

RECOVERING THE MANUFACTURED SITE
A Science Park in Culemborg

Design Research Project APC5058S

Submitted in partial fulfilment of the requirements for the degree
Master of Architecture (Professional)

by

Adrian Storm Radcliffe

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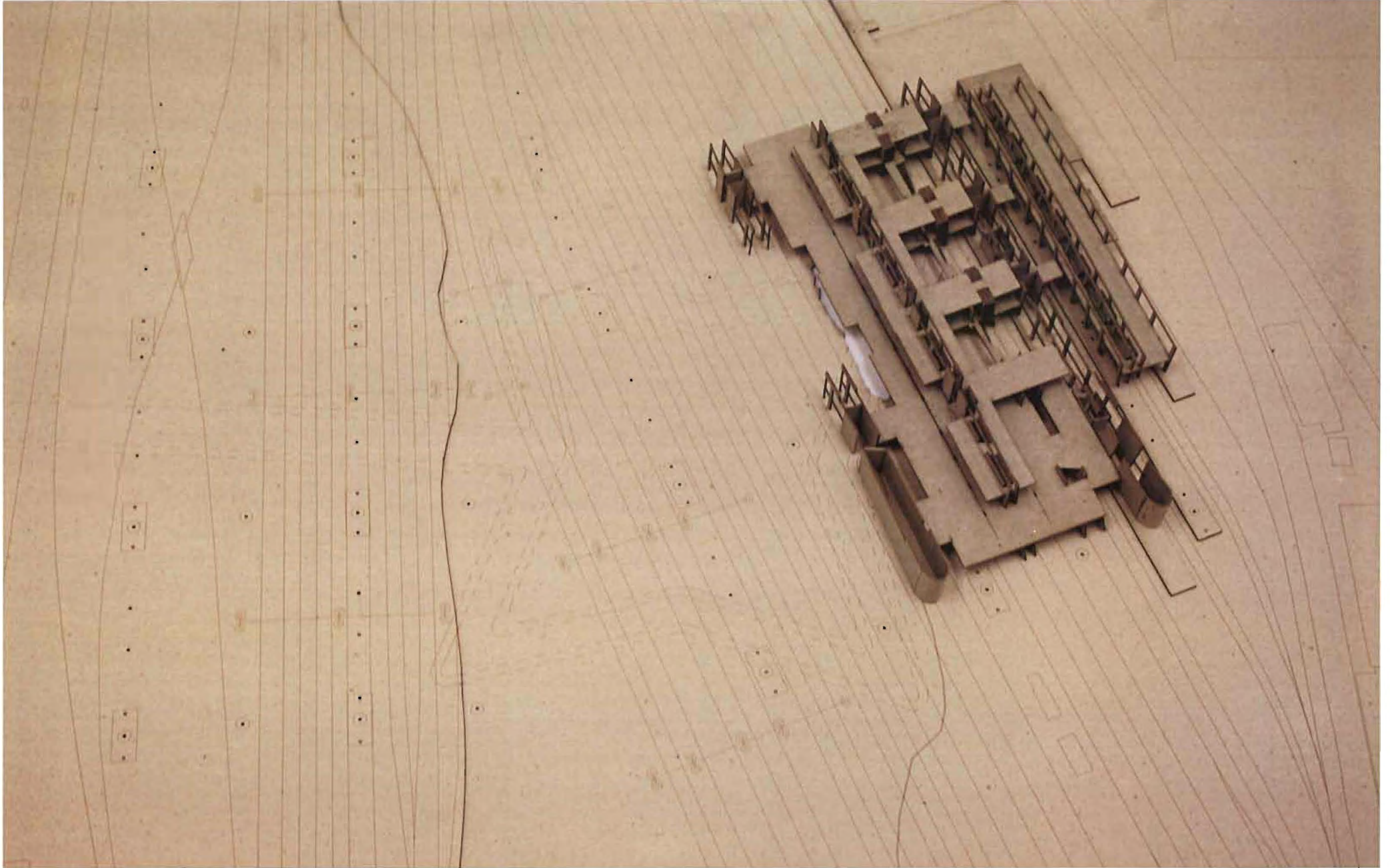
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'...that, just as the ancients drew their inspiration from natural elements, we - materially and spiritually artificial - must find our inspiration in the new mechanical world we have created, and our architecture must be its most beautiful expression, its most complete synthesis, its most effective integration'

Manifesto 1914, Antonio Sant'Elia

'Let us accept the proposition that nature is process, that it is interacting, that it responds to laws, representing values and opportunities for human use with certain limitations and even prohibitions to certain of these.'

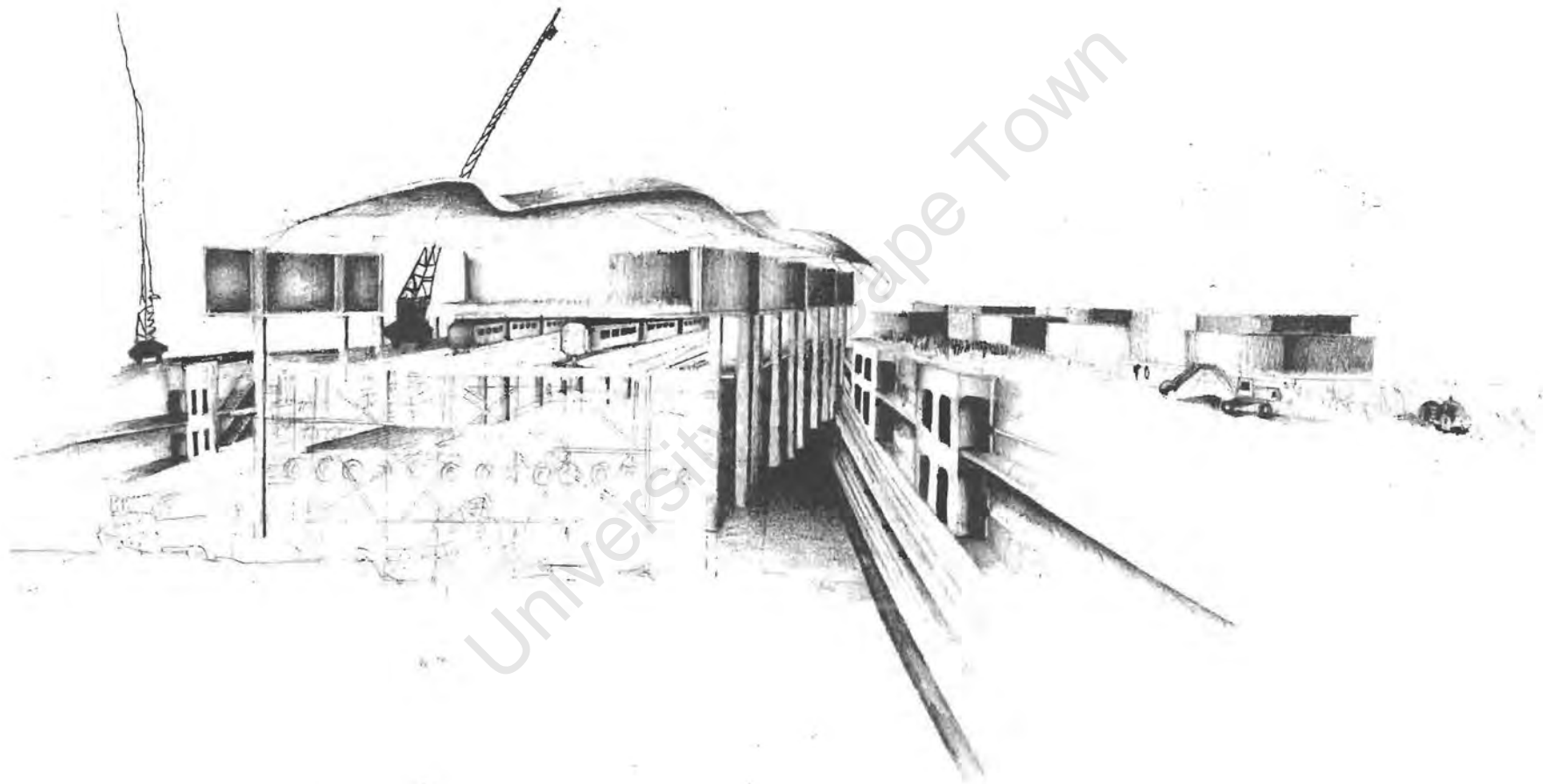
McHarg, 1964; 7



Figure 2 A model of Cape Town 1800

PREFACE

Oil rigs, waste lands, power plants scar the land. Soft and slow biological processes will cover these scars. It is not to forget, but to memorialise the architecture of the mechanical world. It is not to bury these toy machines in oil stained sandpits, but to restructure and give them new meaning. Architecture is to become a spectacle of the industrial artefacts of yesterday, and living systems of the ecological. Memoirs of humankind's obsession to control the weather and drain the earth's energy will be read in the secret gardens of rusting air-conditioning units. Natural thermodynamic systems will replace electric fans and engines. Energy will be captured and channelled with water and wind. The expression of buildings remains an art, a fusion of living systems and industrial artefacts - not static. Architecture is to reimagine the city; not to demolish our past attempts, but to build on to what was once started before our time and what will be continued long after our time. Beauty is to contain the roughness of the industrial without marring the softness of the ecological. This beauty is not preconceived; it is derived from the mining of the site. It is an architecture that not only focuses on the technological but the amalgamation of humanity and earth.





Urban Archaeology

SITE LAYERS

The proposed thesis site of Culemborg is what was once the sea and dunes, known as Woodstock Beach. In the seventeenth century, with the establishment of the Dutch East India companies (VOC), the Table Bay area became a half-way refreshment station for ships travelling on the windy seas from Europe to the East.

The bay developed into a place of exchange - the nearby reservoir of fresh water, the streams of Table Mountain, fruit and vegetables to treat sailors who suffered from scurvy, and a place where post was left under inscribed stones by those departing for those returning. With time, in 1652 the VOC established a permanent settlement in the bay. Its value as a supply station increased

enormously and defence works along the shores of Table Bay were constructed against foreign maritime powers, such as the British and French. In addition, during the following years several small batteries were erected between the Castle connected by breastworks of earth and masonry, along the shore above the high water line to the east.

The 'Sea Lines' ended at Fort Knokke, a substantial star-shaped fort, demolished only in 1952 to make way for a railway line. Behind the Sea Lines the Company built a powder magazine and its military hospital. During spring tide and winter storms the walls and batteries were often considerably damaged. Smaller earthen forts were erected at Camps Bay, further south along the coast,

and the Castle.

A line of defence works were thrown up by French soldiers, fortifications workers employed by the VOC, artisan slaves and local convicts, together with a small corps of 'half-breeds' and 'Hottentots' from Fort Knokke (at the northern end of Table Bay) up Devil's Peak.

These 'French Lines' were connected by a rampart and ditch and for many years formed the boundary of the expanding town. At Trafalgar Park in Woodstock fragments of the French Lines, i.e. the Central Redoubt, and part of a boundary wall and the foundations of the Hollands Redoubt still exist.

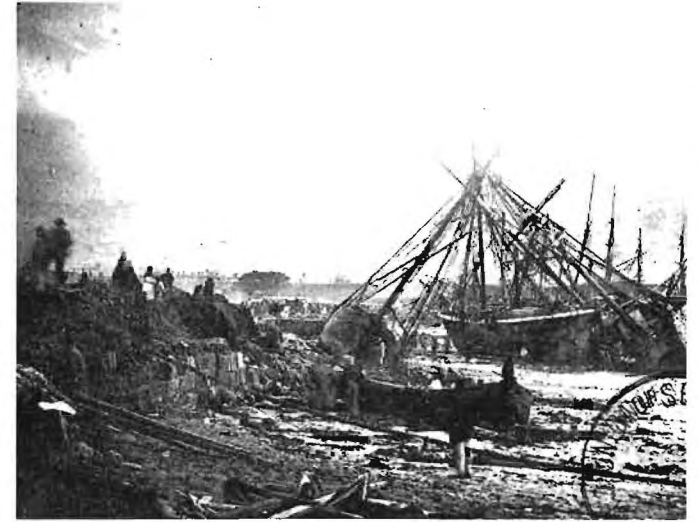


Figure 5 Woodstock Beach 1808

FIRST EUROPEAN SETTLERS



1844

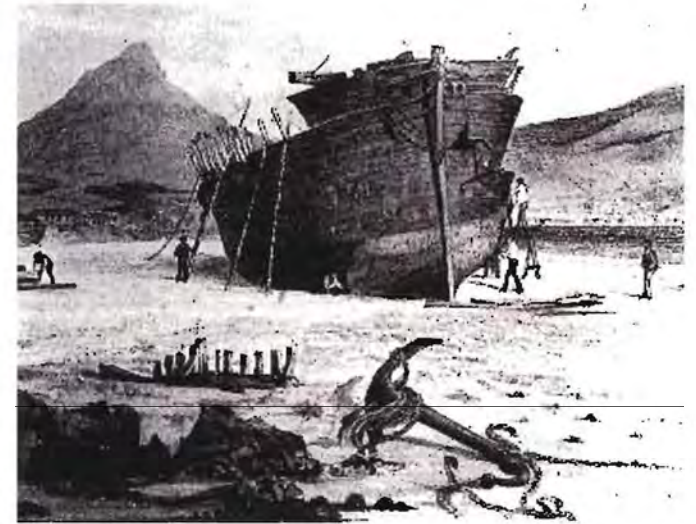


beach

FORT KNOKKE AND DEFENCE



Fort Knokke



flood

The development at the shore supported the smaller boats and sailors; however the larger ships and cargo out at sea were unprotected from the storms. Terrible weather conditions intensified during the winter months with heavy north-west gales over the bay, often uprooting ships from anchorage and wrecking them up onto the shore.

These disasters became common and soon the Cape gained a reputation of shipwrecking. A gloomy May 1937 recorded a wreck of nine ships, its cargoes, and the death of 205 people. With these disastrous wrecks, ships were eventually restricted from anchoring at the bay during the winter months. Alternative anchor points were established, which included Simon's Bay and the construction of a new breakwater to the west of the bay, today known as Mouille Point.

Ultimately, little progress was made to tame the sea culminating in the cessation of the VOC in 1799. The Cape was governed for a short period under the Dutch in 1802, which was later taken over by British rule in 1806. The Cape still formed part of an important stop to routes for many years, despite continued shipwrecking. The government soon constructed three more jetties between 1836 and 1850 to improve conditions before the development of the Table Bay harbour. (Newall, 1993; 7)

By 1937, the city began to transform the rough sea into a flat stage for its ships. The development of the Table Bay harbour was approved and its construction took place in 1938, with the demolition of the early wooden jetties in order to convert the sea to solid anchorage. In a sense, it marked modernisation and the triumph of man over nature...but for how long?



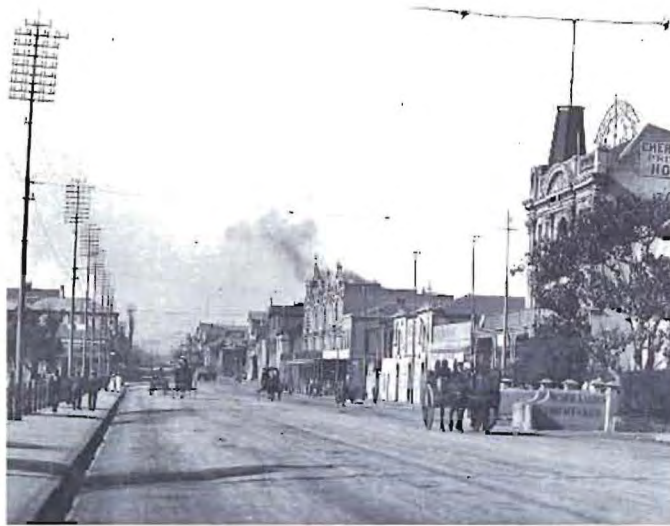
Figure 7 Shipwrecks at Table Bay (above)

Figure 8 Table Bay Development 1911 (right)

VICTORIAN



military hospital



Sir Lowry Street



Industry

TAVERNS OF THE SEA



early wooden jetties



breaking up of the old Pier, 1940

TABLE BAY DEVELOPMENT

modernisation and the triumph of man over nature...



1744-1827



1870

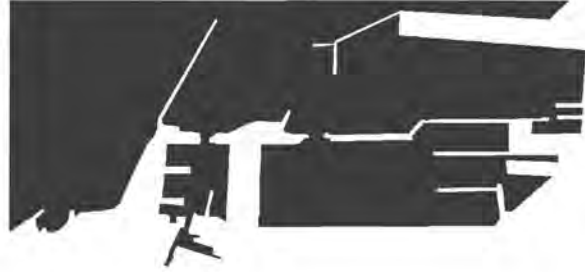
University of Cape Town



1920



1955



1993

The coastal sandbar and its rough seas of shipwrecks is now an underwater burial ground. Its seabed is dug up and its waters are contained, calm and removed. The construction of this industrial site plays out a guilty pleasure, intriguing for humans and offensive to nature. These piers were succeeded by the construction of caissons of the dry dock where water is removed and ships serviced, to the large unbroken surface of water (a depth of over 12 metres at low tide) of the main dock. A human-made interface of land reclamation from the sea is the condition today.

Before the reclamation, the coastline ran along the edge of the present railway lines. The proposed thesis site of Culemborg was underwater until the 1940s, when the land was reclaimed from the sea in 1945 by the Dutch firm Hollandse Aanneming Maatschappij. The sea was compartmentalized and filled in with over 15 million cubic yards of sand and mud that was hydraulically pumped from the bordering seabed by dredges and barges. This buried the natural interface under reclaimed land, where rivers from the mountain are channelled, water is rushed off to the sea, and the sandbar destroyed.

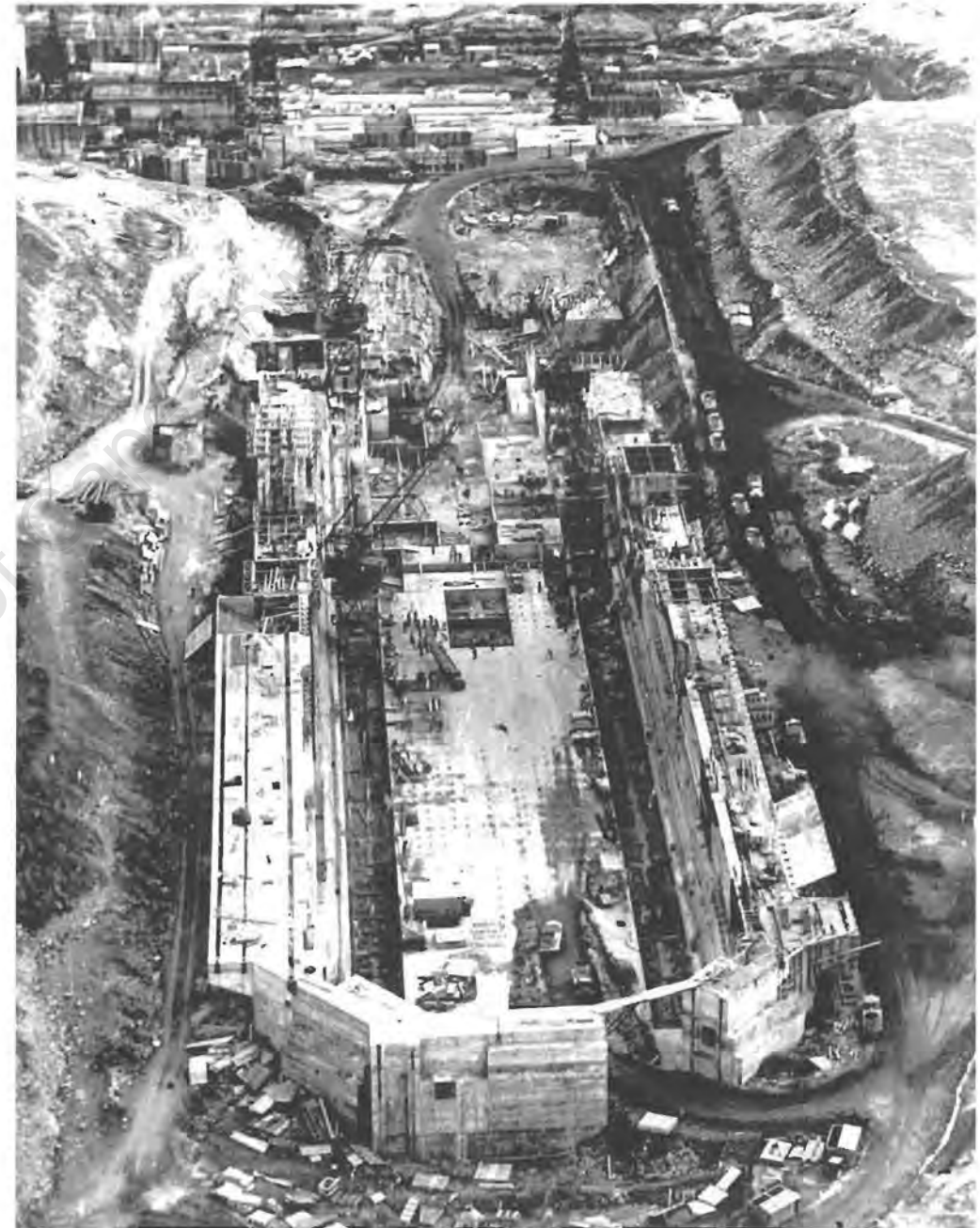


Figure 14 Construction of Sturrock Dry Dock



Figure 12 Construction of the Table Bay Harbour



Figure 13 Aerial View of the newly reclaimed Culenborg in foreground, 1946

Through time, cultural and historical layers have been added to the reclaimed land of Culemborg, which include the 1952 Jan Van Riebeeck Tercentenary Festival. The choice of site for the event was fitting, containing ideas of industry, human progress and evolution of humans over nature. The reclaimed foreshore acted as the port of entry to 'civilisation' and was the proposed 'Gateway of South Africa'. This included the construction of new infrastructure, a stadium and exhibitions halls. These grand exhibitions and world fairs were common around the world from the late nineteenth century, when industrial and manufactured landscapes were sought after and found necessary for human progress. The event and place supported 'human evolution' over the 'savagery' of the 'native condition'. (Rassool & Witz, 1992; 7)



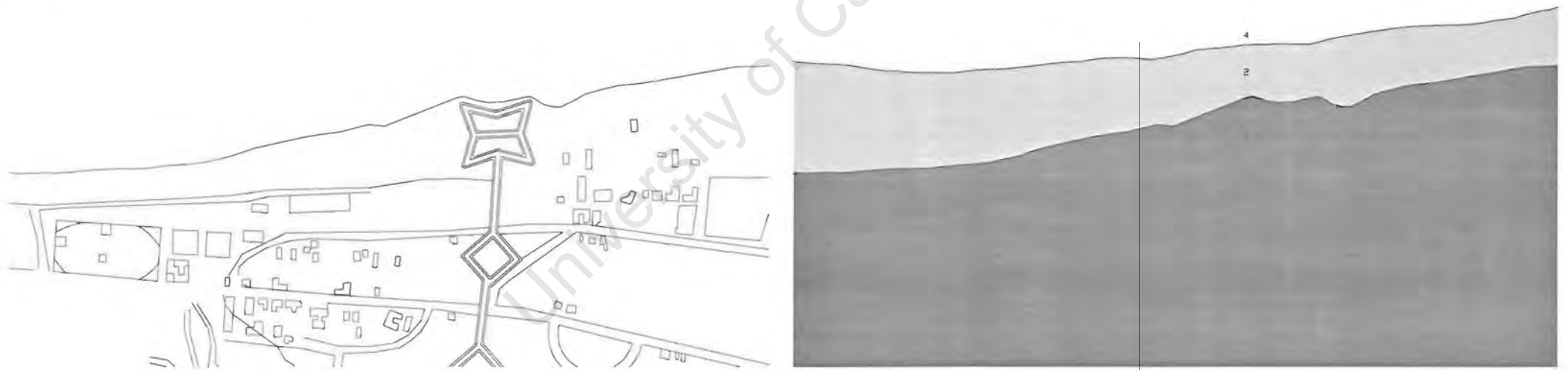


Figure 14 Van Riebeeck birthplace, Culemborg, at Van Riebeeck festival fair in Cape Town 1952



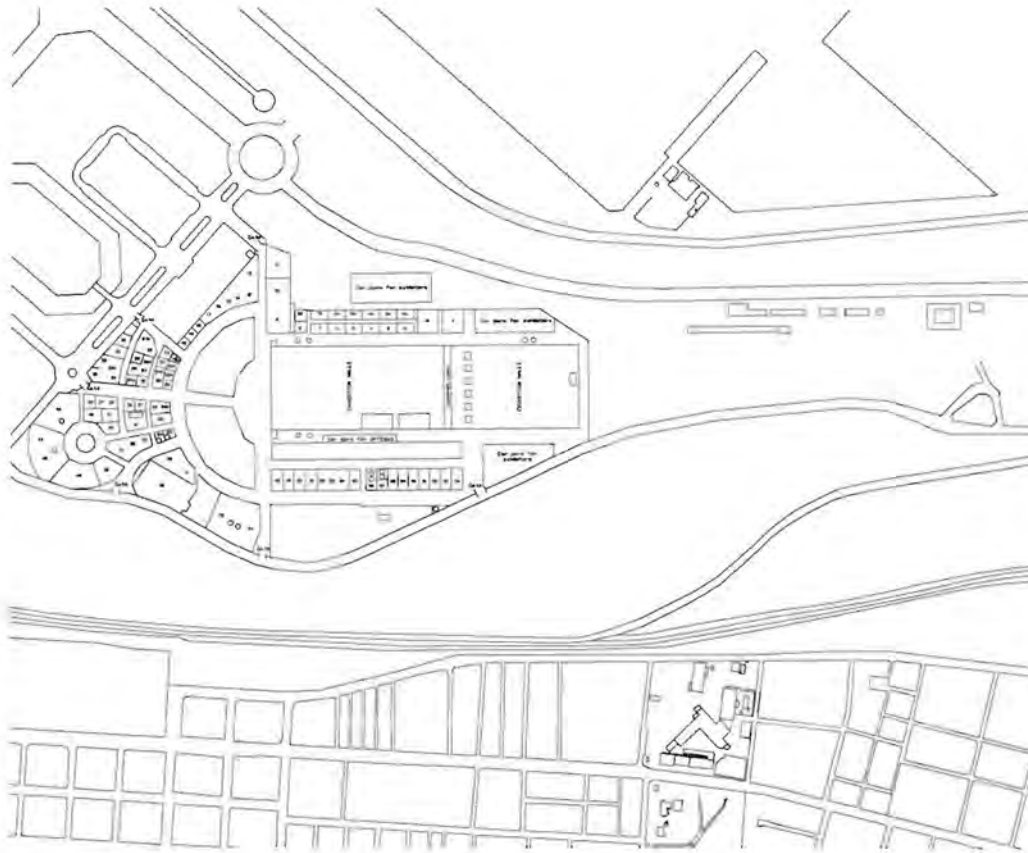
SITE LAYERS

tracing of historical, existing and proposed layers

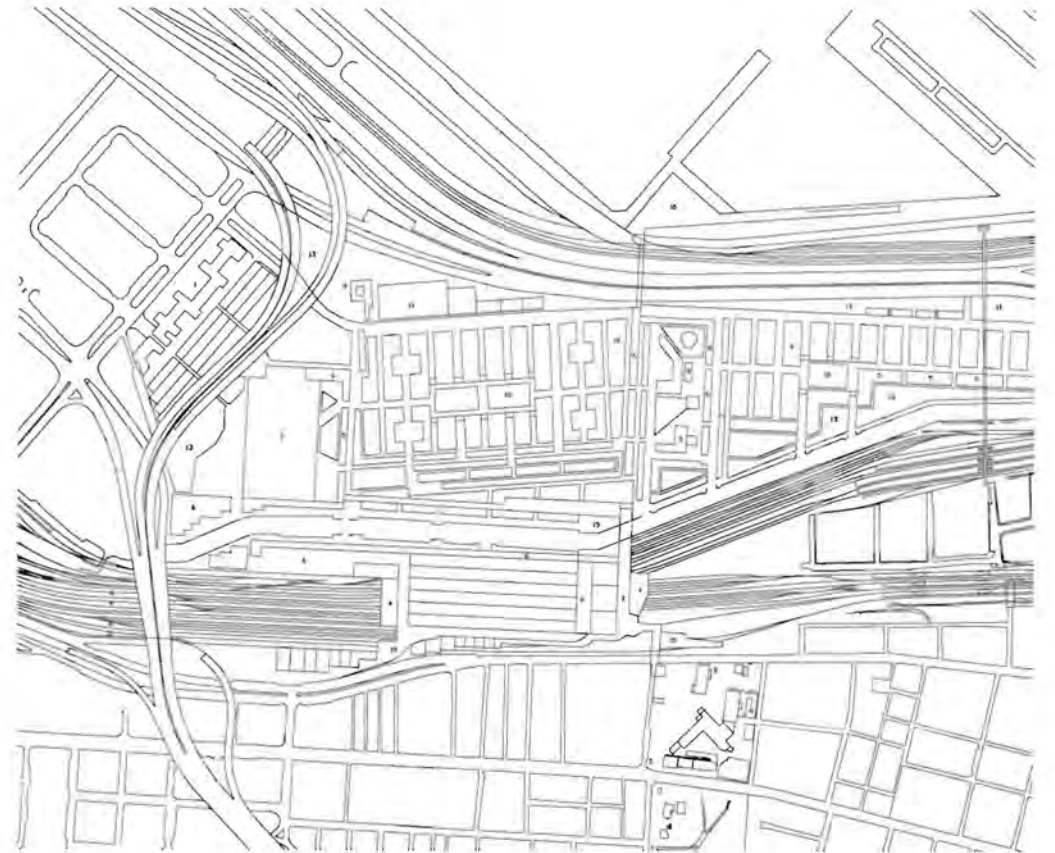


Fort Knokke

land reclamation

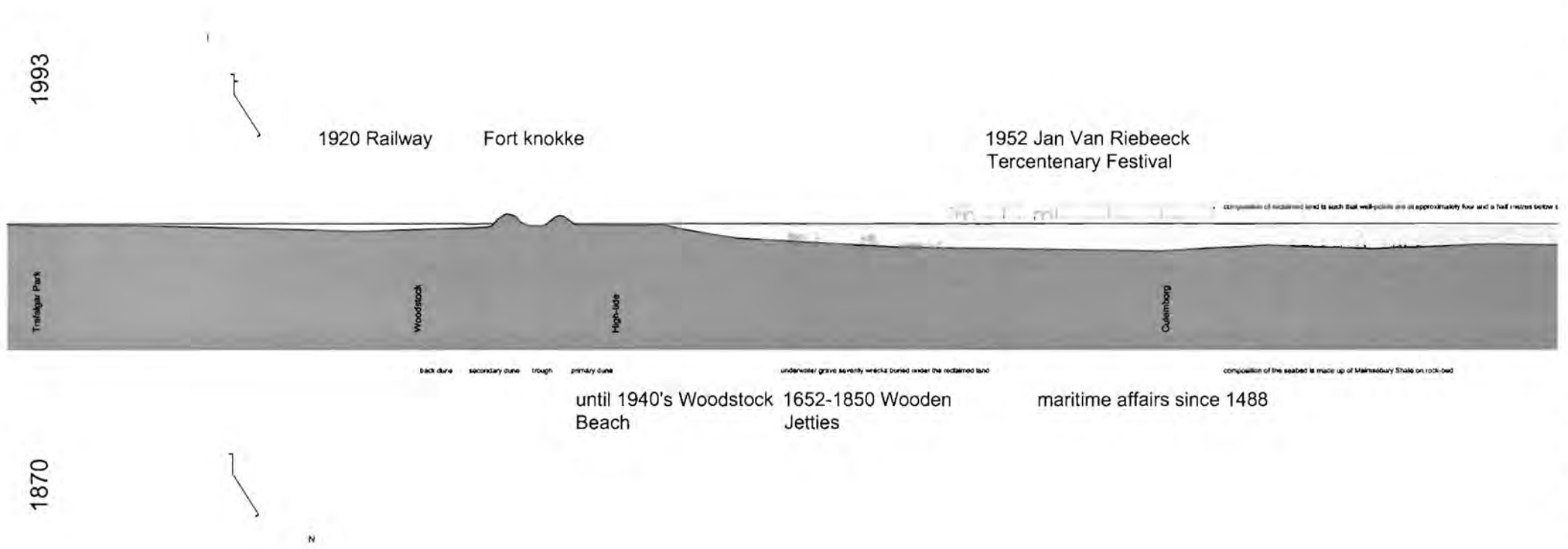


Jan van Riebeeck festival fair 1952



The Culemborg Urban Design Framework, 1996 by Roelof Uytendogaardt

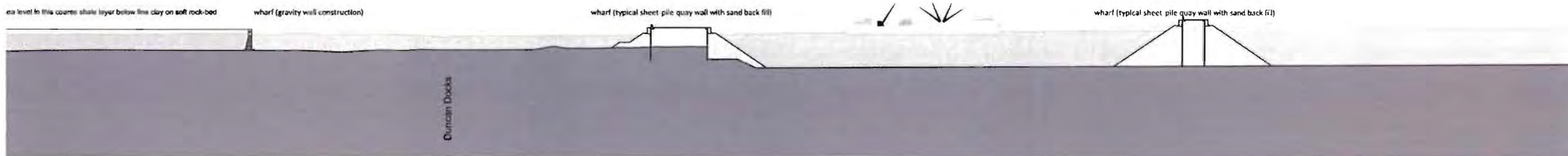
The development of Culemborg over time



1945 Land Reclamation

1938 Harbour Development

1945 Sturrock Dry Dock (typical caisson construction)

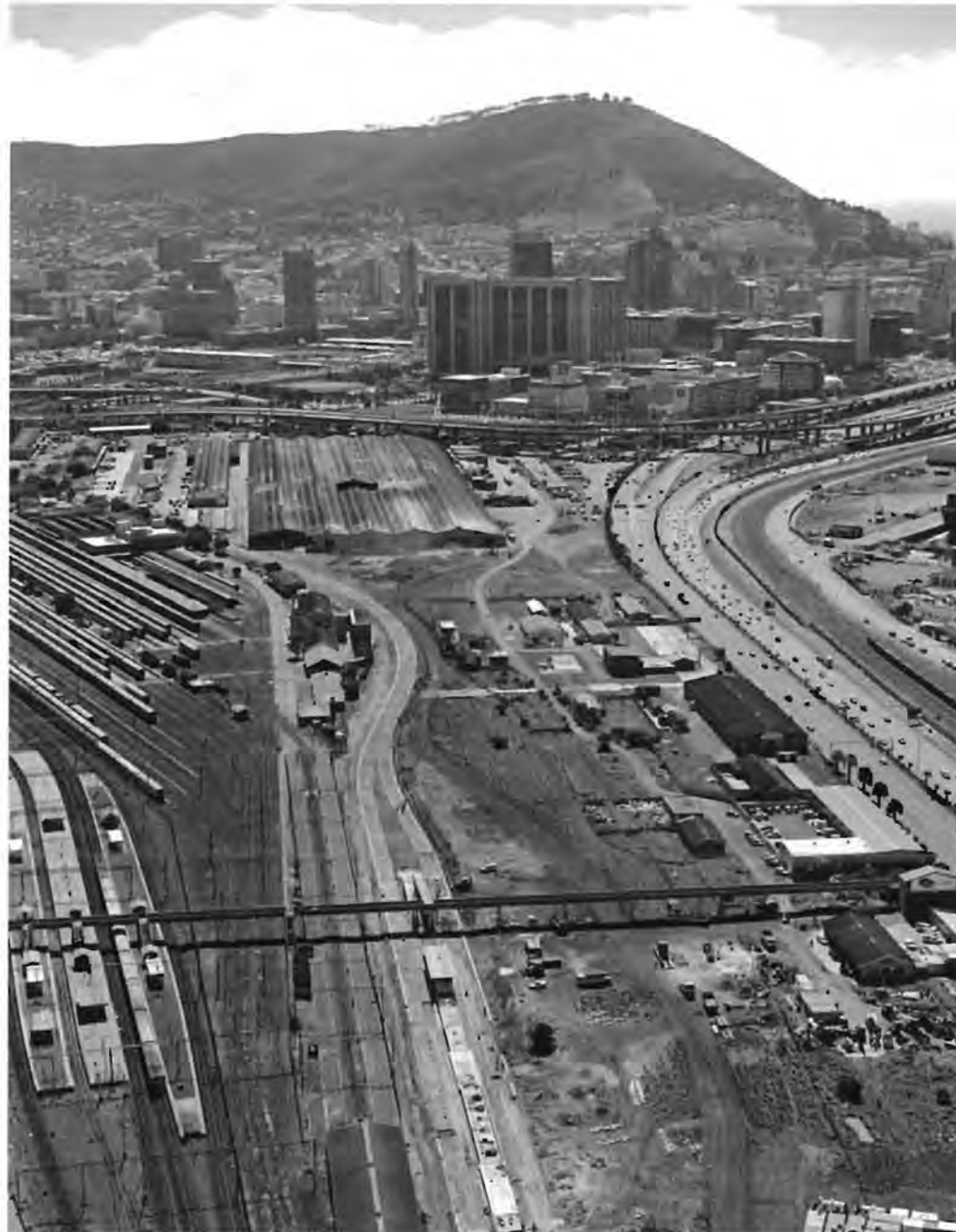




Today, its industrial relics, its heavy structures of reinforced concrete docks and highways are fascinating in its technical feats, but its soullessness is what reminds us of a time passed. It was once a place of vibrant world fairs and exhibitions and industry, now derelict and unproductive. Here, the historical presence of water evokes an awkward feeling; one is almost left disorientated when experiencing the site. It has also buried a history of the storms at sea and seventy shipwrecks. (Gribble, 2008; 4)

In developing the thesis design, several constraints have to be considered from different intervals of time and vantage points. These include the natural and industrial conditions, which contain historical, technical and cultural significance. The erasure of the industrial artefact to a total restoration of the natural condition of what was once the sea is not the objective; instead a parallel restoration of both is favoured. The understanding of the construction processes that have shaped this human-made site of buried histories and industrial relics will illuminate the constraints to building and drive the proposed reuse of the site.

Figure 17 A derelict warehouse at Culemborg on the Cape Town (left), the industrial artefact of Culemborg on the reclaimed land (right)



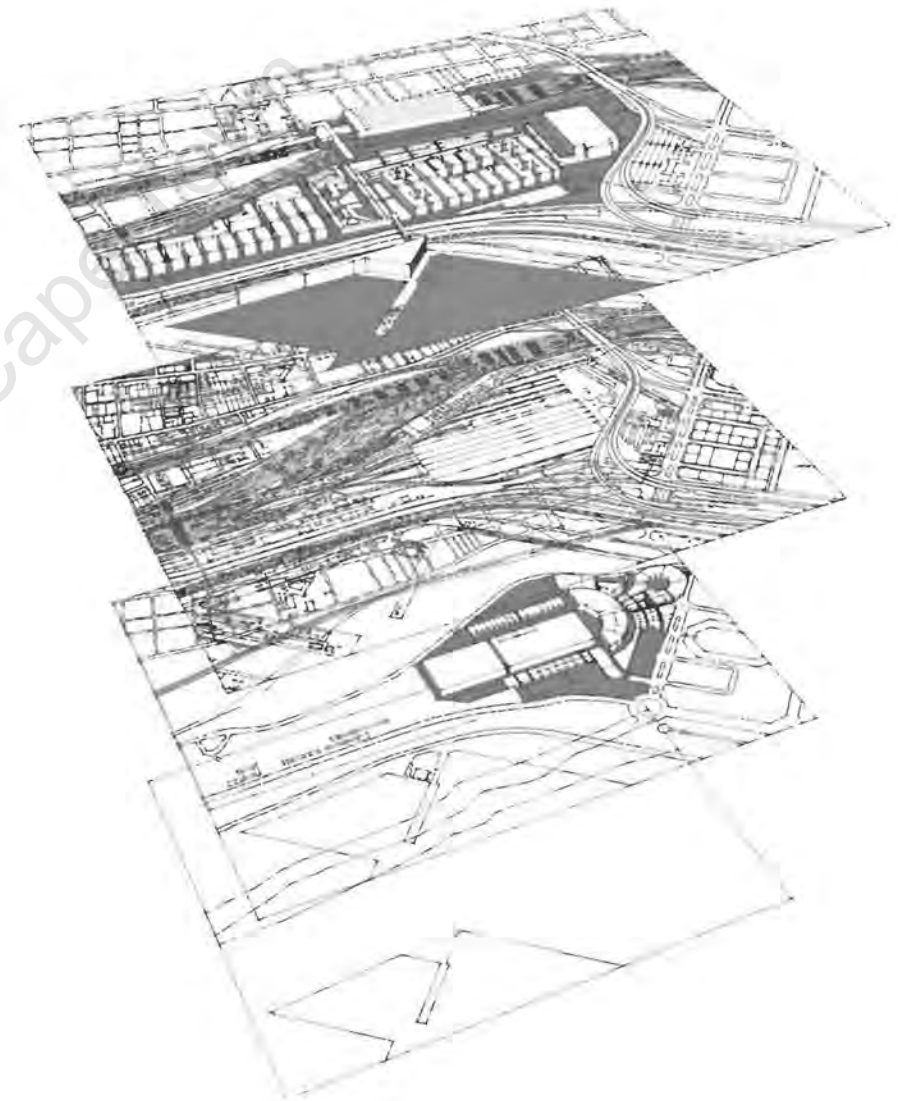
Urban Conceptual Strategies

THE DIACHRONIC, ARCOLOGIC, PALIMPSEST AND LAYERING

This section uncovers a methodology towards working in the urban condition, in particular working in the difficult terrain of the thesis site of Culemborg in Cape Town. The question is how the architect responds to an increased complexity of the urban terrain and its layers.

There are tensions in responding to the urban: from working with a pragmatic approach of designing a master plan (city grid, rational) to designing a method (layering, self-emerging, phasing situations), from the ordering of natural to human-made layers. In working with the historical layers, natural layers, existing layers, proposed layers, the intention is to reveal an intelligent urban approach to working with the Post-Industrial site.

An exploration into four types of urban conceptual strategies will be conducted, which have been cast into groups under terms that best described each process: diachronic, arcologic, palimpsest and layering. These have been selected to cover a range of approaches to working with the urban. The projects used to describe each share similarities or relate in some distinct or abstract way to the thesis site of Culemborg in Cape Town. The interplay between each specific approach and the thesis site will follow.



Diachronic

Parc La Villette

Competition entries

Bernard Tschumi, OMA/
Rem Koolhaas,

new programmatic conditions
and situations over time

new movement networks,
combinations + permutations to
generate new activities

Arcologic

Ian McHarg

Design with Nature

Sea and Survival

'layering approach' of natural
systems and attribute values to
layers

a compound of architecture and
ecology

Palimpsest

Peter Eisenman

Tracing Eisenman

Wexner Centre

Long Beach

Choral Works

archaeological, layering of
historical artefacts

structure and surfaces

Layering

James Corner

Recovering landscapes

The High Line

cultural landscapes

reclaiming place and time

constructing and representing
landscape



Urban Conceptual Strategies THE DIACHRONIC

The forming of the diachronic type is largely influenced by a coexistence of formal layers, programmatic layers and time.

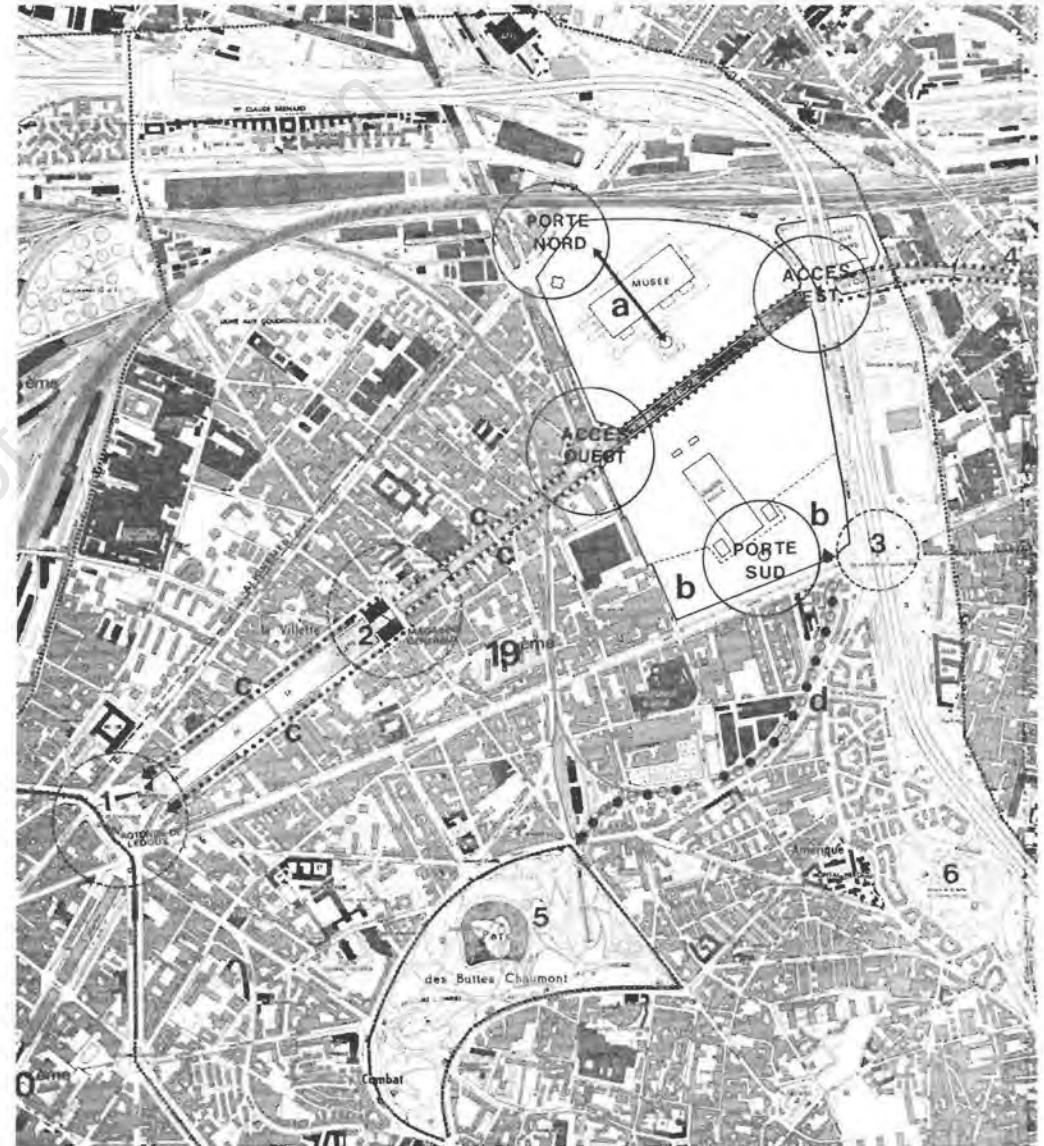


Figure 19 Competition Site Plan

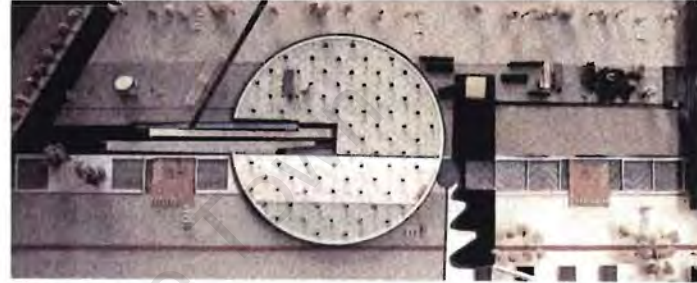


Figure 20 Tschumi: Sequence of Isolated Folie with access ramp (left), OMA: Strips and the confetti (right)

The formal layer in the case of Tschumi's design comprises of a structural system of programmatic points (folies) evenly distributed over the site. The location of the points is influenced by both the limits of the grid and the existing activities on the site. The architectural representation of these folies makes reference to the ideals of the industrial period of prefabrication and 'unembellished' form, each slightly varying in form according to location and function. Each folie is designed for the programmatic activities and the specificity of its location. Thus, the system acts independently of the sum of the park but individually, each folie acts to its activities and intensifies its parts. The system is further refined into three types of folies, general, specific and compound. The general folies are the red forms of flexible space, specific folies respond to specifics of certain programs and compound include both general and specific (Barzilay, 1984; 29). In working with the existing site and the system of folies, a range of new movement systems and spaces are created within the urban.

The formal layers of the OMA/Rem Koolhaas design consist of strips and the confettis. The site is ordered into horizontal strips which run from east to west. This layer includes the proposed thematic garden strips, play strips, discovery garden strips and the larger existing strips of the Museum and the City of Music. The surprising shifts occur when the strict strip system is broken with

the overlapping of the existing buildings. This creates a shift from thin to wide, from human-made to natural, and establishes a hierarchy within the system. The second component to the formal layer is the confettis which is a system of small forms distributed at regular intervals, which include kiosks, play areas, shop stands, ticket sales counters, etc. The formal system here is more robust to the traditional park, with the dominance of confetti over the natural features. An access system is added to the formal layer; the Mall and its five metre wide covered walkway intersects the strips of the formal layer perpendicularly. This starts to connect the programmatic conditions across the strips over twenty five metres. The promenade forms a secondary access system which intersects specific groups of strips (Barzilay, 1984; 41).

The programmatic layer is dealt with similarly in both designs. In Tschumi's design the system is made up of points, lines, and surfaces. The points are formed through an x and y point-grid system, measuring 120 metres apart with each folie roughly measuring 10 x 10 x 10 metres of open 'black box' space, which can be adapted according to the programmatic needs. Each folie forms a distinctive reference for the park, but connects through its scale and appearance to the larger system of folies, becoming the park's vertical reference points. This is superimposed within an orthogonal system of

lines in the form of covered walkways. These lines run across the site in a multitude of directions, some slow and curvilinear along the gardens and others straight and fast from one point/building to the other. These lines contain certain sequences which capture certain frames, responding to a specific point. The horizontal and leftover surfaces add to the programmatic system, these are treated according to the programmatic needs - from hard and soft, to exercising and relaxing (Barzilay, 1984; 38).

Koolhaas works with a similar approach of the programmatic system, where the grid is independent from the formal system. The grid is calculated using a specific formula of $A-a/x$. Here A refers to the site, a to the total area for programmatic devices and x to the number of points to be distributed. The formal system of strips superimposed with the grid means that programmatic devices occur in different strips. For instance the same type of programmatic device can occur in two different strips, forming unique coexistences. The systems of devices are similar in their architectural features, but contain variations across the site. The larger existing buildings on the site form part of establishing the constraints for the programmatic layer. These buildings work in combination with new complementary programs housing functions of arrival, information and security of the site (Barzilay, 1984; 43).

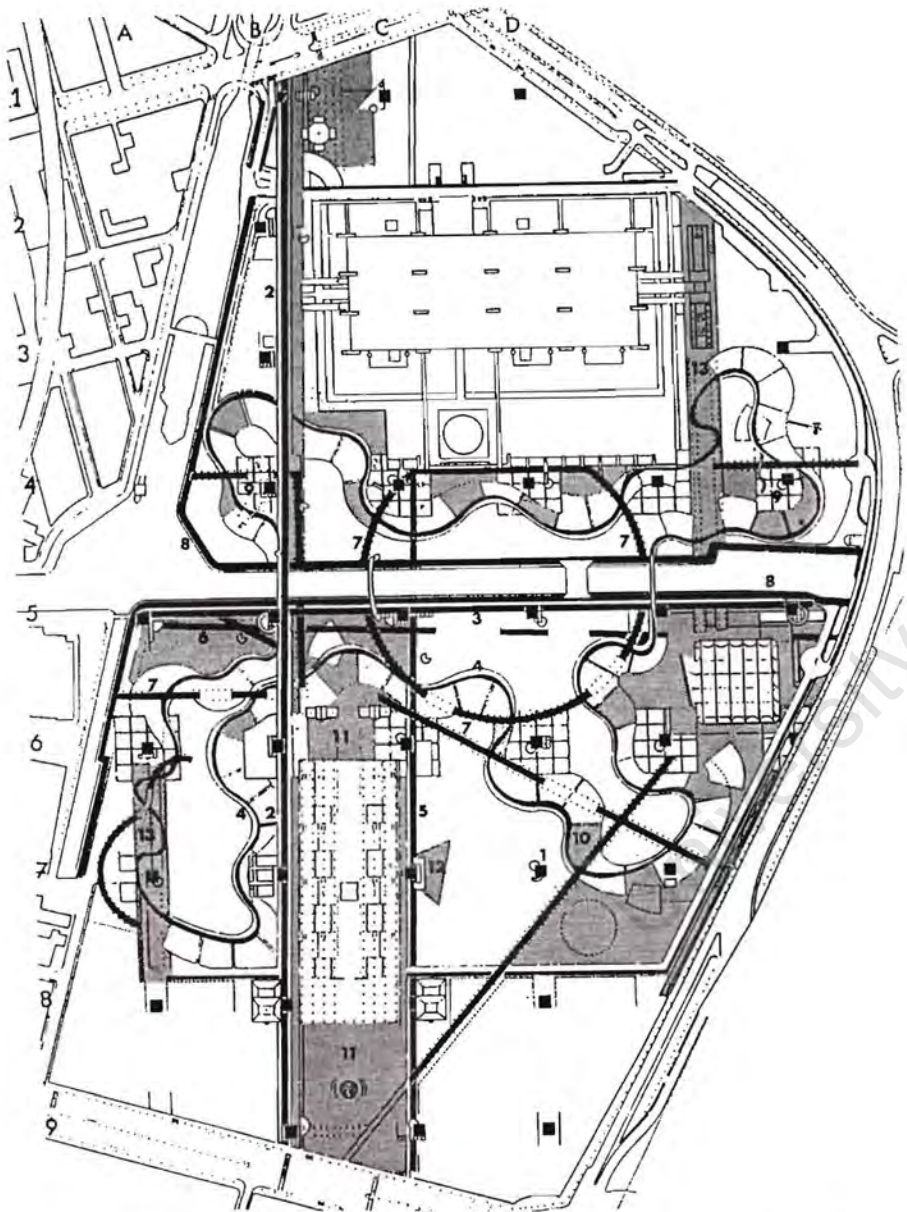


Figure 21 Bernard Tschumi's scheme of points, lines and surfaces (left) and OMA/Rem Koolhaas scheme of strips and confetti's

The diachronic presents a process of how realities unfold over time, where fixed urban systems are constructed over the existing systems in place. The model creates an approach of ordering the urban through program.

The programmatic layer contains juxtapositions of different activities. This creates new associations and situations against the specificity of site where the rules are broken and fittingly altered over time. Emphasis is given to the idea of combination

and variation, both formal and programmatic layers.

The program is broken up and reorganised within certain rules. This methodology attempts to break down the layers of the urban. The interplay between formal and programmatic systems, the hierarchy of scale between the intimate folies and confettis to the larger Museum or the City of Music, and the opportunity of multiple experiences are some of its characteristics.

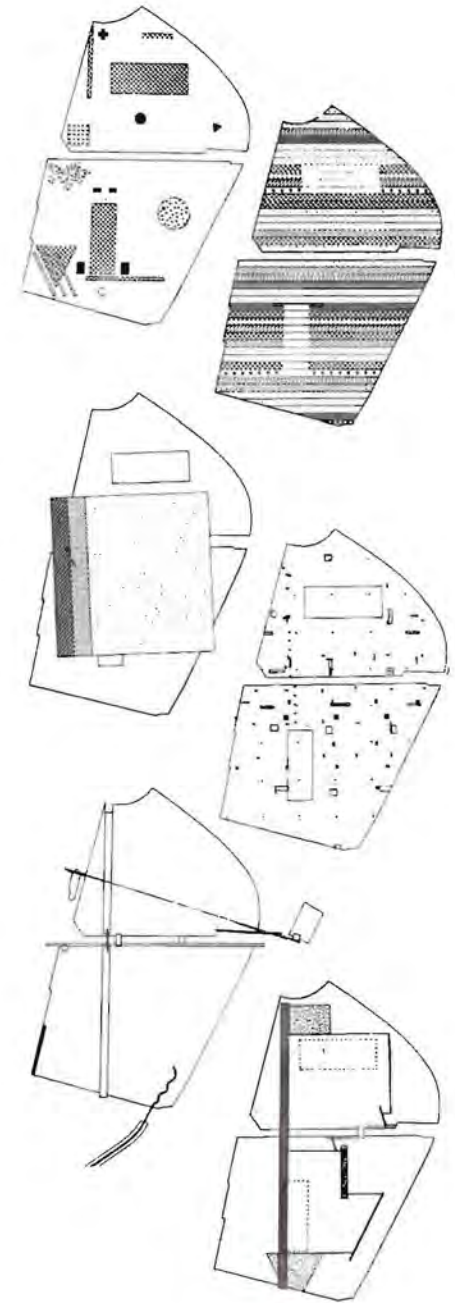
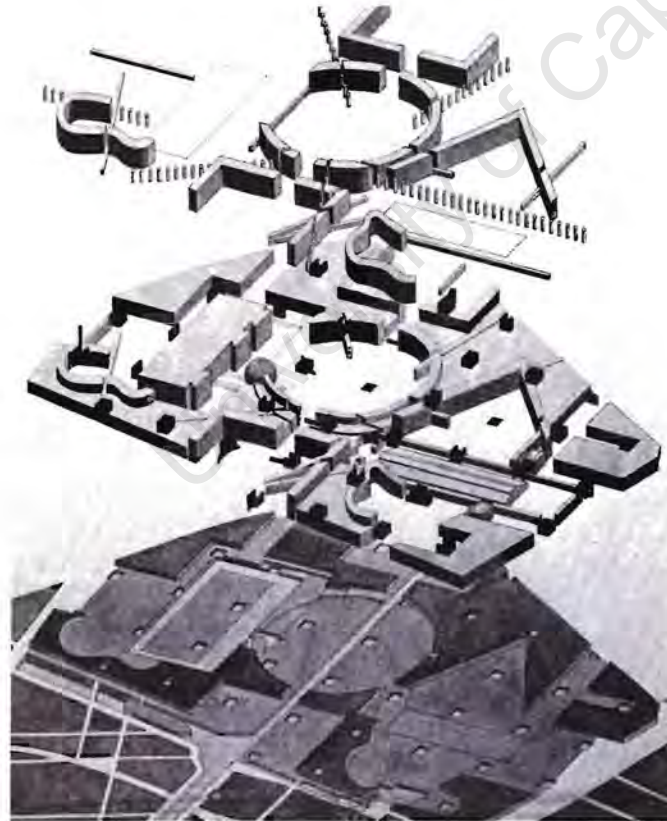


Figure 22 Tschumi: three types of operation: decompose program, series of objects, movement lines and curves (left), OMA: The strips, locational grids or confettis, circulation, large artefacts (right)

The ensemble of programmatic and formal layers found in the diachronic, for most parts, work independently from the site. It attempts to set up a strong basis for dealing with the urban, but these two-dimensional layers do not translate programmatic use or movement (or actions) in space and its experiential qualities. The evolution of the site and its programmatic conditions are open-ended, when designing for the future one needs to consider how these spaces will work in the present condition. Designers can suggest but can never determine the programmatic variations over time; however the space and expression of the formal elements (skin and structure) can be well considered and allow for change in the future. In similar ways, perhaps, the limits of the diachronic approach are its formal layers (folies and confettis). The approach is a process in which emphasis is given to indefinite programmatic changes for the future, but needs to consider its current realities. It is a scientific approach towards the urban, which can either be a 'complete' or an 'incomplete' experience of space.



Figure 23 OMA: Montage of the natural elements

Urban Conceptual Strategies THE ARCOLOGIC

The arcologic is used to describe a compound of architecture and ecology. The work of Ian McHarg in his book *Design with Nature*, describes a fundamental relationship between architecture and ecology.

The section which the paper explores is *Sea and Survival*; this has been selected for the particular relevance to the historical presence of the sea under the thesis site. The understanding of the specific natural condition and the layers of its formation process, allow opportunities for architecture to coexist with nature and to make amends where possible. A 'layering approach' of natural systems and attribute values is used to develop the arcologic conceptual approach.



Figure 24 Section through sandbar (above)

Figure 25 Aerial View of reclaimed land of Culemborg late 1940's (right)



The interface between the sea and land is made up of an ever-changing sandbar. The processes that create the coastal sandbar are largely shaped by water and wind.

The waves approach the coast at an angle; this runs over the sand and returns to the sea at right angles. This means that the sand carried by the returning wave is carried down drift from its origin. This process is known as littoral drift and over time it is what constitutes the coast and its dunes. Thus, its form oscillates and responds to the movement of the sea. Primary dunes form part of the first sand formation process of waves and wind. Its function is to act as the first line of protection of the land behind it. If this dune is left undisturbed, vegetation will grow from it and anchor the dune and forming a more resilient protective layer (McHarg, 1969; 9).

Over time secondary dunes are formed behind the primary dunes, and in between the two lies a trough. The back dunes start to form behind the secondary dunes, wider than the dunes in front because of their protection. The vegetation here is thicker, as it is sheltered from the sea and contains the higher fresh water levels than the trough area, thus rendering this environment suitable for urban development.

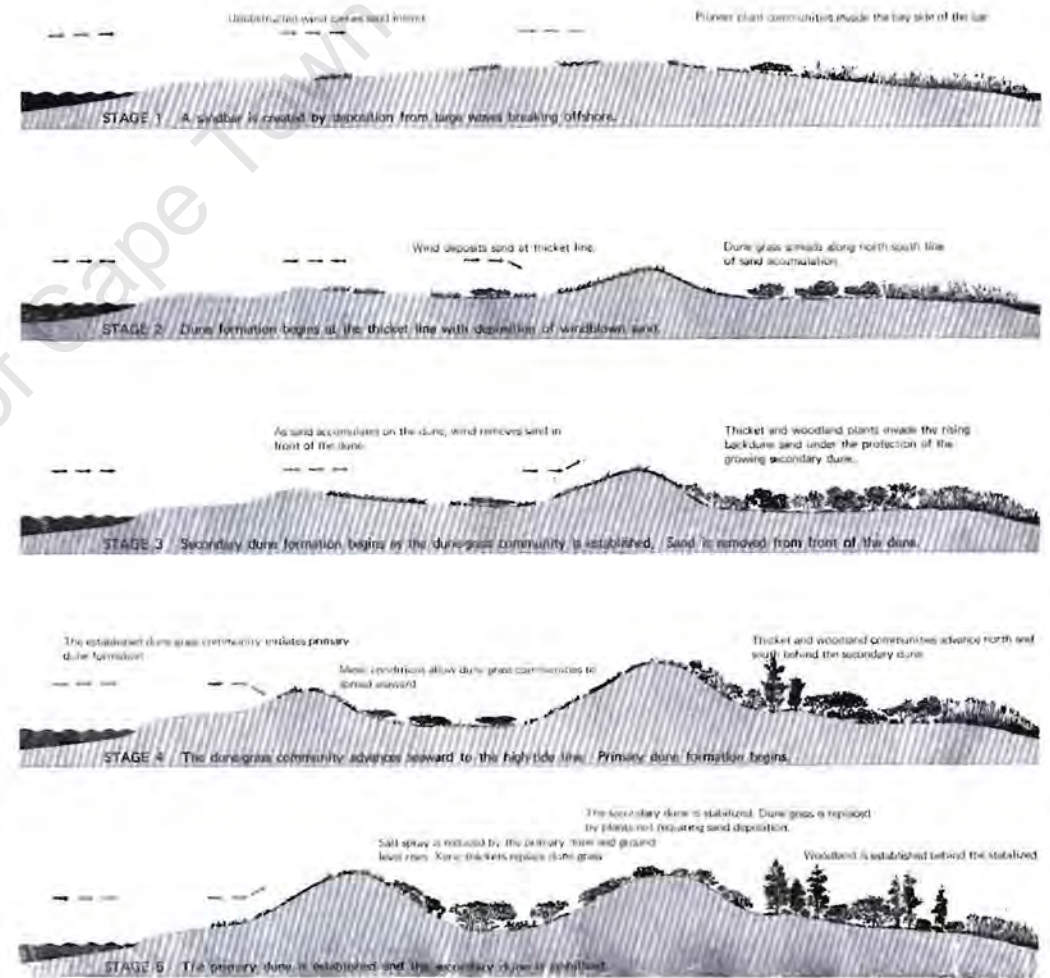


Figure 26 Sandbar and dune formation

Through industrial process of channelling water into storm water systems which bypass the system, a decrease in the water table levels in the sandbar occurs (McHarg, 1969; 18).

The thesis site of Culemborg is one such case. Historically, it was known as Woodstock Beach where natural processes formed a sandbar consisting of a series on dunes, providing the necessary interface between the sea and land. As previously mentioned, by 1937 the city began to transform the rough sea into a more permanent anchorage for ships. This new flat piece of land would serve as a logistical ground for the industrialization of factories and production, the railway and the shipping yards and docks of the harbour. The coastal sandbar and its rough seas of shipwrecks is now an underwater grave. As a result the area is unprotected and windswept with the strong South-Easter crashing across the manufactured site. In building over the reclaimed land, many difficulties exist.

The ground was previously the seabed made of Malmsebury Shale on rock-bed. Now, this is covered with a fine clay layer and well-points are at approximately four and a half metres below sea level. The structures above are supported by pile foundations which poke through the earth and are driven through the upper layers to sit on

the rock-bed. The soil, biomes, land cover, and vegetation system have been altered and any design needs to respond to this new condition.

In the way that structure needs to respond to the laws of these physical ecological systems of the ground, the design can also start to incorporate basic principles found in nature. The systems which form the sandbar include laws of cycles, flux, hierarchy and interdependence (Dinur, 2008; 1). A cycle is a circular process that repeats itself, often returning to where it began. The sandbar is formed through cycles of the wind and water. In making amends with nature on the industrial artefact, the proposed design and its structures can start to allow these cycles to occur and allow for a restoration of nature.

The parallel restoration of both nature and the industrial relics of the site can allow for the cycle to be reinvented. Nature is constantly moving energy and matter, and its system fluctuates in order to maintain and evolve into more complex structures over time. The sandbar is constantly changing and forming dunes. The intervention can start to respond to these natural changes that occur over time.

On the sandbar there is a hierarchy of primary, secondary and back dunes and

their in-between spaces. Living systems are structured hierarchically and consist of different levels which interact with one another. The design needs to emerge from the site's existing hierarchy of layers.

The elements which form the sandbar - water and wind - are interdependent. In similar ways, architecture and the site are interdependent, where architecture needs to respond to various natural processes that interact with it.

The natural condition of Woodstock beach has been altered to the logistical aprons of industrial and harbour affairs. The natural processes of water have been covered, but over time a new set of natural conditions have occurred. The design challenge is how to balance both natural and artificial systems. The ground section varies from Culemborg to the sea, from underground wells to the rough seas of the docklands. The proposed design needs to respond to this changing condition. The relationship between architecture and the site is to understand the limits and laws of nature, to form dynamic systems.



Figure 27 Configuration of beach, through wind and wave processes

Urban Conceptual Strategies PALIMPSEST

The work of Peter Eisenman is used to draw principles of the palimpsest methodology. The projects of Wexner Centre for the Visual Arts and Fine Arts Library, The University Art Museum of 1986 and his Choral Works, Parc de la Villette of 1986 to 1990 contain notions of sites as palimpsest.

The idea of using site as 'palimpsest' was introduced into Eisenman's work in the early 1980s, where historical layers were seen as a non-linear process - as an interplay of past, current and future events.

A palimpsest is a manuscript that has been written over many times, where traces of 'mistakes' and erased lines are still visible. These lines are historical layers which can be used to reveal aspects of the site and/or together these lines act as new meanings to form fictional layers (Kirkwood, 2001; 128).

Here, the urban terrain is layered through specific dates or grids, tying the building to histories. In a sense, in the way the diachronic approach incorporate devices into new associations, the palimpsest traces historical maps and superimpose these into the urban, creating new combinations. These historical layers contain no exact hierarchy and contain an ambiguity of scale.

The layers range from historical, geographical, structural, and formal to imaginary conditions from various vantage points.



Figure 28 Scaling/Superposition Long
Beach Art Museum

In the Wexner Centre the competition brief did not prescribe a sitting for the building, but rather gave an area for the centre to be located within. The sitting of the design is within an interstitial space between two existing buildings. Its form is broken up, and creates a series of relationships with the site on varying scales, as well as with the ground and time.

Two contrasting grids influence the design, the city streets and the campus grid. The city streets grid is brought through into the site, which varies at eleven degrees from that of the campus grid. These are juxtaposed and superimposed to form the primary elements for the site as palimpsest.

The most interesting part of the design is the Ohio State's Armory towers, which introduces the secondary element of palimpsest. These military towers were demolished in 1958 after being destroyed by a fire. The Armory is brought back, not completely but referenced on the site in various ways. The foundations of the original Armory are also expressed in its actual location, through walls and paving systems (Kirkwood, 2001; 129).

The University Art Museum traces historical maps to form a new representation of the building. Three main maps were used to develop the urban terrain, each a hundred years apart representing shifts in

time. It is defined through the establishment of Carlifornia in 1849, the creation of the campus in 1949 and the projective layer of 'rediscovery' of 2049. The overlapping maps reveal analogical relationships which play on the ambiguity of scale. The iconography contains an interpretive dimension over urban, mid to detailed scales. The relationship of channel to museum site (1849) is a smaller representation of the river to campus site (1949).

The project is an archaeological artefact 'a palimpsest of forms, structures and histories.' (Davidson, 2006; 129). The urban starts to create dialogues between the past and the future, geographical and cultural existences.

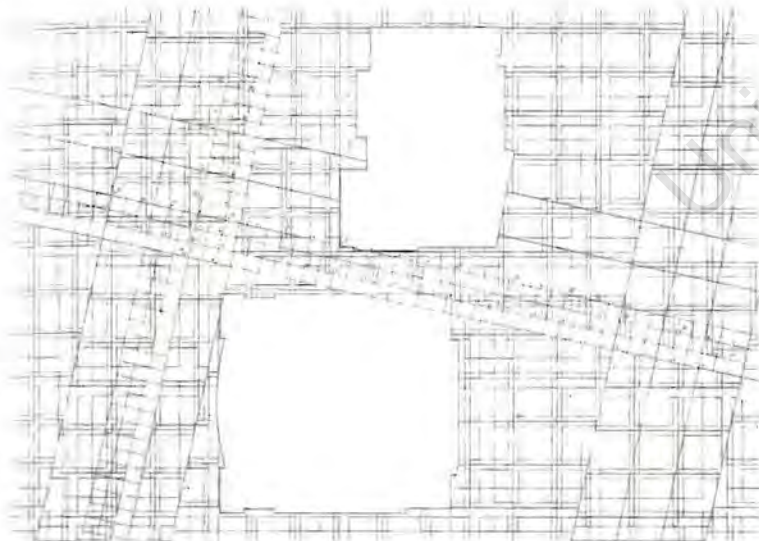


Figure 29 Mapping/Artificial excavations: Wexner Centre (left), Artificial excavations/Scaling: Long Beach Art Museum

The project of the Choral Works, Parc de la Villette starts to combine notions of the diachronic. This is done through shifting and reconfiguration of time, place and scale.

Analogies between three maps: la Villette in 1848 before the presence of the slaughterhouse and the city walls of the city occupied the site, 1867 with the presence of the slaughterhouses and Tschumi's design of the Parc de la Villette. The device employed to support new associations is place through a displacement in scale. La Villette site is

superimposed with the Cannaregio site, revealing formal relationships.

Through the process of scaling, surprising discoveries between la Villette as site, Tschumi's design for la Villette and the Cannaregio site. The programmatic lines in Tschumi's design intersect the lines in Cannaregio project at right angles; both sites contain similar formal relationships of canal and slaughterhouse, as well as point-grid systems. (Davidson, 2006, 140).

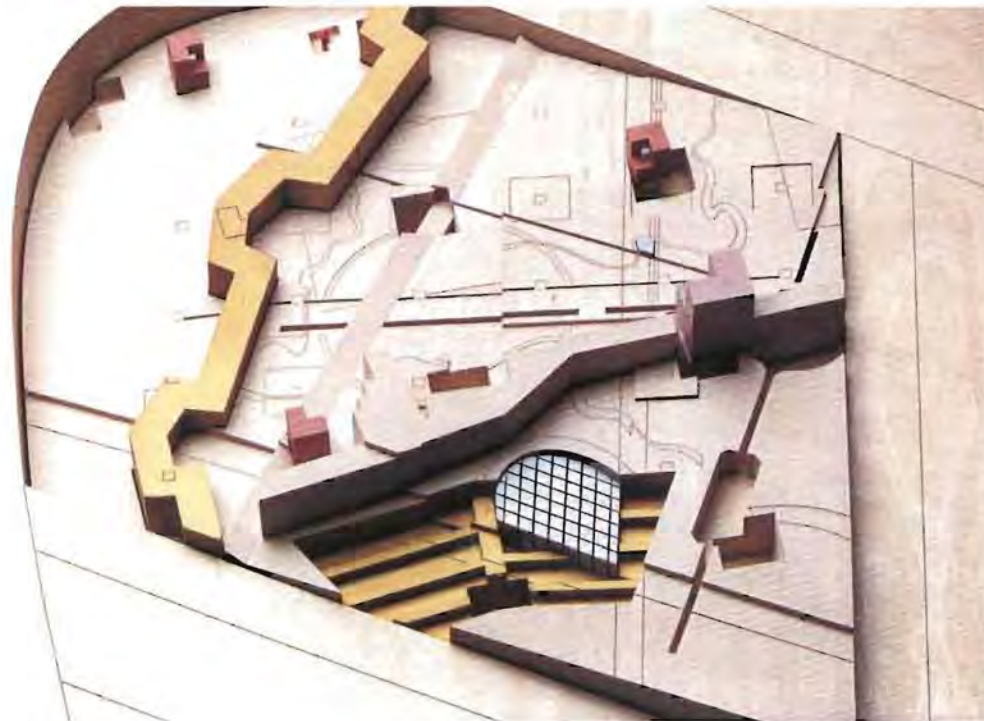


Figure 30 Choral Works, model and section study(left), exploded axonometric drawing (right)

The palimpsest approach is viewing the site as a stage of many performances and events; these are either historical and/or fictional layers. The thesis site of Culemborg contains a series of events, which have shaped the site.

The early maritime affairs and shipwrecks, walls and fortifications of the historical sea condition, which is now covered by the reclaimed land, offer an archaeological opportunity for the design. Over seventy shipwrecks lie under the reclaimed land, however the exact location of these shipwrecks is unknown (Gribble, 2008; 4). Nevertheless, in digging up this treasure chest, a cultural history and fiction can prompt design development. Later, events celebrating industry and human evolution of the 1952 Jan Van Riebeeck Tercentenary Festival were added to the site. This included the construction of new infrastructure, a stadium and exhibition halls. Many of the exhibition buildings have been destroyed or lie abandoned and derelict.

These past, current and future events contain exciting opportunities for the thesis design. The palimpsest approach suggests the traditional idea of grid as an order and structure be abandoned in favour of superimpositions and juxtapositions at varying scales of these events.

Figure 31 Shipwrecks at Table Bay



Urban Conceptual Strategies

LAYERING

This layer is largely influenced by the work of James Corner, who redefines the idea of landscape. The approach transforms the traditional view of landscape. His work stresses an altering of the perception of the traditional landscape, into a cultural productive landscape. It is an idea rather than a quantifiable result, which describes the relationship between humanity and nature.

The landscape is more than the pastoral gardens and historical landscapes or the conservation of the present; it is the invention of a robust system which has rich potential to recover the cultureless natural urban condition. It is the shift between viewing landscapes as the artefact to viewing it as landscapes in process (Corner, 1991; 10).

Some of the main concerns that influence the layering approach include the temporal and natural dimension of the site, memory and the cultural enrichment of place, and new programs and uses.

The presence of the past offers a “sense of completion, of stability, of permanence...” (Corner, 1991; 13) The layering of sites goes beyond the nostalgic and picturesque; it is to invent and give new exciting meanings to the industrial past.



Figure 32 Left: Aerial view on The Highline Park in New York, Opposite: elevated industrial artefact

The High Line design in New York has been selected to form some of the layers to the layering approach. The design is collaboration between James Corner Field Operations and Diller Scofidio and Renfro. One of the main elements to this approach is specificity.

At this point, a brief historical account to its existing urban condition must be made. The High Line was built in the 1930s forming part of an urban upgrade project, raising the trains from the streets below. It runs through nine city blocks, and crosses over 22 public streets through changing urban conditions from the Historic Meat Packing District to dense neighbourhoods. With time comes technological advancements, and the line soon became outdated.

The line was unused for 25 years since its last run in 1980, left decrepit and under threat of demolition. Through time a layer of soil and vegetation started to grow from the industrial artefact. After many years, the city chose to transform the elevated industrial structure into an urban park.



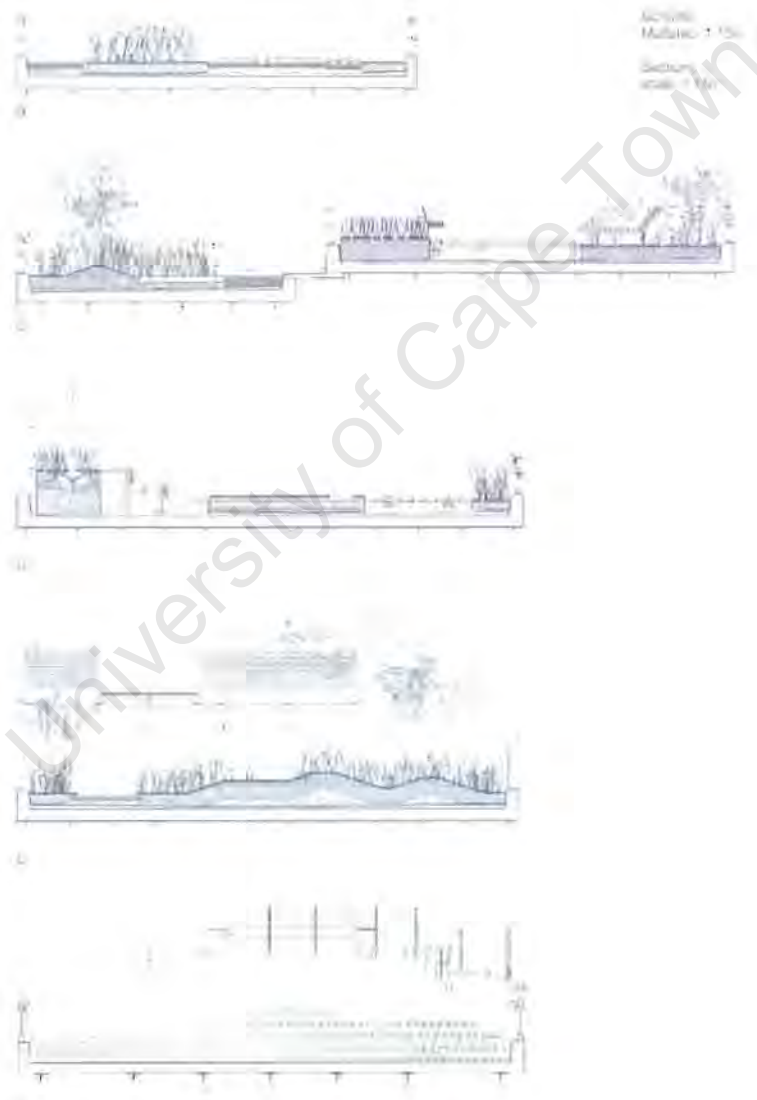


Figure 33 Right: sections through structure. Opposite: planting on the industrial artefact

This approach is not as clear as the previous approaches; the rules are invented according to the site. In this case, the existing structure is recovered and retrofitted and retains its historical elements. Nature recovers itself on the old piece of urban infrastructure.

The approach works with the constraints of the existing urban condition - an elevated structure crossing varying urban conditions, from buildings to streets, public to private land ownership, to wind from above and below. The design shows a symbiotic relationship between vegetation and urban construct, where urban construction and vegetation seem to equally share space thus negating the notion that concrete and grass cannot share equal space. The system contains both formal layers and programmatic layers. The formal comprises of a surface layer - this is the interface between the new and the old.

In the High Line an inventive paving and planting system varies from hard to soft surfaces. This is treated in relation to program - harder surfaces are used along movement routes, combinations of hard and soft for the in-between and softer surfaces of vegetation. The surface is similar to a lattice structure, built from linear concrete planks with open joints, containing edges and seams allowing water and vegetation to move through the surface.

It is the combining of materiality rather than the strict ordering of a manicured landscape. The distinction is further emphasized by the reality of the shallow depth

of the soil, where only certain types of grasses and plants can grow.

The circulation systems of the stairway and meandering pathways, as well as the discovery niches are secondary devices of the formal layer. Its function is to slow things down, to promote a sense of duration and of being in another place. The third layer involves dimension and scale. The composition combines historic with new, natural with industrial artefact, and close-up with distant. These combinations form a range of sequences across a site that runs through changing urban conditions. These combinations are also expressed in the smaller scale details where new elements interact with the industrial artefact.

Here, the technical significance of building on the elevated site is manipulated to form for new metaphorical meanings. The industrial relic is transformed into a park for a new ecological future.



Contamination, Remediation and Reclamation RECOVERING THE MANUFACTURED SITE

This thesis illuminates the constraints of both the natural and the artificial conditions, which contain historical, technical and cultural significance. In working with this manufactured site, where most of its natural processes of soil and groundwater have been contaminated, the design challenge is how to balance both its natural and artificial systems. The recovery of the soil and groundwater and the erasure of the industrial artefact is not the objective, it is to retrofit and reinterpret the old machine and its new vegetation, soils and waters.

In 1952 the Fort Knokke was demolished to make way for the railway line. The site was once the beach and is now a sea of railway tracks and overhead lines. This forms part of the first barrier between land and sea. The railway system is made up of the southern local lines, which connects the city centre all the way through to Simons Town, the national freight railway connecting the city to the rest of the country, as well as a railway yard for servicing and stopping. After many years of railway use, the soil and groundwater below has been contaminated by petroleum products such as waste oil and diesel.



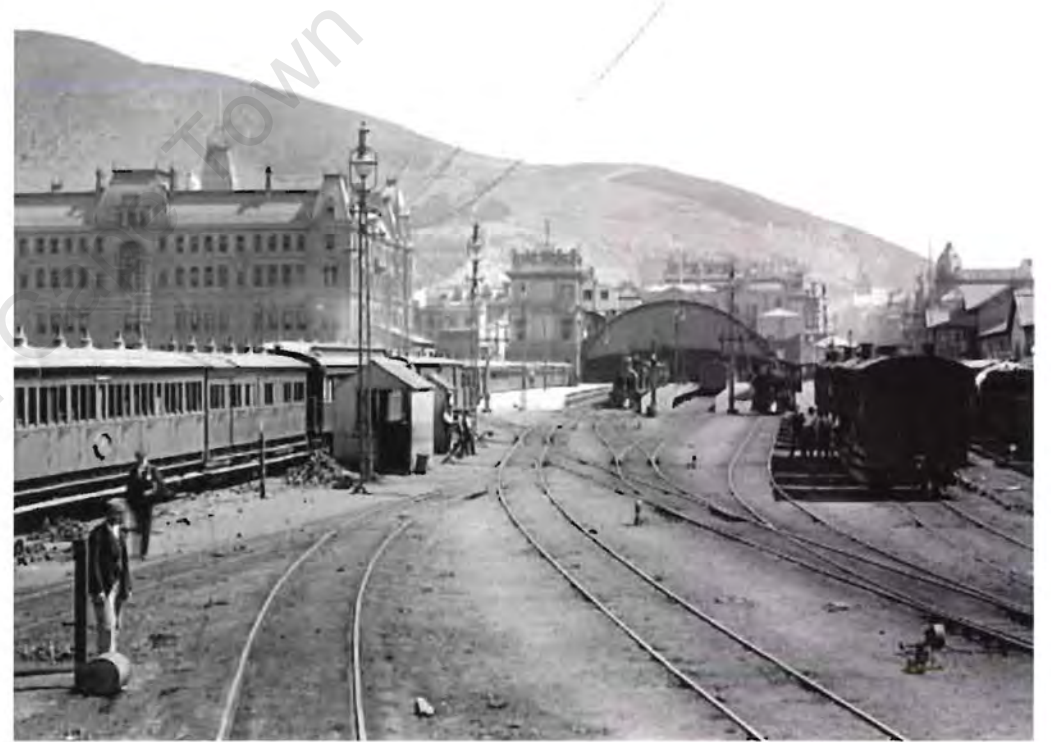
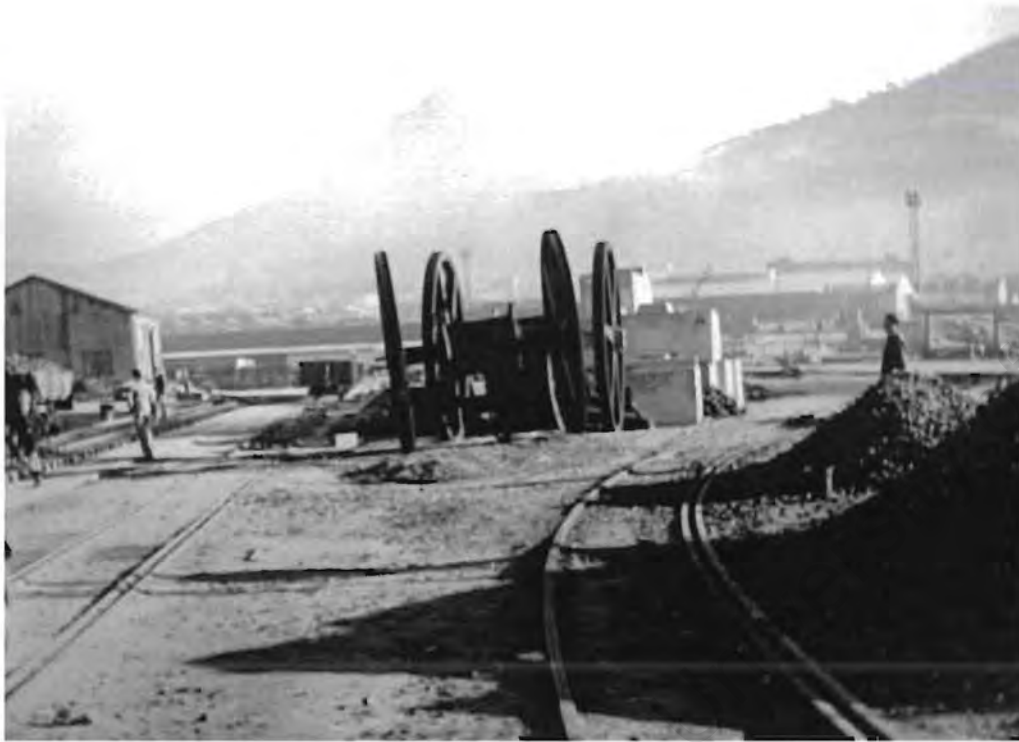


Figure 34 Historical photographs of the Southern Railway, Culmburg

In an attempt to recover or balance the toxins in the land over time, the design attempts to incorporate in-situ soil and groundwater remediation wells as a means of cleansing the soil and the groundwater, thereby readying both soil and groundwater for further development in the future.

This will be carried out by the placing of remediation wells along the railway lines at specific yet varying intervals. These wells will continue in between the railway lines culminating in their protrusion through the platform serving both architectural and purifying role. Whilst fulfilling the primary role of purifying and readying the land for further development, they will also be adding an architectural and structural role to the concept.

The intervention is designed around what already exists on the land. The railway lines dictate the form in which the wells are planted; therefore one does not get the notion that the lines interrupt the flow of the wells. The intervals in which they are planted are born out of the geometrical flow of the railway lines. Keeping true to African

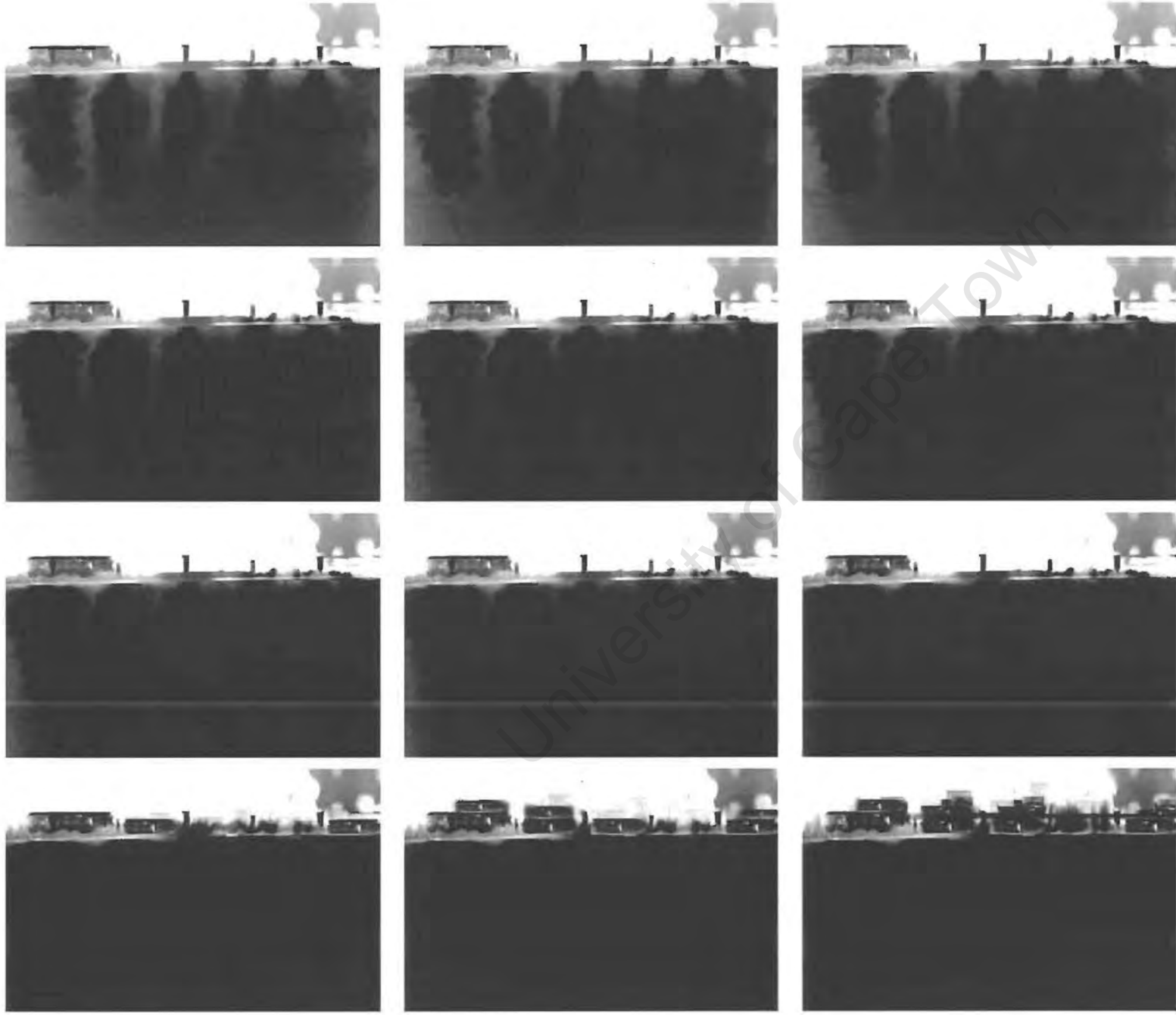
storytelling, these wells will serve as the architectural storytellers of this journey, remedying and readying of the soil.

To the public as they emerge from the earth skyward through the platform they will also serve as 'beacons of light' so to speak, indicating with each colour the phase of the earth culminating in readiness for development. The light indicators from these wells will serve to communicate to all commuters that this soil does indeed have a story to tell and that it is in the process of another phase, another phase of development, another role to play in history and another generation's architectural dreams to fulfil.

To many, the sight of these remediation wells could be a number of images; 'beacons of light' or even a 'patient-doctor' relationship, where the light indicators from these protruding beacons bear a resemblance to a thermometer. This symbolises the irony that in any industry, whether it is architecture or medicine, the purpose of present practitioners can be to remedy or redesign the past work of its predecessors.



Figure 35 Recovering the Manufactured Site: Urban Conceptual Sections



The platform building that has been described in this paper is such that it will be the structure that also houses the chemical labs, soil sampling and research facilities. It will be supported by columns placed between the existing lines and service strips on the existing platforms below.

The platform contains a series of courtyards, which allow light to penetrate and allowing the users of the building to witness the recovery of the land where vegetation will grow between the lines below. The start of the building above begins from the top floor leading to designing for the future infill below once the land has recovered.

The stairs and lifts in the building serve to connect all the levels down to the lower

platform leading to the main platform and research facilities above. The platform is terraced thereby exposing most spaces to the northern light, allowing it to penetrate through. The services to the building are contained within the service stripes, which are broken at particular points to allow the circulation from one section of the platform to the next and where the foundations of the fort below would possibly be positioned, thereby resulting in a series of straight and angled walls.

An excavation strip is placed on the southern side, where all layers come together from the historical coastline to the Fort Knokke and the present railway lines.

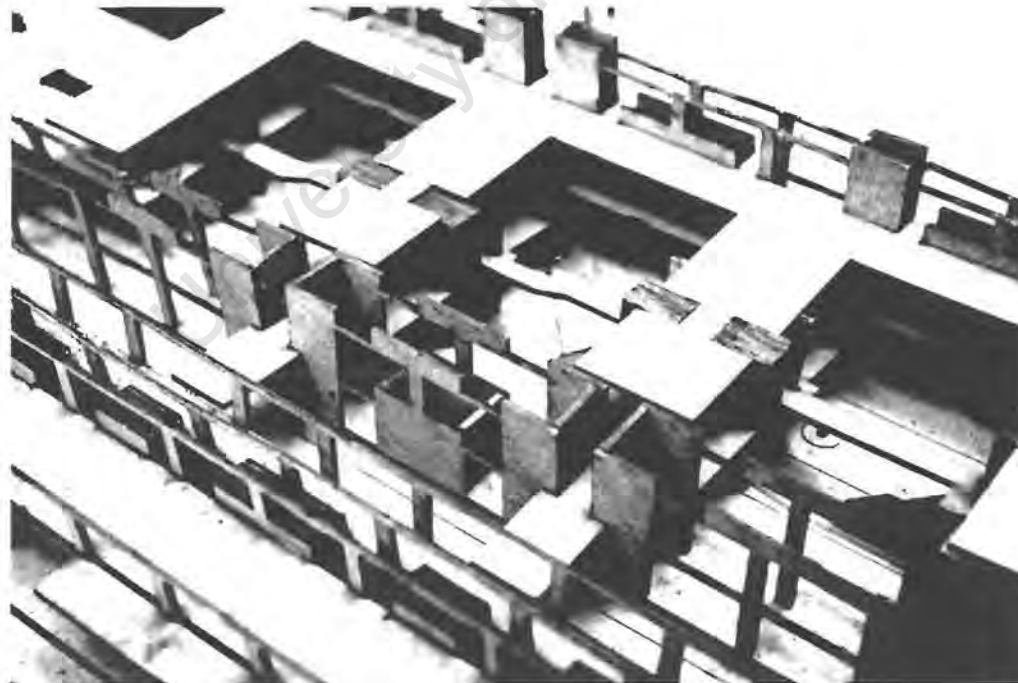
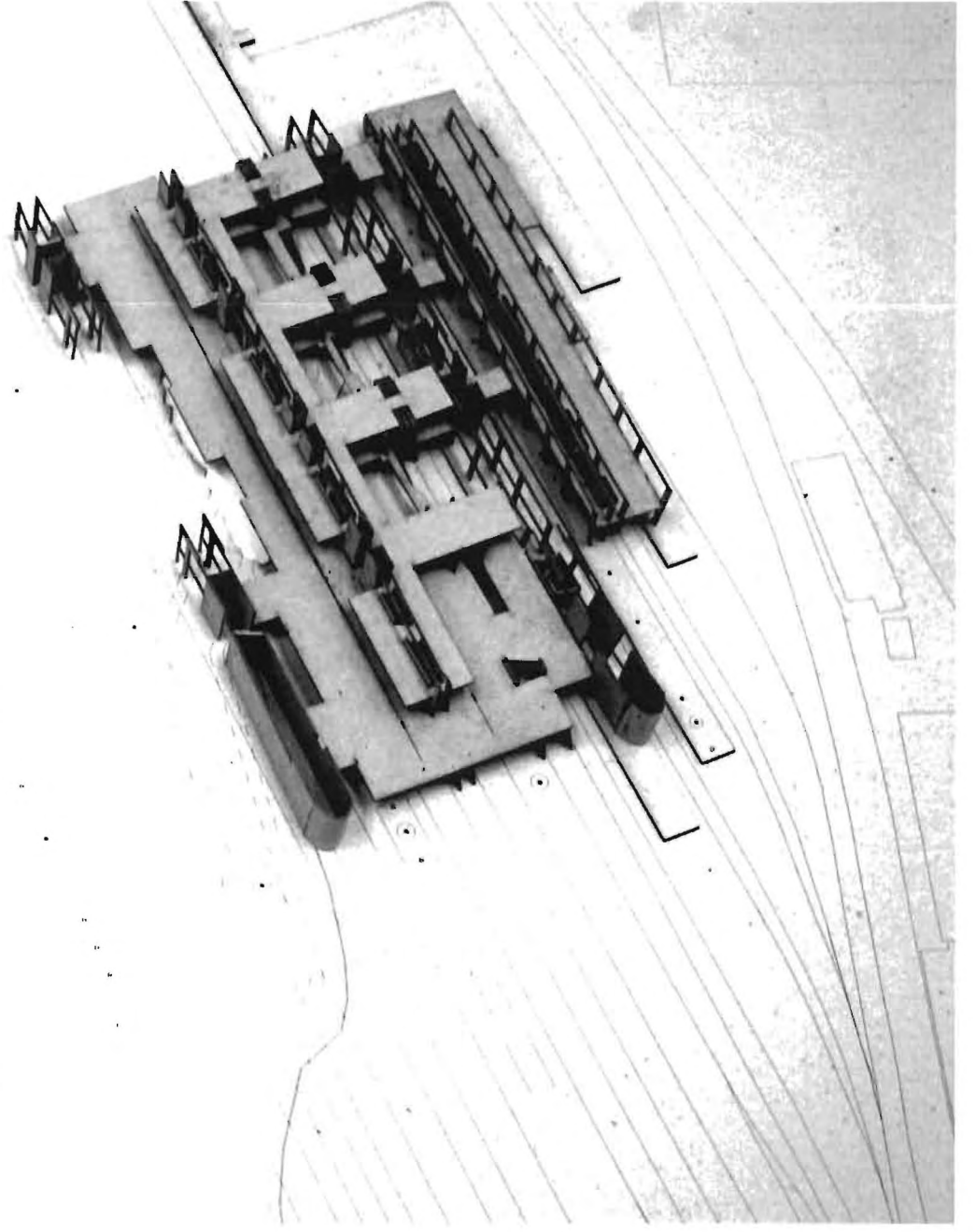
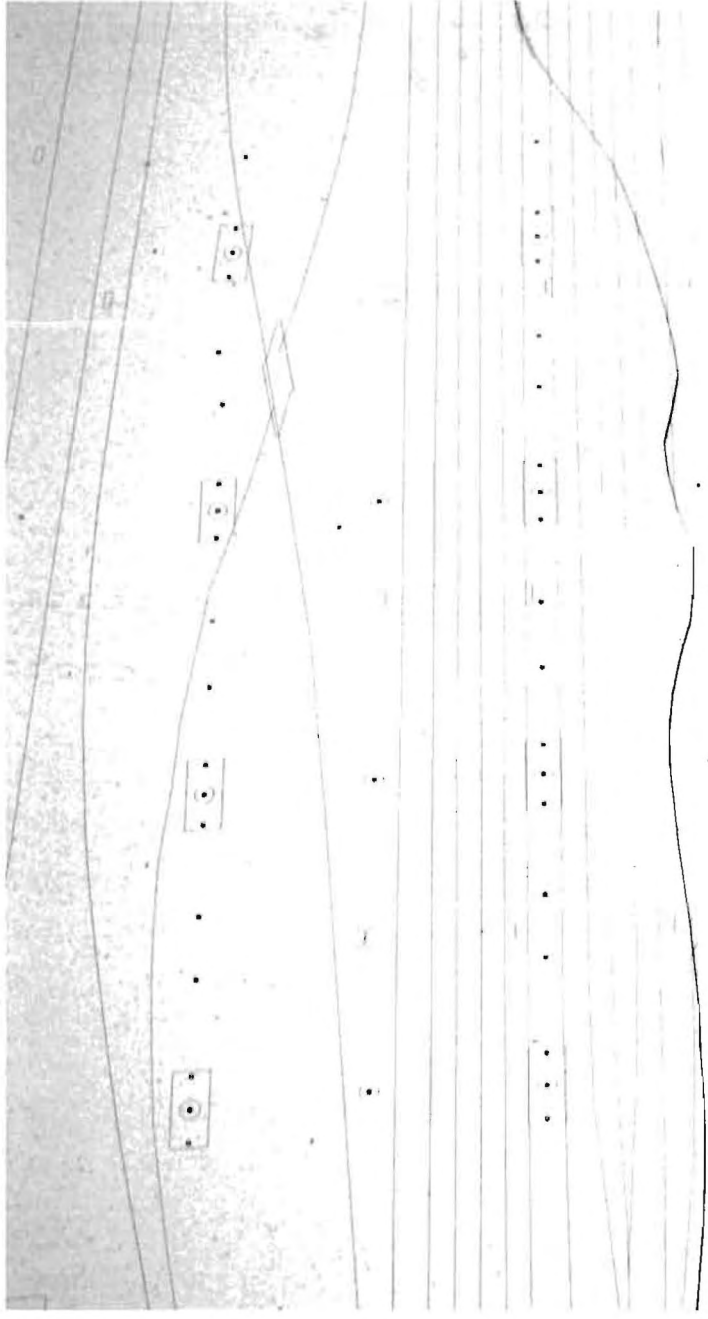


Figure 36 View of courtyards and services in platform (left), aerial view of the platform with localized wells



Essentially, the platform interacts with the past and the future - an archaeological excavation of the past in what is already identified as the excavation strip and railway courtyard of what would soon be overgrown with vegetation once the earth is decontaminated.

The leading reasons behind the platform being placed in this particular position are as follows; the first instance is of the historical sentiment, as the platform building is in line with the French lines of old leading up to Fort Knokke. Secondly, it connects to an existing public transport system, namely Bus Rapid Transit as well as the city's bicycle and pedestrian routes that run parallel to the BRT line. Lastly, it is a disused coach yard once used for freight rail, which contains no overhead electric lines therefore the platform building does not have to be extensively elevated (which would be the case, were it built in other sections of the rail route).

Not only do the well points perform an ecological function, but they also interact with the building, forming part of the architecture compared to the more localized wells that run along the rest of the lines.

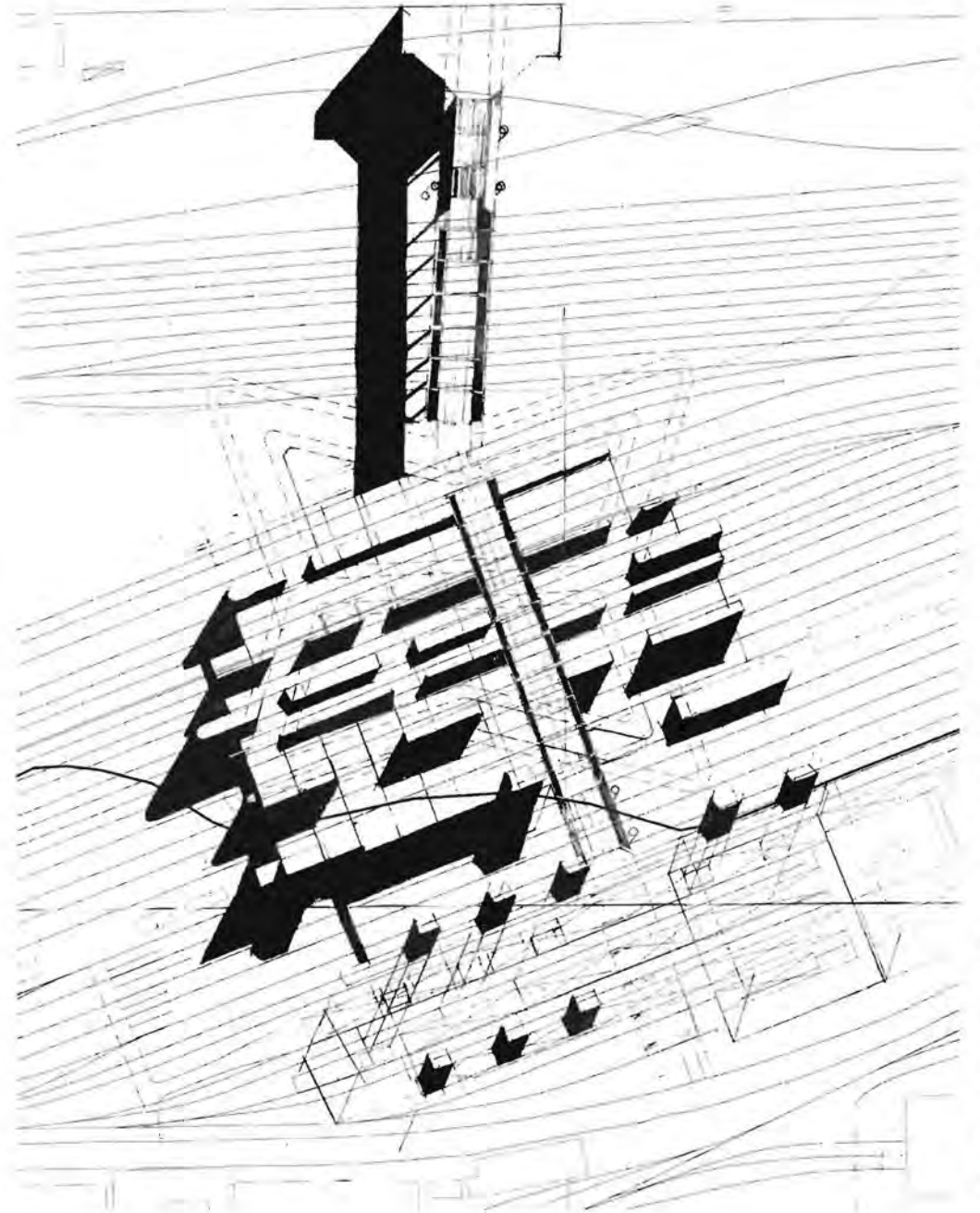
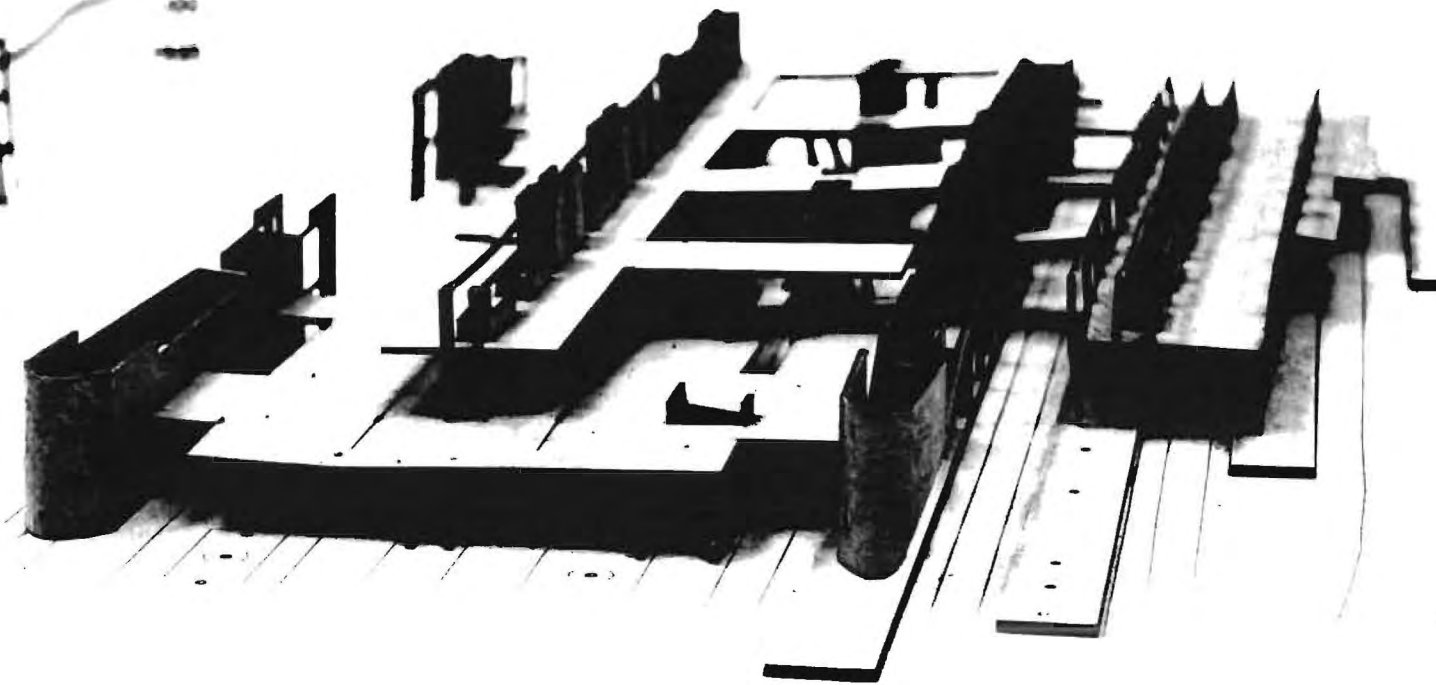
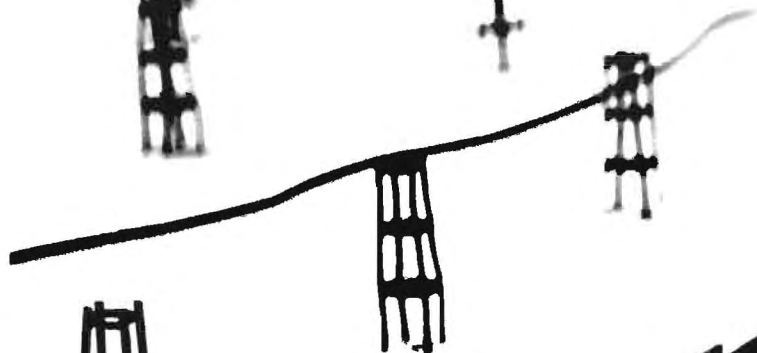


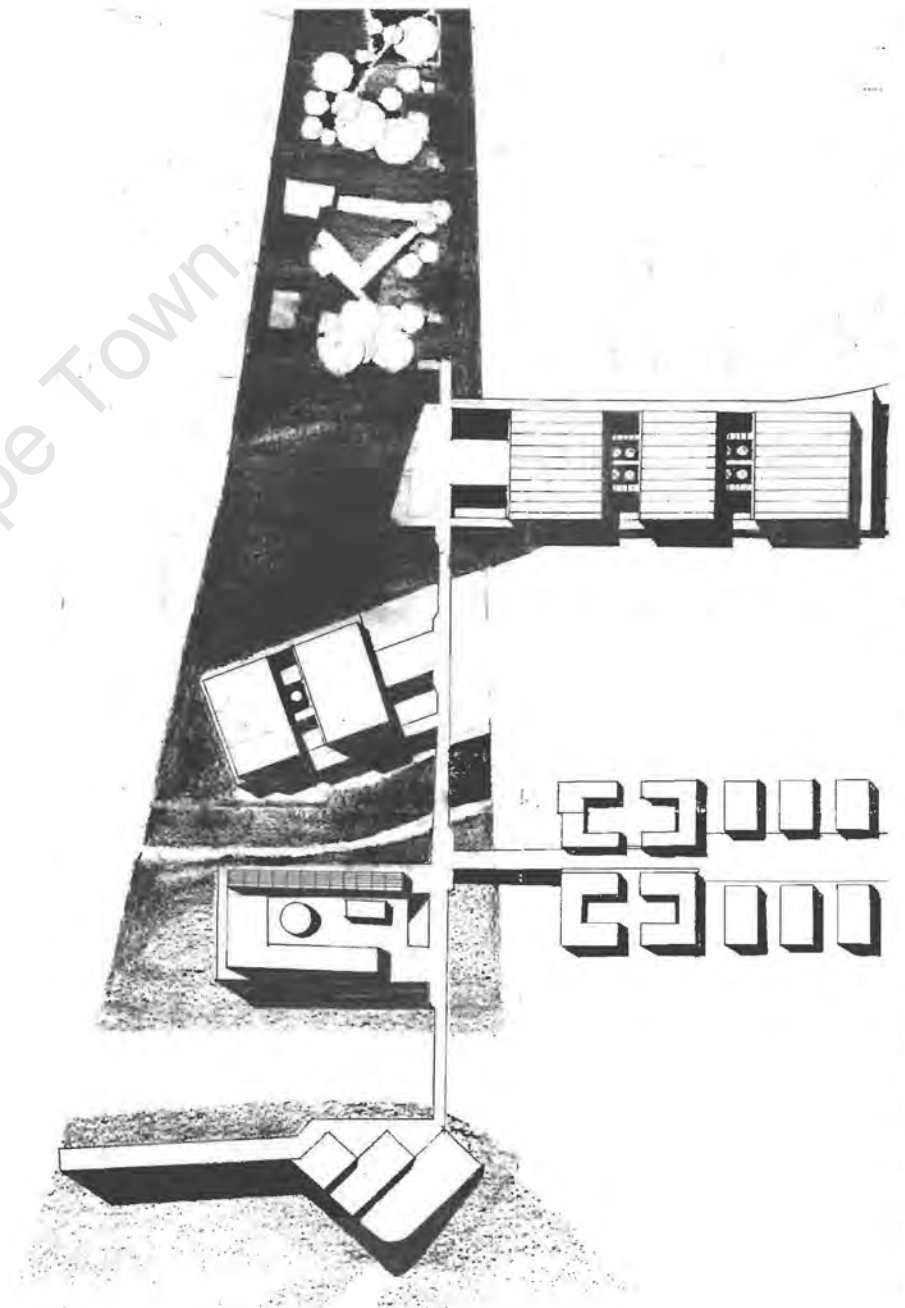
Figure 37 Aerial view of Platform (left), the sitting of the platform with localized wells

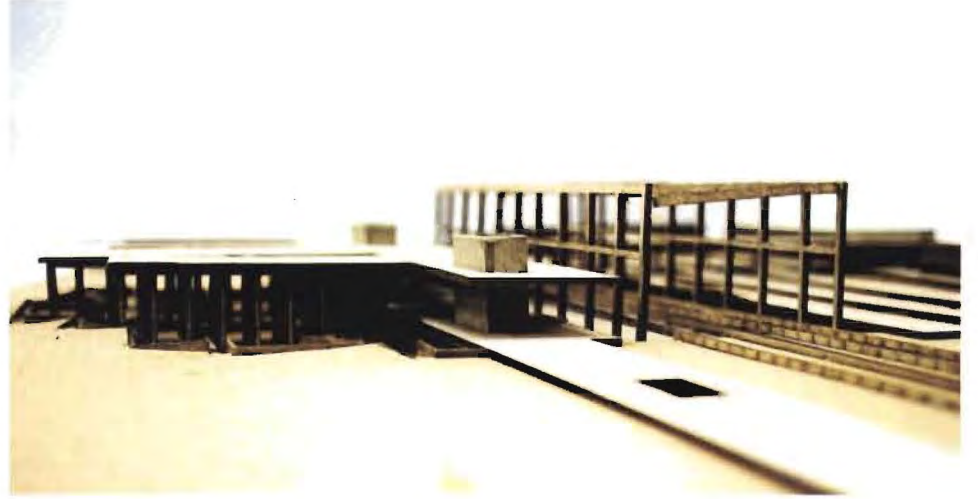


Memorializing the Industrial Artefact
THE DEVELOPMENT OF THE PLATFORM

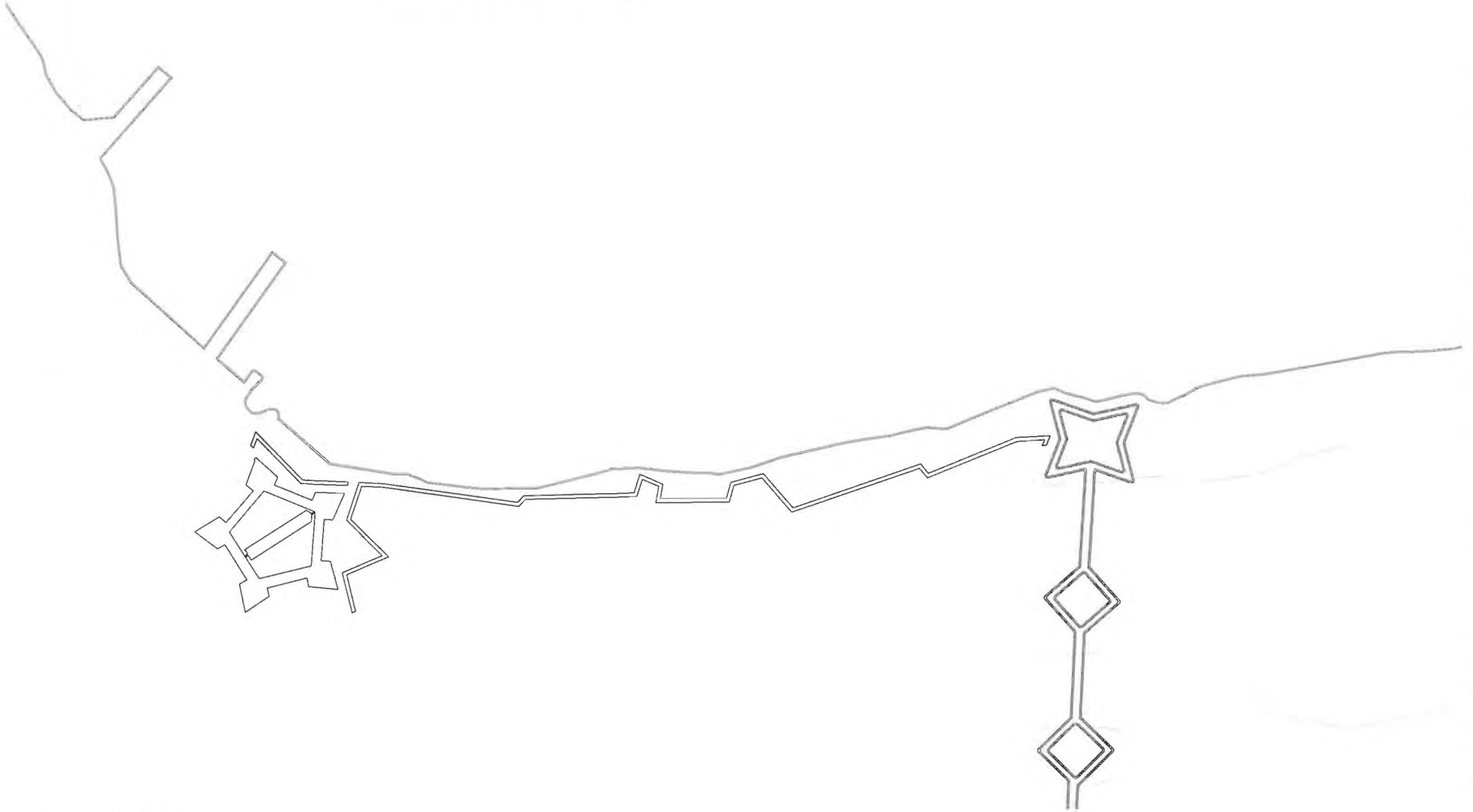
finding the appropriate scale and fit...

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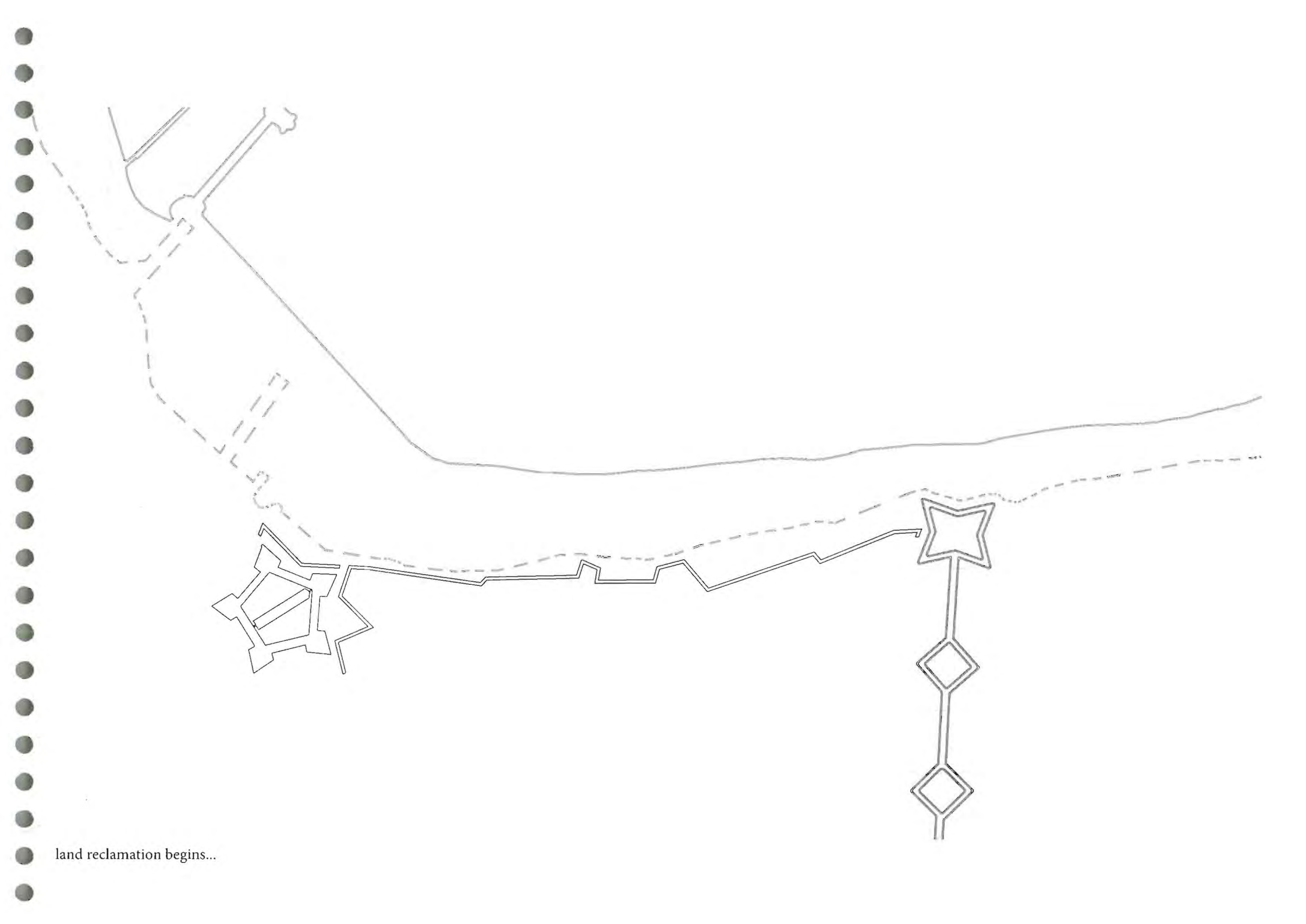




Timeline
PREDICTED URBAN CHANGES



historic coastline 1800

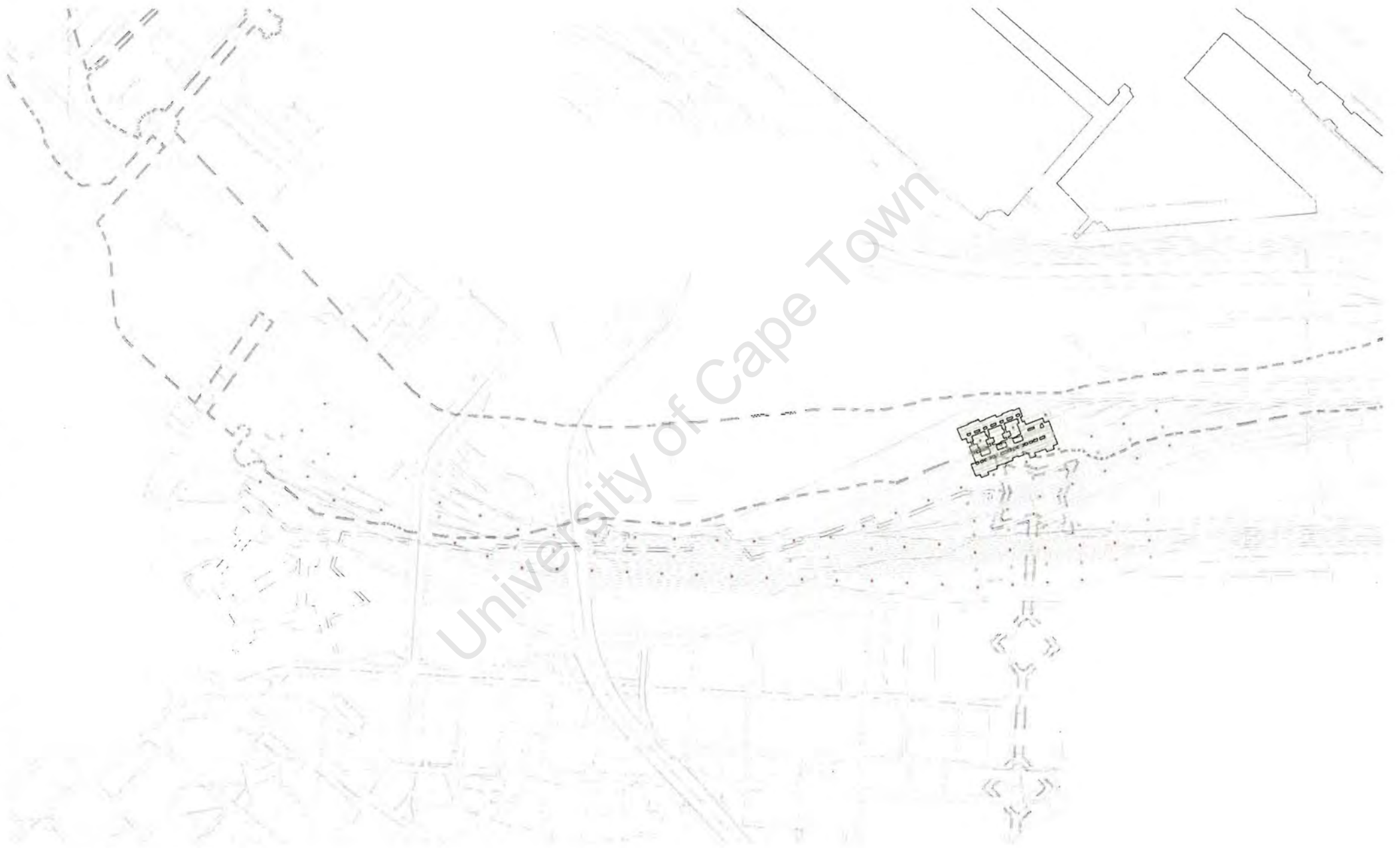


land reclamation begins...

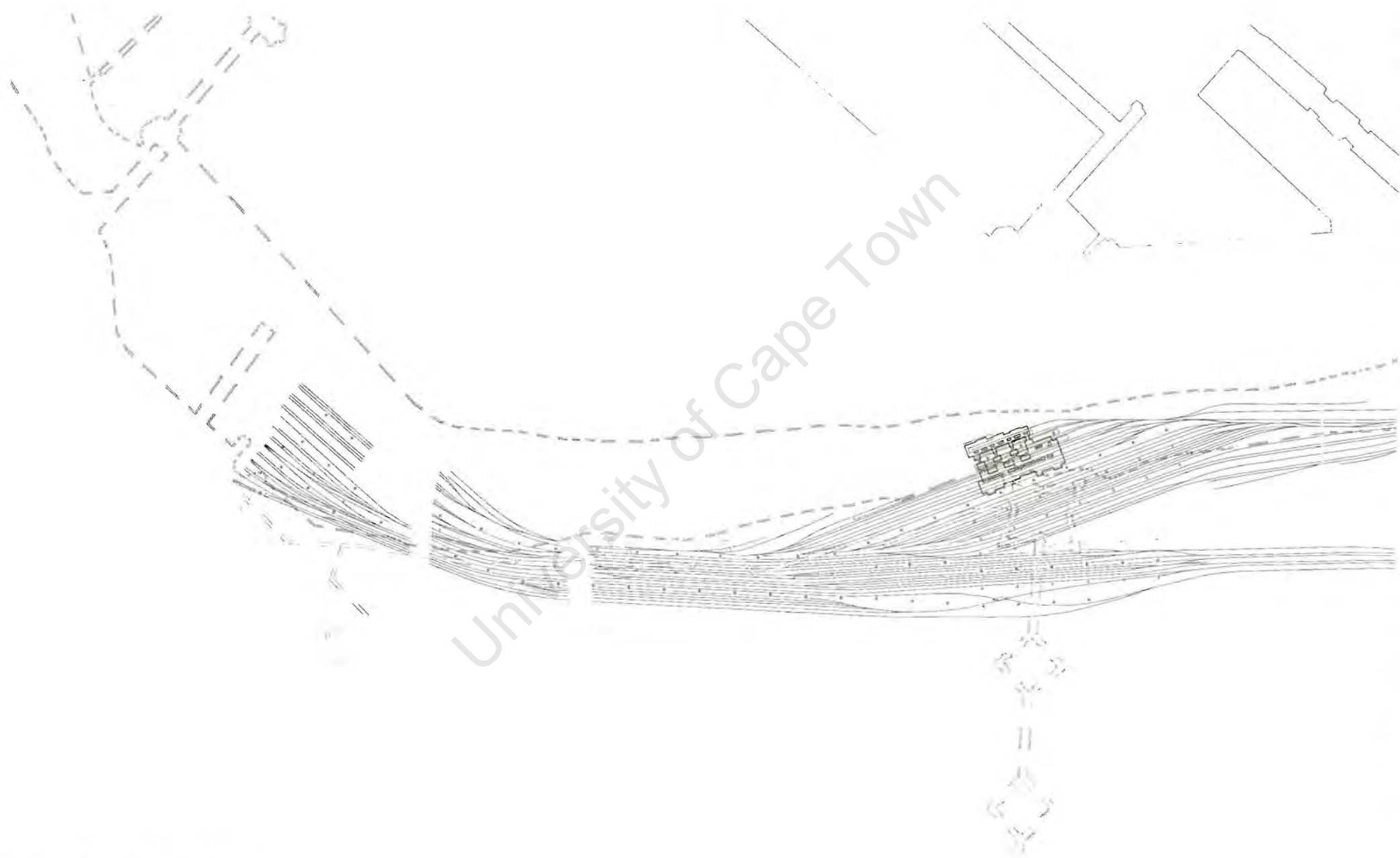


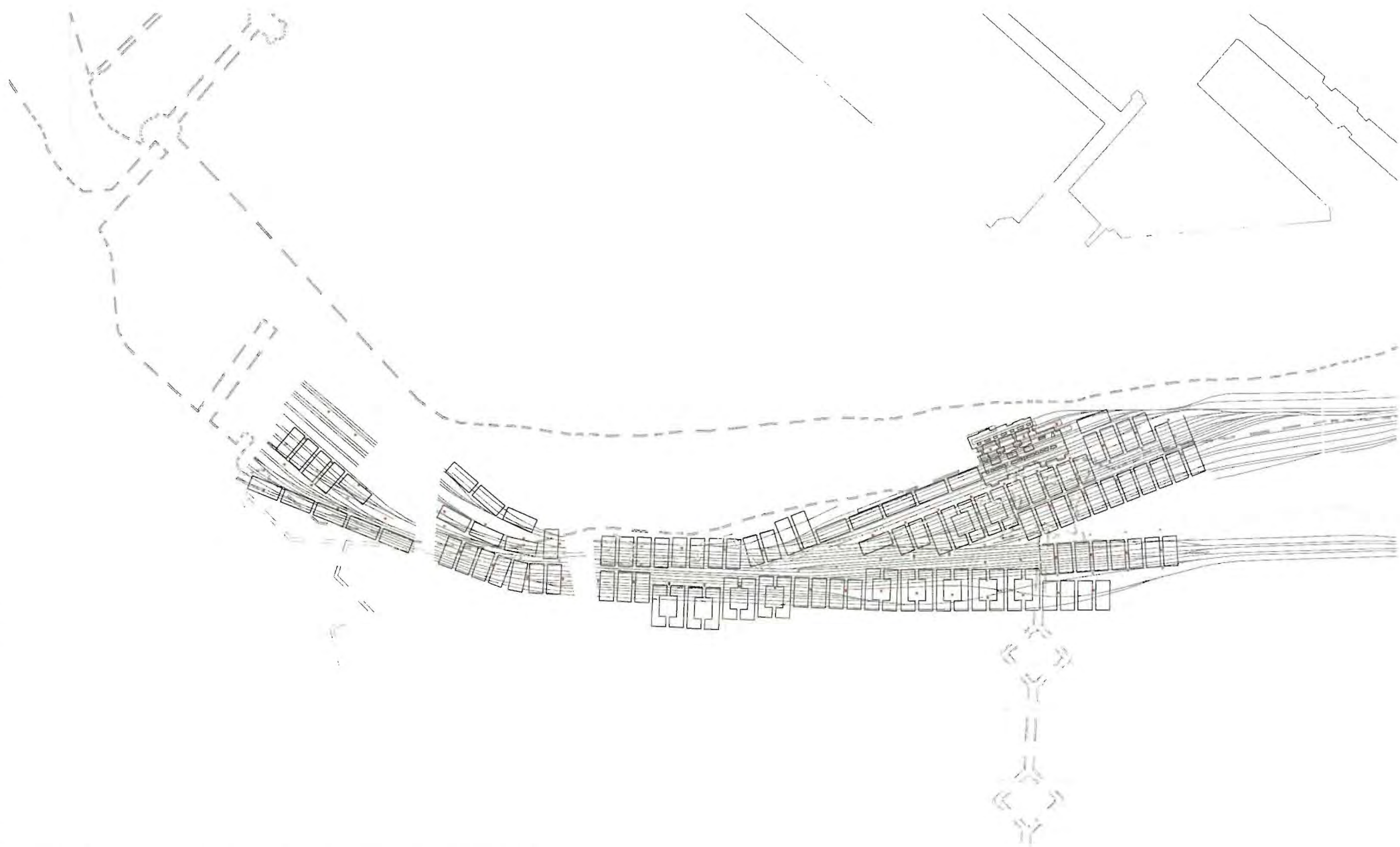
Fort Knokke demolished in 1952, to make way for railway line

University of Cape Town

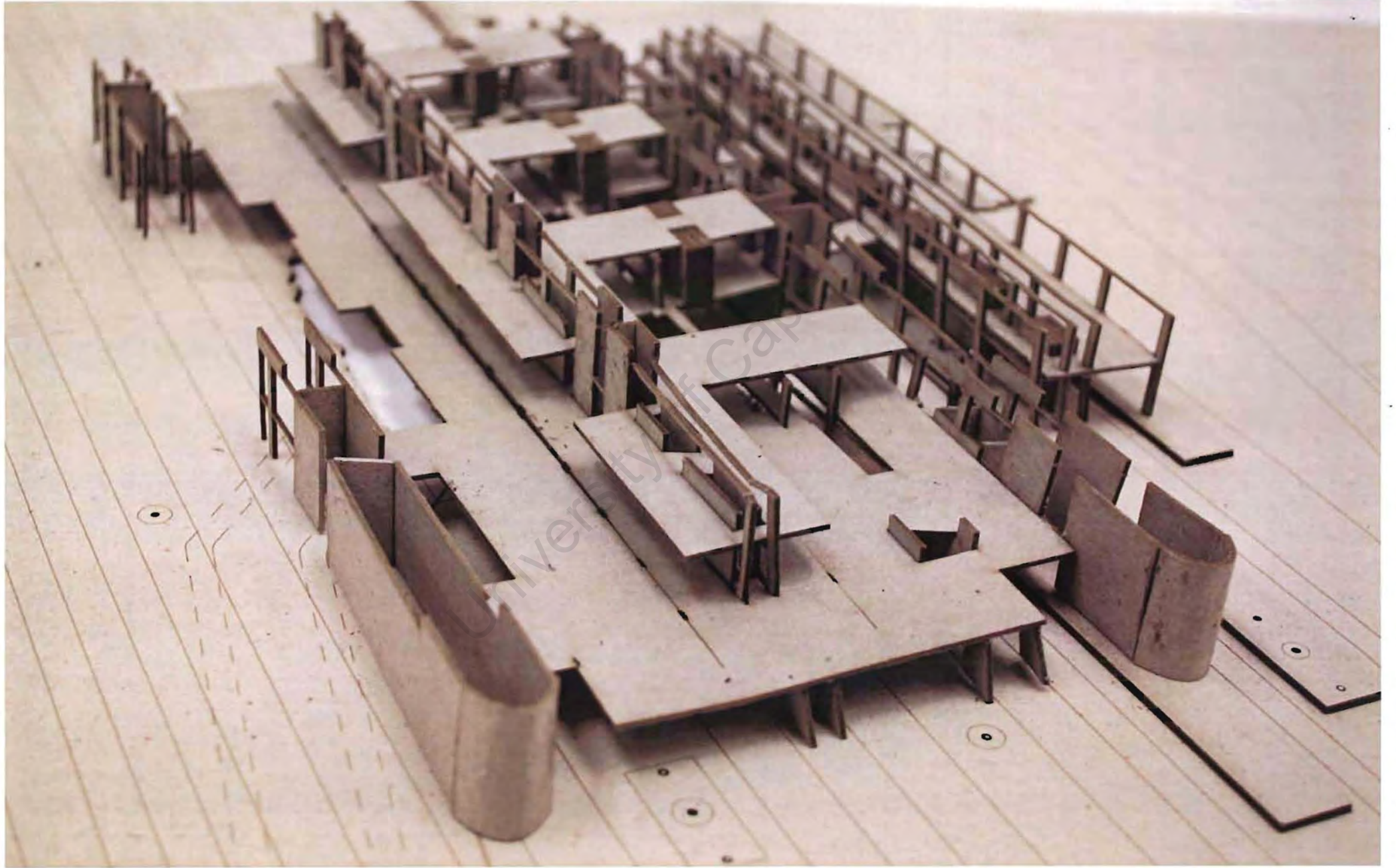


platform and localized well points





future development with industrial artefact incorporated into urban fabric



CONCLUSION

The reclamation phase of this concept is somewhat a means of awakening the land, more the environment as an entirety out of its slumber, out of its state of amnesia.

In as much as the wells play a vital role in readying the land, they also play the role of teasing society as a whole through suspense. They evoke the questions how long? And what now? Once the land is ready, indicated by these beacons that the land is no longer toxic and ready for further development, there are two extremes that can be followed - one would be to completely do away with the railway lines, which not only would be an infrastructural chore, but probably also would not be fitting with South African society. No, we are a nation that loves to combine past and present, we do not shy away from where we come from, and so the next alternative would most likely be to leave the railway lines, perhaps not all, but enough for us to

communicate to future generations that 'Once upon a time, there lived a locomotive in this area.'

Surely it would be fitting to leave the unused rail way lines as memorabilia of the past, South Africa being a country where we pride ourselves in exhibiting our past in museums - why not bring the past into the future? The concept behind this thesis is not to nurture the land out of its state of amnesia straight into another state of amnesia.

The concept is to encourage development, incorporating the past into the present by acknowledging the railway lines as the very veins of this plot of land.

In this less extreme alternative, the railway lines would be incorporated into the urban fabric, a fabric that contains artefacts dating back from Fort Knokke, the early sea walls and French lines all served the purpose of defending the historic coastline.

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TABLE OF FIGURES

All pictures, diagrams, drawings and images in this document were taken/produced by the author unless stated otherwise

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Discott. 2011. A model of Cape Town in 1800. [electronic print] available at: http://en.wikipedia.org/wiki/File:Cape_Town_in_1800.jpg [accessed 15/05/2012]

Figure 4

Skyscrapercity. 2009. The industrial artefact of Culemborg on the reclaimed land. [electronic print] available at: <http://www.skyscrapercity.com/showthread.php?t=768440&page=37> [accessed 15/05/2012]

Figure 5

Etiennedup. 2011. Woodstock Beach 1899. [electronic print] available at: <http://www.flickr.com/photos/8270787@N07/615775171/> [accessed 15/05/2012]

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Figure 7

Hilton T. 2009. Shipwrecks at Table Bay. [electronic print] available at: <http://www.flickr.com/photos/hilton-t/3862440818/> [accessed 15/05/2012]

Figure 11 & 12

Hilton T. 2009. Construction of Sturrock Dry Dock. View from the entrance. [electronic print] available at: <http://www.flickr.com/photos/hilton-t/4948764344/sizes/o/in/photostream/> [accessed 15/05/2012]

Figure 13

Hilton T. 2009. Aerial View of the Duncan Dock and Culemborg in foreground. [electronic print] available at: <http://www.flickr.com/photos/hilton-t/3862440818/> [accessed 15/05/2012]

Figure 14

Rassool, C and Witz, L (1992) The 1952 Jan Van Riebeeck Tercentenary Festival: Constructing and Contesting Public National History: University of the Western Cape, Van Riebeeck birthplace, Culemborg, at Van Riebeeck festival fair in Cape Town 1952, page number 199

Figure 17

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Figure 18-22

Barzilay, M (1984) L'invention du parc: Parc de La Villette, Paris: concours international= international competition 1982-1983, Graphite, Paris, page numbers 1-35

Figure 19-23

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Figure 24, 26-27

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Figure 25

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Figure 28-30

Davidson, C (2006) Tracing Eisenman : Peter Eisenman complete works, Rizzoli, New York

Figure 32-33

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