to a more rapid rate in weathering of the wood to a greying shade of colour. The colour shade along the coast is often a bright light grey or is often described as silver in appearance (Image 20).

Timber decay can also become a problem along the coast due to fibre saturation which is the largest amount of water vapour which can be absorbed by the timber. It is therefore important to construct and, if needed, finish the timber when the moisture in the air is at an average level for the region in question. This will allow fluctuations on either side of



Image 20: Weathered timber – silver appearance



Image 21: Timber grains softening appearance over time

the moisture levels without any drastic changes which could cause the timber to decay.

What is interesting to note is that even though the material is said to get to a 'fully-weathered' stage in terms of its colour, the grains in the timber appear to continue to warp over time with regards to their depth and are further emphasised (image 21). This is arguably similar to how wrinkles on humans deepen over time and just like human skin, this aging process gives the timber a softer appearance. This has the potential to activate a space in terms of its evolving experiential quality as the softening timber makes the space feel possibly more welcoming, warmer or even just more calming; but once again this is all very subjective dependent on the occupier of the space.

This once again brings an aspect of time to the material showing its evolution over time and a changing experiential quality. The weathered timber appearance creates an arguably rested and calmer characteristic for the space which is typical of a coastal region. This is once again only emphasised over time with the continued weathering/warping of the material.

## 2.5. Weathering of Concrete

Concrete is said to be a good material in terms of weathering as it is not affected much due to the fact that it has similar properties to stone. For this reason concrete has been used in the construction of breakwaters and piers, as well as Dolos' which are used as barriers against the ocean's corrosive properties (Image 22).

What is interesting though is that permeable rocks, ones which have large spaces between their pores, weather in an intriguing honeycomb effect (image 23). This happens when salt deposits onto the rocks and through an accumulation over time slowly start to erode the rock. Once the surface has been eroded the salt enters the spaces between the rocks pores and the erosion of these spaces results in the honeycomb effect.

It would therefore be rather interesting to see if a permeable/porous concrete could be created which could mimic this honeycomb effect along the coast. Over time the effect will increase until all the porous space has been eroded away. This would not only be a rather unique way to represent time but the experience of the space it creates would alter as the space would change from one of a geometric to an organic nature.



Image 22: Dolos along the coast



Image 23: Honey-comb type effect on coastal rocks

Primary outcome:

Materiality and the effects of the weathering thereof is a form of “passive” time-based architecture which can really allow architecture to grasp a sense of time from the surrounding environment and almost allow it to appear to start to “settle in” or become “connected” to the area. Different materials weather in different ways and therefore it is wise to choose the material type with the desired structural durability and aesthetic weathered effect in mind.

## PROGRAMMATIC FLEXIBILITY

The research pertaining to this dissertation has demonstrated why a building of a fluid nature is so important. It has been evident how the needs and demands of society can drastically change over time thus transforming a space; how space, especially the space in Hout Bay harbour, need to be read as fluid changing spaces which need to serve different needs and experiences at different times of the day and on different days in the week. For architecture to become fluid space of a time-based nature in order to evolve with these changes the need for a programmatic flexibility becomes apparent.

### What is meant by "Programmatic Flexibility"?

Architecture of a programmatically flexible nature is architecture which is able to be easily modified/ transformed to respond to altered circumstances. It is cross-disciplinary and multifunctional; is does not merely idle, but rather adapts; it favours transformation above restrictions; purpose and drive above immobility; user interaction with the architecture above restraint. The possibilities of architecture of a flexible nature appear to be endless (Kronenburg, R, Flexible: Architecture that Responds to Change). For instance if the design for a house is considered which has

purposely been designed to accommodate and offer changing opportunities for the user or inhabitants of the space – think of all the options available. The house could be designed to accommodate a single inhabitant during the week and then transform to accommodate five people when entertaining over the weekend. Or a large house which can accommodate an entire family and then be rationed off to the children as smaller start up homes to suit their needs when they are young adults? The opportunities are endless – it is primarily just about the right design execution.

### "True" Programmatic Flexibility

As noted, programmatically flexible architecture must be able to accommodate various situations, thus implying a multi-functional space. Flexible space must therefore be designed in order to fulfil the certain requirements which such mentioned functions depend upon. Open spaces cannot merely be created and expected to be occupied. Those functions have needs and requirements and those need to be met. This is what Eric Dluhosch, an architectural professor at the Massachusetts Institute of Technology, refers to as "true" flexibility (Dluhosch, E, Flexibility/Variability and Programming). This does appear in fact begin to

limit flexible architecture which, as mentioned above, may have seemed “endless” before.

“True” programmatically flexible architecture is not necessarily about inter-changeability or variety of space, which it can be; but its primary focus is on the changing/manipulated relationships between spaces - leaving the greater system of the architecture unchanged but allowing the conditions within the system to be transformed. The benefit of this is that change is allowed and embraced within the architecture but the overall character/identity of the architecture remains a constant.

This is well demonstrated through Herman Hertzbergers “Diagoon houses” (1967-1971) through what he saw as polyvalence i.e. creating spaces which could occupy more than one given use (Image 24). This was achieved mainly through the way in which he organised the houses spatially as he allowed for a variety of different spatial scenarios.

Each house consisted of a vertical pair of enclosed elements, one being the staircase, the other housing all the services for the house. A number of moderately identically shaped rooms were displaced half a level vertically apart from one another, thus creating split levels which surrounded these two core vertical elements creating the separation needed between the

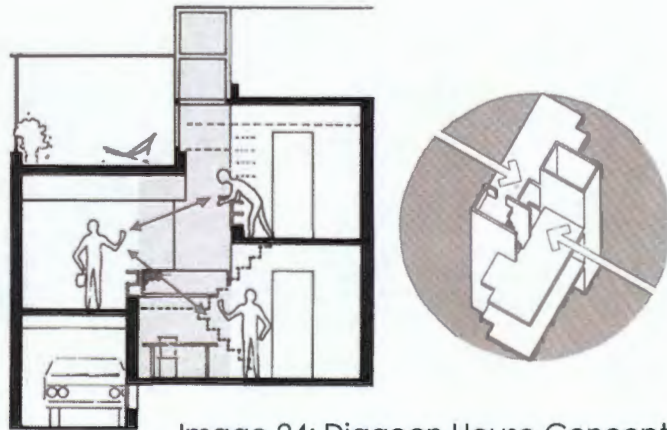


Image 24: Diagoon House Concept

rooms. A void was left open between the two vertical elements in order for the inhabitant to appreciate the split levels and to visually connect the spaces. By housing the circulation and services separately and utilising them as a buffer zone between the rooms Hertzberger created a very flexible living space.

The result is rooms which are left open to the inhabitants needs when it comes down to programme. The rooms can now be inhabited as needed, whether it be a bedroom, living room or even a studio space – all of which have similar requirements and characteristics when it comes to their spatial needs. The only rooms which would have had different needs with regards to their programmatic requirements would have been the vertical circulation and services, which he dealt with elsewhere already. Even though the conditions within the house are able to change, the overall system of the Diagoon houses remains the same – that of a fixed central service core surrounded by multi-functional spaces.

Testing this theory of “true” programmatic flexibility on one of the more flexible spaces in the harbour, that of the main parking lot, it becomes apparent that the space is not as flexible as previously thought. The parking-lot acts as a public square of sorts for the harbour – providing open



Image 25: Informal market – front perspective



Image 26: “Dead” disconnected space behind market

space for a daily informal market, access to three local tourism cruise companies and their ticket offices, and just general pedestrian movement and interaction (Image 25). Yet this space cannot really be considered a flexible space as it is really just a big open space. The space does not meet the demands the space truly requires, such as street furniture or even just a place for the informal traders to store their stalls overnight. The spaces true function is really what it was just built to be – a parking lot. If this, however, were to be overlooked, and was in fact considered a flexible space, it could still not be considered a “true” flexible space due to the poor relationship between the changing spaces. The informal traders become a barrier with their stalls separating the pedestrians from their connection to the sea and the local tourism cruises, thus ruining the relationships between all the other functions as well. The effect is a dead space created along the sea edge behind the traders with the informal market dominating the space (Image 26). The conditions within the parking lot may have been able to change but as a result the whole system has changed with regards to how the space works and the relationships between the spaces.

#### Primary outcome

Programmatic flexibility and spatial experience thereof both relate to a time-based architecture and each bring unique and valuable characteristics to this type of architecture. Programmatic flexibility primarily focuses on a time-based architecture of a functional and physical quality – recognising that all spaces, functions and changing parts are interlinked and connected. Flexibility must therefore always keep the overall system in mind, whether contextually speaking or programmatically, creating a stable base upon which the components within this system are able to comfortably change without upsetting the “foundation” of the system.

## SMALL CHANGE BIG EFFECT

As demonstrated next with the study of the structure of a Haiku, small and sensitive design changes can still result in a larger perceived change. The high technology and gimmicks are not needed in order to attain a fluid programmatically flexible building; those are arguably merely easy ways to make any design “time-based”. This study inspired me to look for small and subtle devices in order to still create a big effected change but for it to be a gradual and smooth transition.

### Haiku:

A haiku is a type of poem originating from Japan with the intention of being a smart, witty or humorous form of light entertainment.

- Simple structure
- Short form
- Should be fun to write and read

Structure of a typical Haiku:

1st line:	5 syllables
2nd line:	7 syllables
3rd line:	5 syllables

Divided into two parts by using either a:

- i. CUTTING word i.e. a type of grammatical symbol such as a colon, hyphen or an ellipsis
- ii. CONJUNCTION word i.e. a word connecting the two parts of the haiku such as – because, as or yet.

Even though the dividing word/symbol makes up such a small part of the Haiku it can have an immense effect on its meaning – thus changing the way in which the reader understands the story being conveyed behind the poem.

### Primary outcome

- 1.) Small change – big effect i.e. a big change is not needed to create a sense of flexibility
- 2.) Sensitive flexibility can still have a large affect – large gimmicks and complicated technology are not needed – just good, simple design.

**On New Year's Day**

I long to meet my parents  
as they were before my birth.

*-Natsume, Soseki*

**On New Year's Day**

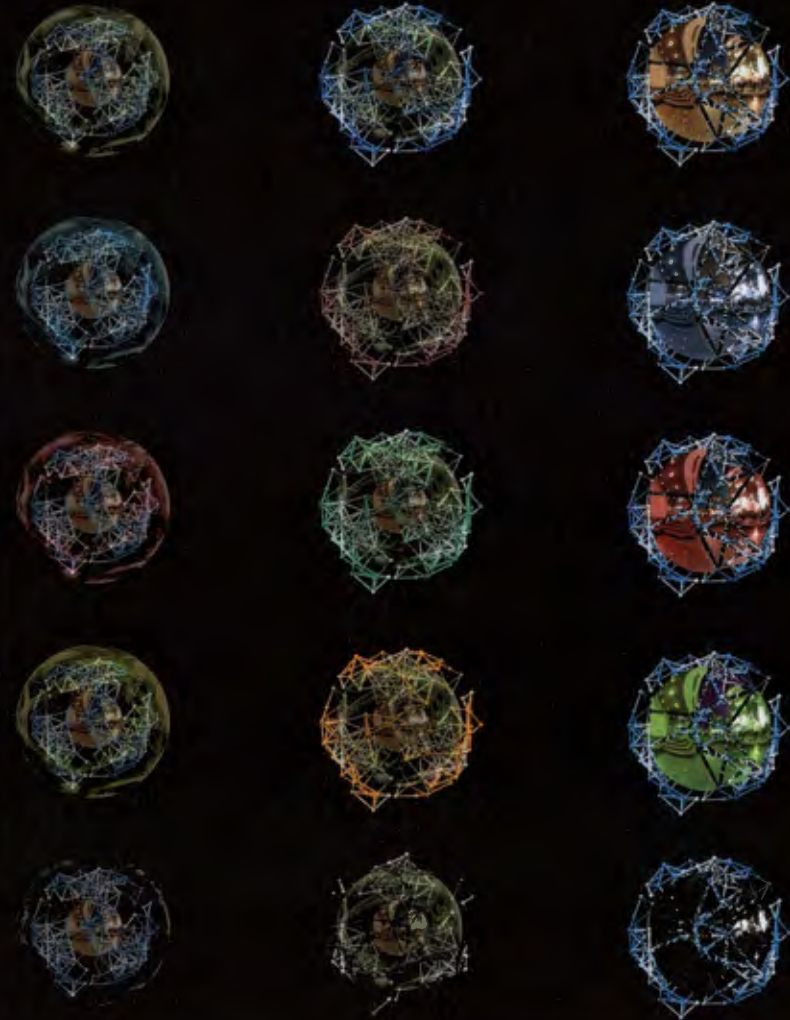
I long to meet my parents...  
they were before my birth.

*(altered)*

The haiku reads that a child longs to meet his parents as they were,  
character wise, before his birth.

In the altered Haiku the child simply wishes to meet his parents and states  
matter of fact that they existed before his birth

INVESTIGATING HOW MAKING ONE SMALL CHANGE TO THE ORIGINAL FIRST IMAGE  
CAN HAVE A LARGER EFFECT ON HOW THE GRAPHIC IS INTERPRETED



## CONTEXTUAL MAPPING & URBAN STRATEGY

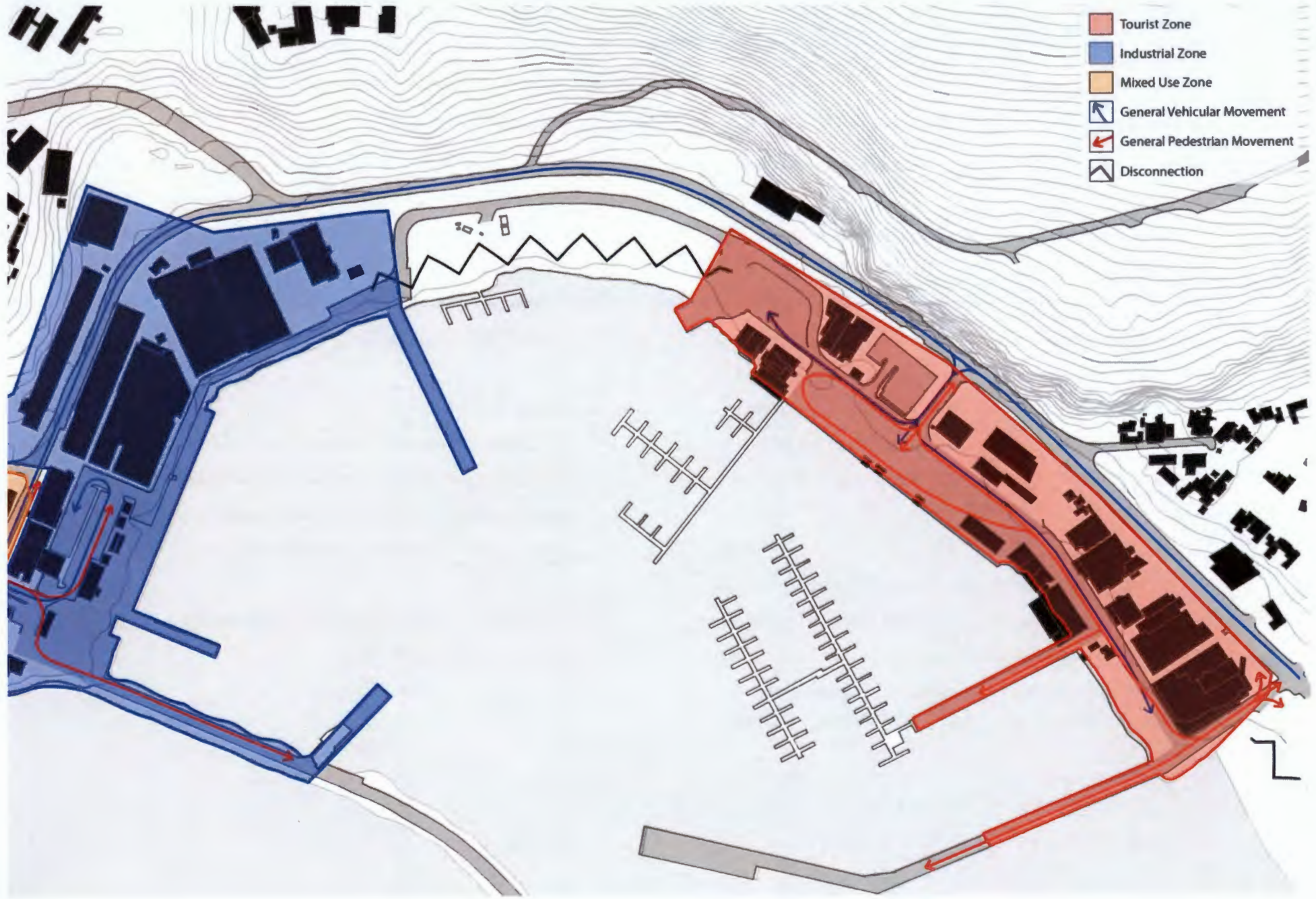
### Harbour Divide – sectors

- Evident through previous historical analysis of Hout Bay – current function of area combination of both Fishing and Tourism industries
- Dual function most clearly visible in immediate Hout Bay Harbour built environment
- Notable DISCONNECTION between Industrial and Tourism sectors
- Vacant site inhabits role as the “divider” between these two industries
- Mixed use zone recently established which successfully mediates between industrial industry (workshops, factories and factory stores) and tourism industry (popular eateries and market).
- Little movement through site of disconnection – pedestrians travel between industries via vehicular movement outside of harbour borders

- Lack of community based facilities, not just in immediate Hout Bay harbour but larger area as well, catering for Hout Bay residents.

### PRIMARY OUTCOME:

Vacant site of DISCONNECTION could become one of CONNECTION. One of community based facilities addressing both broader Hout Bay community needs as well as affording ties into both the tourism and industrial sectors of the Hout Bay harbour



## Harbour Divide – Land and Sea

### SEA DISCONNECTION

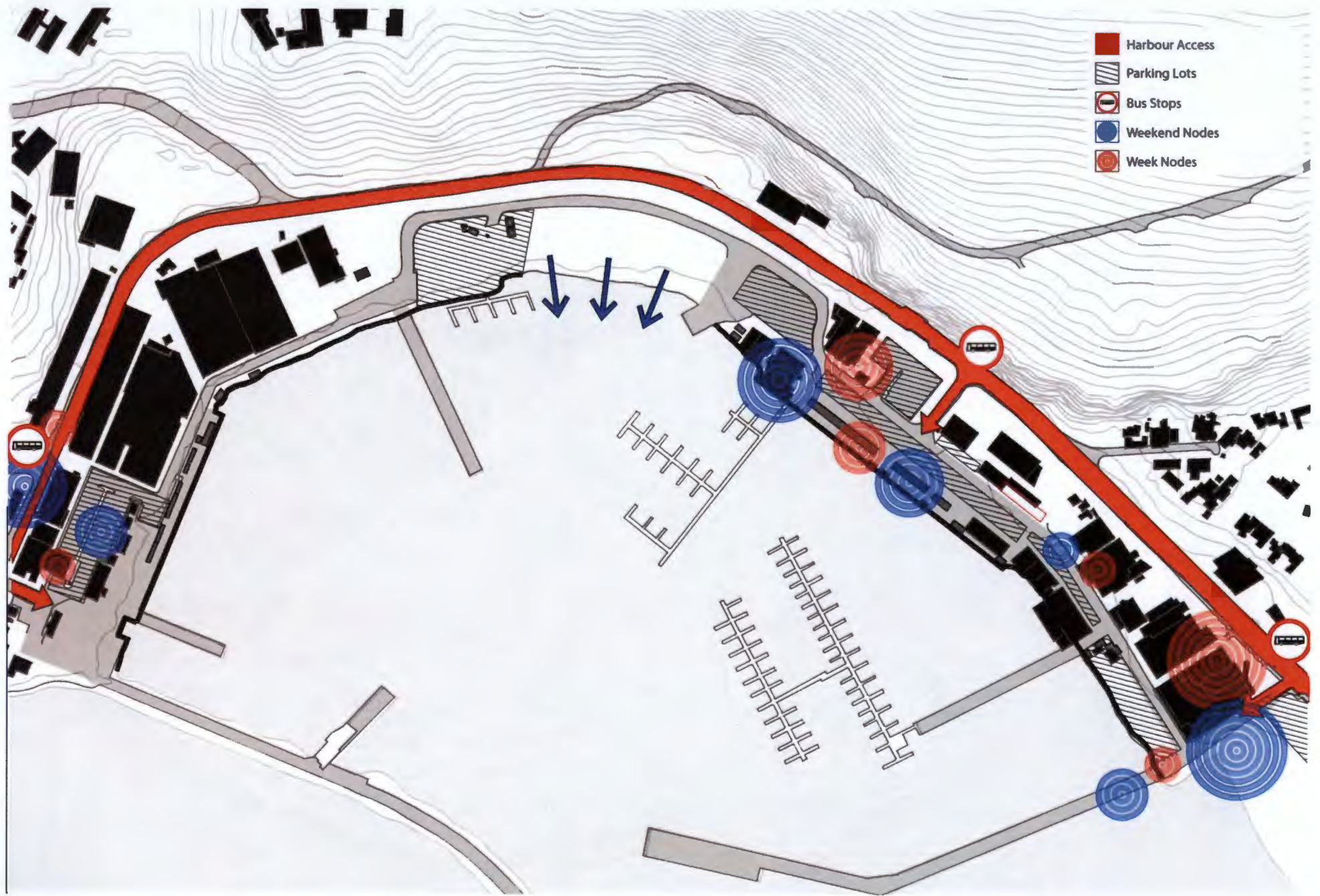
- Three access points into Hout Bay Harbour – with adjacent bus stops
- Northern most access point primary pedestrian access – unsuccessful configuration due to fact that pedestrians enter at an end point of the harbour (tourism sector) contributing to poor pedestrian dispersal and exposure to harbour as a whole.
- Excessive parking lots bordering waters edge coupled with a combination of small permanent and temporary urban grain directly on the waters edge - led to an apparent disconnection between the average pedestrian of the harbour and the harbours edge/ sea.
- Highest concentration node of people is at the northern most access point and appears to decrease as the access points reach further south. Social spaces of pedestrian interaction seem to be the nodal draws – notably eateries, local markets (i.e. informal retail) and the local yacht and boat clubs (which are the only community gathering spots in the harbour although requiring membership).

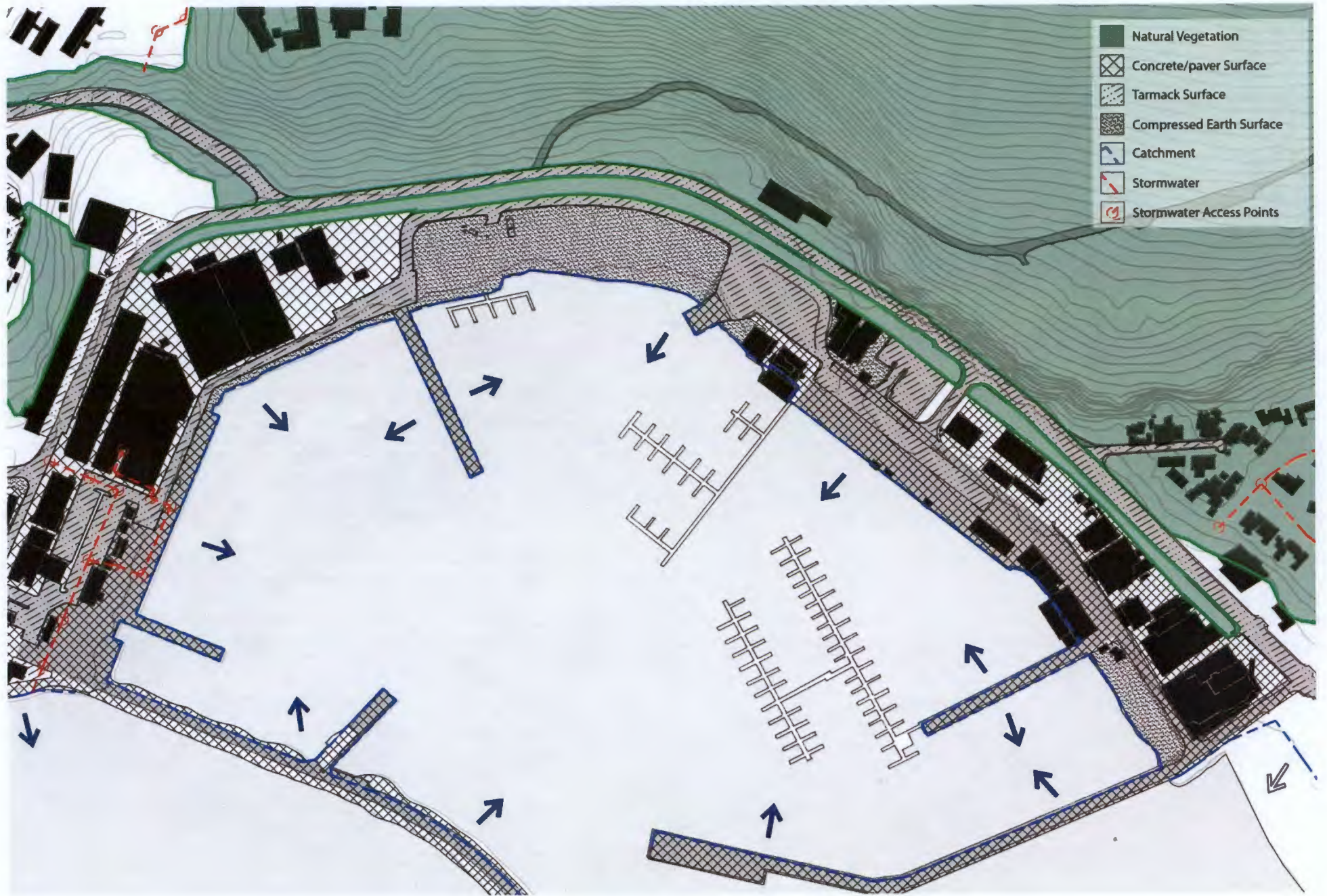
### LAND DISCONNECTION

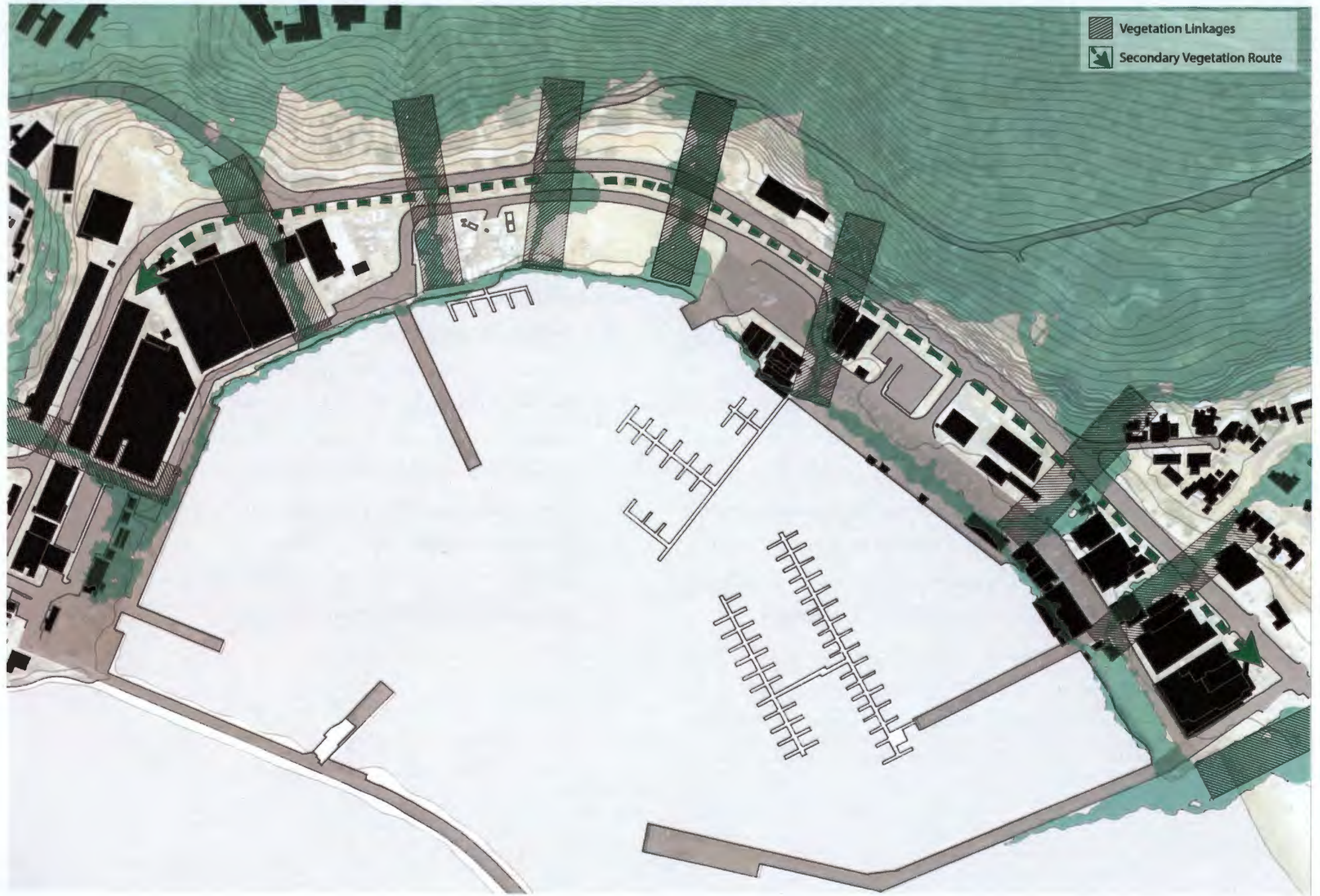
- Natural vegetation of environment does not breach the Harbour boundaries and has no connection to the sea as was the case before the modern day development of the harbour.
- Immediate Hout Bay harbour surface treatment very hard and non-permeable leading to heavy stormwater runoff directly into the sea – contributing to already polluted waters.

### PRIMARY OUTCOME

- Primary access to harbour should be centralised to allow for adequate and even pedestrian dispersal throughout harbour. Limited vehicular access needed - pedestrian orientated harbour.
- A greater connection between pedestrian and waters edge should be established.
- The harbour would benefit from a community based space accessible to all – ideally located near new centralised access point







## Harbour Movement – sea and land based

### SEA MOVEMENT

- The harbour's sea frontage enclosed by its breakwater barriers can be notably divided into four quadrants based upon the harbours design layout.
- Quadrant 3 and 4 have the highest density of sea movement within their area's
- Quadrant 4 however has the most diverse sea movement ranging from industrial to tourist to local inhabitants.

### LAND MOVEMENT

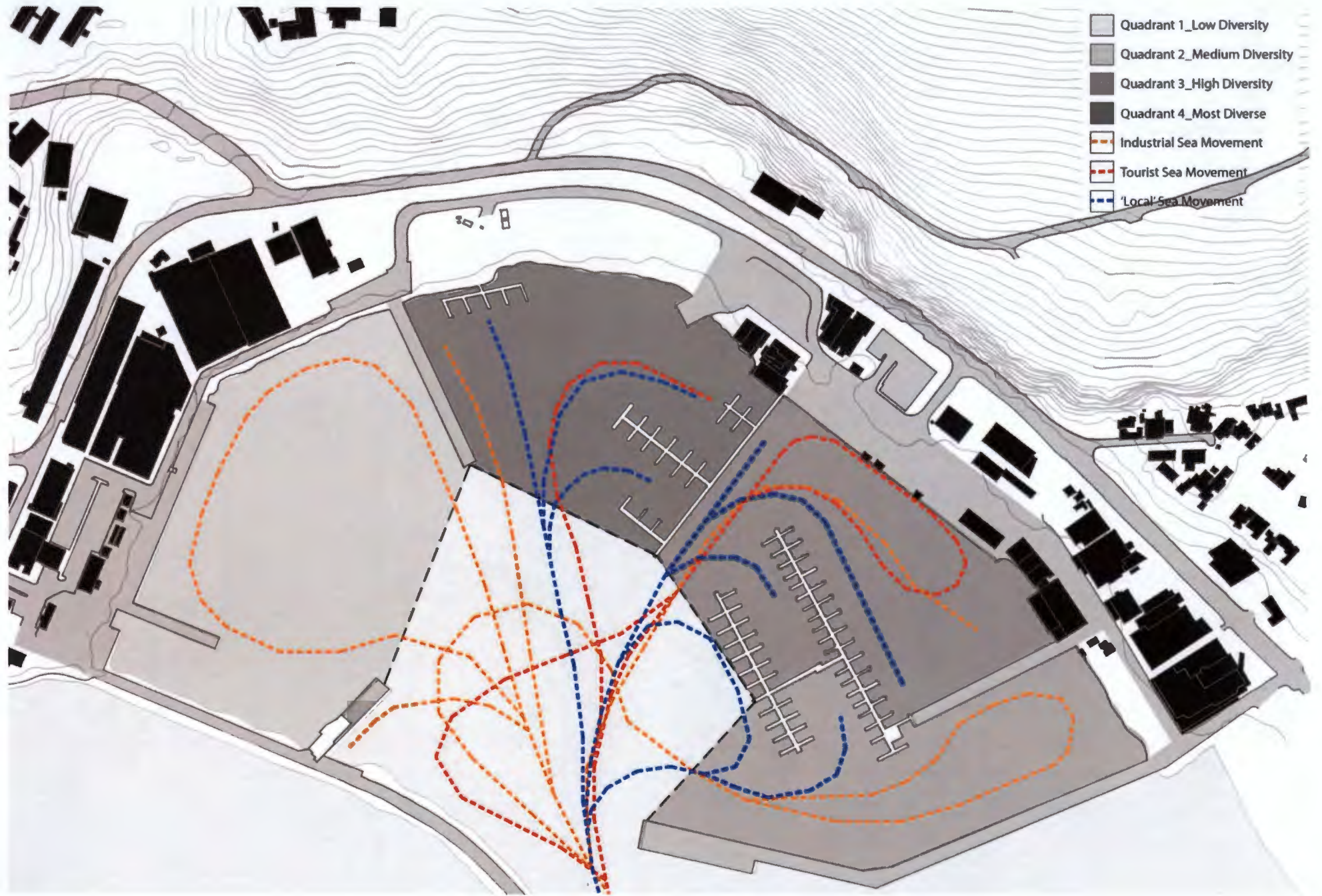
- Industrial related land movement is dispersed throughout the harbour, yet need only be at the Northern most pier and the actual industrial sector on the southern end of the harbour.
- Tourist and local inhabitant related land movement is focused on both ends of the harbour – once again having a void of disconnection in the harbours centre. The harbour is exited and re-entered on its opposite end with relation to this movement type.
- Fisherman/worker related land movement is dispersed throughout the harbour – primarily along the waters edge with the exception

of the vacant site in the harbour centre which cannot be cut across due to a fence running along the southern border of the site.

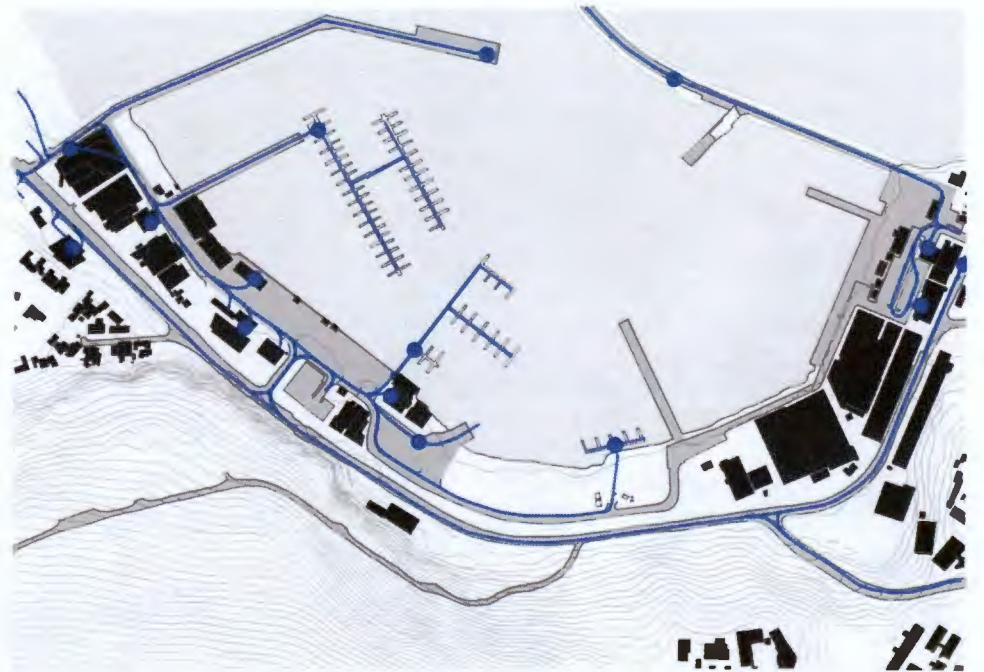
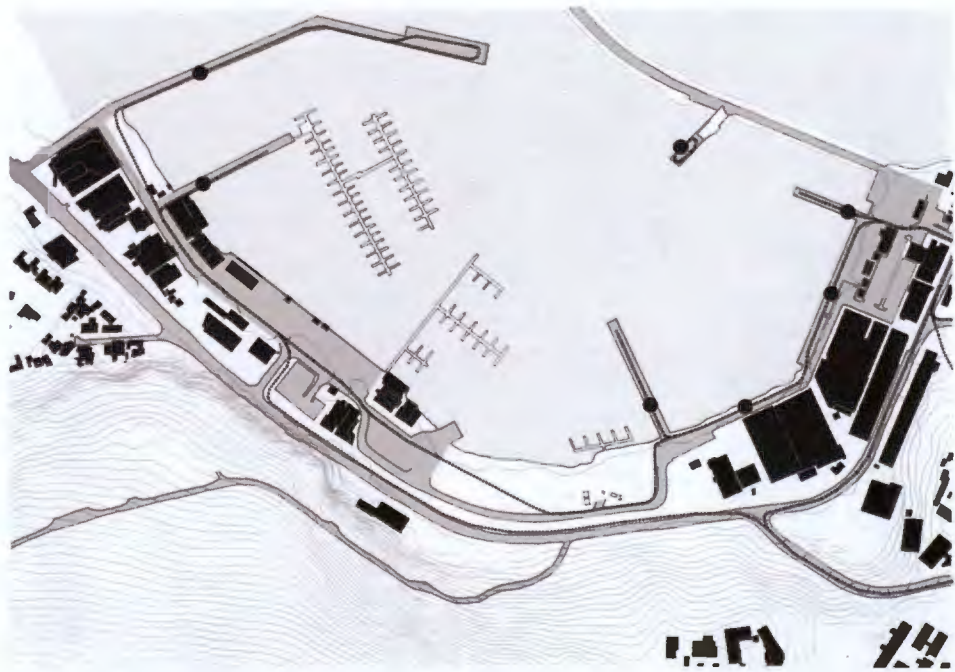
- Overlaid land movement shows good dispersal and diversity of movement throughout the harbour with the exception the vacant site in the centre of the harbour.

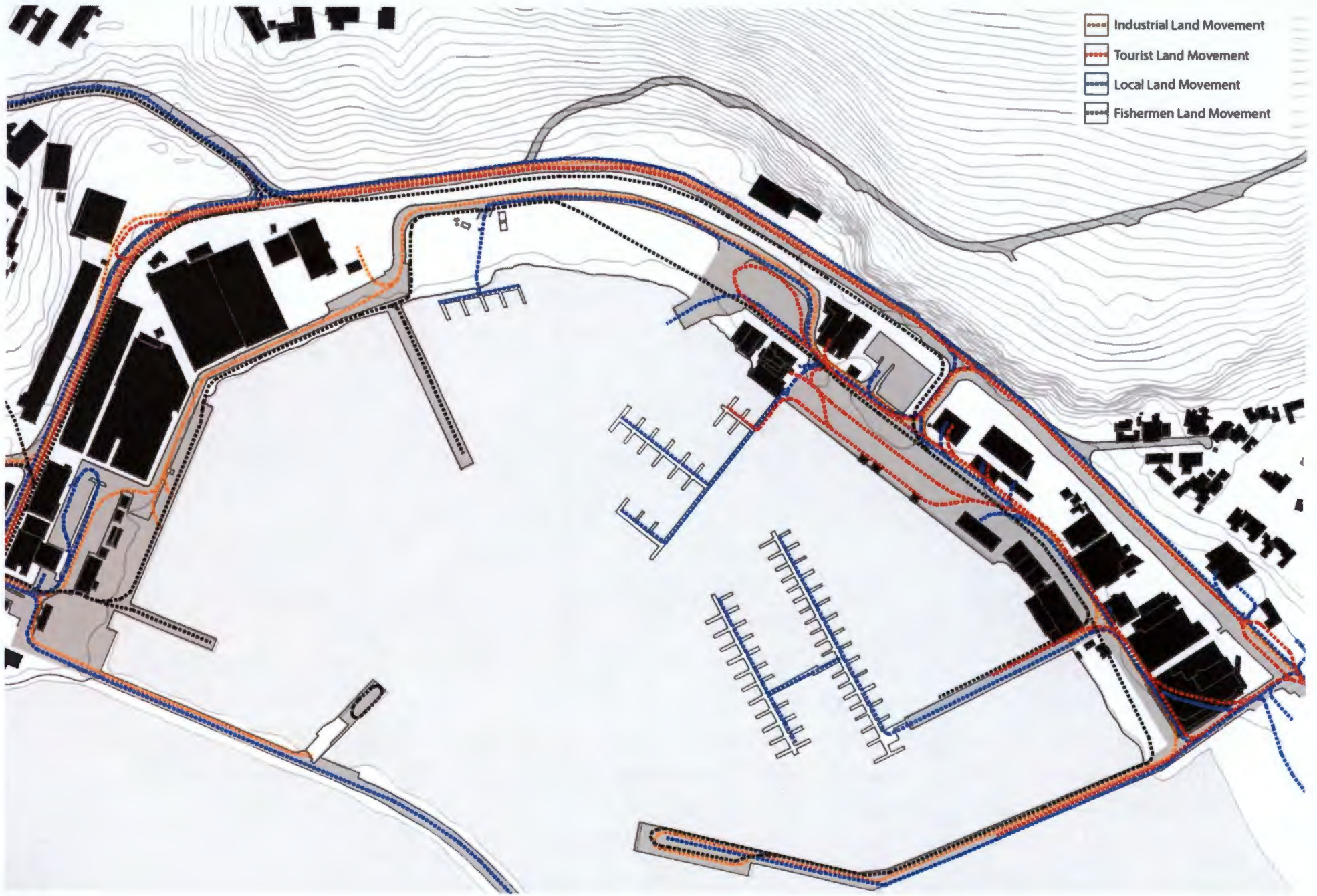
### PRIMARY OUTCOME

- Quadrant 4's sea movement is a good representation of Hout Bay as a whole imitating the area's vast diversity in an isolated region. The land movement in front of this quadrant is the complete opposite and lacks movement and the diversity thereof. The land should therefore be occupied by a space accessible to all in the community and from elsewhere in order to mimic this sense of diverse accessibility and movement.
- Access routes to the harbour should be relocated in order to minimise industrial vehicular movement within the harbours borders.



- Quadrant 1\_Low Diversity
- Quadrant 2\_Medium Diversity
- Quadrant 3\_High Diversity
- Quadrant 4\_Most Diverse
- Industrial Sea Movement
- Tourist Sea Movement
- 'Local' Sea Movement

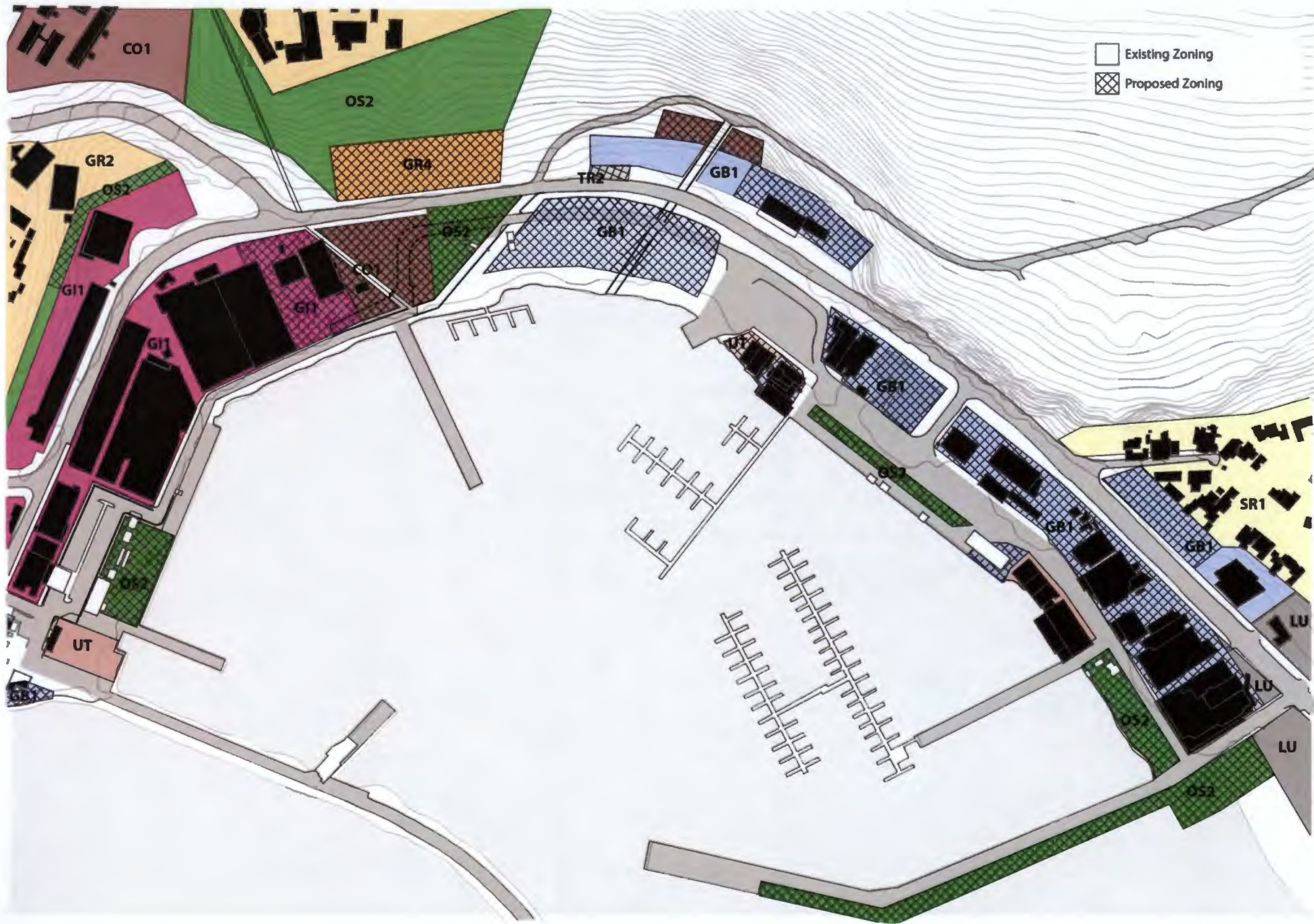




- Industrial Land Movement
- Tourist Land Movement
- Local Land Movement
- Fishermen Land Movement

### Proposed Zoning

- All land within the harbour was leased in the past and has only recently become owned by local business owners therefore the zoning is primarily non-existent at present – thus the need for a zoning scheme
- My proposed scheme calls for a higher concentration of community based zoning – largely focused in central harbour area
- Industrial zoning will be focused at southern end of harbour for safety and organisational purposes - alleviates unnecessary movement and allows for shared industry provisions



### Proposed Strategy

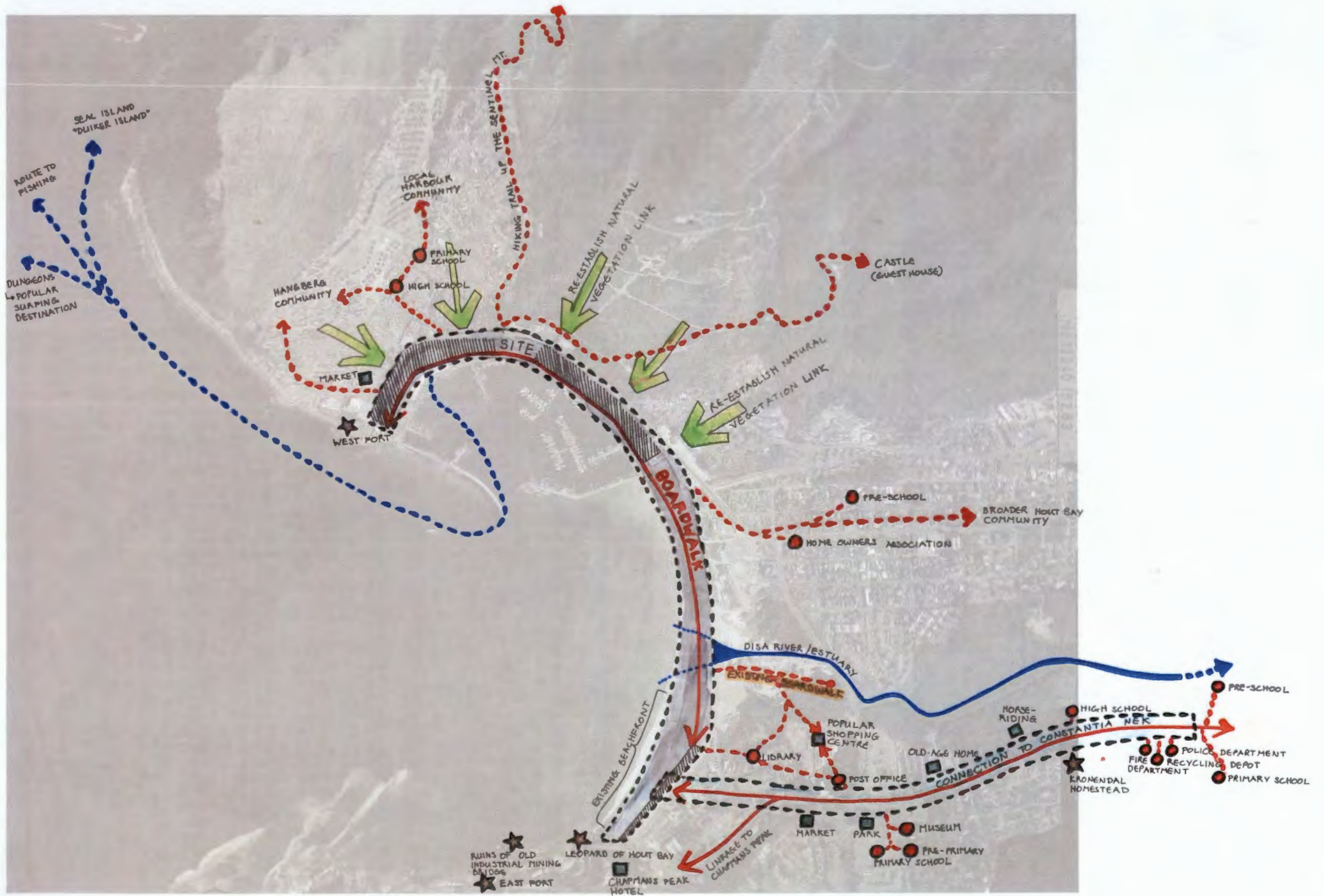
#### MACRO SCALE

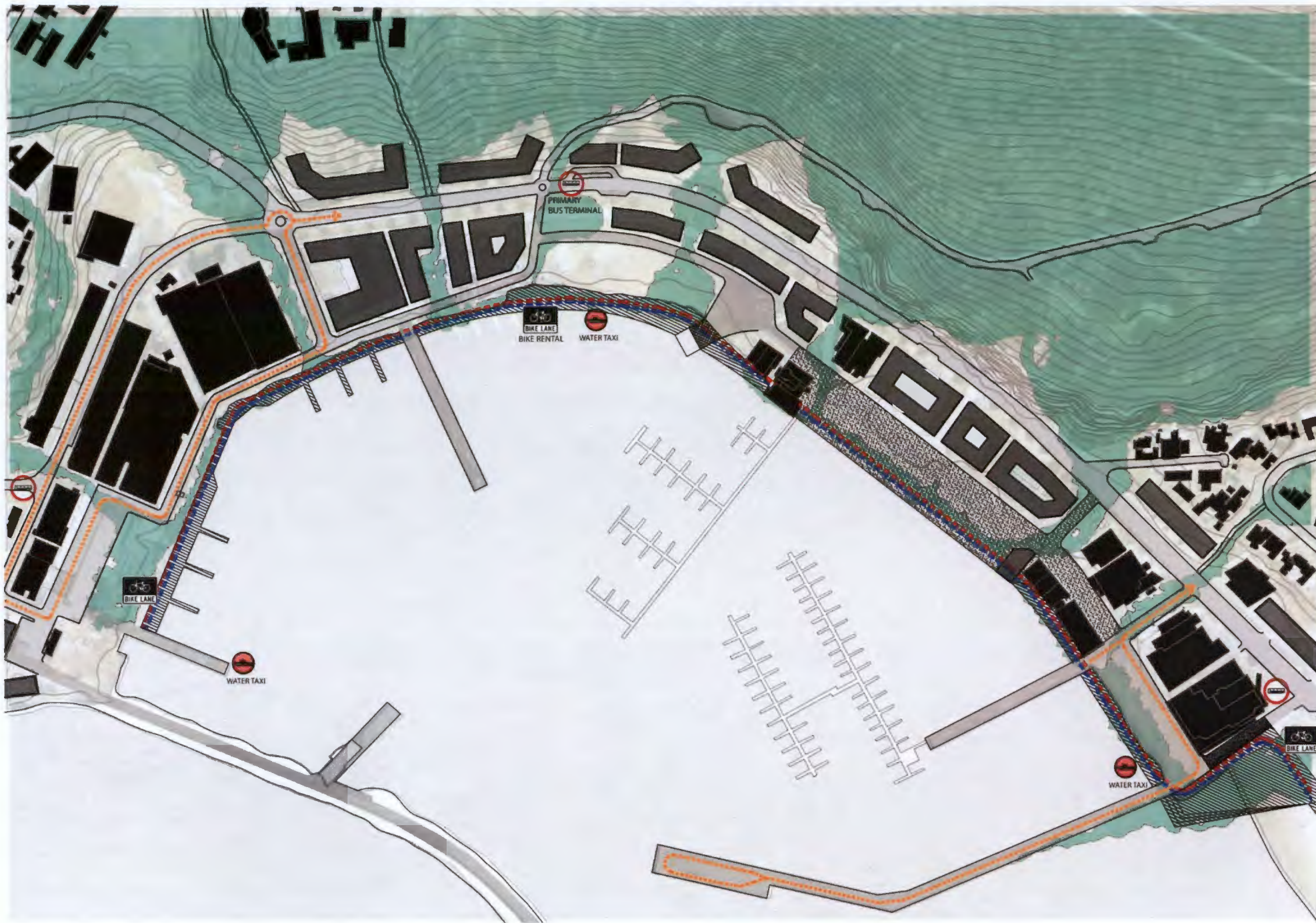
- AIM: To re-establish the “historical route” of Hout Bay which once ran from Constantia Nek down to Hout Bay beach and around to the harbour (see historical analysis)
- Civic route exists between Constantia Nek and Hout Bay beach – although not very strong.
- Establish new boardwalk running waters edge of harbour and extending to connect to existing Hout Bay beach sidewalk.
- Boardwalk will grant easy access to Hout Bays existing civic, retail and commercial infrastructure as well as providing an opportunity for future development.
- Boardwalk will create a safe, all-connecting and pedestrian orientated route along the waters edge which will double up as a flexible space for both community interaction and activity.

#### MICRO SCALE

- Limited vehicular access
- Industrial vehicle access limited to northern-most pier and southern end of harbour

- Primary access point to harbour centralised across from vacant site and new proposed bus terminal
- Northern end and central harbour largely pedestrianised.
- Boardwalk to encourage walking and cycling – with the introduction of a bicycle lane
- Water taxi’s introduced to allow for quick and easy travel between opposite ends of the harbour.
- Harbour water edge opened up to allow stronger connection between people and sea.





## PROGRAMME

At a broader scale the programming of the site revolves primarily around a community based function. As noted in the research into Hout Bay's history, community based functions tend to remain in demand most likely because no matter the changing function of Hout Bay, people will remain a constant. Hout Bay is currently lacking many community based facilities and the few that exist are of poor quality thus having little or no real impact on the broader community of Hout Bay, hence the need for such a building. A community based function with ties into tourism and industry would essentially become the connecting link between the industrial and tourism sectors of the harbour bringing a new layer to the fluidity of the harbour. The community centre would become the new pedestrian entrance to the harbour with the new primary bus terminal for the area being directly opposite it – welcoming tourists, locals and workers/fishermen alike.

The programme of the proposed community centre began with merely a research centre and an event space. With development of the design brief becoming more of a urban response to the harbour the programme grew with the needs of the space and those of the people who would essentially occupy it at different times – thus responding to changing fluidic patterns

of movement. The decided final programme thus proved challenging to initially define with so many crucial contextual aspects which required a response.

### Final Programme

#### EXHIBIT/EVENT

- Multipurpose Hall
- Public Square
- Art gallery/ exhibition space

#### INFORMATION/LEARN

- Tourism and Information centre
- Museum
- Conference Centre/ workshop/ aftercare
- Library
- Media Centre

#### COMMERCIAL

- Restaurant
- Retail

- Coffee Shop
- Trading Stalls
- Fish Market

#### ADMIN

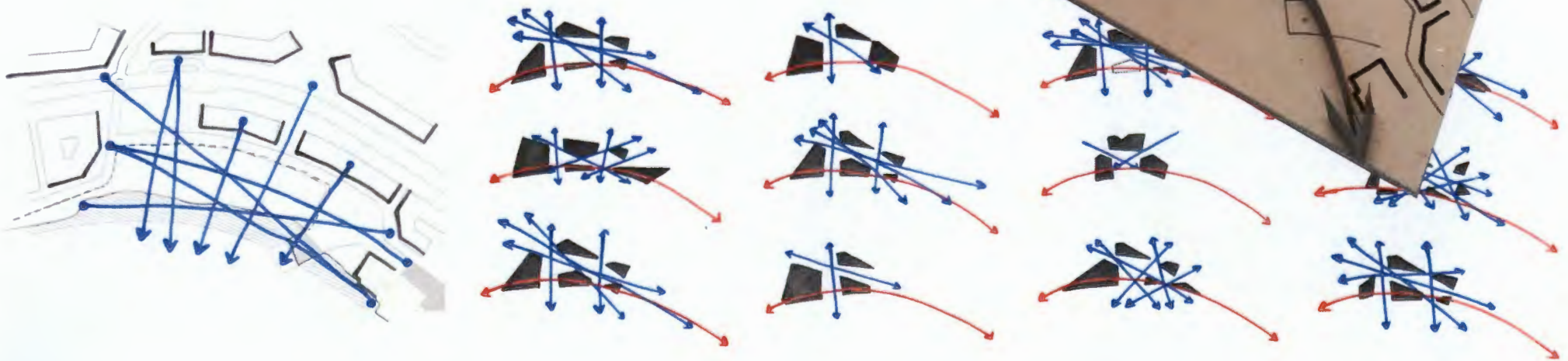
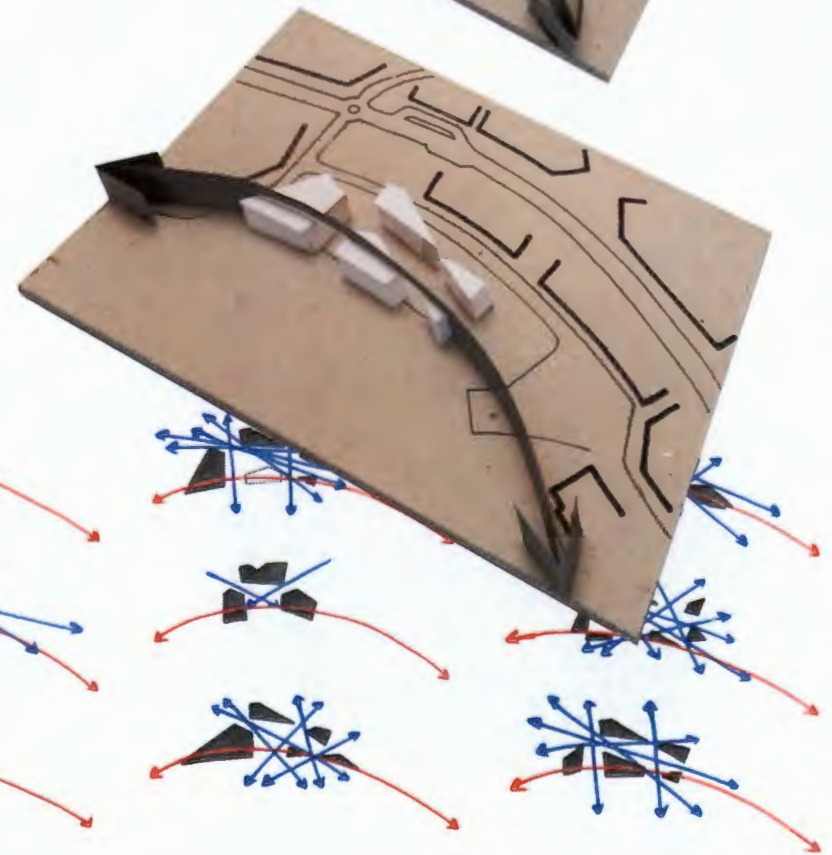
- Offices
- Staffroom
- Kitchen

Planning of the programme and the layout thereof proved to be the most challenging aspect of my project and was a continual process of review and change. Changes happened to the programme and new design features were added as additional layers along the way in order to make the most of the site, to capitalise on the site's fluidity and to ensure that all the programs would complement one another in order to ensure smooth and "true" programmatic flexibility.

## INITIAL CONCEPTS

My initial concepts proved to be highly unsuccessful in terms of the aim of my dissertation, yet proved to be valuable steps in terms of lessons learnt. Initially I sought to subdivide the site into parts thus making it easier to manage in terms of development. It was divided along the new lines of axis drawn from my urban strategy connecting land to sea and the fishing and industry sectors.

- The first concept was inspired from the current movement over the site in order to take advantage of its pedestrian traffic.



- The second concept, modelled on polyvalent houses in Vienna sought to create a very flexible compartmentalised steel structure building.

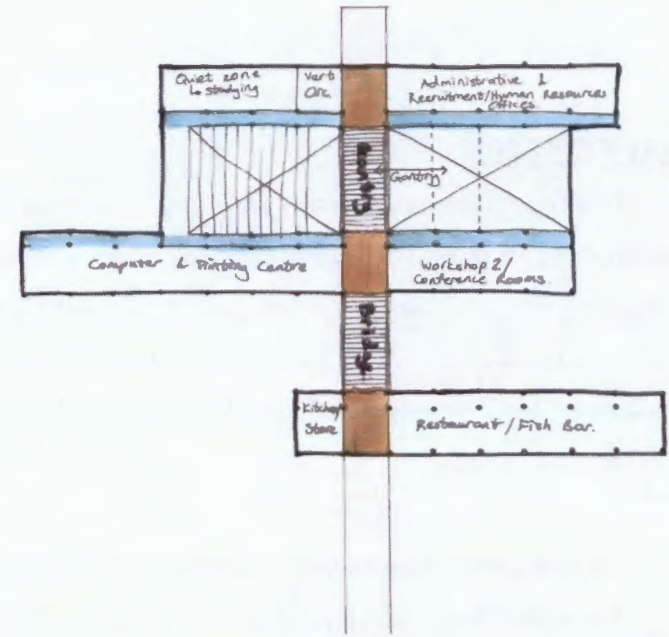
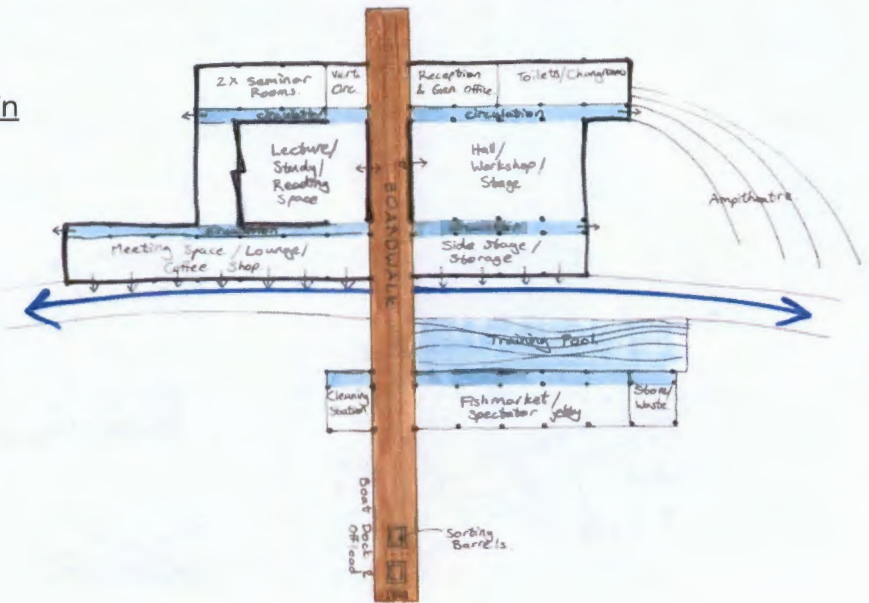
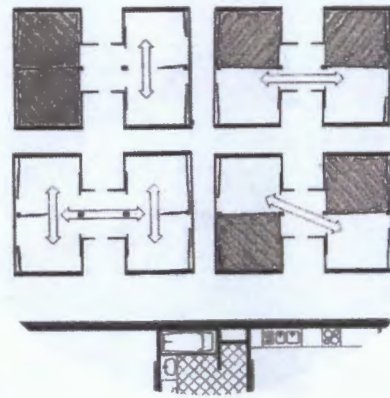
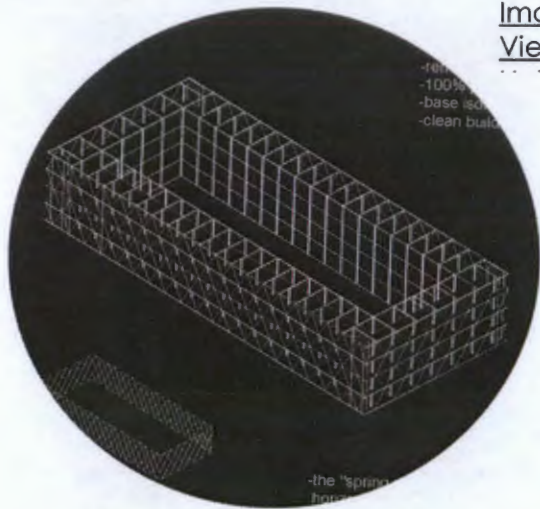


Image 27 & 28: Polyvalent housing scheme in Vienna.



### Lessons learnt

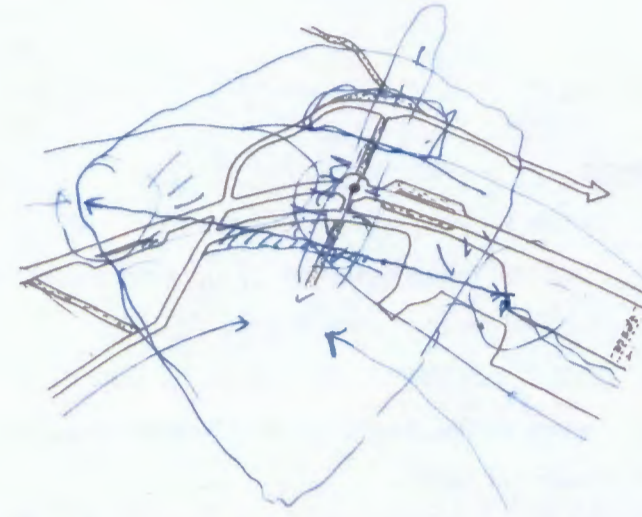
1. Strange shapes proved rather inflexible
2. Collapsible rooms in the first concept and a gantry in the second relied too heavily on gimmicks
3. Study of movement routes irrelevant as currently unsuccessful therefore need to remedy this with new more convenient movement routes
4. Focus less on programmatic flexibility as design and more as one of many layers making up a good design
5. Concepts should be more sensitive and site specific to the area in their design
6. Subdividing site is proving unsuccessful as design is no longer remedying issues brought up in research – should be seen as a larger urban design occupying the whole space between the two sectors and the land and sea.

## SKETCH DESIGN

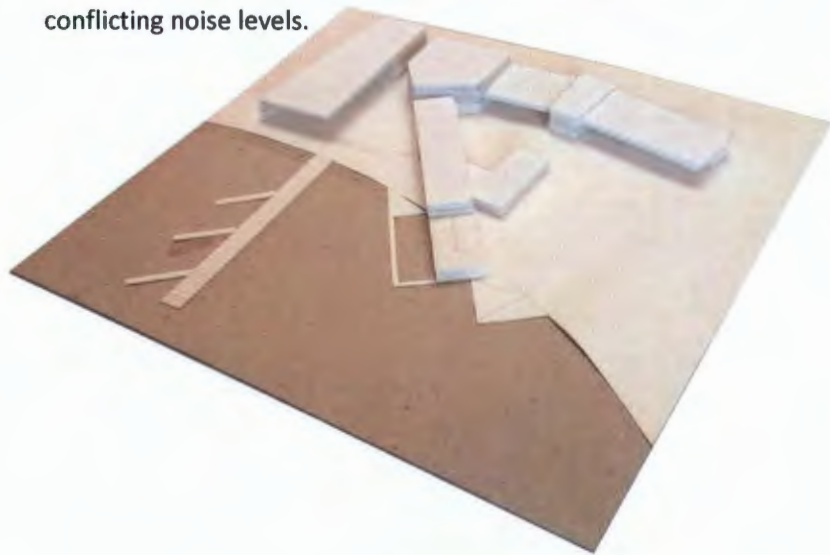
- Need for site and future design to be seen as part of larger context and proposed urban strategy

### Design planning Layout

This first stage of the sketch design sought to create a direct line of movement from the newly proposed bus terminal and the new pier, as well as opening the building onto the route of the boardwalk from my new urban strategy. The design was essentially made in two parts – the public square which serves as the entrance to the harbour connecting the two lines of movement; and an event space located next to the ship launch and facing the tourism sector.

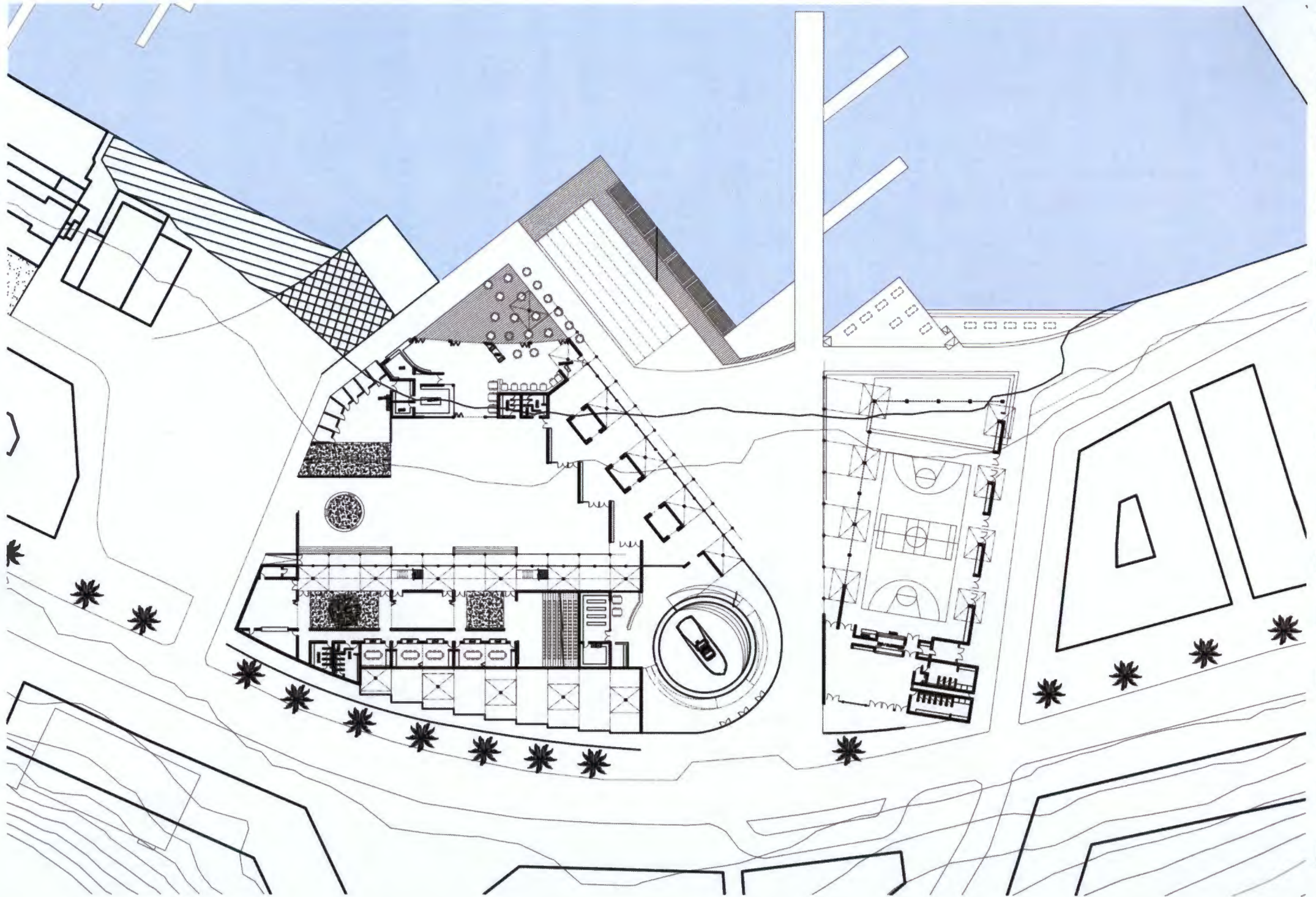


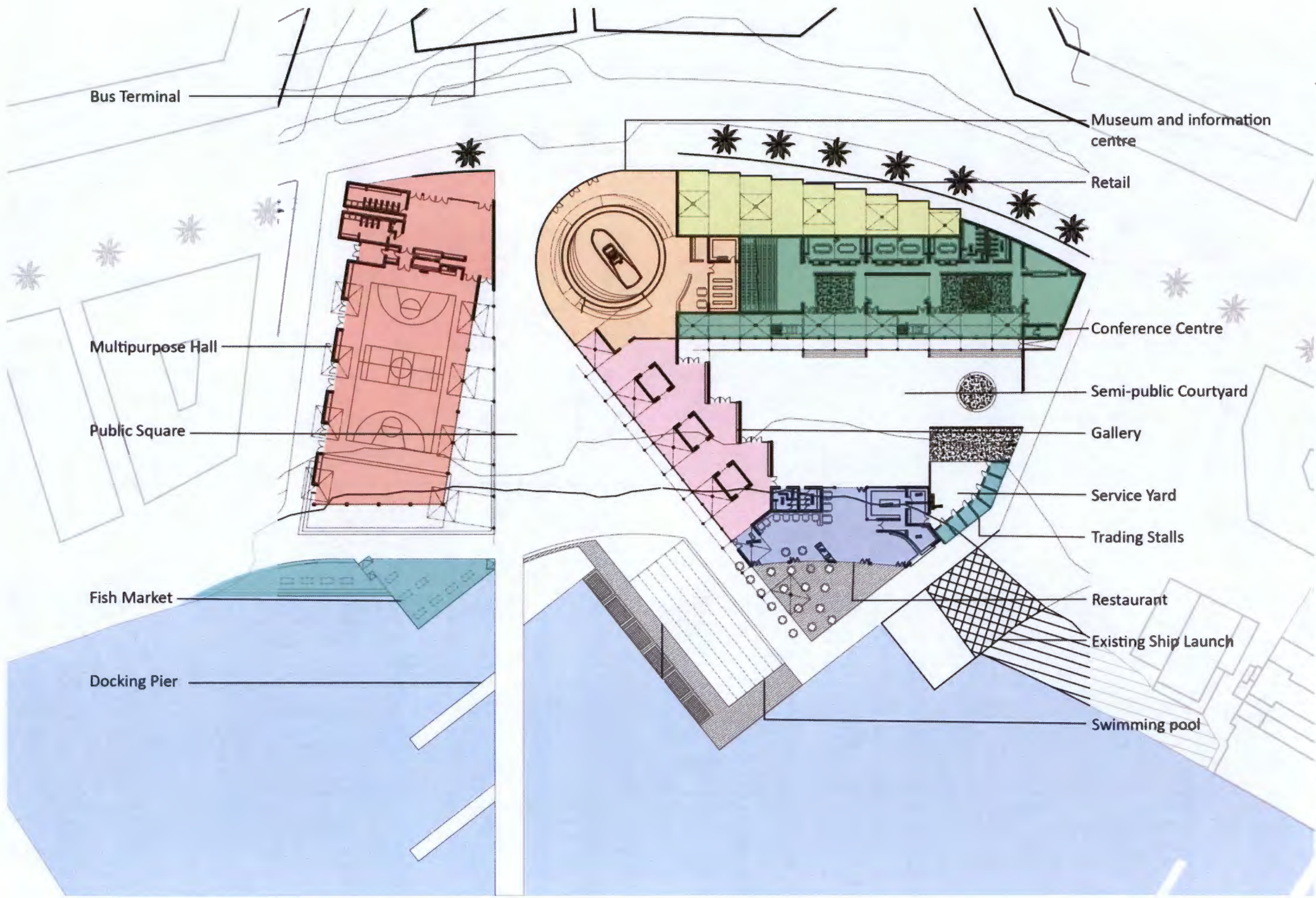
This design proved unsuccessful in terms of "true" flexibility. For instance the he multipurpose hall (section below) initially held two lecture theatres which would open up to the hall and become spectator seating when need be. Conceptually it proved an interesting idea but the spaces did not complement one another as both spaces would require completely opposite noise levels. The entrance to the main building had the same issue where it lead out into a workshop facing the public square. Once again both require conflicting noise levels.



## **DESIGN DEVELOPMENT**

The spaces within the building have a polyvalent character dependent on the relationship and fluidity between spaces as well as a “true” flexible nature - pairing spaces knowingly that different programmes have different needs. The design therefore simply came down to “good” planning. (main plans below 1:800)





Bus Terminal

Museum and information centre

Retail

Multipurpose Hall

Conference Centre

Public Square

Semi-public Courtyard

Gallery

Fish Market

Service Yard

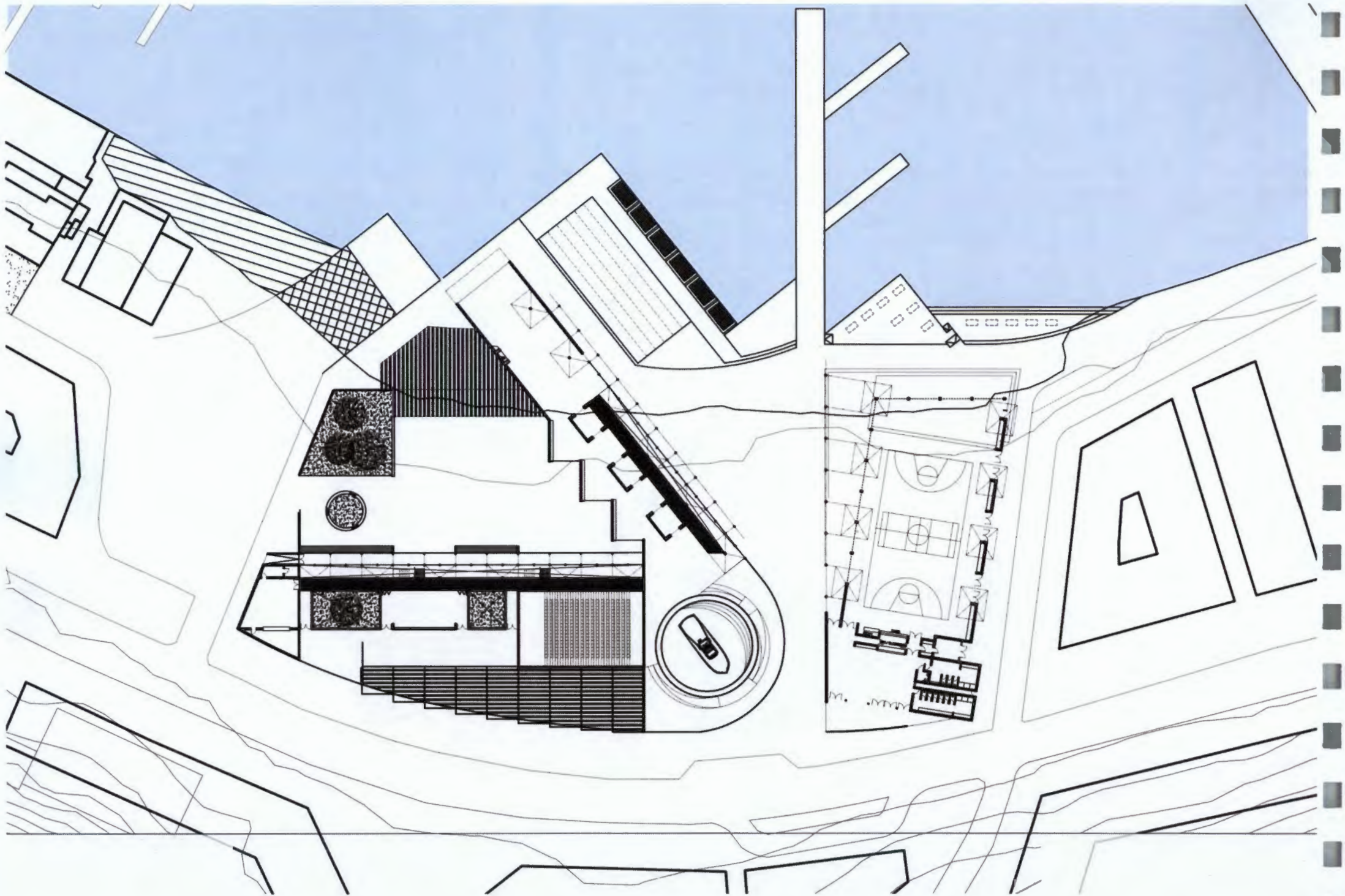
Trading Stalls

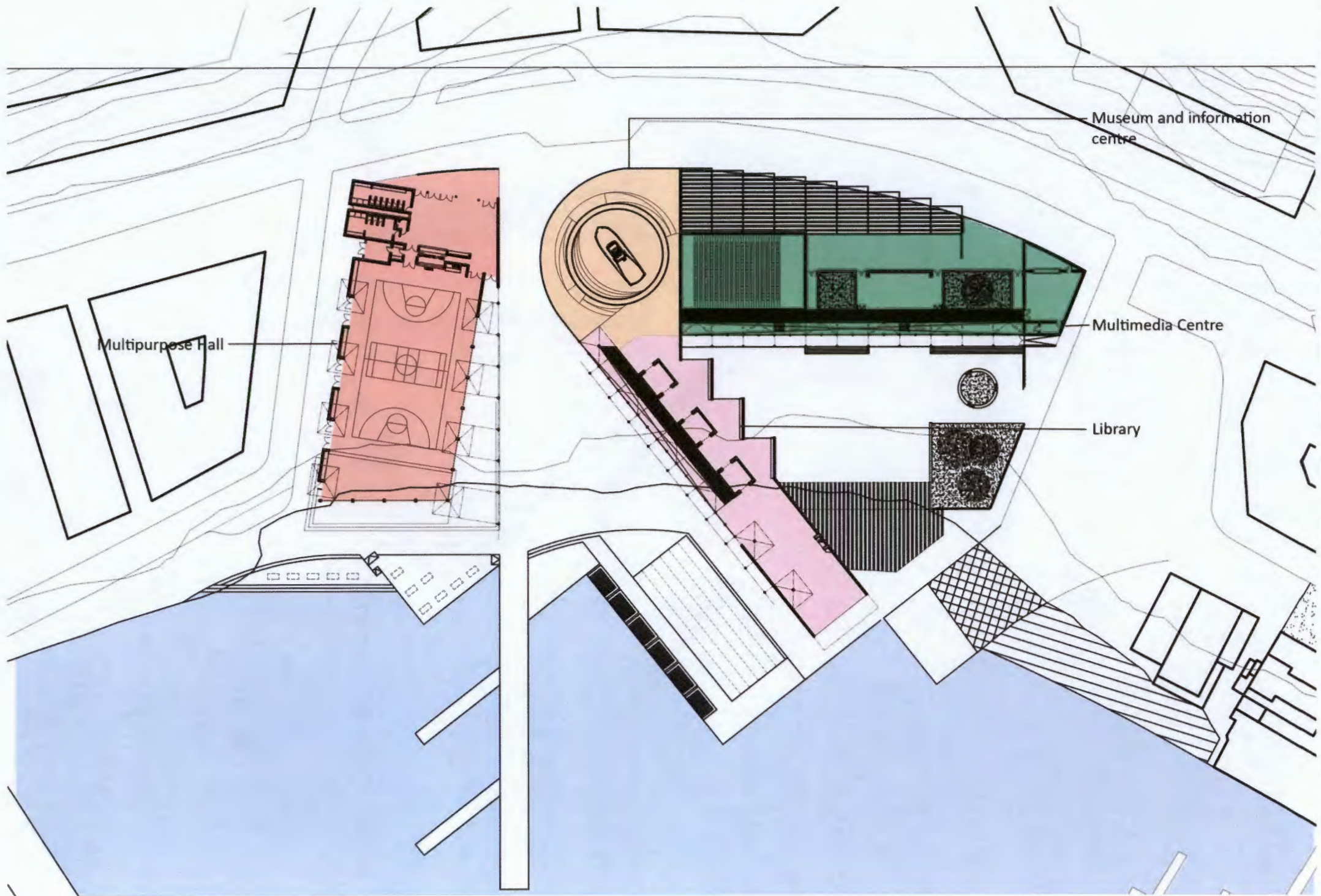
Docking Pier

Restaurant

Existing Ship Launch

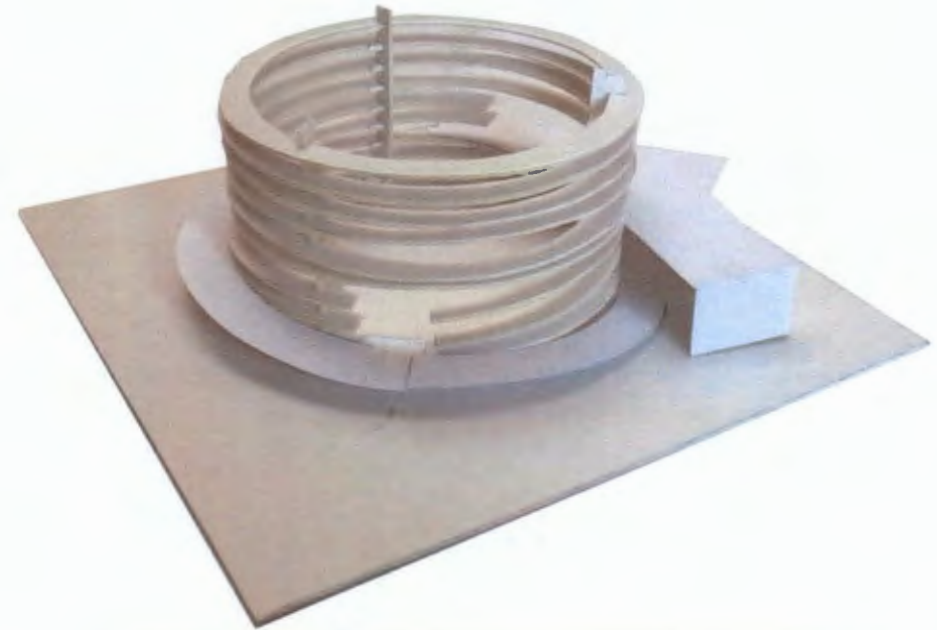
Swimming pool



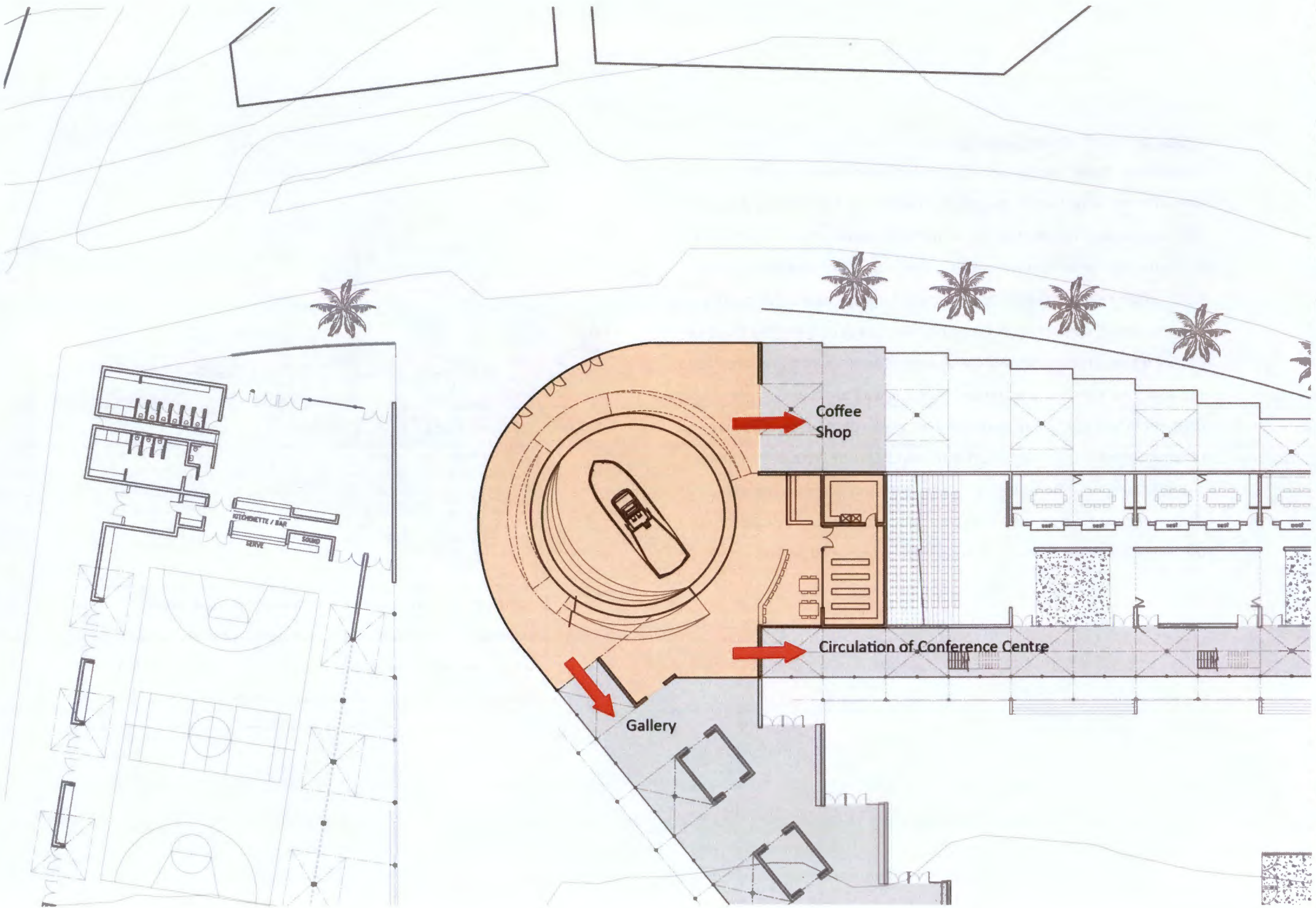


### Entrance/ "Head" of Community Centre

The building "head" becomes the first space pedestrians come into contact with when entering the site therefore it houses the "introductory" parts of the programme – namely the tourist and information centre, as well as the museum space giving tourists and locals alike a background to the area's historical context and celebrating Hout Bay's unique local industry. The building "head" doubles up as the connecting space of the entire building making up an atrium space and the community centre's vertical circulation. The space has been set out and designed in a way to allow all these different functions to be read as one fluid spatial experience where a ramping system surrounding a circular steel structure becomes exhibition space, houses the information centre beneath and becomes the main vertical circulation thus motivating interaction between the displays and the inhabitants when they move around the community centre.

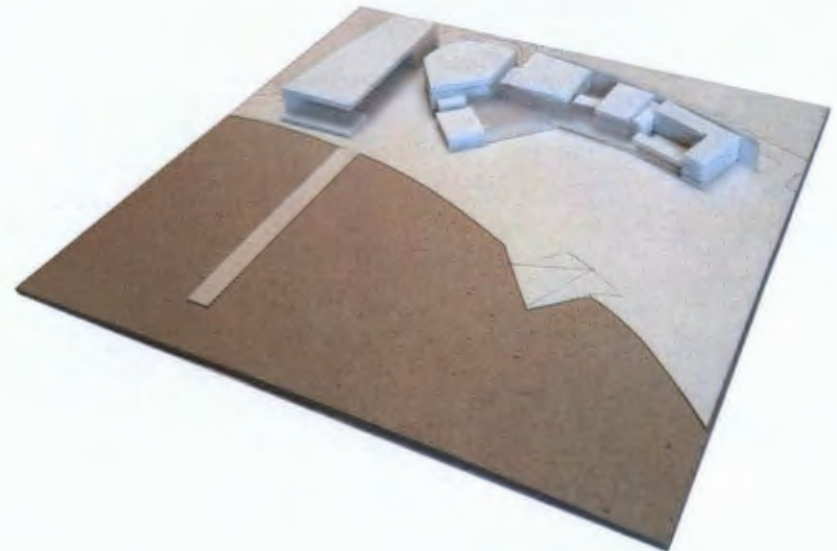
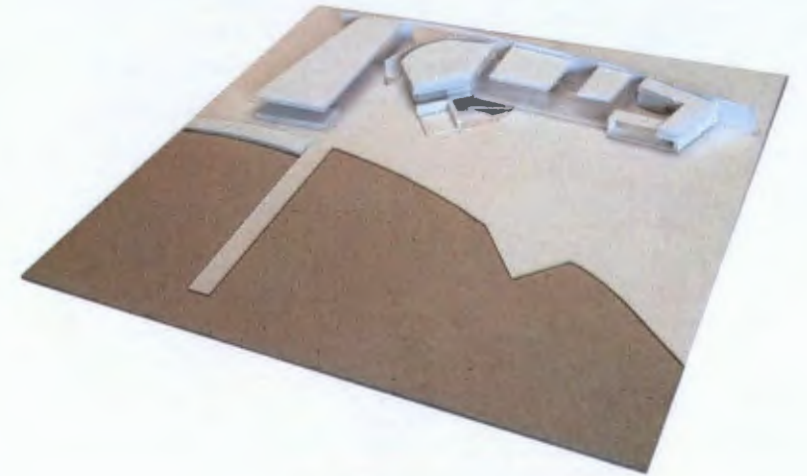


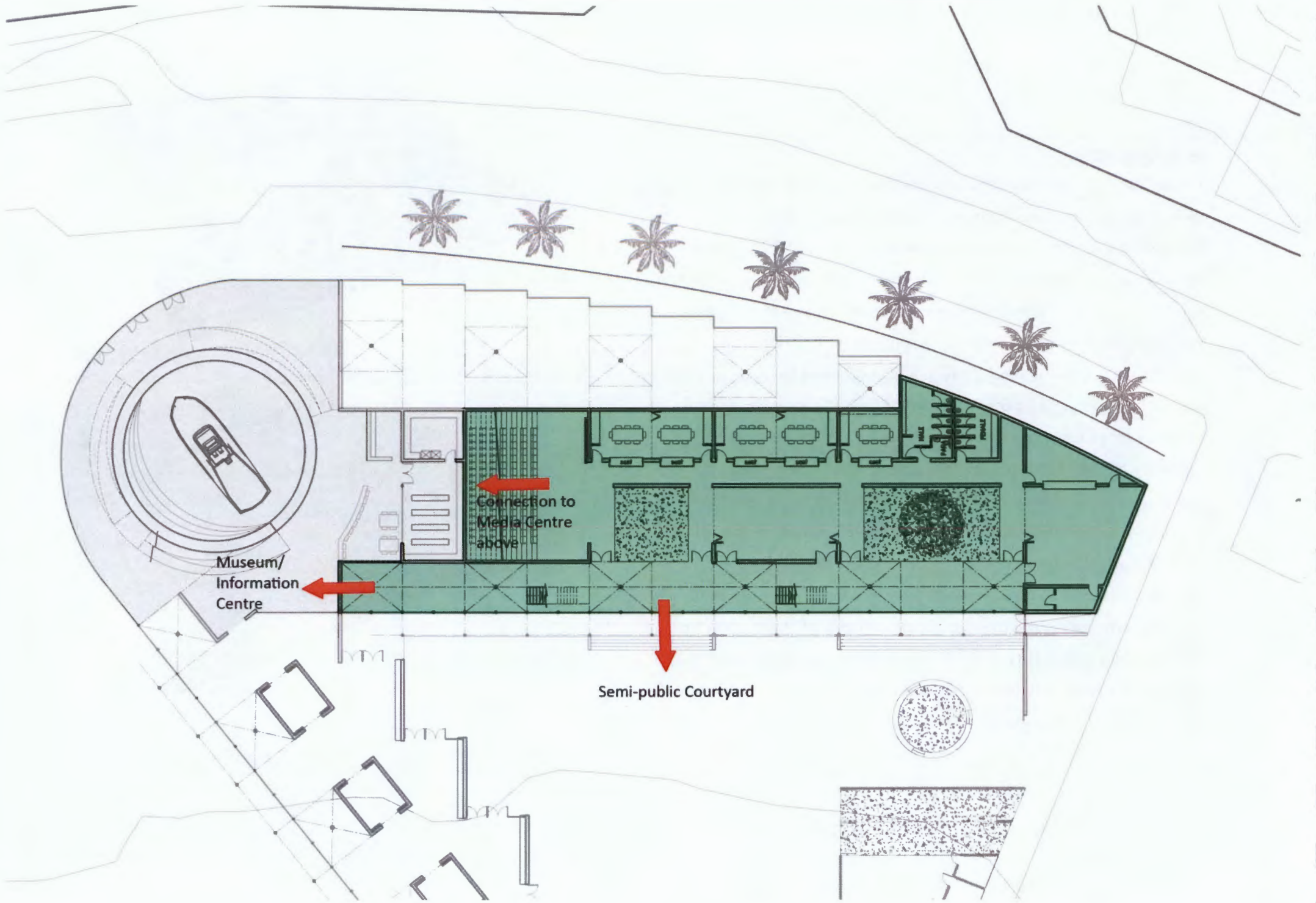
Structure of atrium space of entrance doubles as display shelving for the museum. The ramped vertical circulation winds around this structure with a triple volume exhibition space in the centre for a traditional timber fishing boat



### Conference Centre

The conference centre is directly accessible off the entrance space and spills out onto a semi-public courtyard. A direct line of circulation runs between the habitable spaces of the conference centre and the courtyard for controlled accessibility. The conference centre houses a lecture theatre doubling up as a large formal media space accessible from both the ground floor (conference centre) and the media centre on the first floor. The opposite end of the conference centre houses a rec room for more specialised workshop orientated tasks such as cooking classes for the local Hangberg community or crafts based activities for children. A studio space separates the lecture theatre from the rec room with private courtyard spaces specific to the conference centre bordering it on either side. Formal meeting rooms border the length of the conference centre for organised meeting or group study which can be connected and made larger via concertina doors. Lastly the conference centre has its own service spaces, namely a restroom and a kitchen serving the rec room. All these spaces can operate independently but can also be combined into one larger space in the event of a large conference or for an aftercare space for the children of the locals and workers/fishermen of Hout Bay.

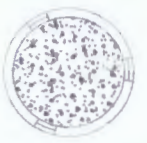




Museum/  
Information  
Centre

Connection to  
Media Centre  
above

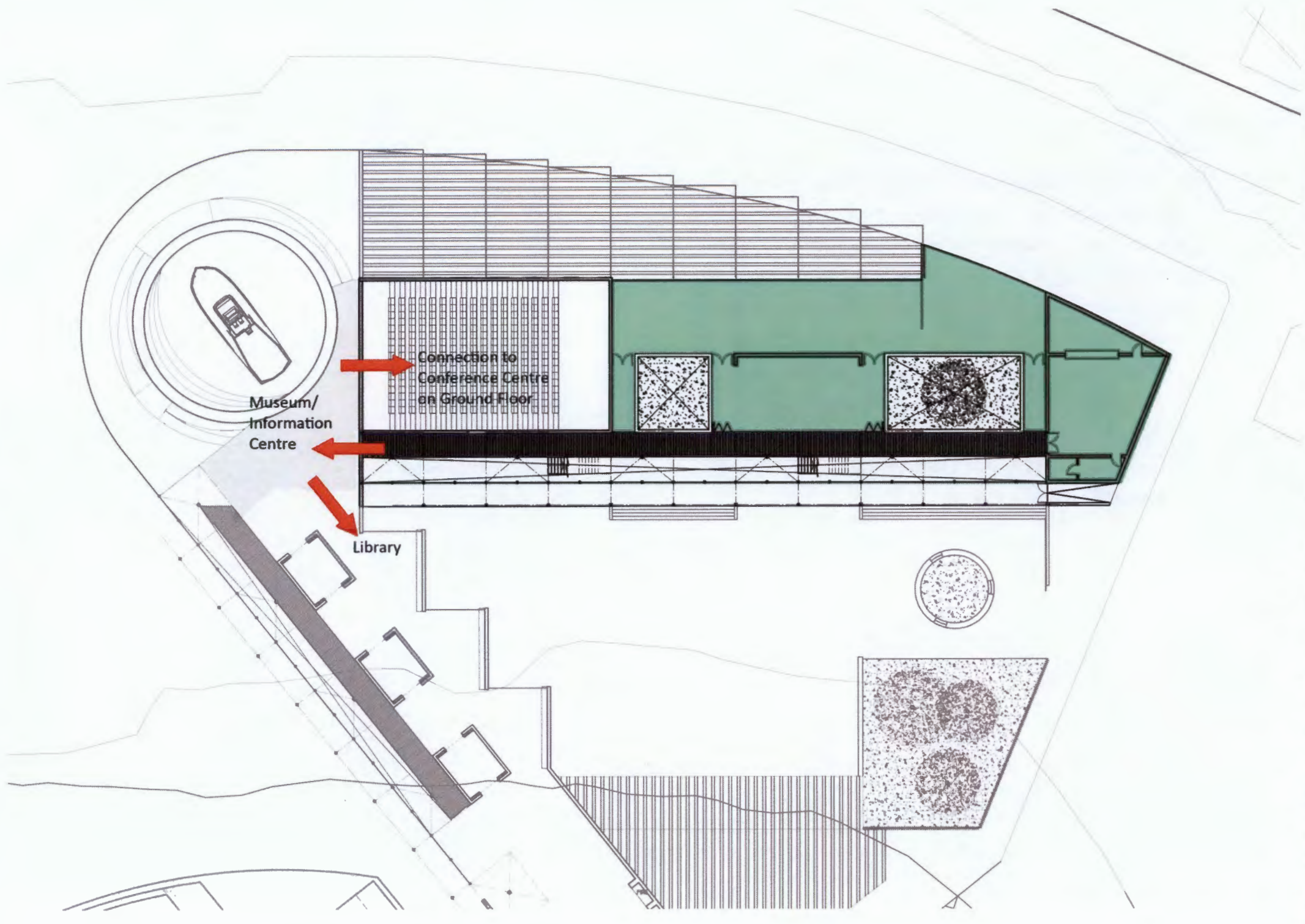
Semi-public  
Courtyard



### Media centre

The media centre is directly above the conference centre on the first floor – accessible via the ramp in the community centres main entrance space.

The media centre can operate on its own or feed into the conference centre below via the lecture theatre, link up to the community centres library space which is on the same floor or the museum space such as in the case of visual learning. The media centre has computer facilities which serve the community as a digital research base as well as an informal study lounge with wifi connection which can be closed up when a smaller informal media room is required as opposed to the lecture theatre. The staffroom and offices are located at the far end of the media centre for increased visibility over this space.



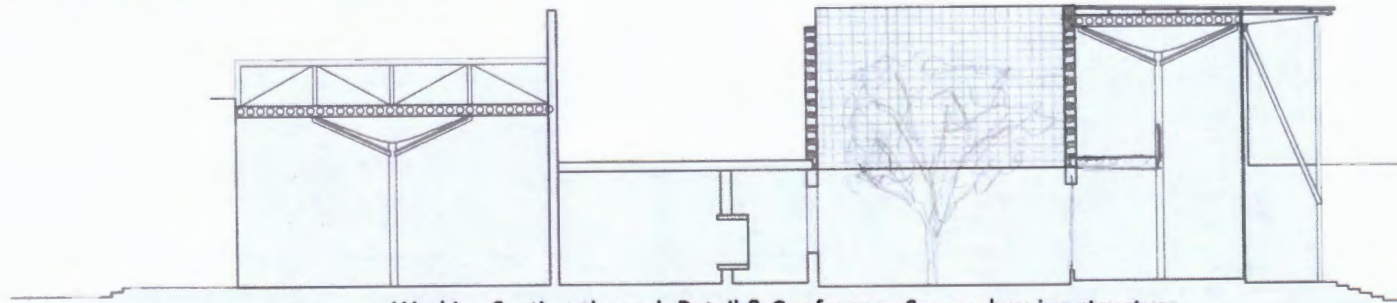
Museum/  
Information  
Centre

Connection to  
Conference Centre  
on Ground Floor

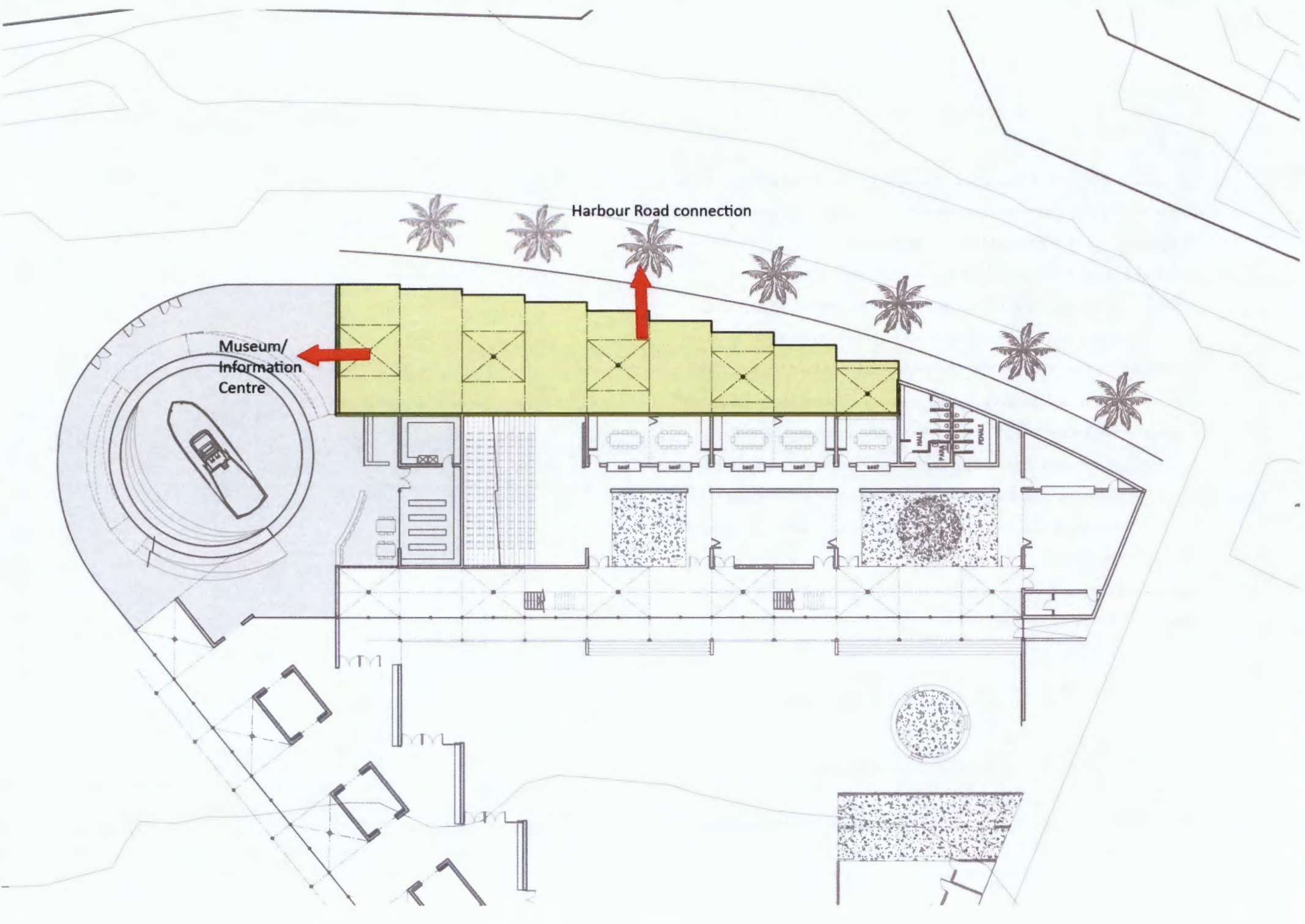
Library

## Retail

The retail component of the community centre was the last addition to the programme which came out of the designs need to activate the street edge. This grew out of the broader urban strategy in order to bridge the current disconnect of the harbour and the rest of Hout Bay as currently the harbour turns its back to the street edge and is fenced off. The retail spaces are based on a 5,5metre grid and a steel tree structure supporting the roof allows the retail spaces to be independent of load bearing walls. The spaces can therefore all be divided up into individual shops via drywall and can be easily expanded if need be by simply removing the wall between two stores. If the need for the retail were not needed in the future the space could be completely opened up into another space serving directly off of the community centres entrance space as well as still having that connection to the street edge. Currently I have proposed for the retail space which connects to the entrance space of the community centre to serve as a coffee shop for the building.



Working Section through Retail & Conference Space showing structure



Harbour Road connection

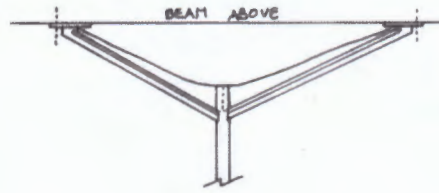
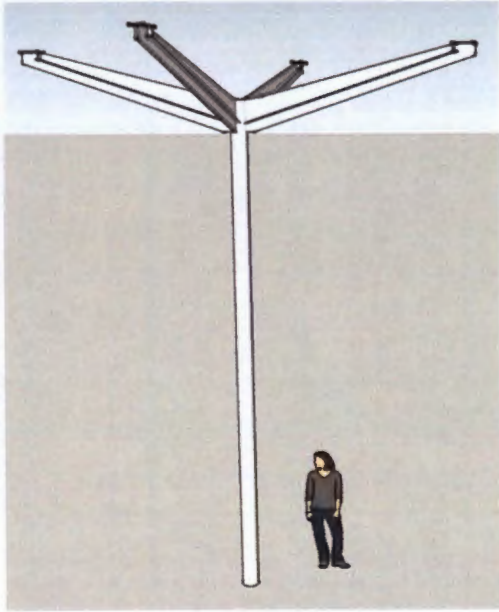
Museum/  
Information  
Centre

MUSEUM

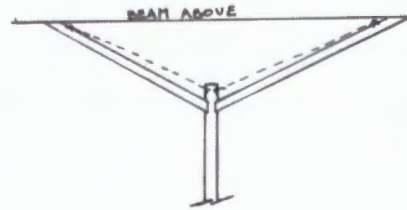
PAUSE

TOILET

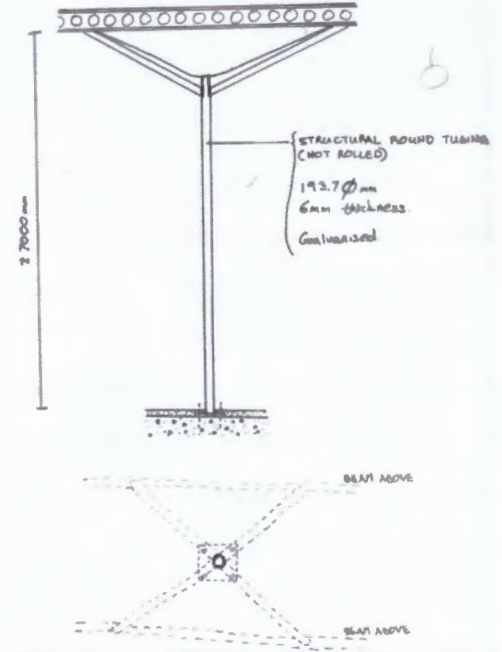
INTERIOR STEEL TREE STRUCTURE



STEEL PIN STRENGTHENING

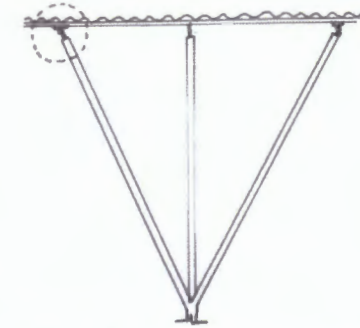
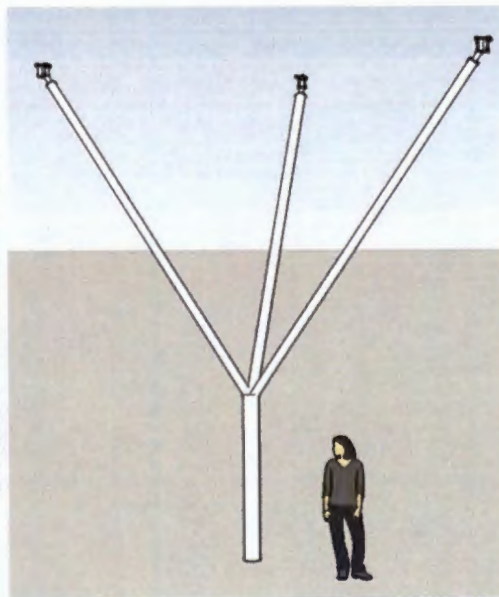


STEEL TENSION CABLE STRENGTHENING

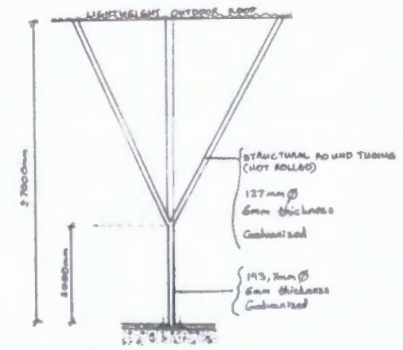


STRUCTURAL ROUND TUBING  
(HOT ROLLED)  
193.7  $\phi$  mm  
6 mm thickness  
Galvanized

EXTERIOR STEEL TREE STRUCTURE



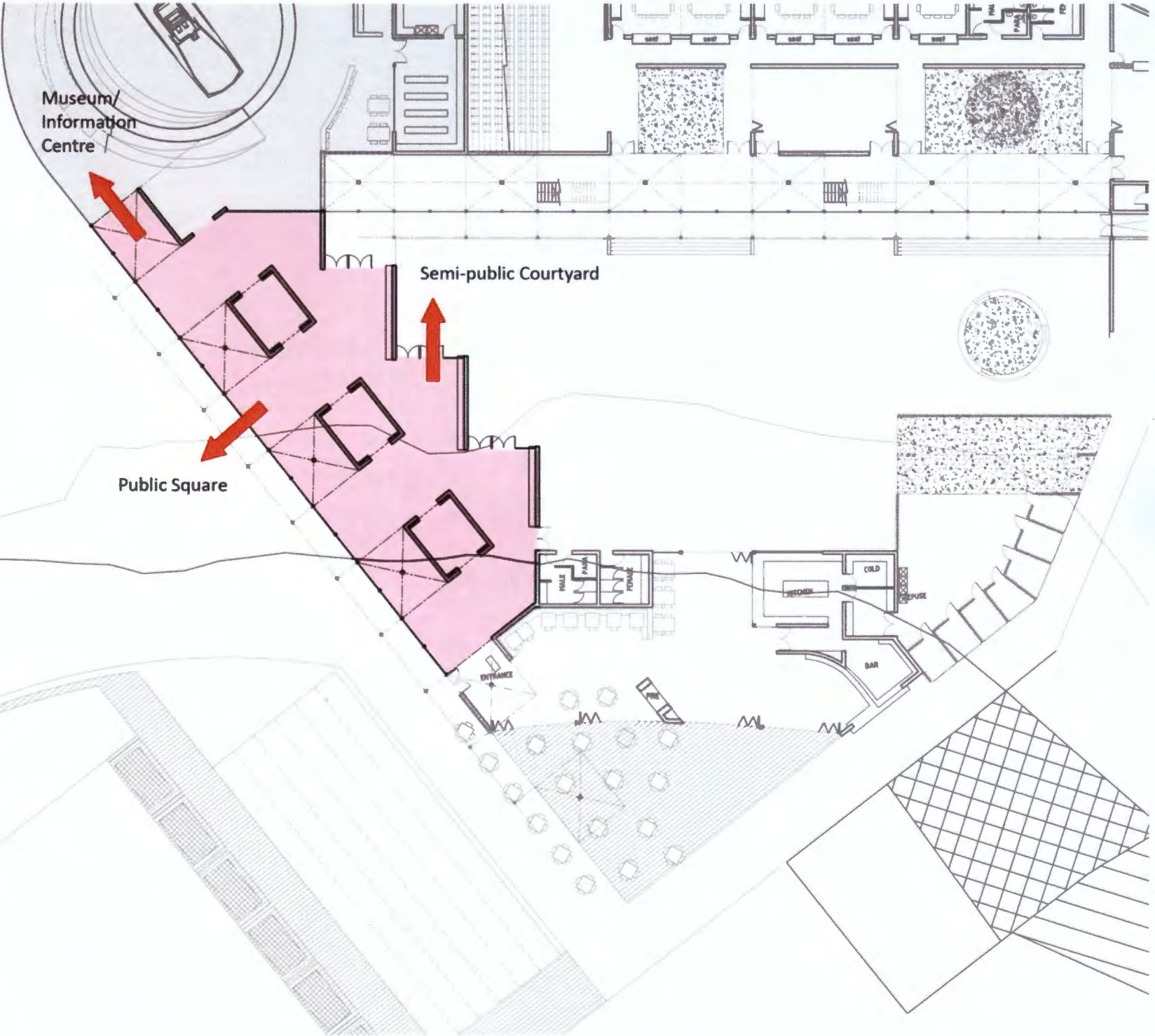
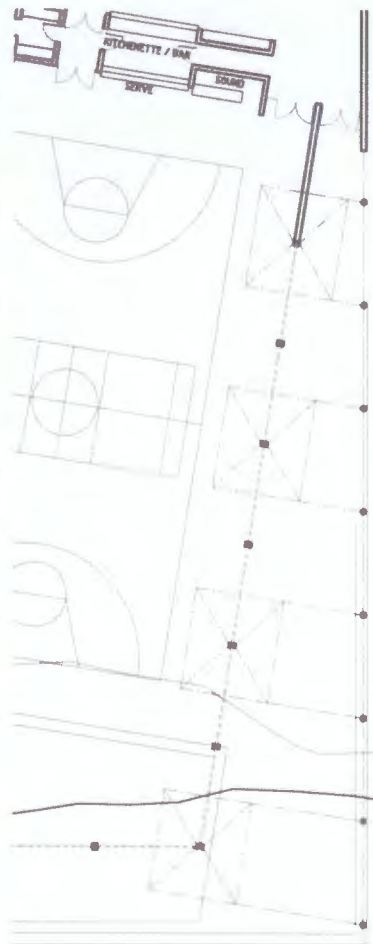
tree to beam detail



STRUCTURAL ROUND TUBING  
(HOT ROLLED)  
127 mm  $\phi$   
6 mm thickness  
Galvanized  
193.7 mm  $\phi$   
6 mm thickness  
Galvanized

### Gallery space

The gallery space of the community centre would serve as an art gallery space exhibiting local artists and thus providing a possible income for them. Smaller load bearing rooms running down the center of the space become more intimate exhibition rooms or can be used to store works in the case of the space being used for a special event. The space is formally accessed from the main entrance of the building but has the option of being accessible directly from the main public square such as on weekends, interacting with larger flows of people, in order to take advantage thereof. The same can be said for times during the week during the influx of tourists during the day and can then be closed off and only accessed through the entrance space at quieter hours for security reasons. A glazed facade would still allow for a visual connection between artworks and pedestrians during off-peak times. The space, being directly connected to the museum space in the entrance has the option of being used for temporary museum exhibitions as well. Like the conference centre, the gallery space has access to the semi-public courtyard of the building allowing for increased display space and a sculpture garden.



Museum/  
Information  
Centre

Semi-public Courtyard

Public Square

KITCHENETTE / BAR  
SERVE  
STOVE

HALL  
PAVILION  
PENTHOUSE

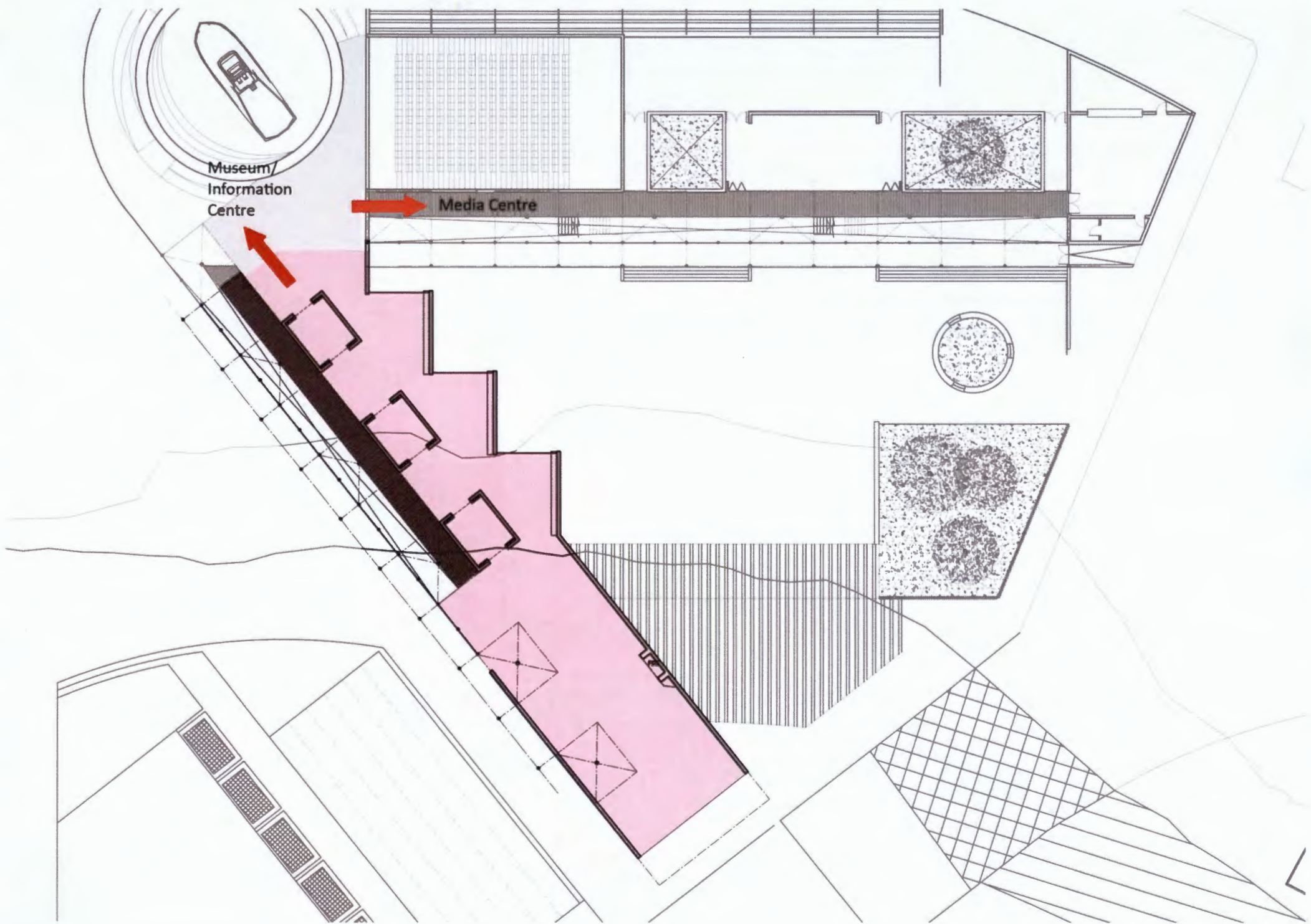
COLD  
REFUSE

BAR

ENTRANCE

### Library

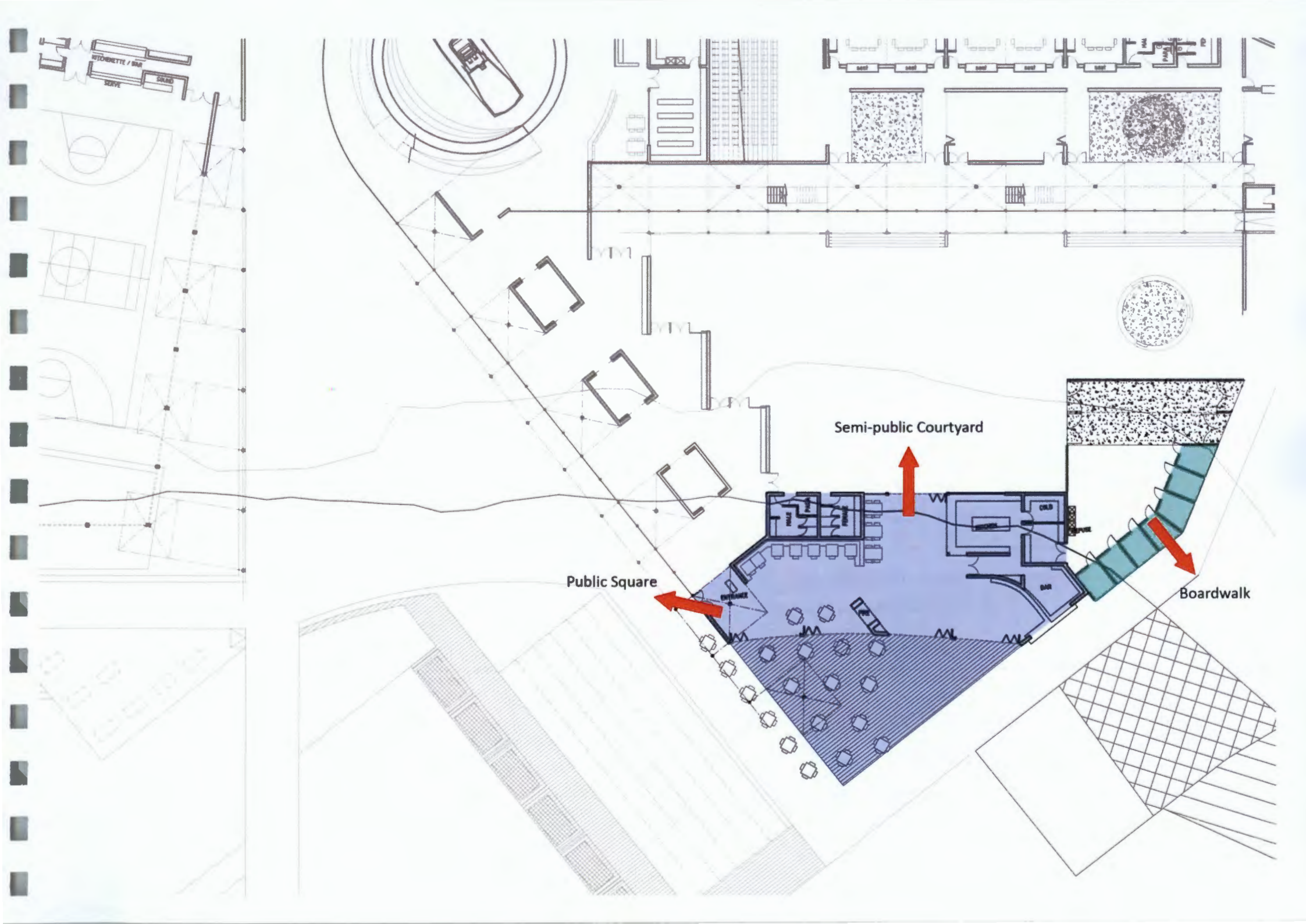
Hout Bay already has a public library and even though the broader proposed urban strategy seeks to connect to it, the current library is more fiction orientated and very far for the locals living around the harbour area and the newly proposed library will be more research orientated. The library space is directly above the gallery space on the first floor and accessible from the ramped entrance space. Being on the first floor it has a connection to the media centre for digital research resources. Like the gallery space below the library has the same “display” rooms which can be used for storage, office space or specialised spaces such as reading rooms. The same steel tree-like structures support the roof thus making for a relatively open flexible floor plan. The library cantilevers over the restaurants outdoor deck below thus serving the dual purpose of covered dining on the ground floor and a quiet reading space/viewpoint with uninterrupted views of the bay.



### Restaurant and trading stalls

The restaurant serves to create a place of rest for the general pedestrian and capitalise from the location along the public square and boardwalk.

Being in the harbour it will of course relate to seafood and become a sample of what the waters of Hout Bay have to offer – as well as becoming an additional client for the local fishermen. Being a restaurant, as shown in my research, it is a space which will most likely be active and thrive all day thus activating the rest of the space.



HYDRANTE / BAR

SERVE

BAR

WY1

Semi-public Courtyard

Public Square

Boardwalk

ENTRANCE

W

COLD

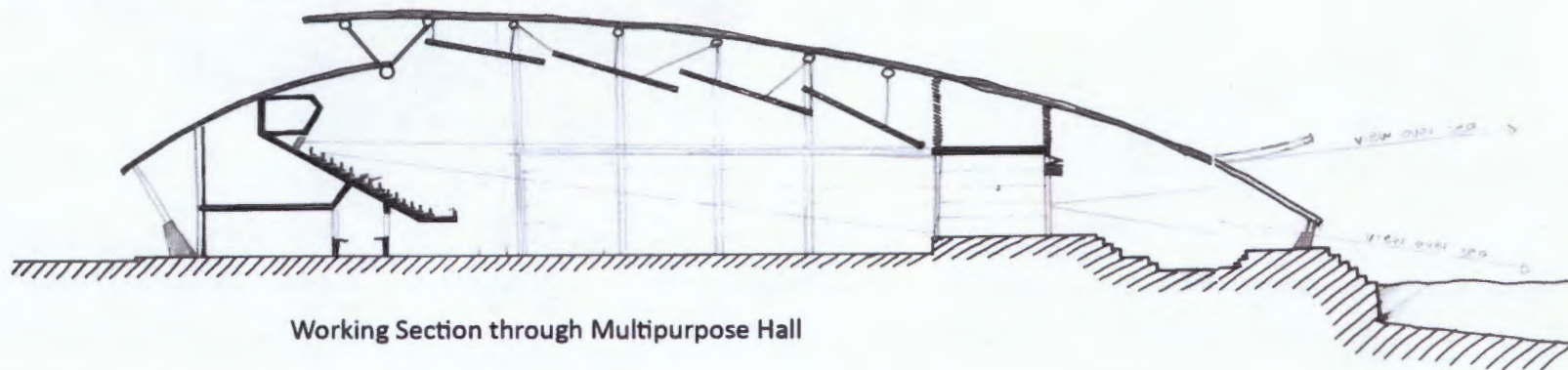
BAR

### Multipurpose Hall

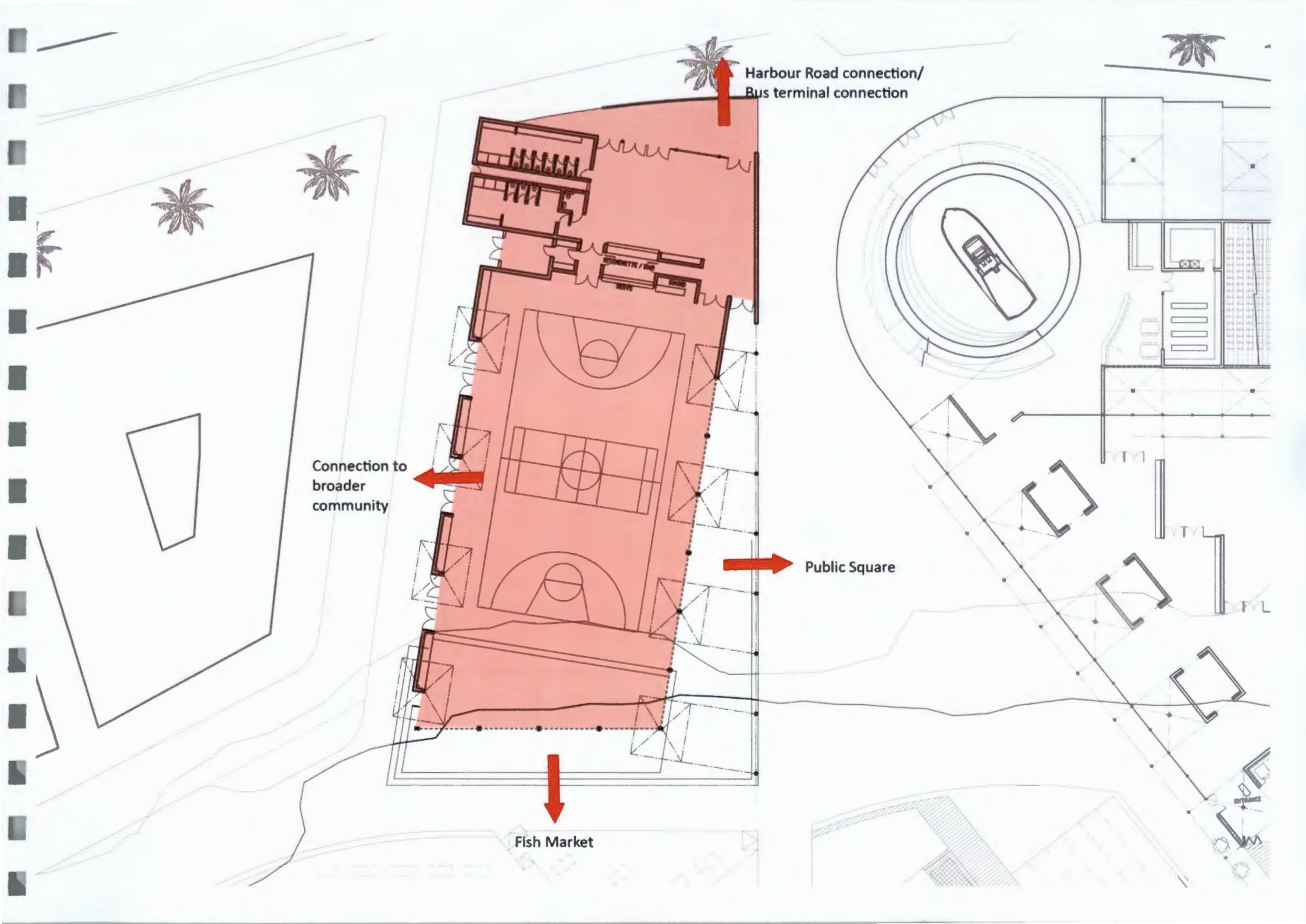
The multipurpose hall will be used for all big events happening, not just in the harbour, but Hout Bay in general. The hall is formally accessed through a foyer space opposite the bus terminal and has the dual purpose of a sports hall and a performance space. A studio space on a raised plinth makes up the stage for the hall with theatre seats facing it above the foyer on the first floor. The wall of the sports hall facing the public square can completely open up via vertical industrial folding doors which allows the user to adjust accessibility to the space accordingly. During a performance which requires a closed quiet space the wall can be completely closed and in the afternoon when local children are playing sports the wall can be completely opened up onto the square. With the wall opening up the stage space becomes an open stage facing the hall interior, the public square and a fish market space on the seafront. This allows the hall to become part of the urban environment when a large event is held in the public square.



Sample of vertical industrial folding doors  
NOTE: Due to height of opening - six folds as opposed to two



Working Section through Multipurpose Hall



Harbour Road connection/  
Bus terminal connection

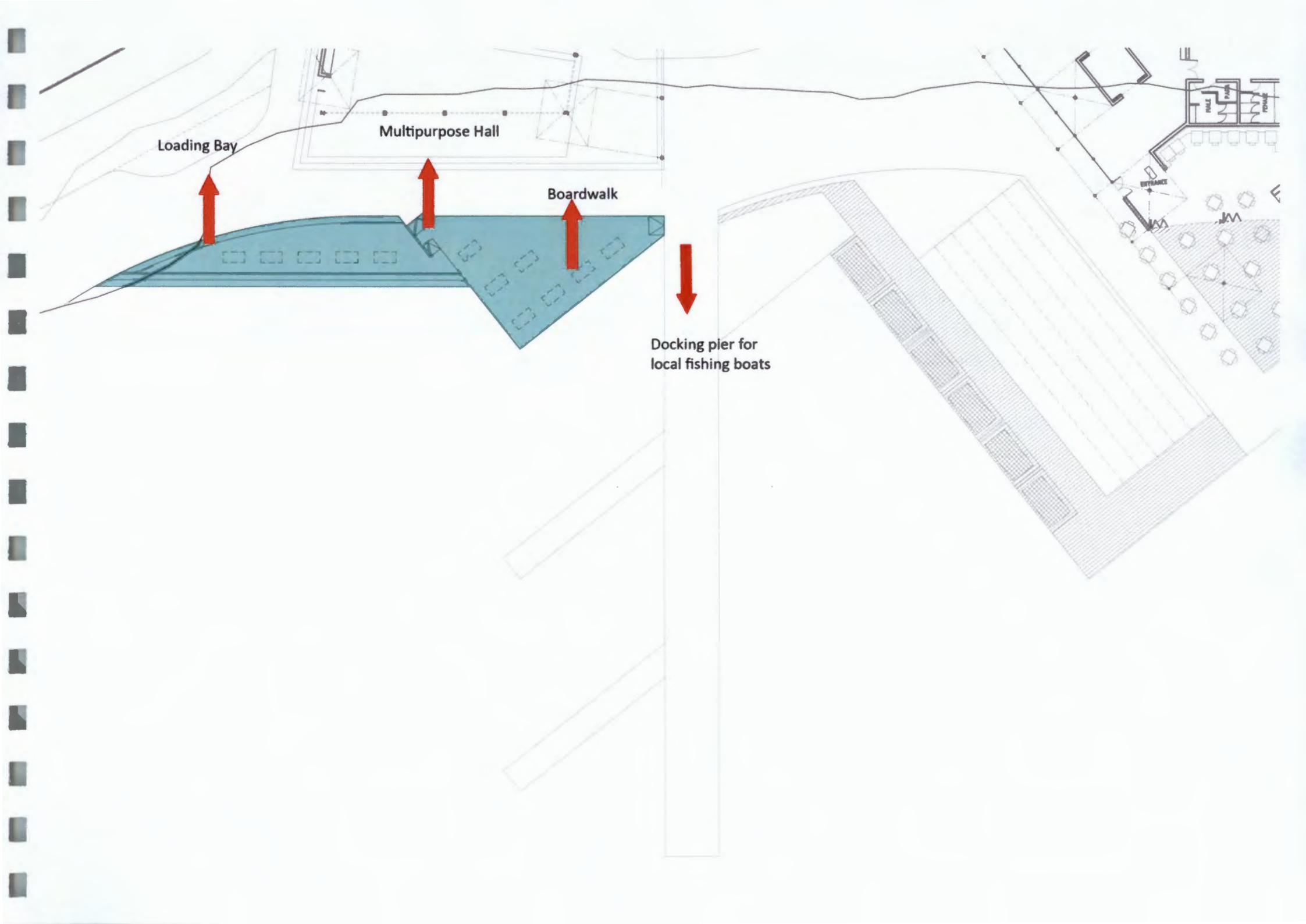
Connection to  
broader  
community

Public Square

Fish Market

### Fishmarket

The new fishmarket will be a way for local fishermen to sell their own freshly caught Demersal fish on a daily basis. This will provide them with a direct income and as opposed to working for larger corporations who pay weak wages. This should promote entrepreneurship amongst the fishermen where they can start to grow their own smaller companies. The market is placed along the promenade in order to promote direct interaction with pedestrians and thus reducing the need for marketing. The market is conveniently located in the centre of the harbour near the newly proposed restaurant as well as the current existing few thus already creating a market for the fish. A loading bay adjacent to the fish market allows for sales to larger companies. Like most fish markets it will operate primarily during mornings with extended times on weekends. Thereafter the market is able to be washed down and becomes part of the larger urban environment. Being opposite the multipurpose hall the low fish market tables double up as seating facing the stage of the hall for outdoor performances.



Loading Bay

Multipurpose Hall

Boardwalk

Docking pier for local fishing boats

ENTRANCE

WALK

STAIR

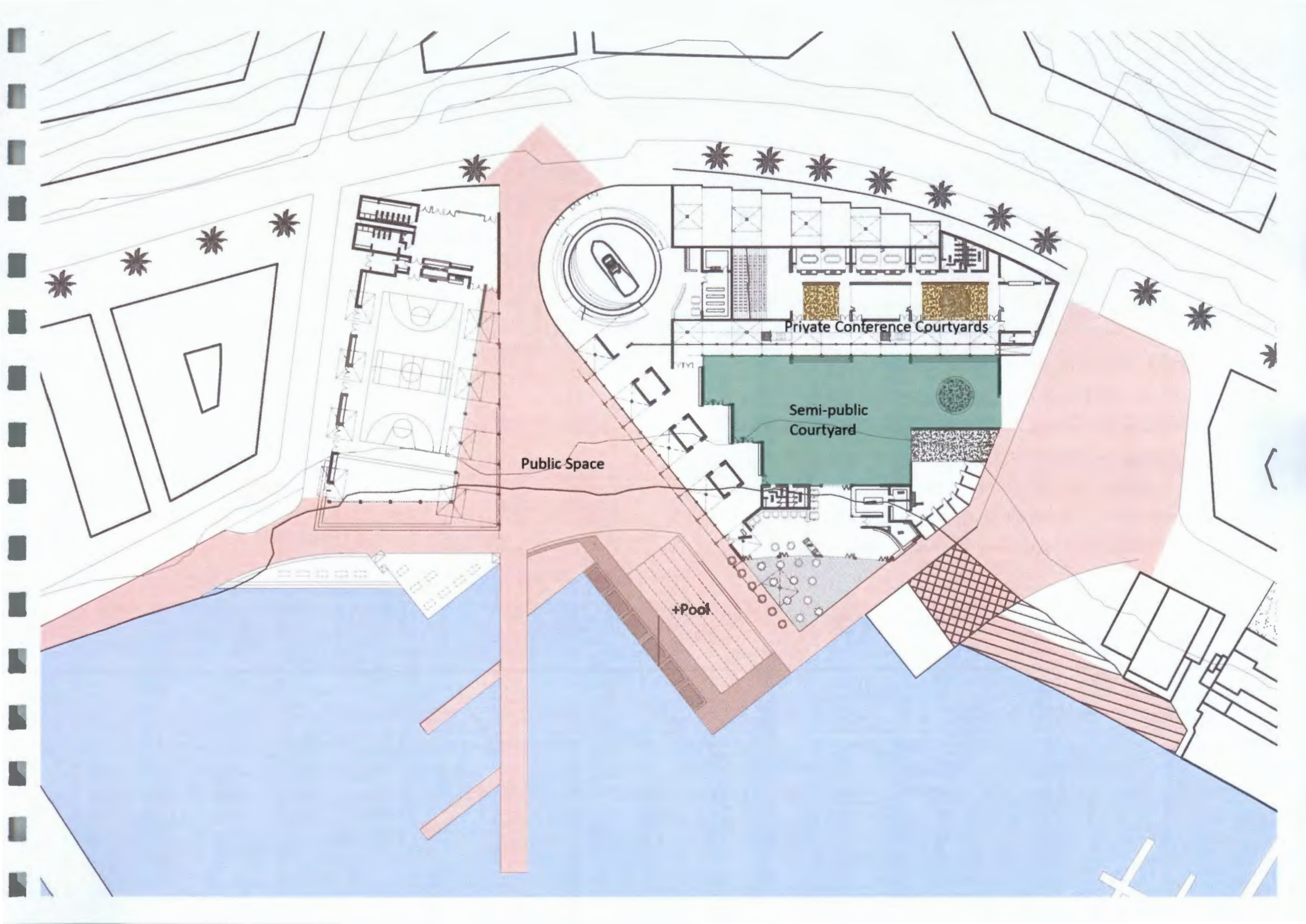
### Urban landscape

This is split up into public, semi-public and the more private spaces.

The public square has a lap pool for competitive and recreational swimming. The sea water is heavily polluted therefore the perimeter of the pool utilises +Pool natural filters to filter the water to swimmable conditions. Amphitheatre type seating makes up the perimeter of the seafront creating a link to the sea, spectator seating for the pool, as well as simply a recreational space for the workers, locals and tourists to relax on.

A semi-public courtyard serving the community centre creates a very different experience than that of the hard, event-orientated public space.

The semi-public courtyard creates a quiet contemplative, soft space offering a retreat from the working harbour environment.



Public Space

Private Conference Courtyards

Semi-public Courtyard

+Pool

## **PROJECT REFLECTION**

The most valuable lessons learnt from the dissertation process stemmed from the planning and layout of the programme in order to create fluid programmatically flexible spaces. It is a subject all architects should express in their buildings, no matter the concept for the buildings, as it allows for building longevity and continued use – activating the same spaces with complimenting functions throughout the day ensuring the special experience always remains “alive” with activity.

The proposed Community Centre appears to be successful in its aim of creating fluid programmatic flexible spaces as well as realising that the design is always part of a greater context and must thus be designed accordingly. The design becomes a central beacon in the harbour thus reconnecting it and responds to the context sensitively enough realising that it is just another element in a much broader context.

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### Table of figures

(NOTE: All images/maps by author unless otherwise stated)

#### Image 1:

Drysdale, A, 1988. Pg 52. The Argus Book of Cape Town. 1<sup>st</sup> ed. Cape Town: Struik Publishers

#### Image 15:

Deviant Art. Awesome Art. 2013. [ONLINE] Available at:  
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#### Image 18 - 19:

Kolarevic, B, 2008. pg 14. Manufacturing Material Effects, Rethinking Design & Making in Architecture. 1<sup>st</sup> ed. New York: Routledge.

#### Image 20:

Weathered Wood. 2013. [ONLINE] Available at: <http://www.photos-public-domain.com/wp-content/uploads/2011/11/weathered-wood-> [Accessed 07 April 2014]

#### Image 21:

Redemptions Beauty. Keep Walking. 2012. [ONLINE] Available at:  
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#### Image 22:

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Image 23:

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Image 24:

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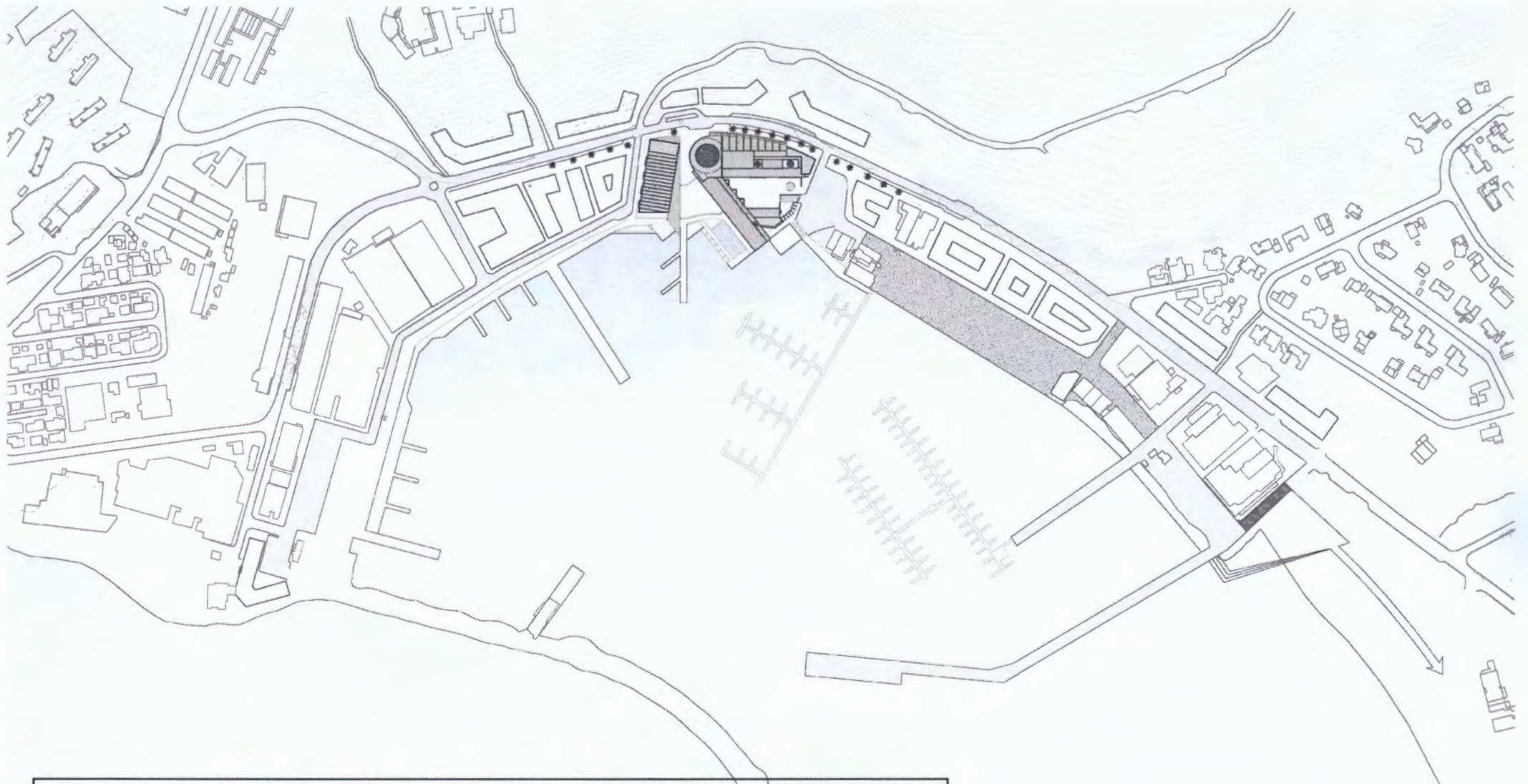
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Images 27 – 28:

Leupen, B, 2005. Time-based architecture. 1<sup>st</sup> ed. Rotterdam, 010 Publishers.



APPENDIX



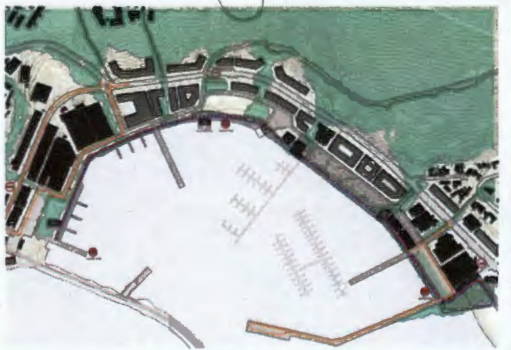
**PROPOSED URBAN STRATEGY**

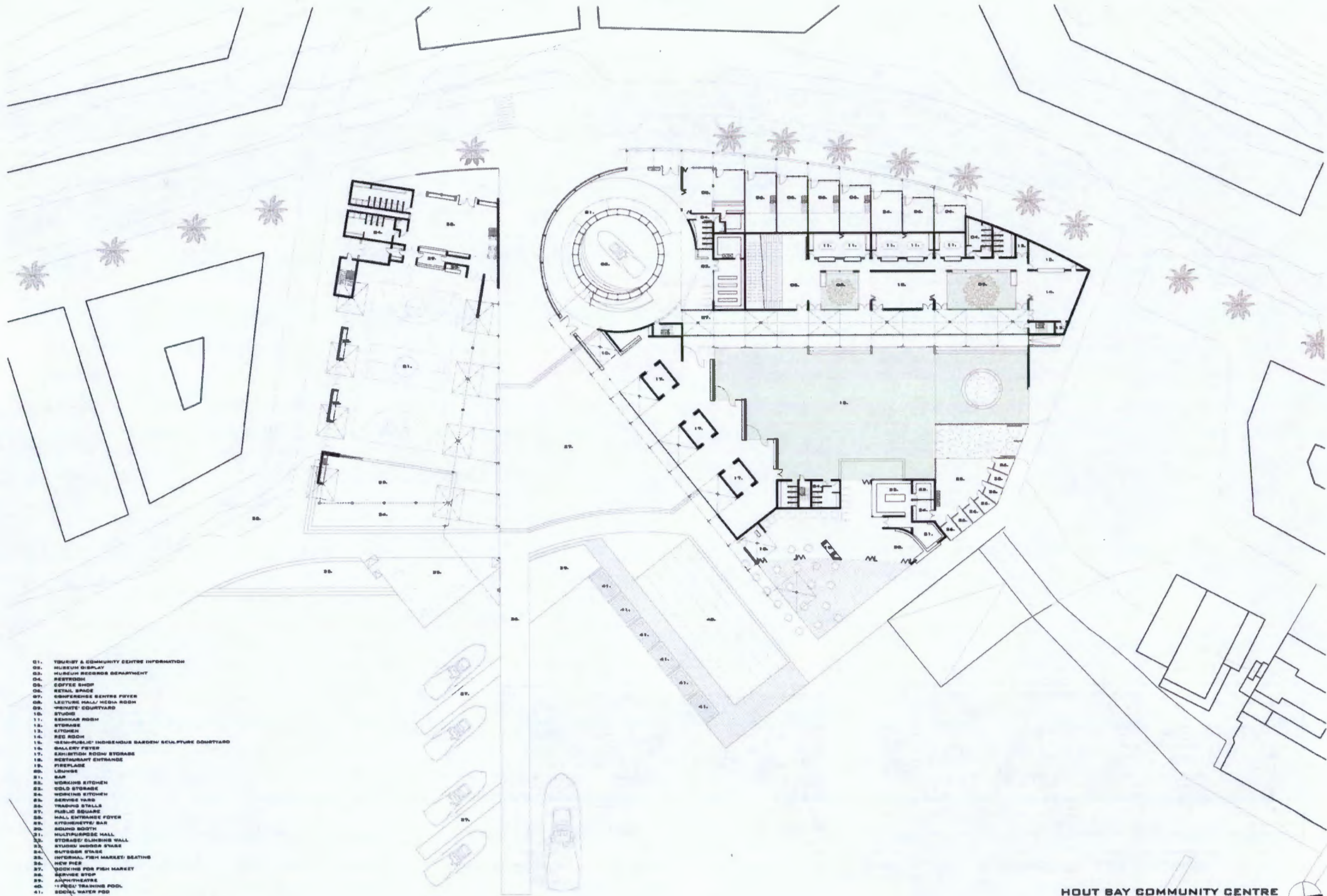
**Macro Scale**

- Aim: To re-establish the "historic scale" of Hout Bay which once ran from Constantia Nek down to Hout Bay and around to the harbour.
- One main route between Constantia Nek and Hout Bay beach - although not very strong.
- Establish new benchmarks creating a sense of place and contributing to a sense of identity for Hout Bay town.
- Benchmarks will point away from the Hout Bay's existing walls, and commercial infrastructure as well as providing an opportunity for future development.
- Benchmarks will create a sense of place, orientating and providing a sense of direction along the water's edge which will allow us to be a flexible space for both community interaction and parking.

**Micro Scale**

- Limited vehicular access.
- Vehicular access limited to northern most pier and southern end of harbour.
- Primary access point to harbour via Constantia Nek from west side and new proposed bus terminal.
- Northward and southward routes largely pedestrianised.
- Benchmarks to encourage walking and cycling - with the introduction of a bicycle lane.
- Water front is intended to allow for a mix of uses between opposite ends of harbour.
- Water front will be used up to allow for a range of connections between people and sea.

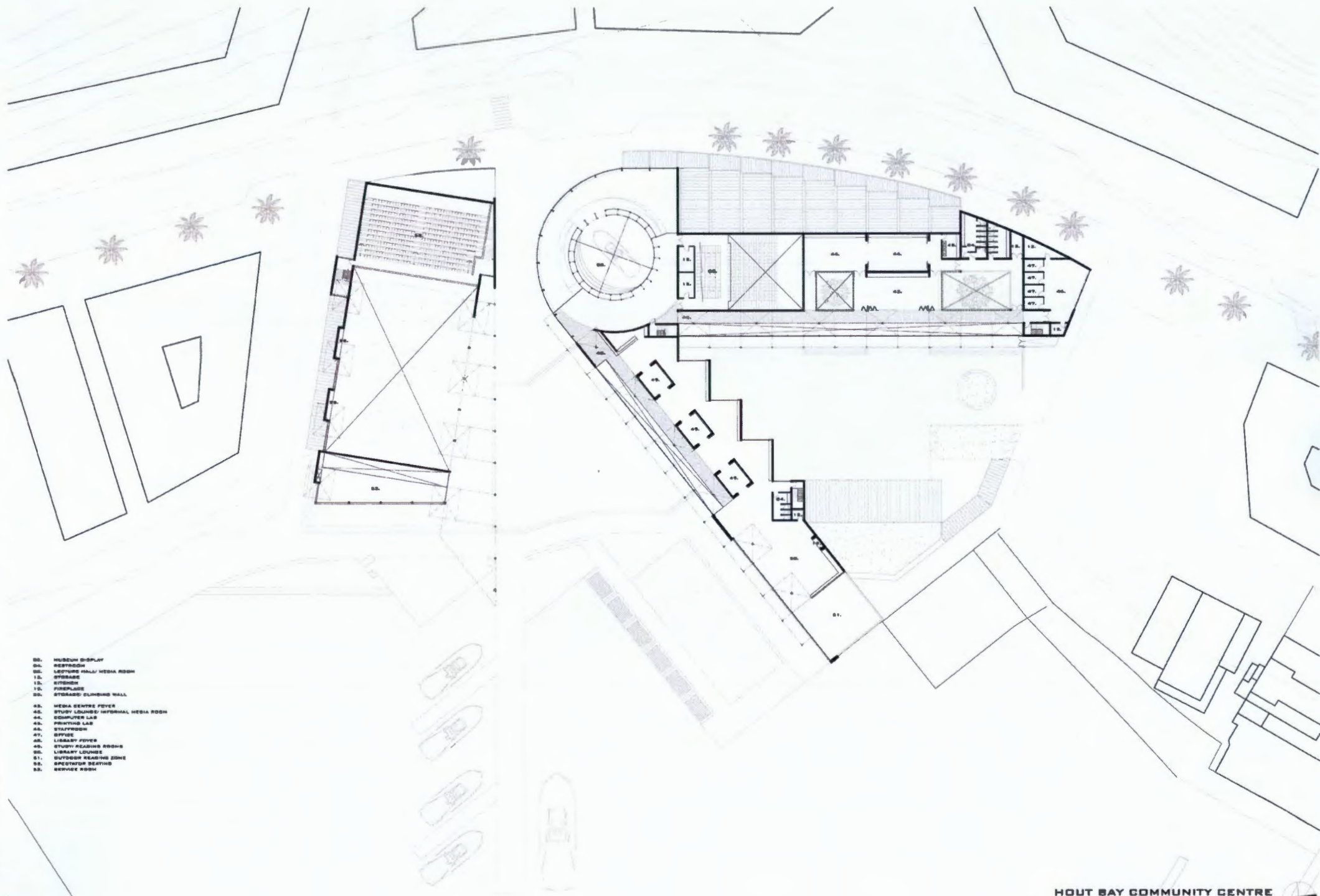




- 01. TOURIST & COMMUNITY CENTRE INFORMATION
- 02. MUSEUM DISPLAY
- 03. MUSEUM RECORDS DEPARTMENT
- 04. RESTROOM
- 05. OFFICE SPACE
- 06. RETAIL SPACE
- 07. CONFERENCE CENTRE Foyer
- 08. LECTURE HALL/ MEET ROOM
- 09. 'WINDY' COURTYARD
- 10. STUDIOS
- 11. BEHIND ROOM
- 12. STORAGE
- 13. KITCHEN
- 14. REC ROOM
- 15. 'SUNSHINE' INDIAN BARDEN/ SCULPTURE COURTYARD
- 16. GALLERY Foyer
- 17. EXHIBITION ROOM STORAGE
- 18. RESTAURANT ENTRANCE
- 19. FIREPLACE
- 20. LOUNGE
- 21. BAR
- 22. WORKING KITCHEN
- 23. COOLD STORAGE
- 24. WORKING KITCHEN
- 25. SERVICE YARD
- 26. TRADING STALLS
- 27. PUBLIC SQUARE
- 28. HALL ENTRANCE Foyer
- 29. KITCHENETTE BAR
- 30. SOUND BOOTH
- 31. MULTIPURPOSE HALL
- 32. STORAGE/ CLIMBING WALL
- 33. STUDIO UNDER STAIRS
- 34. MULTIPURPOSE STAIRS
- 35. INFORMAL FISH MARKET SEATING
- 36. NEW FISH
- 37. BOOTHING FOR FISH MARKET
- 38. SERVICE STOP
- 39. AMPHITHEATRE
- 40. 'FRESH' TRAINING POOL
- 41. SWIMMING WATER POOL

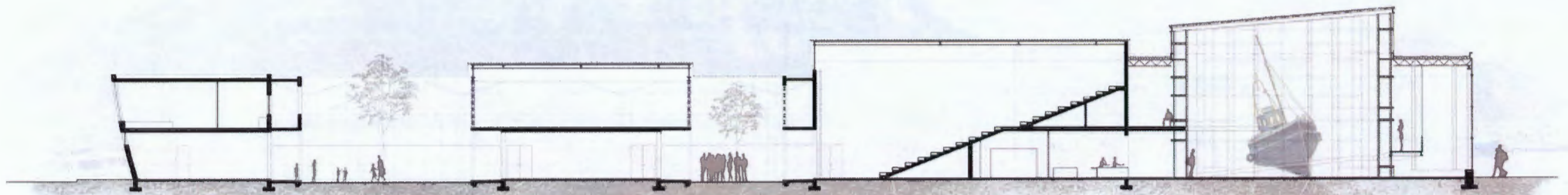
HOUT BAY COMMUNITY CENTRE  
GROUND FLOOR PLAN - SCALE 1:200



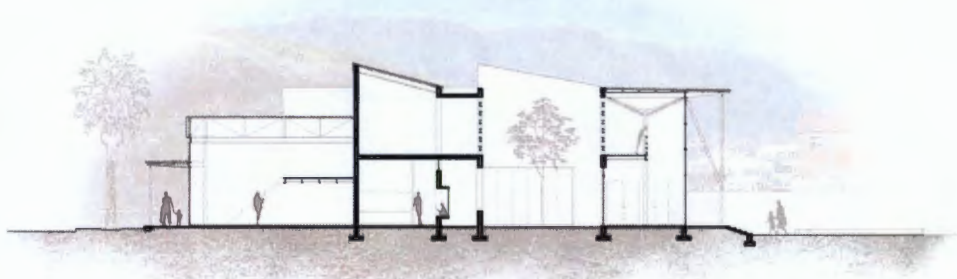


- 02. MUSEUM DISPLAY
- 03. RESTROOM
- 04. LECTURE HALL/ MEDIA ROOM
- 12. STAIRS
- 13. STAIRS
- 14. PORCH
- 15. PORCH
- 16. STORAGE/ CLIMBING WALL
- 05. MEDIA CENTRE FOYER
- 06. STUDY LOUNGE/ INFORMAL MEDIA ROOM
- 07. COMPUTER LAB
- 08. PRINTING LAB
- 09. STAFFROOM
- 04. OFFICE
- 05. LIBRARY FOYER
- 06. STUDY READING ROOMS
- 07. LIBRARY LOUNGE
- 08. OUTDOOR READING EDGE
- 09. SPECTATOR SEATING
- 10. SERVICE ROOM

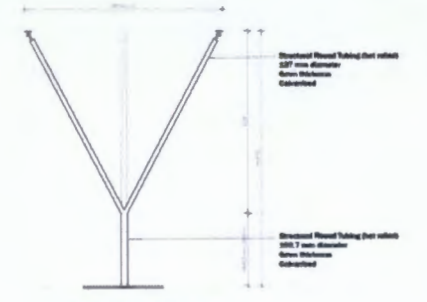
HOUT BAY COMMUNITY CENTRE  
FIRST FLOOR PLAN - SCALE 1:200



**HOUT BAY COMMUNITY CENTRE**  
**SECTIONS - SCALE 1:100**



INTERIOR STEEL STRUCTURE - ELEVATION\_L100



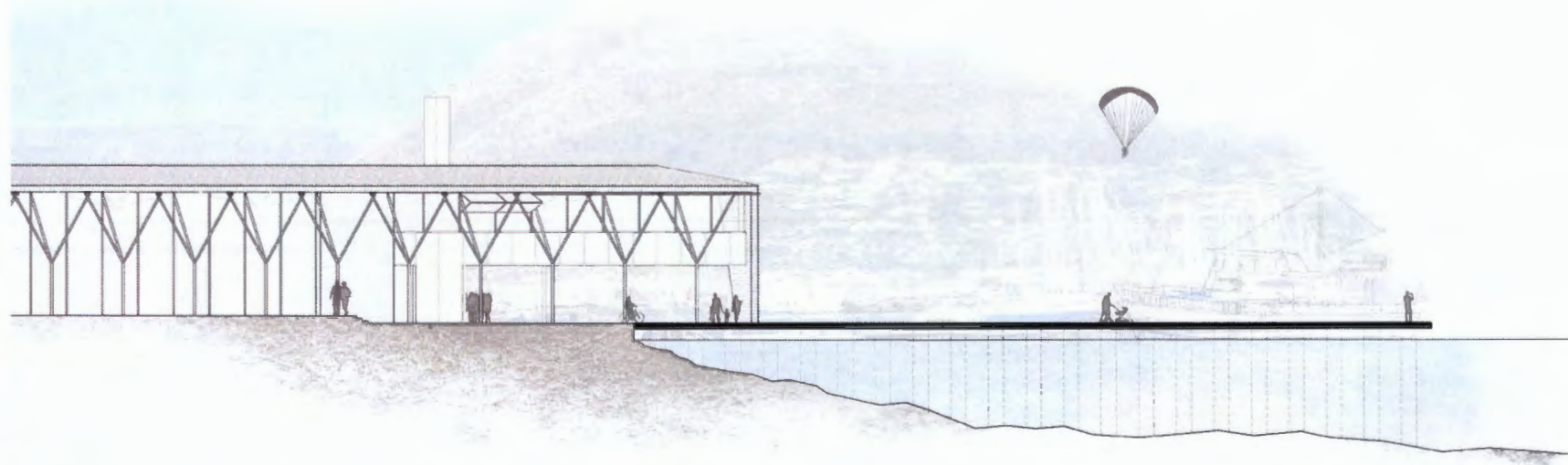
EXTERIOR STEEL STRUCTURE - ELEVATION\_L100

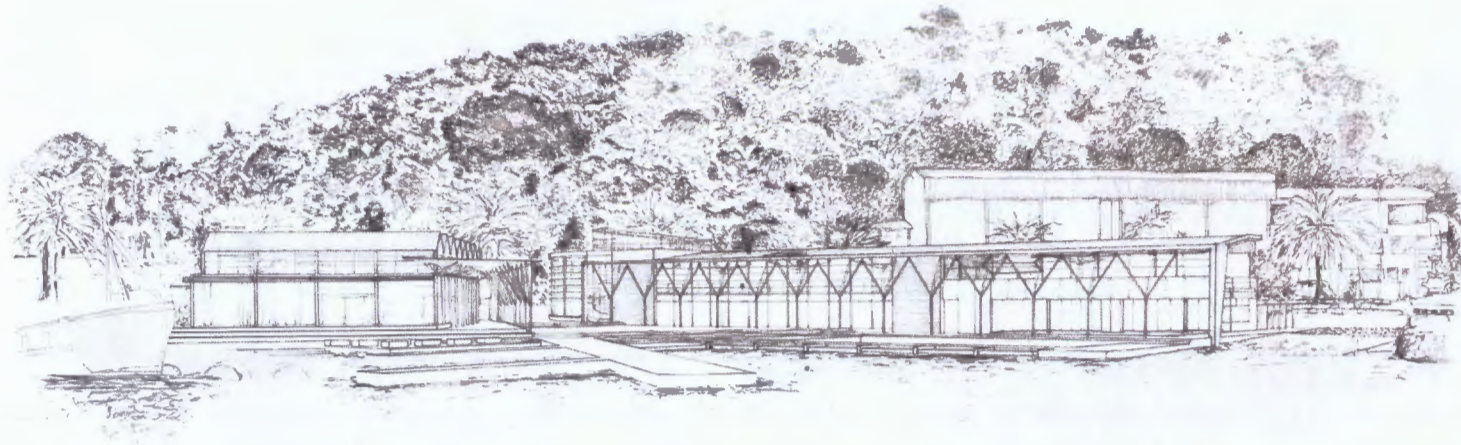
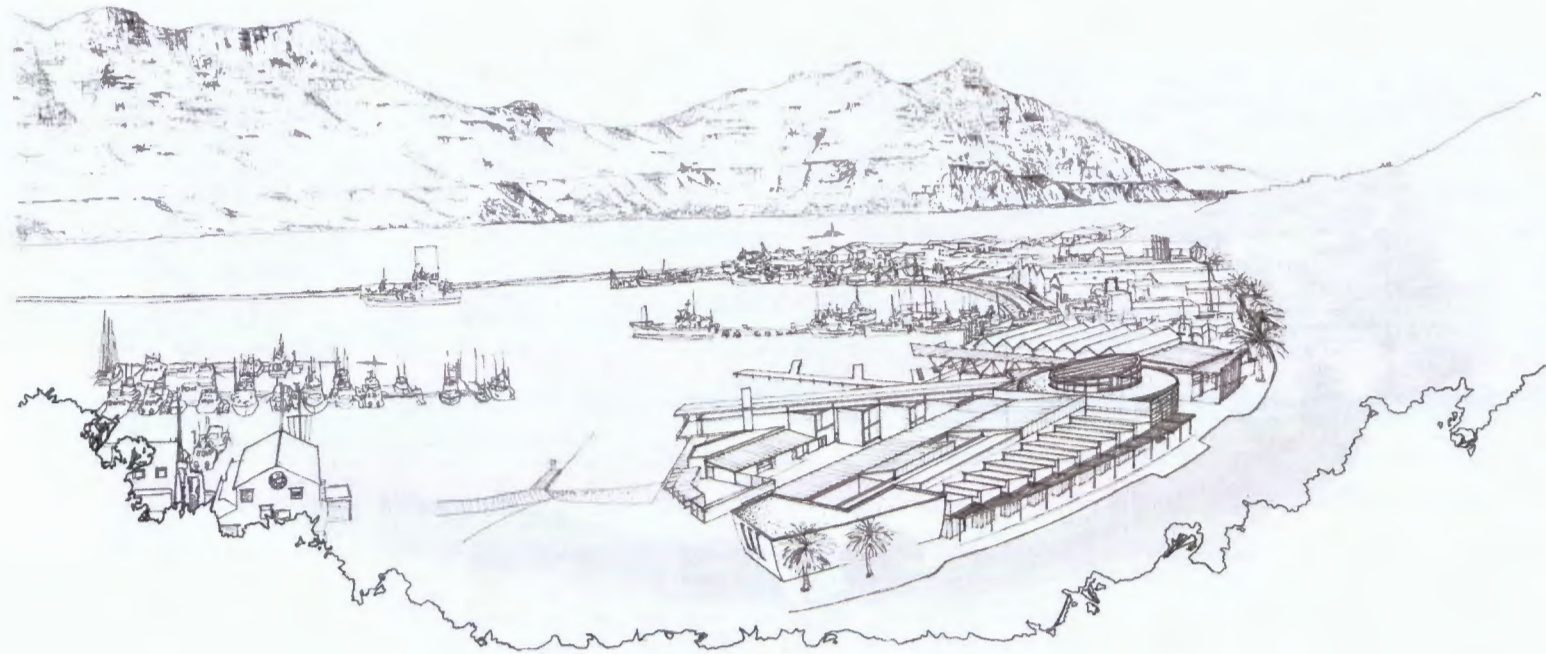


INTERIOR STEEL STRUCTURE - PLAN\_L100



EXTERIOR STEEL STRUCTURE - PLAN\_L100





**HOUT BAY COMMUNITY CENTRE**  
**PERSPECTIVES AMONGST CONTEXT**

### EBE Faculty: Assessment of Ethics in Research Projects

Any person planning to undertake research in the Faculty of Engineering and the Built Environment at the University of Cape Town is required to complete this form before collecting or analysing data. When completed it should be submitted to the supervisor (where applicable) and from there to the Head of Department. If any of the questions below have been answered YES, and the applicant is NOT a fourth year student, the Head should forward this form for approval by the Faculty EIR committee: submit to Ms Zulpha Geyer ([Zulpha.Geyer@uct.ac.za](mailto:Zulpha.Geyer@uct.ac.za); Chem Eng Building, Ph 021 850 4791). Students must include a copy of the completed form with the thesis when it is submitted for examination.

Name of Principal Researcher/Student:

Sven Pilzweger

Department:

Built Environment (BAS)

If a Student:

Degree:

M Arch (Prof)

Supervisor:

Nick Coetzer

If a Research Contract indicate source of funding/sponsorship:

Research Project Title:

#### Overview of ethics issues in your research project:

Question 1: Is there a possibility that your research could cause harm to a third party (i.e. a person not involved in your project)?	YES	<input checked="" type="radio"/> NO
Question 2: Is your research making use of human subjects as sources of data? If your answer is YES, please complete Addendum 2.	YES	<input checked="" type="radio"/> NO
Question 3: Does your research involve the participation of or provision of services to communities? If your answer is YES, please complete Addendum 3.	YES	<input checked="" type="radio"/> NO
Question 4: If your research is sponsored, is there any potential for conflicts of interest? If your answer is YES, please complete Addendum 4.	YES	<input checked="" type="radio"/> NO

If you have answered YES to any of the above questions, please append a copy of your research proposal, as well as any interview schedules or questionnaires (Addendum 1) and please complete further addenda as appropriate.

#### I hereby undertake to carry out my research in such a way that

- there is no apparent legal objection to the nature or the method of research; and
- the research will not compromise staff or students or the other responsibilities of the University;
- the stated objective will be achieved, and the findings will have a high degree of validity;
- limitations and alternative interpretations will be considered;
- the findings could be subject to peer review and publicly available; and
- I will comply with the conventions of copyright and avoid any practice that would constitute plagiarism.

Signed by:

	Full name and signature	Date
Principal Researcher/Student: Sven Pilzweger		26 June 2014

This application is approved by:

Supervisor (if applicable):		
HOD (or delegated nominee): Final authority for all assessments with NO to all questions and for all undergraduate research.	Tom Sanyal (HOD Nominee) 	27/10/2014 →
Chair: Faculty EIR Committee For applicants other than undergraduate students who have answered YES to any of the above questions.		

#### ADDENDUM 1:

Please append a copy of the research proposal here, as well as any interview schedules or questionnaires:

**ADDENDUM 2:** To be completed if you answered YES to Question 2:

It is assumed that you have read the UCT Code for Research Involving Human Subjects (available at <http://web.uct.ac.za/depts/educate/download/uctcodeforresearchinvolvinghumansubjects.pdf>) in order to be able to answer the questions in this addendum.

2.1 Does the research discriminate against participation by individuals, or differentiate between participants, on the grounds of gender, race or ethnic group, age range, religion, income, handicap, illness or any similar classification?	YES	<input checked="" type="radio"/> NO
2.2 Does the research require the participation of socially or physically vulnerable people (children, aged, disabled, etc) or legally restricted groups?	YES	<input checked="" type="radio"/> NO
2.3 Will you not be able to secure the informed consent of all participants in the research? (In the case of children, will you not be able to obtain the consent of their guardians or parents?)	YES	<input checked="" type="radio"/> NO
2.4 Will any confidential data be collected or will identifiable records of individuals be kept?	YES	<input checked="" type="radio"/> NO
2.5 In reporting on this research is there any possibility that you will not be able to keep the identities of the individuals involved anonymous?	YES	<input checked="" type="radio"/> NO
2.6 Are there any foreseeable risks of physical, psychological or social harm to participants that might occur in the course of the research?	YES	<input checked="" type="radio"/> NO
2.7 Does the research include making payments or giving gifts to any participants?	YES	<input checked="" type="radio"/> NO

If you have answered YES to any of these questions, please describe below how you plan to address these issues:

NA

**ADDENDUM 3:** To be completed if you answered YES to Question 3:

3.1 Is the community expected to make decisions for, during or based on the research?	YES	NO
3.2 At the end of the research will any economic or social process be terminated or left unsupported, or equipment or facilities used in the research be recovered from the participants or community?	YES	NO
3.3 Will any service be provided at a level below the generally accepted standards?	YES	NO

If you have answered YES to any of these questions, please describe below how you plan to address these issues:

Research Proposal:

Time-based Architecture: A sensitive approach to programmatic flexibility

Time-based architecture has always held an appeal to me as an aspiring architect due to the fact that our environment, no matter the context, is constantly changing and in a state of motion; be it natural forces, human activity, the cyclical events which change throughout the course of a day, or even the rapidly changing social demands and needs of a society. Much like our contextual environment can be seen as a continual process, so too should architecture – not just through its conceptual design methodology but its built nature as well – thus creating fluid, dynamic, changing and cyclical experiences of space. With so many meanings to the word, what do I refer to as time-based architecture in the context of this design dissertation? Time-based architecture refers to architecture which responds to change or resembles an evolution of sorts; eroding the metaphorical boundaries that appear to currently exist between the architectural “artefacts” we have become accustomed to and the rest of the ever-changing world. It is architecture which goes beyond its normative static state and becomes an “evental” act attending to a void in architecture – that of time.

The real challenge as a designer is strategically and well thought out designs which are easily adaptable to change and demand, whilst still realising the design is still part of a greater context and must respond responsibly as such. The main focus of this design dissertation is therefore time-based architecture specifically that of a sensitive “passive” nature which relies on small changes to garner larger perceived effects. The site in question which will house such an archetype is a vacant site currently dividing Hout Bay harbour in two opposing parts: the industrial and the tourism sectors. This design dissertation will thus seek to not just create a time-based medium but to respond responsibly to its surroundings as well - bridging the current divide and reconnecting the harbour and the surrounding area with a community based programme linking in both adjacent sectors.

Safe access + non-disruptive access to the site should be given due diligence at all stages. JS.

