



Dissertation Report

Weathering Architecture
a saline center for research and creativity
at the old salt river mouth

Micaela Jacobson | 2019

*Presented as part fulfillment of the degree of Master of Architecture (Prof) | School of Architecture, Planning
and Geomatics | University of Cape Town*

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Weathering Architecture

a saline centre for research and creativity at the old salt river mouth

Micaela Jacobson

Supervisors:

Associate Professor Nic Coetzer, Kevin Fellingham and Yvonne Brecher

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

—

29th October 2019

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1. Weathering Rock

Abstract

The focus of this dissertation is on the ephemeral qualities in architecture, with an interest in the concept of weathering and the natural condition of the eroded Salt River estuarial landscape.

The dissertation proposes a Saline Centre for research and creativity, combining the arts and sciences on a site of the confluence of the Old Salt River canal and Salt River power station. The chosen site, which holds the last visible traces of the Salt River estuary, is located on the periphery of both Cape Town and industrial Paarden Eiland. Although this site holds visible traces of the estuary, the water is formed by a man-made canal. The once flourishing and ecologically significant Salt River estuary has dissolved into industry as a result of the construction of the N1 highway among other forms of city development leaving it stagnant as a piece of infrastructure rather than landscape.

The programme proposed is a combination of a saline crop research centre and multi-purpose event space, which are meshed together with overlapping programs such as a test kitchen, workshop-studio, salt harvesting roofscape and estuarine landscape. The salt-forming architecture, resurfacing the saline marsh landscape through erosion and the notion of temporal event is a return to the fluid and ephemeral. Both programme and form are transient and embody weathering by evolving and devolving. The Salt River power station water inlets as vessels for event and for producing knowledge for a sustainable future is a re-imagination and inversion of their purpose. Along with this, the combination of programme is to create a poetic relationship between the architecture and the site's past, present and possible future.

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INTRODUCTION

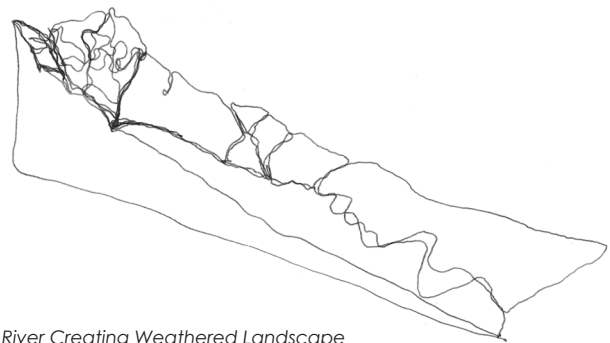
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A shifting ocean tide traces the passage of time and leaves its mark on the surfaces it encounters. This is a naturally occurring layered effect that embodies both erasure and renewal. The act of weathering reveals hidden conditions through subtraction, a reformation by nature over time as a layered process.

This dissertation emerged out of a metaphoric and theoretical exploration of the concept of weathering which was arrived at through personal interest and through an initial interpretation of the Liesbeeck River, where river erodes landscape. The interest is focused on the natural process, one that is ephemeral and fluid and how this is translated into architecture, which is simultaneously systematic, functional, natural and poetic, just as a river.

However, as with many natural systems and processes, the river in parts has been artificially straightened and canalized where it once was significant ecological regions of saline marshland. Water once fluctuated in and out of this region shifting the landscape with its movement. The dissertation seeks to engage with the lost natural condition of the Salt River Estuary, dissolved into disappearance for the sake of industry and development, as a weathered and palimpsest landscape previously connected to a broader ecological network of wetlands and the ocean.

The chosen site is located at the Salt River mouth end of the historical estuary and on the edge of Paarden Eiland today. This location the site introduces the potential for the dissertation project to be a place of confluence. The site presents traces of both the salt river estuary and the defunct Salt River power station



2. River Creating Weathered Landscape

which intersect one another and create the unique opportunity for their forms to be re-imagined and repurposed into programs for a Saline Centre Institute for research and creativity, the confluence of science and art, fluid and rigid.

Exposing the site to its hidden past by retuning it to an estuarial landscape allows for spatial formations to exist which are created out of the concept of weathering in terms of the landscape and in an architecture that evolves and devolves, transforming the space from a condition of rigidity to a condition of ephemerality and fluidity. The landscape re-imagined affords a new relationship between nature, natural processes and built form, where landscape and architecture are explored simultaneously through the notion of temporality, appearing as one but also separate.

The dissertation is divided into five parts. The first begins by engaging with the concept of weathering by drawing on key ideas from preliminary explorations conducted early on in the year. This section is focused on expanding the notion of weathering as concept from the aging of a buildings exposed to the natural elements, to processes and materials that embody weathering and its qualities from which an approach is conceived. Secondly the chosen site including its part in the broader landscape and wetland network is described. This section is concerned with the broader contextual and historical background of the site, its locality and current day conditions as well as its capacity for ephemeral and conceptual significance for the dissertation project. Defining and curating the program for the dissertation project is explained in the third part whereby the emphasis is on the meshing of scientific, artistic and productive programmatic functions in order to create a poetic architecture.



3. A Memory of the Salt River Estuary and Mouth

The fourth part concentrates on the design proposal with a clear description of the design development. Included is the over all concept and intent of the proposal, design informants and strategies. This is accompanied by preliminary sketch design in the form of working drawings, models and collages. Lastly, final drawings are displayed in part five.

In essence the dissertation is an attempt to explore the ephemerality in architecture by using the concept of weathering as an approach to returning the site to its fluid origin by resurfacing and re-imagining the Salt River estuary as a weathered landscape.



WEATHERING

*From Concept to Approach
An inevitable process
Revealing Through Subtraction
The Presence of Time Through Addition
Developing an Approach*

4. Carved Earth



Weathering can be defined as the natural geological process whereby rock breaks down due to various forces of nature and environmental factors. The earth just as rock is weathered by various natural processes such as a river which carves the earth's surface with its movement, shifting and changing the landscape condition. This natural process is not limited to the earth's surface and its geological composites but has an affect on all things, regardless of being man-made or natural. The built environment is not free from the affects of nature and weathering no matter the resistance.

The underpinnings of this dissertation are rooted in the understanding of weathering as a concept for an approach to architecture. This section is interested in the translation of the concept of weathering from a natural process and interpretation of the Liesbeek river in the Cape Town landscape to an approach to architecture by highlighting key ideas from explorations conducted early on in the design process.

Initially the concept of weathering is applied to architecture, while echoing the ideas of Mohsen Mostafavi and David Leatherbarrow, as an inevitable process of subtraction and addition worth harnessing. More abstractly weathering is understood through the ideas of "revealing through subtraction" and the "presence of time through addition". Finally the concept is developed into an approach to architecture.



5. The Liesbeek River in Cape Town Landscape

The Liesbeek River was chosen as the axis of study for the sCape studio 2019, which intended as a generator for design. This studio is particularly focused on the landscape of Cape Town as a present and past reality that has the ability to evoke and facilitate the exploration of ideas. It emerged, though preliminary investigation, that the Liesbeek River embodies movement, transience and erosion. This interpretation of the river guided a conceptual inquiry into the notion of weathering as river erodes landscape.



An inevitable process

Architecture, as with things wabi-sabi (objects that display the Japanese philosophy of the celebration of decay), record the effects of nature in the language of erosion. All things exposed to the natural elements deteriorate. This can be seen as nature's rightful claim on the artificial, retuning the artifice to the nature it occupies and from which it is built (Mostafavi and Leatherbarrow, 1993).

Many efforts are made to remove all traces of life (nature), which have left their mark on architecture. Mostafavi and Leatherbarrow in *On Weathering: a Life of Buildings in Time*, call for a shift in this attitude as they highlight that natural processes are one not worth resisting. This is because natural processes have much to offer the built environment, such as an architecture that is moulded by its environment and context, one that shifts harmoniously with the seasons and is free from the unrealistic demands of timeless perfection. It is the imperfect that is appreciated, the real and authentic character that can never be truly replicated by man.

Architects rather than fearing the inevitable can utilize the opportunity to engage the natural elements as a design tool, to develop a narrative that unfolds through time. Embracing the effects of nature develops a meaningful architectural character moulded not by only architect but by the particulars of the environment and inhabitants. This allows the work to be truly situated.

The inevitability of weathering of architecture extends the construction of the building beyond our perception of finished or complete, meaning that it is in continual construction and reconstruction by nature, incomplete and imperfect, moulded and re-moulded.



6. Weathering Concrete Brion Cemetery

Carlo Scarpa, according to Koren 2008 and Frascari 1991, intentionally detailed his work at the Brion Cemetery and other works to embrace, express and celebrate weathering. This is seen in this coarse concrete finish that collects marks caused by exposure to dampness and water.



7. 侘寂 | Wabi-Sabi

The Japanese philosophy of wabi-sabi embraces the beauty of modesty, weathering and decay. Wabi-sabi, as an acceptance of transience, in richest form is about delicate traces and memory of an event or constructs that once evolved and devolved. The accumulated effect of the passage of time is recorded through a process of layering.

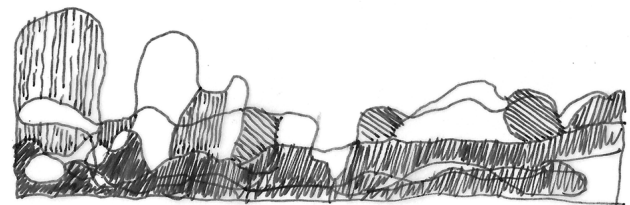
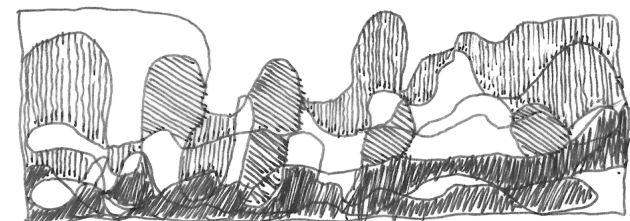
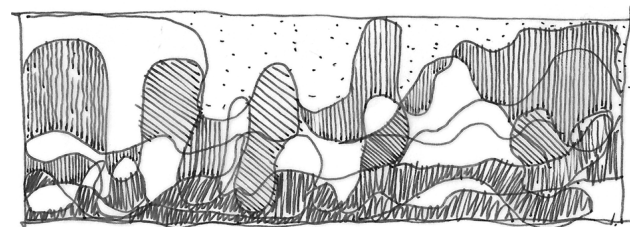
“Wabi-Sabi is a beauty of things imperfect, impermanent, and incomplete.

It is the beauty of things imperfect modest and humble.

It is the beauty of things unconventional”
(Koren, 2008: 7)



8. Details and Qualities of Tidal Sculptures



9. Revealing Through Subtraction

According to anthropologist Tim Ingold (1993) landscapes are layers of meaning, created by the process on the earth's surface which leave their traces on the layers of land over time. Therefore when layers of earth are stripped away whether by human impact or the process of weathering, knowledge and hidden conditions are revealed about the past and humans' involvement with their environment.

The removal or subtraction of layers is inherent in the notion of erosion and weathering. Therefore value is placed in a subtractive process which reveals hidden conditions which addition alone cannot harness.

Subtraction can also be perceived as deterioration, the removal or decline of integrity. As part of the exploration of tidal erosion the tidal sculptures were made. The value of subtraction is evident in the tidal sculptures that embody the weathering as they display the shifting effects of revealing and concealing. The notion of revealing through subtraction is engaged through the cutting of the skins of the sculptures so that the inner object is revealed. The subtractive or deteriorative act affords glimpses of texture and colour to be seen through these subtractions. The integrity of the material is removed while a new form is revealed, one that is unpredictable and fluctuates with movement.



10. Tidal Sculpture Series



11. Tidal Sculpture Movement | Shifts

This composition indicates the transient quality of weathering which is harnessed by subtractive means, whether through removing layers of earth, rock, surfaces of buildings or by removing the structural integrity of the material as in this exploration, shifting conditions emerge.

12. A Site Location Model

The site's location model exhibits the potential of extrusion or subtraction whereby the digging through the layers, as an archeological activity, uncovered an abstract composition of the landscape with subtle allusions of the estuary's previous forms and metamorphosis.

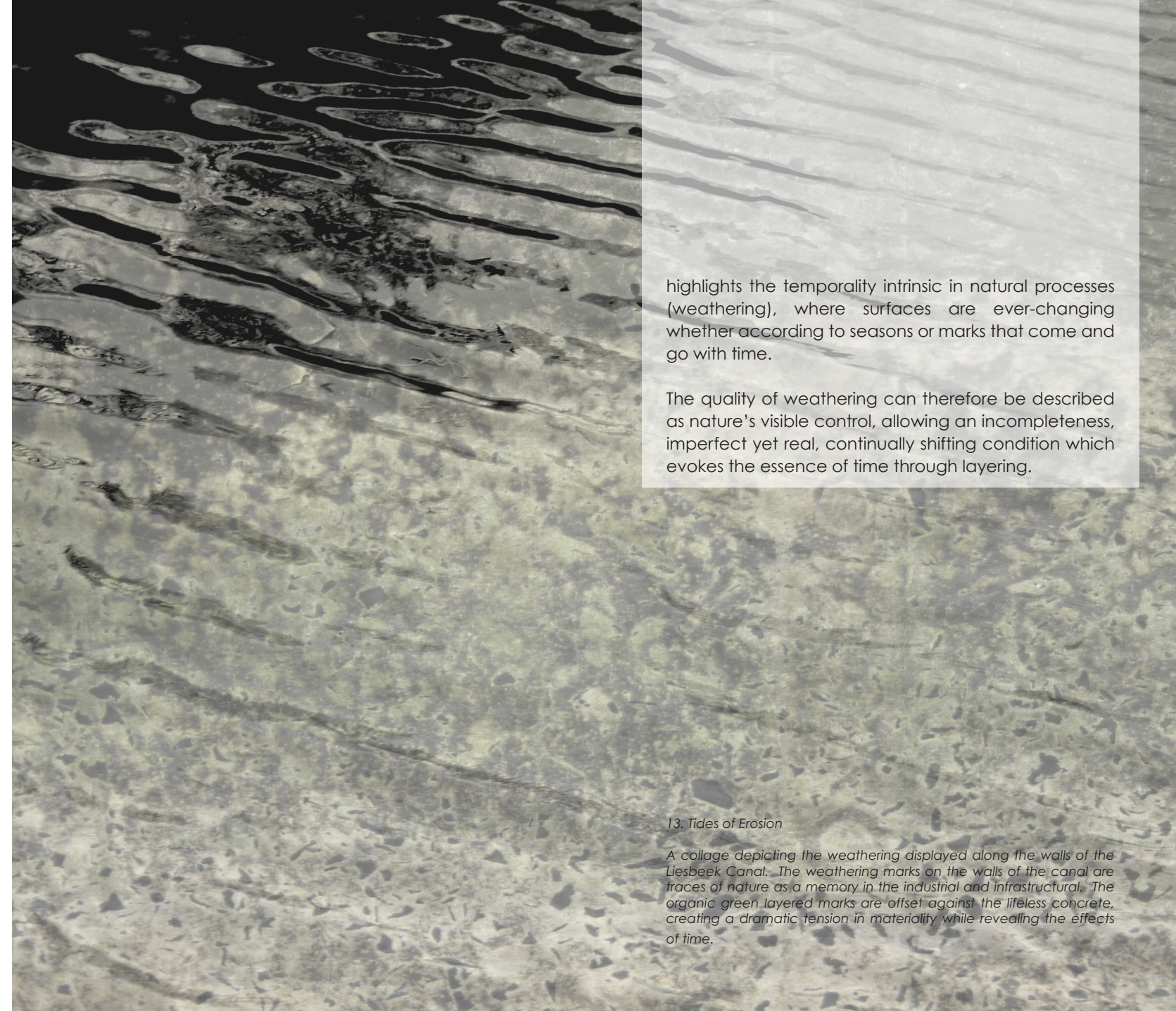


The Presence of Time Through Addition

According to Juhani Pallasma, contemporary architecture portrays a "collapse of time" where by the projects are centred on a moment in time, an instant, rather than the continuous, where time is present in matter (Holl, S; Pallasmaa, J; Perez-Gomes, A., 2006). It is therefore shifting matter which presences time.

Marks of weathering (residual deposits) suggest a process whereby nature and natural elements apply their effects layer-by-layer onto exposed objects. Natural processes are recorded as visible layers, where change is apparent in the accumulation of deposits. Weathering displays a layered effect of time, a metaphysical quality often ignored in the making of architecture. Weathering marks recorded on the surface of a building are considered by Mostafavi and Leatherbarrow (1993) as ambient elements, as they reveal the weather conditions that have change over time.

The passage of time expressed in architecture enhances a buildings relationship to its past and future through the recording of shifts in nature. A shifting surface or finish which occurs naturally affords a materiality that develops over the years while productively changing a building according to the environment. This notion of refinishing through weathering indicates the notion of regeneration through degeneration, as weathering is often views as deteriorative although has the ability to reform architecture. This entropic condition



highlights the temporality intrinsic in natural processes (weathering), where surfaces are ever-changing whether according to seasons or marks that come and go with time.

The quality of weathering can therefore be described as nature's visible control, allowing an incompleteness, imperfect yet real, continually shifting condition which evokes the essence of time through layering.

13. Tides of Erosion

A collage depicting the weathering displayed along the walls of the Liesbeek Canal. The weathering marks on the walls of the canal are traces of nature as a memory in the industrial and infrastructural. The organic green layered marks are offset against the lifeless concrete, creating a dramatic tension in materiality while revealing the effects of time.

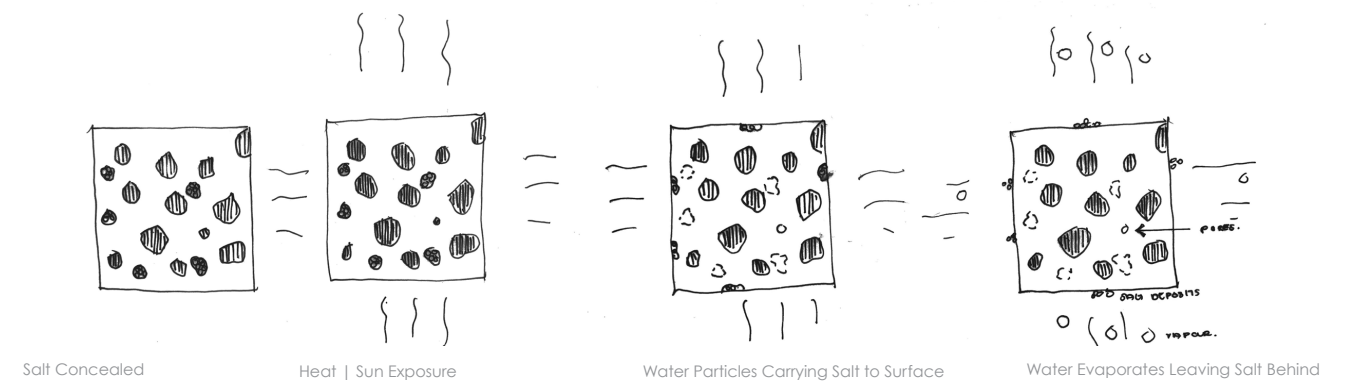


14. Efflorescence

The presence of salt formations on the surface of concrete transforms the concrete materiality from lifelessness to that which displays a process imbued in time. Efflorescence is an affect which is commonly noticed on aging buildings exposed to saline water. The saline water absorbed by the porous materials evaporates when exposed to sun, moving the water to the surface, leaving only the traces of salt once the water has vaporised. If left exposed to elements such as rain or natural moisture the salt deposits on the surface might dissolve, returning the concrete to its bare surface. A transient material quality is achieved.

"It sparkles. It's white, sometimes with a grayish tint. It flakes off the surface and is present only on the surface." (Elizabeth Weintraub, 2018)

Efflorescence therefore exhibits the passing of time as salt forms and dissolves.



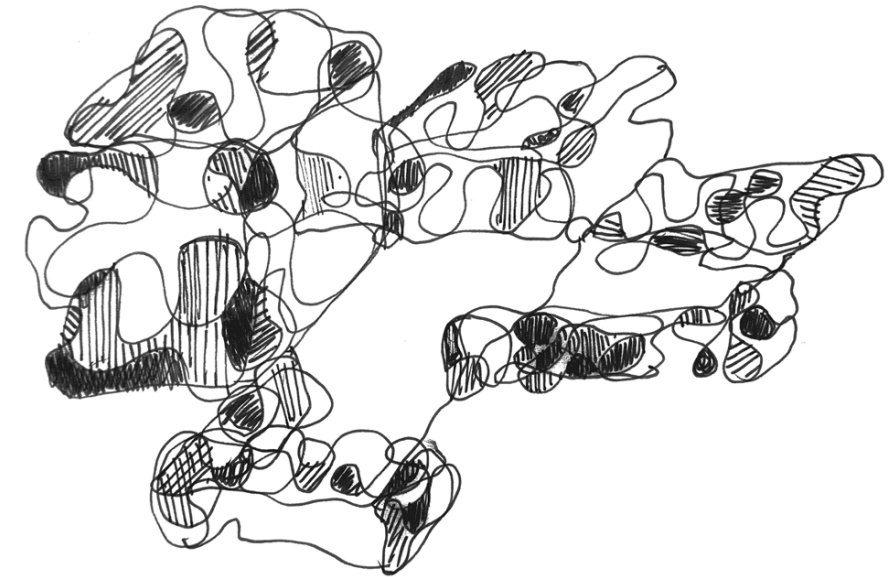
15. The Process of Efflorescence forming

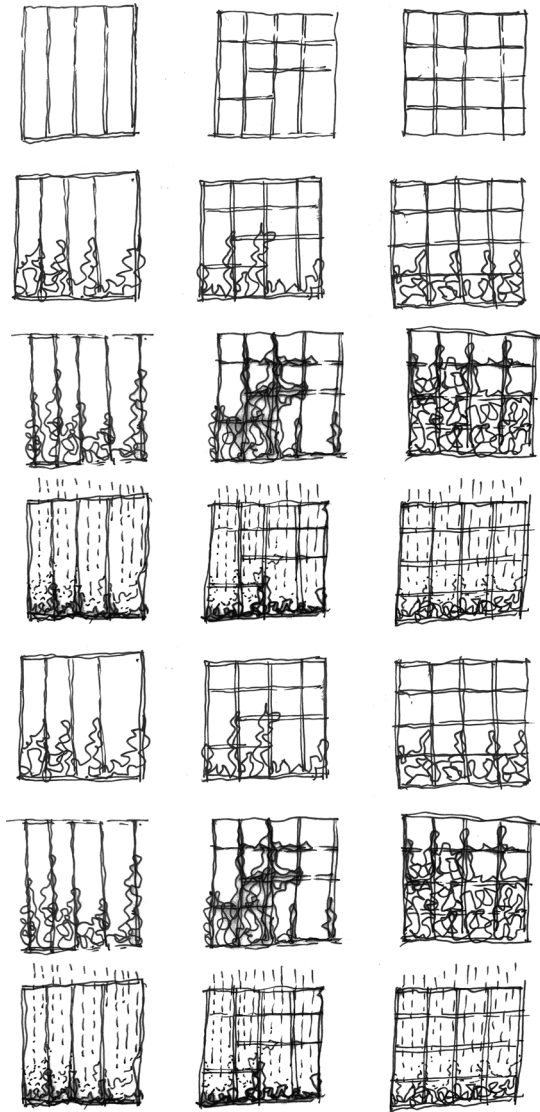
Developing an Approach

The idea of an architecture of weathering is born out of the notions describe in this section, which are derived from explorations into the concept of weathering often in the absence of architecture itself. The accumulation of these ideas guided the conception of an architectural approach early on in the process. The architecture is to embody the qualities that have been discovered to be embedded in weathering, the inevitable natural process of erosion which reveals through subtraction and presences time through layers of addition.

The imagined architecture evolves and devolves over time as a weathered condition and is achieved by transforming the envelope elements into transient, semi-translucent screens which grow and dissolve depending on environmental conditions. This creates the condition of concealing and revealing (enclosing and exposing) spaces over time.

These elements, which hold space are imagined to be constructed out of a porous string like material which absorb saline water from saline ponds into its fibres that when exposed to solar evaporation, solid salt forms along the surface of the strings. This process allows the elements (horizontal and vertical) to continue to grow over time and eventually form a thick skin of varied salt formations. The salt forms can be harvested throughout the summer months due to sustained sun exposure. However, inversely in the event of summer rains or during winter when the weather is cooler and wetter, the walls ruinously dissolve, creating a devolved and condition of ruin quality.





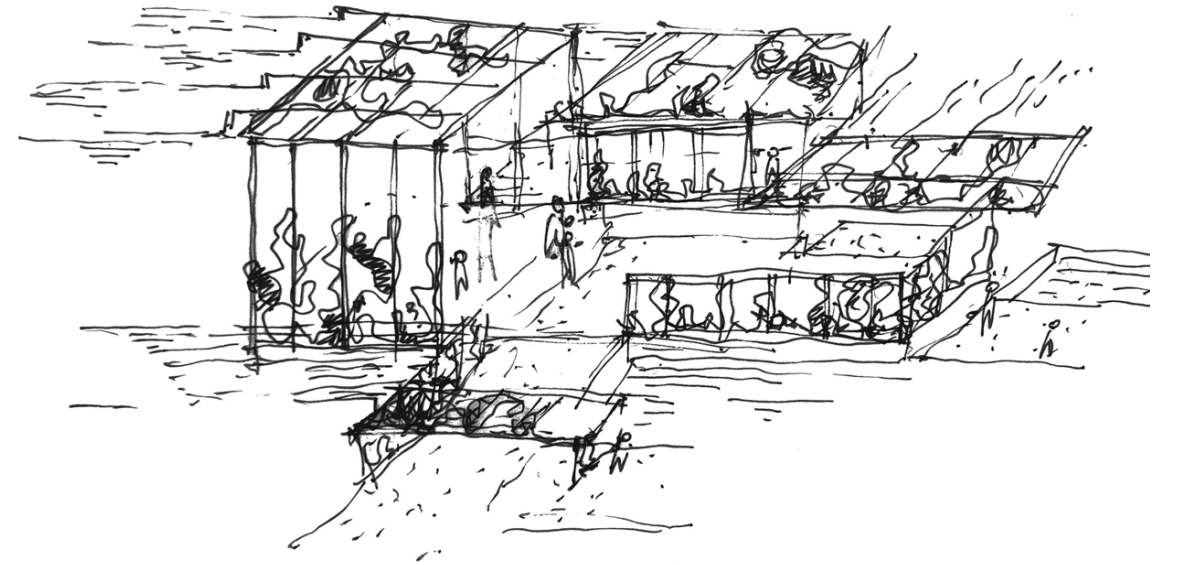
17. Evolving and Devolving Architectural Elements

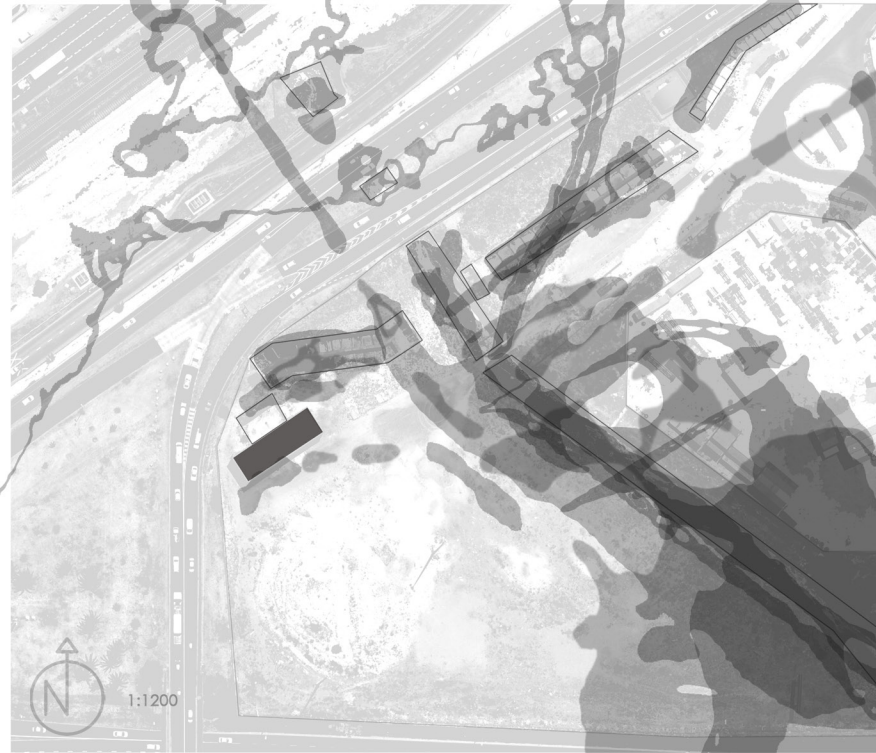
Although a permanent framework is provide, it affords the freedoms for an organic and ephemeral architecture to grow and dissolve. This produces a spatiality that in essence is unpredictable and transient as the salt will form a disappear naturally and according to nature.

The use of salt to form metamorphic architectural elements such as screen, wall or roofs, which come and go, shifting and changing, is chosen because as a material it embodies weathering and it can be a productive by-product of a weathering architecture. A duality is achieved in this materiality as it is productive and scientific but affords poetic expression.

18. Weathering Architecture (Opposite)

The metaphorical exploration of salt as weathering evidently allowed an architectural approach to be realized, one which erodes and grows as salt does, however one that is poetic and productive.





19. The Site at the Historic Dissolved Salt River Mouth

02

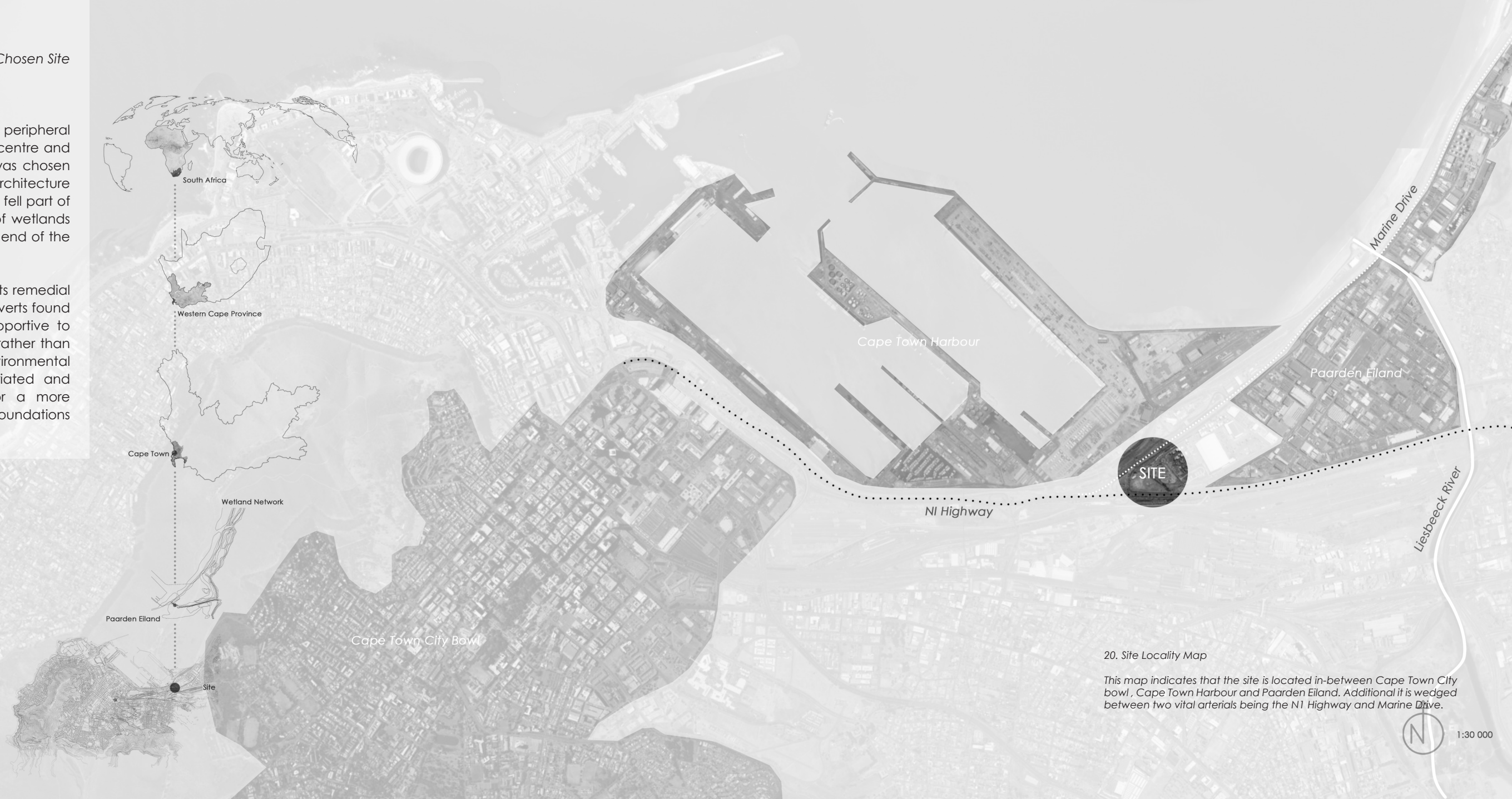
A SITE IN A DISSOLVED LANDSCAPE

—
*A Historical Estuary
A Dissolved Estuary
A Once Transient Landscape
A Scarred Waterscape
A Site of Traces
A Past of Ruin
The Salt River Power Station*

Locating the Chosen Site

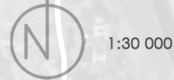
The dissertation project finds itself in a peripheral condition on the edge of Cape Town city centre and on the edge of Paarden Eiland. The site was chosen as it presented interesting potentials for an architecture of weathering. This is because the site once fell part of a weathered landscape, a wider system of wetlands in the form of salt river estuary at the lower end of the network.

In addition to this poetic potential it presents remedial potential as the abandoned water inlet culverts found on the site revealed the sites past as supportive to the old Salt River Power Station. Therefore rather than infrastructures that supported much environmental damage the culverts can be reappropriated and imagined as infrastructures that look for a more sustainable future through providing the foundations and source for saline crop research.



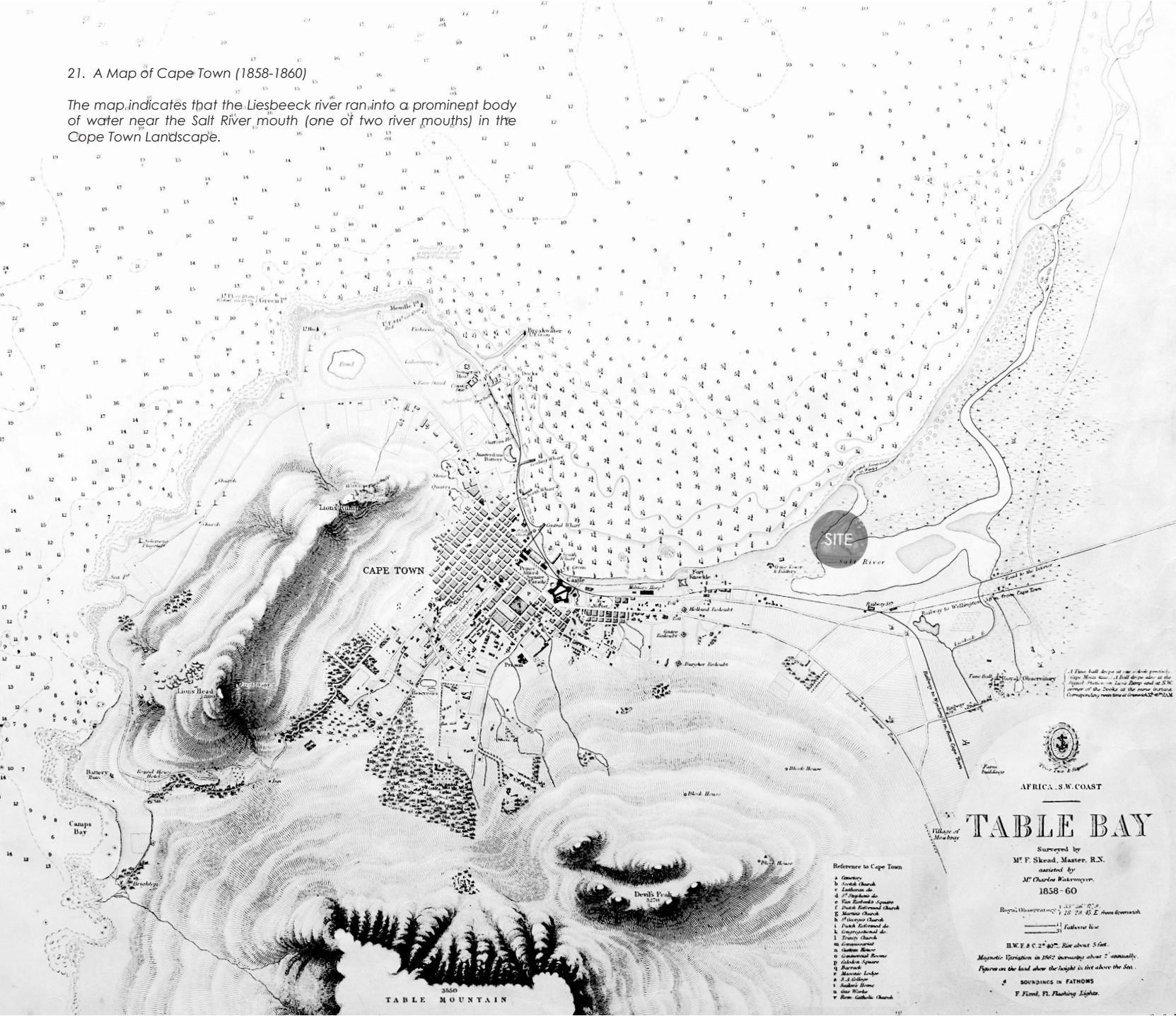
20. Site Locality Map

This map indicates that the site is located in-between Cape Town City bowl, Cape Town Harbour and Paarden Eiland. Additional it is wedged between two vital arterials being the N1 Highway and Marine Drive.



21. A Map of Cape Town (1858-1860)

The map indicates that the Liesbeeck river ran into a prominent body of water near the Salt River mouth (one of two river mouths) in the Cape Town Landscape.

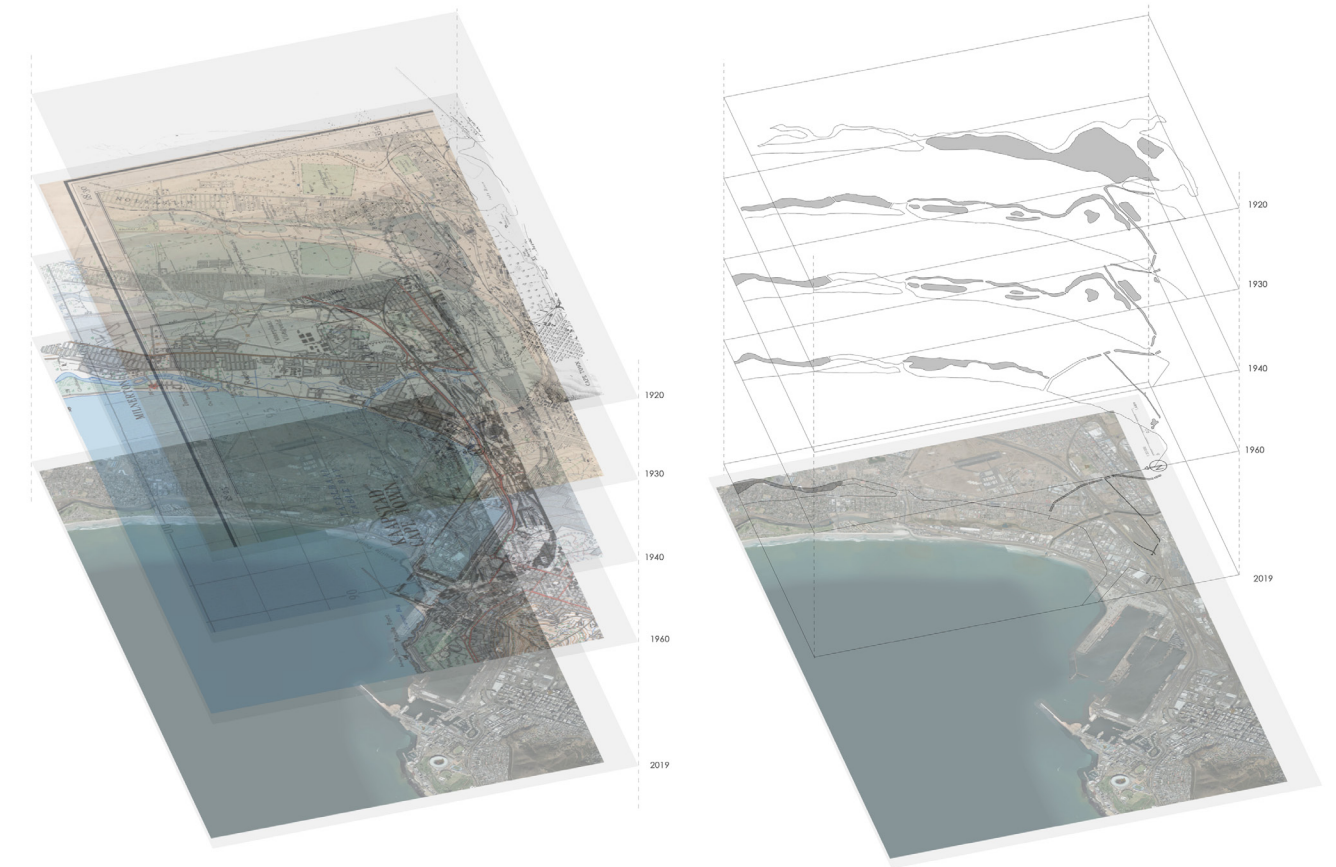


A Historical Estuary

It has been recorded in as early as 1662 that the Liesbeeck River ran into the Salt River estuary (Belcher and Grobler, 2016) which then entered Table Bay at two points. Therefore Paarden Eiland was effectively a very large sand bank and historically a true island with only one point of entry and exit (Schietecatte and Hart, 2015). The northern of the two mouths enters Table Bay at a similar point that the Liesbeeck does today. The estuary and its second connection to the sea are no longer present in today's landscape. The Salt River estuary has since dissolved into disappearance.

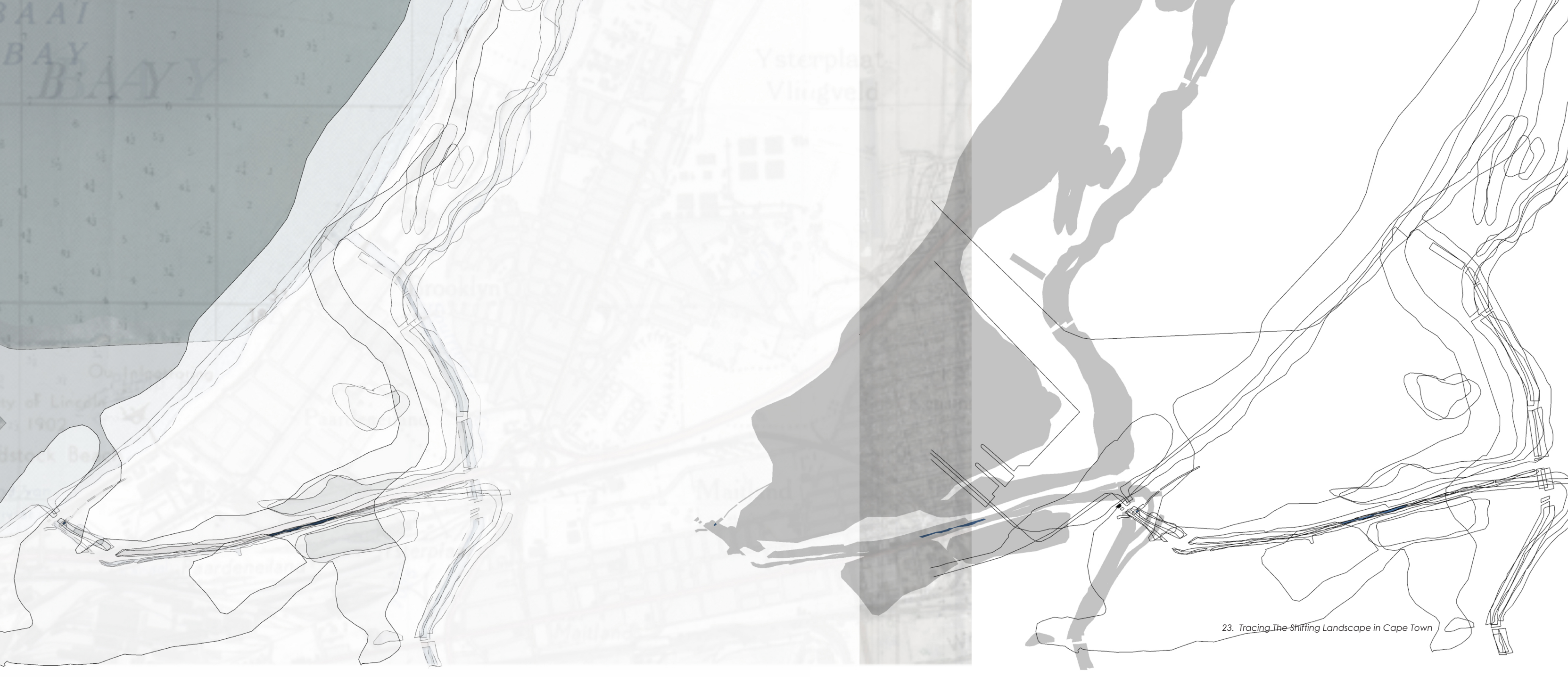
Anne Spirn (1984) in *The Granite Garden*, argues that nature permeates the city and creates bonds between the city, air, water, earth and other living beings. The nature of these elements is neither kind nor cruel to humankind but when they are acknowledged and utilized effectively are a useful and meaningful resource for shaping valuable urban habitats. However, it is when they are ignored, disrupted and undermined that they have the tendency to create problematic ecological and living conditions in cities. The disappears of the Salt River estuary, a valuable natural resource and habitat of cultural significance, for development exemplifies a neglect and disregard for natural systems. The considerably sized estuary of the past would have been a resource and waterscape for cattle, indigenous grasses and valuable high quality fishing. The essentially very contained estuary area would have been habitat for various fauna and flora, which no longer thrive there today.

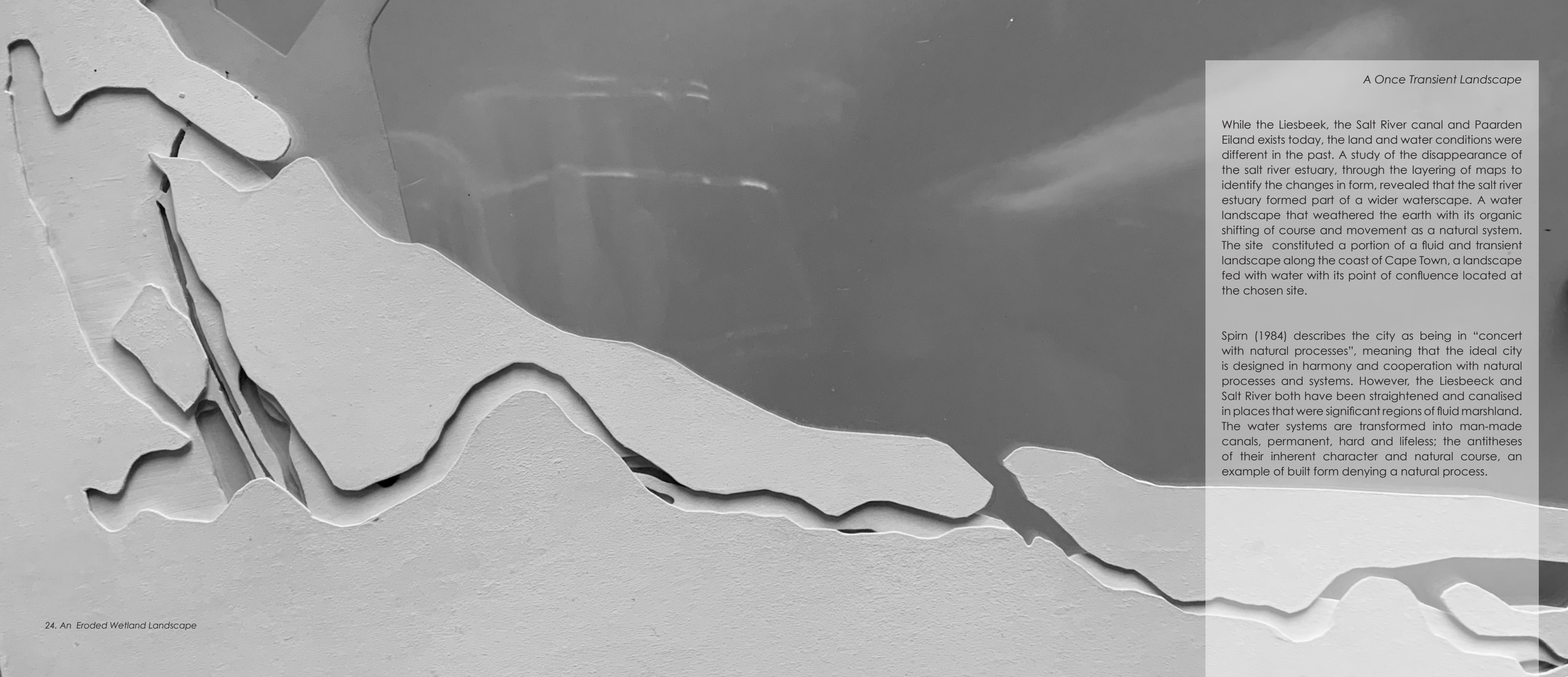
The erasure of the estuary began in the early 20th century with the construction of marine drive in 1912, separating the estuary from the sea and when large portions of the estuary were drained to make provisions for the development of the railway (Schietecatte and Hart, 2015). Furthermore the construction of the N1 and resulting canalisation of the Salt River created further devastations to the estuary and its network (Paarden Eiland Local Area Spatial Development Framework, 2015). According to Spirn (1984) this disregard of the natural process in the city has always been and will always be detrimental and costly, where the cost extends also to the quality of urban life. The potential for the natural environment to contribute to a unique, memorable and meaningful urban from is lost.



22. 3D Map Overlay and Tracing

It was observed through the layering of maps and the tracing of waterscape that the disappearance of the salt river estuary began in the early 20th century. The water landscape naturally shifted however artificial intervention caused this fluidity to be hindered and resulted in the ruin of the waterscape





A Once Transient Landscape

While the Liesbeek, the Salt River canal and Paarden Eiland exists today, the land and water conditions were different in the past. A study of the disappearance of the salt river estuary, through the layering of maps to identify the changes in form, revealed that the salt river estuary formed part of a wider waterscape. A water landscape that weathered the earth with its organic shifting of course and movement as a natural system. The site constituted a portion of a fluid and transient landscape along the coast of Cape Town, a landscape fed with water with its point of confluence located at the chosen site.

Spirn (1984) describes the city as being in “concert with natural processes”, meaning that the ideal city is designed in harmony and cooperation with natural processes and systems. However, the Liesbeek and Salt River both have been straightened and canalised in places that were significant regions of fluid marshland. The water systems are transformed into man-made canals, permanent, hard and lifeless; the antitheses of their inherent character and natural course, an example of built form denying a natural process.

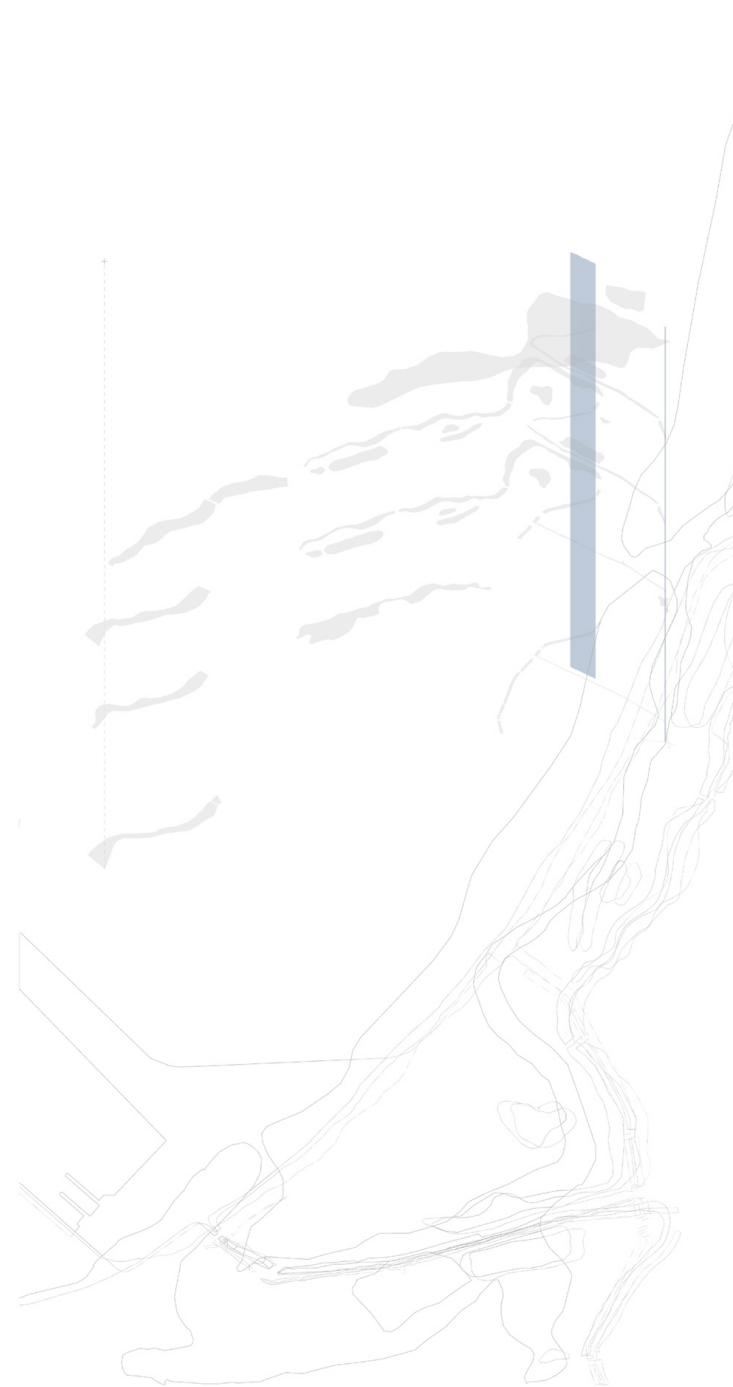
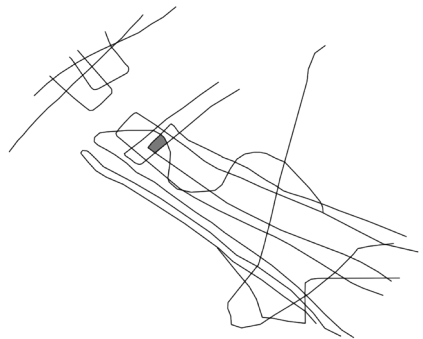


A Scarred Waterscape

The Salt River estuary of the past was connected to a wetland system that extended as far northwards to Rietvlei. Zoarvlei once was a salt-water ecosystem and was connected to the Diep River wetland (which rather than flowing through the Zoarvlei into the ocean at the Salt River estuary as it did) currently finds its mouth at Lagoon beach. Over the years development favouring transport systems and the dissolving of the Salt River Estuary has caused Zoarvlei to be transformed into an isolated and involuntary freshwater wetland. Therefore the demise of the salt river estuary is not only a loss of a valuable landscape culturally and ecologically but has essentially disrupted a broader network of wetlands causing this landscape to be weathered.

A Site of Traces

The site is located within the weathered landscape (A landscape of wetland systems that once shifted as a weathered condition in the past and presently a deteriorated landscape) and is a site of the last visible evidence of the historical estuary. This visible evidence is the presence of water on the site in the Old Salt Canal. The Old Salt Canal present on the site remains in place of and in the same place as the once existing estuary. The canal although not in true embodiment of the once flourishing natural saline marshland nuances its past through the existence of water flowing through the site.



26. The Site once zoomed in on the Tracing (Opposite far left)

27. Locating the Site in Tracing (Opposite left)

28. A Thread Through the Site Locating Model Indicating Remains



29. Ruins on Site

Along with the entrance building and other transformers still needed by Eskom, the circulating pump house and inlet culvert are the only remains of the Salt River Power Stations.

30. Looking Back over the Old Salt River Canal (Opposite top)

31. The Existing decaying Bridge and an Old Pump House in the Distance (Opposite second top)

32. The Existing Old Pump House and Inlet Culvert (Opposite second bottom)

33. Existing Inlet Culvert and Internal Structure (Opposite bottom)



A Past of Ruin

Built form is the eradication and deterioration of the landscape. However on the contrary, the original landscape out of which cities rise, reclaims and triumphs in the demise of the built environment (Solnit, 2011). The built environment inevitably becomes entropic and presents a gradual return to the organic. The power in the ruin is its inextricably link to memory, as moments of the past embedded in the present and as reminders of what once was, guiding us in the landscape of passing time (Solnit, 2011).

Not only does the site contain traces of the Salt River estuary but it contains traces of the Salt River power station. Just as the traces of the estuary are in ruinous form whereby the canal represents the demise of the natural landscape, the traces of the Salt River Power station are in the form of neglected water basins. Although the site has a past that contributed to environmental destruction, an interesting tension is presented between a dark past function and the possibility for an environmentally responsible and remedial future programme.



The Salt River Power Station

According to Fowler and Bowen (2019), the water basins identified on the site once were operational open intake culverts for the Salt River 2 power station, which was decommissioned and demolished between 1995 and 1997.

The inlet culverts underpasses the Salt River Canal connecting a circulation pump house to the pump house at the Salt River power station. The intake and outfall canals were, and still are, below road level and are only partially visible from the road (Fowler and Bowen, 2019: 30). The outfall water was discharged onto the beach however with the harbour extensions in the 1970s, post land reclamation, the outfall was consequently extended below ground level towards the breakwater, as it is today. This outfall continues to form part of the Paarden Eiland storm water drainage system.

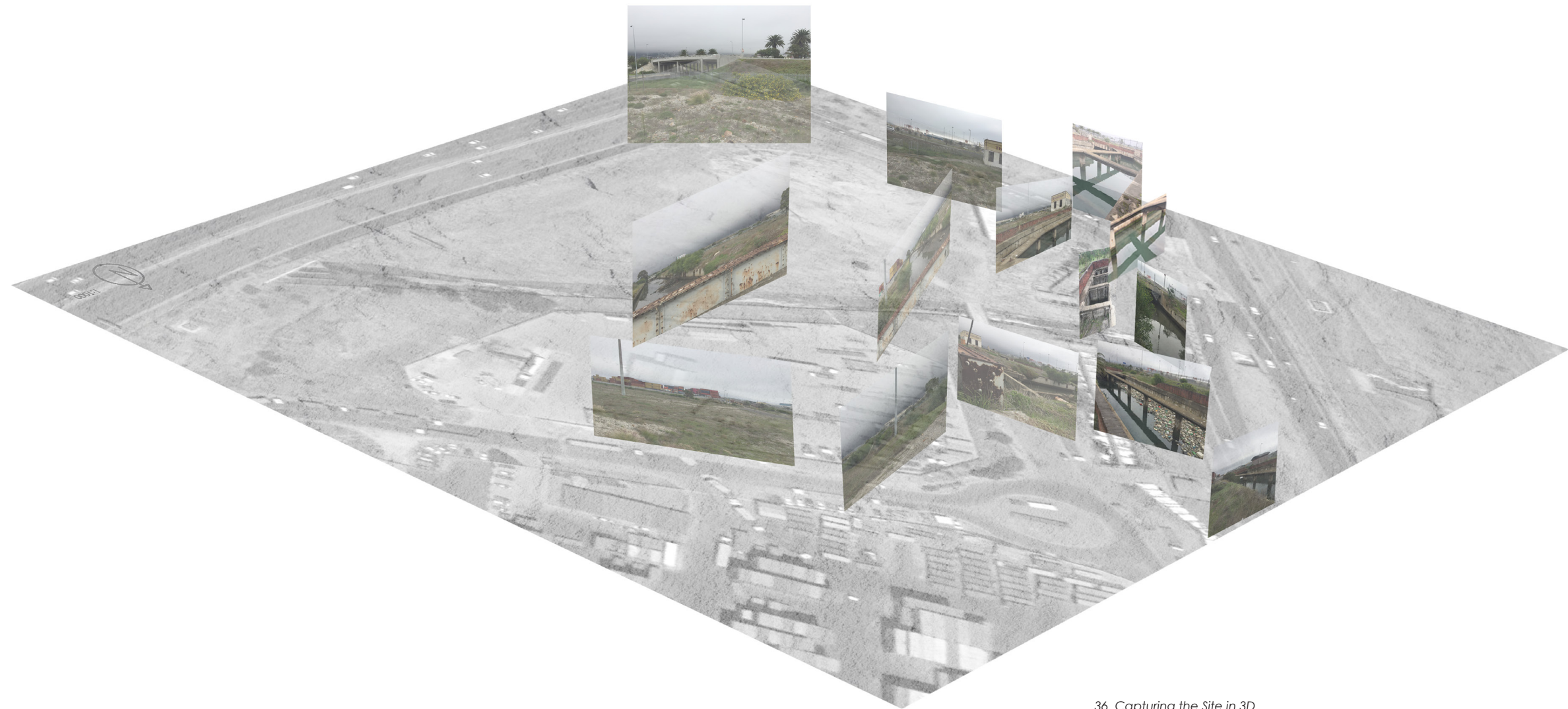
The process of electricity generation at the power station included the burning coal cooled with the seawater, explaining the absence of massive cooling towers and the presence of intake and outfall culverts. This cooling process created steam which then powered electricity generating turbines. Fowler and Bowen (2019) indicate that the Salt River power station was strategically located at the mouth of the Salt River in order to use sea water for cooling, confirming this as the location of the second of the two mouths of the estuary.

34. Salt River 1 and 2 (Top opposite)

Salt River 1 is on the left and the larger Salt River 2 is on the right, with outfall visible on the beach in the foreground.

35. Salt River 2 and Entrance Building (Bottom opposite)

The entrance building, constructed in 1928 is visible in front of the prominent Salt River 2. The entrance building was constructed to house the caretaker's quarters and was later developed into a clinic.



03

PROGRAM DEVELOPMENT

A Programme of Confluence

Studio H

S/Zout Pantry

Salt Crops Tested Form and Research Centre

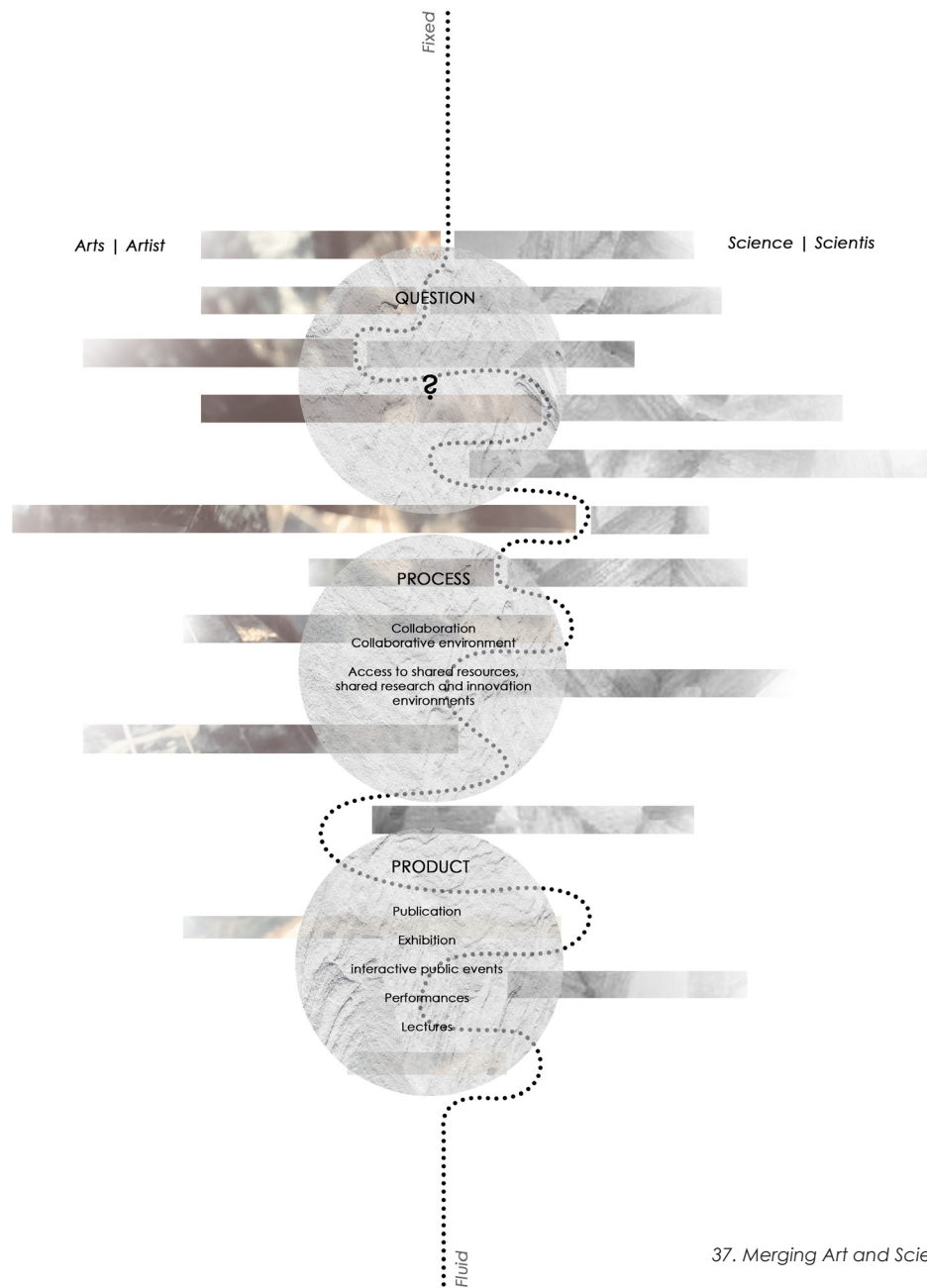
An Ephemeral Programme

Small Scale Salt Harvesting

Developing the String Harvesting Method

A Technical Exploration

Reintegrating an Estuarine Landscape



37. Merging Art and Science - Concept Diagram

An estuarine condition is the confluence of fresh and salt water. A decision was made for the programme to be the merging of the fields of art and science. Part of the programme is centred on saline crop research and the other is a temporal and multi- use event vessel, where landscape and salt production meshes the two programmes together.

Alan Lightman (2005), argues that sciences and arts provide complementary ways of looking at the world as they enhance each others qualities. Both are rooted in critical thought embodying human creativity, whether an answer is achieved or not. The sciences work on a clear problem where an answer exists. Contrastively, in the arts the question is often more enticing than the answer (Lightman, 2005). Nonetheless, artists and scientists share similar work processes allowing them to collaborate at any given stage of the scientific or creative process, whether it be in the questioning, research, product (outcome) or throughout all the phases. The most significant of the phases for collaboration would be the process or research stage of any project. This is because the sharing of an environment and research experience affords repeated interactions, (Gorges, Jones, Siu and Scott, 2017), allowing the separate fields to influence each another, challenging their respective thinking and improving the quality and complexity of the knowledge produced. Science being on the forefront of discovery, has always been a source of innovative ideas and artists flourish on ideas, however in turn art has much to offer sciences as they provide an alternative and essential store of ideas, metaphors, language and images (Lightman, 2005).

Studio.H is an existing local example of a collaborative, multidisciplinary studio which merges the disciplines of science and art. *Studio.H* describe themselves a “culinary-minded design team” (Studio H, 2019). The shared interest in culinary development provides a platform for both scientific and artistic innovation where the approach is centred on solutions for a more sustainable food future.

The studio is run by Cape Townian Hannerie Visser and is based in Cape Town and Amsterdam (Studio H, 2019). Their projects include the design of experience based events as well as some inhouse projects such as *Chips!* their digital culinary magazine, *Street Food Festival* and *FOOD XX* conference awards dinner for celebrating womxn in food (Studio H, 2019) and with particular interest, the *S/Zout* water shortage project .

38. *Studio. H* Experimenting for *S/Zout* Pantry (Opposite Top)

39. Testing and Tasting Process (Opposite Bottom)





This project is driven by research into saline tolerant crops (produce). It is known that almost 70 percent of the world's freshwater is used for the growing of crops. Therefore S/Zout imagines a culinary future where the water used for agriculture is seawater as freshwater is certainly a depleting resource. *Studio.H* is in partnership with Salt Farm Texel Netherlands. Together their research is centred on the impact seawater irrigation has on the edible properties of produce and the creative possibilities that emerge (Studio H, 2019). The aim of the project is to create and draw attention to the water scarcity problem that is faced world wide and which concernedly is at critical-level here in the western cape, South Africa .

Salt Farm Texel are already achieving measurable success in the decade they have been growing produce using seawater as irrigation. More specifically, potatoes strawberries, cabbage, lettuce, tomatoes and carrots have been yielding favourable results (Studio H, 2019). The S/Zout developed pantry for the future has envisioned cuisine such as "pickled green strawberries, carrot ketchup, cabbage marshmallows and seaweed crisps" (Studio H, 2019). These innovative food solutions are packaged in packaging designed in collaboration with another Cape Town design studio, Hoick making this project both rooted in the science and creativity (Art). The research and creative process, conducted by Studio.H, that has afforded confluence of the disciplines, is imagined for the site and programme of the saline centre. A creative research environment is proposed, which is inserted in a re-surfaced landscape and existing infrastructure, tied together by the ephemeral and productive process of growing and harvesting salt.

40. S/Zout Pantry Sea Water Cabbage (Top Left)

41. S/Zout Pantry Sea Water Cabbage Marshmallows (Top Right)

42. S/Zout Pantry Sea Weed Crisps (Bottom Left)

43. S/Zout Pantry Carrot Loops (Bottom Right)



artichoke



asparagus



beans



beetroot



broccoli



artichoke



cabbage



carrots



cauliflower



celery



collards



corn, sweet



cucumber



eggplant



escarole



lettuce, iceberg



potatoes, sweet



spinach



tomatoes, cherry



tomatoes, regular



turnips

Vegetable	Soil Yield	Water Hydroponic Yields	Salt Tolerance
Artichoke	3.5	4.4	M(T)
Asparagus	1.2	2.6	T
Beans, -bush	2.4	31.4	S
Beetroot	6.25	65.3	M(T)
Broccoli	3.75	14.5	M(S)
Brussel-sprouts	6.0	8.7	M(S)
Cabbage	10.8	43.6	M(S)
Carrots	6.25	98.0	S
Cauliflower	9.0	34.8	M(S)
Celery	25.0	130.7	M(S)
Collards	5.0	21.8	
Corn, sweet	3.0	12.3	M(S)
Cucumbers	5.4	58.1	M(S)
Eggplants	7.5	24.2	M(S)
Escarole	7.0	43.6	
Lettuce, iceberg	10.8	31.4	M(S)
Lettuce, -leaf	7.5	43.6	M(S)
Onions, -green	48.0	65.3	S
Onions, -white	35.0	65.3	S
Parsnips	4.0	65.3	S
Peas	2.4	41.8	M(S)
Peppers, -green	9.6	49.0	M(S)
Potatoes, -idaho	13.5	62.7	M(S)
Potatoes, -sweet	7.0	52.3	M(S)
Squash, -summer	4.0	145.2	M(T)
Squash, -winter	8.75	193.7	M(S)
Spinach	3.6	6.5	M(S)
Tomatoes, cherry	4.0	72.6	M(S)
Tomatoes, regular	10.8	145.2	M(S)
Turnips	10.0	65.3	M(T)

(Willis, 2019)
(Tanji and Kielen, 2002)

The scientific aspect of the programme is a salt crop research centre and test farm where research is to be conducted, information collected and knowledge produced regarding crops in a South African environment which can withstand seawater irrigation.

Sea water along South Africa's west coast ranges approximately from a narrow 34,7 to 35,4 ‰ salinity (Republic of South Africa, Department of Environmental Affairs, 2018). The tolerance of crops can be divided into 3 categories; Tolerant, Moderate and Sensitive. Sensitive crops can tolerate a salinity of 0 - 8dS/m (0-0.64%). Moderate crops can tolerate a salinity of 9 - 23 dS/m (0,64 - 1,92 ‰), Tolerant crops can tolerate a salinity of 24 - 32 dS/m (1.92 - 2.56%) and a salinity above this is usually not acceptable for most crops (Tanji and Kielen, 2002). This indicates the need of 3 variant sections for farming and testing saline crops where they can be separated into their categories of tolerance and the irrigation water can be diluted and controlled accordingly. The research centre is to manage and control the operation of the test farm as their source of data. In the table opposite: T= Tolerant, M= Moderate, and S= Sensitive. These are possible crops to be grown.



45. Salt Harvesting Experiment Before Crystal Formation (Opposite)

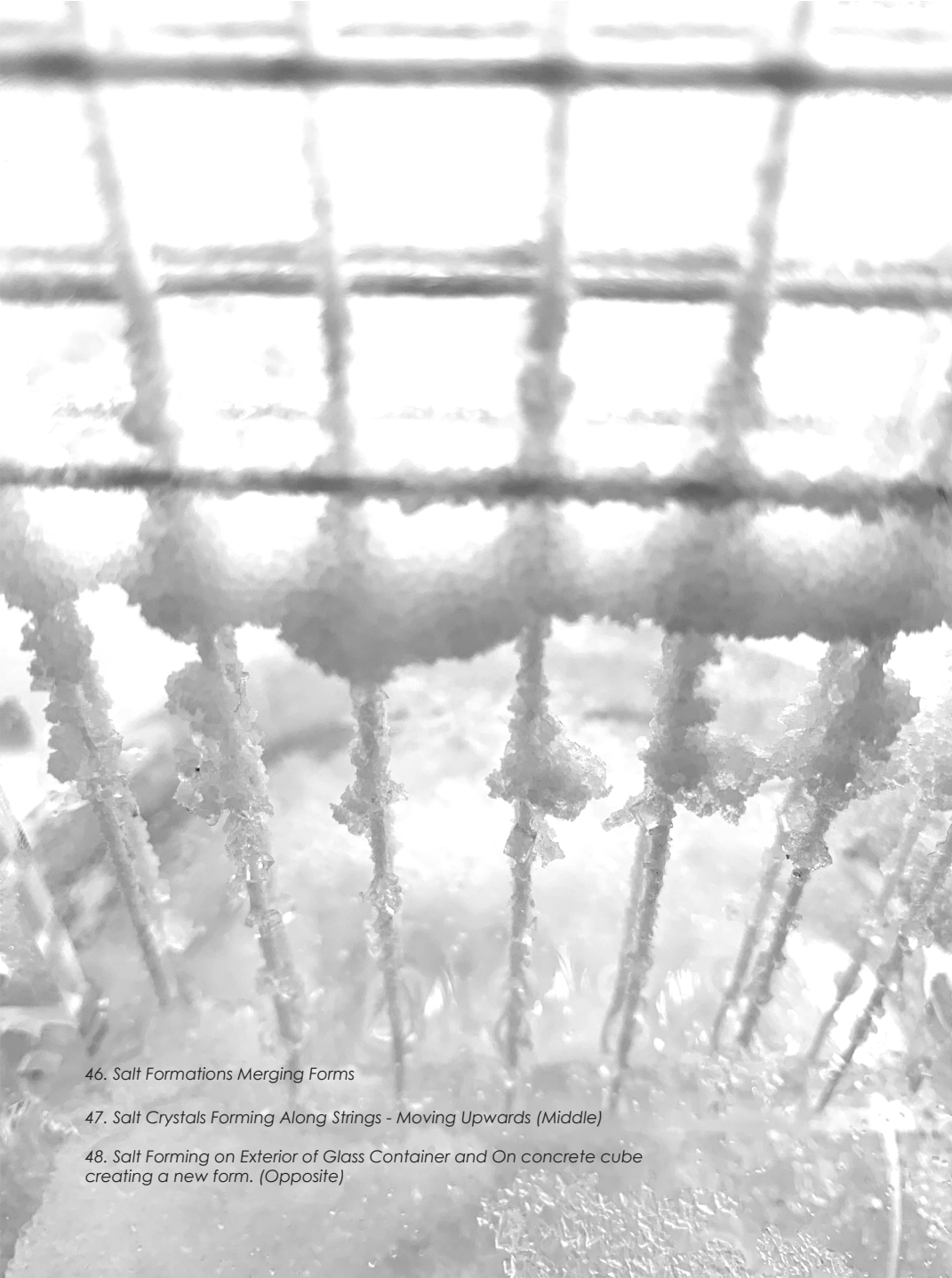
45. Salt Crystals Forming on Grid Stings



An Ephemeral Programme

As expressed previously in the report there was a desire to create architectural elements that evolve and devolve (grow and dissolve), and so an experiment was conducted in order to test if salt can be grown vertically along strings suspended in a saline solution as an alternative to the pond system.

The porous strings are able to transport the saline solution within them allowing the salt to form along their surfaces, and finally morphing into a crusty saline form. The strings provide a network for a fluid form to emerge. This experiment combines rigidity (science) and fluidity (art), embodying the merging of the two. This imagined architecture is translated into a method of ephemerally meshing programme where the joining the art and science is achieved through the productive and transient harvesting of salt.



46. Salt Formations Merging Forms

47. Salt Crystals Forming Along Strings - Moving Upwards (Middle)

48. Salt Forming on Exterior of Glass Container and On concrete cube creating a new form. (Opposite)





49. Experiment Development , Salt Growth and Transience

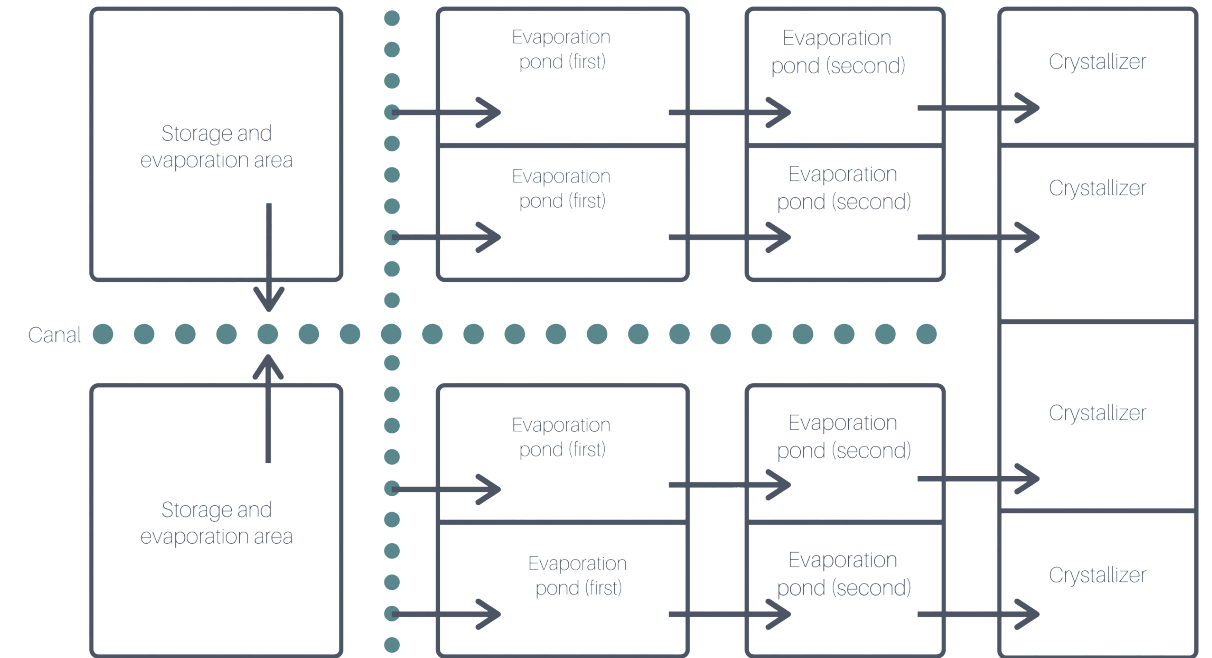
50. Development of Salt Forming and Thickening Strings (Middle)

51. Development of Salt Formations of Concrete Block (Opposite 2)

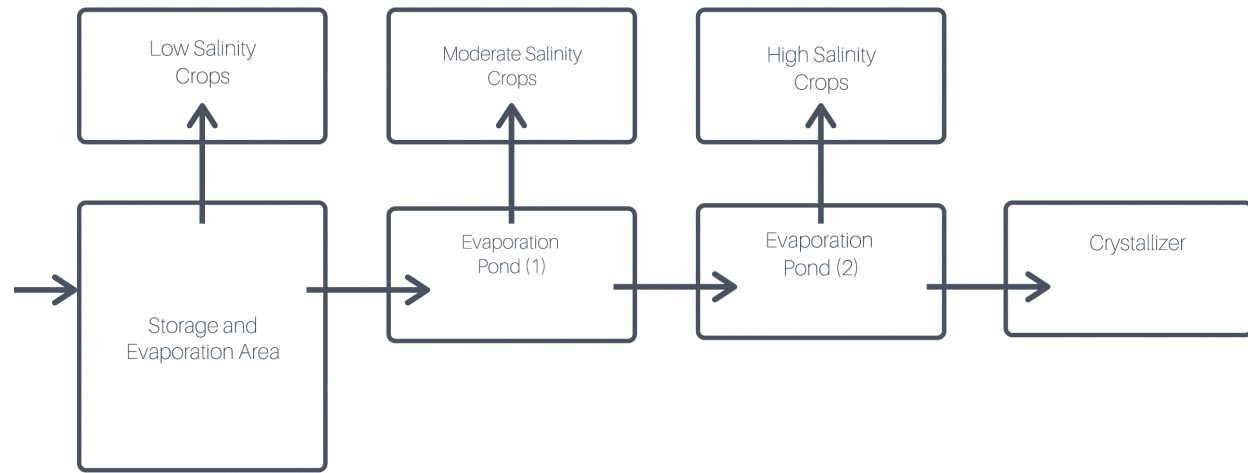
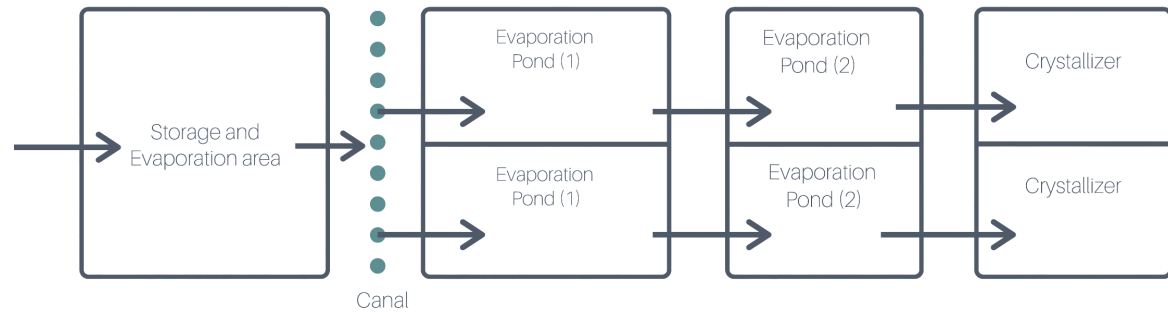
Small Scale Salt Harvesting

Typically salt from sea water is harvested through a series of evaporation ponds with depths between 100mm to 600mm. An artisanal salt works is configured in such a way that at the start of the production season all the ponds are filled with seawater as a result of influx of water supplied by tidal flow. In addition to this, small pumps, mills and other manual water systems are used to transport, manipulate and control the flow of water and salt levels (Lavens,1996).

The size of the storage and evaporation area is approximately 4000 square meters, the first and second evaporation ponds are approximately 2000 square meters and the crystalizers can be between 2000 and 5000 square meters (Lavens,1996). The process works through evaporation. Consequently before the next production period all the water of higher salinity is concentrated in a separate pond allowing all the other ponds to be refilled. This again evaporates and is concentrated in a second pond allowing two different salinities and processes in different stages to run concurrently. Following this initial stage, for the remaining production time the water remains in their separate ponds until a predetermined salinity level is reached. The water is then allowed to flow into a following pond where the salinity increases further until final crystallization. Once the ponds are drained it is customary to leave the ponds dry and exposed to the sun so that the bottom gains heat which once filled further enhances the evaporation process (Lavens,1996), hastening the production speed.



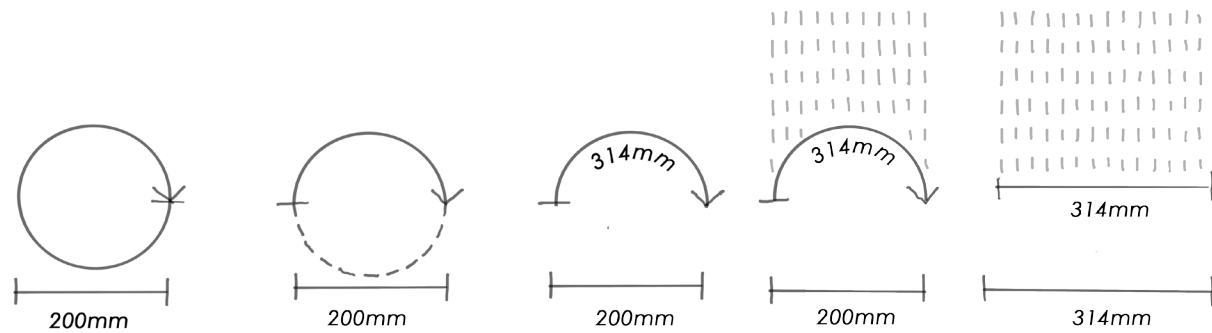
52. Typical Layout of a Small Scale Salt Works (Lavens,1996)



The string method of harvesting salt is developed according to the basic principles of the typical pond system. Due to scale of the site and salt works required, (which intended for an ephemeral architecture and atmosphere) the typical layout has been converted to only one branch of the harvesting system. In addition, the system is to be integrated into the saline crop test farm. After each evaporation stage the water is directed to the farm into three varying salinity levels for the tolerant, moderate and sensitive crops.

The strings are converted into a pipe system that like strings can carry and hold saline water, while the pipe wrapped in a porous nylon skin allows crystals to attach and form. This system is chosen over the pond system not only because of the desired atmospheric and architectural qualities but also because it affords a more efficient evaporation and heating to land cover ratio. Meaning that less area has to be covered by pipes in order to achieve similar evaporation areas stipulated by the typical pond layout.

The surface of a 200mm diameter piper exposed to the sun is half its circumference ($628/2 = 314$). 314mm covers 200mm of land when curved. However when laid flat covers 314mm of land, with the same surface area exposed to the sun (314mm). This is more efficient because the same surface area exposed to the sun in a curve covers 37% less land than a flat surface. Therefore only 63% of the land stipulated by the typical ponds system is required. When pipes are used with the same evaporation surface areas as the ponds sizes are reduced to: Storage and Evaporation = 2520 sqm, Evaporation 1, 2 and crystallisers, each = 1260sqm.



53. One Branch of Typical Salt Works ponds (Opposite Top)

54. Integrating the Saline Crop Test Farm (Opposite Middle)

55. Efficiency of Curve Over Flat Surface Diagrams (Opposite Bottom)



Storage and Evaporation
4000sqm

Evaporation Pond 1
2000sqm

Evaporation Pond 2
2000sqm

Crystallisers
2000sqm



Storage and Evaporation
4000sqm x 63%
=2520sqm

Evaporation 1
2000sqm x 63%
=1260sqm

Evaporation 2
2000sqm x 63%
=1260sqm

Storage and Evaporation
2520sqm
Evaporation 1
1260sqm
Evaporation 2
1260sqm
Crystallizers
1260sqm

Sensitive Crops
Moderate Crops
Tolerant Crops

Crystallizers
2000sqm x 63%
=1260sqm

The more efficient evaporation system is further converted into a vertical system where water of different salinities move vertically into the next phase instead of horizontally into the next pond, transforming the harvesting system into roof scape rather than a landscape.

56. Typical Pond Areas On Site (Opposite)

57. Pipe System with Adjusted Sizes on Site and Layered System

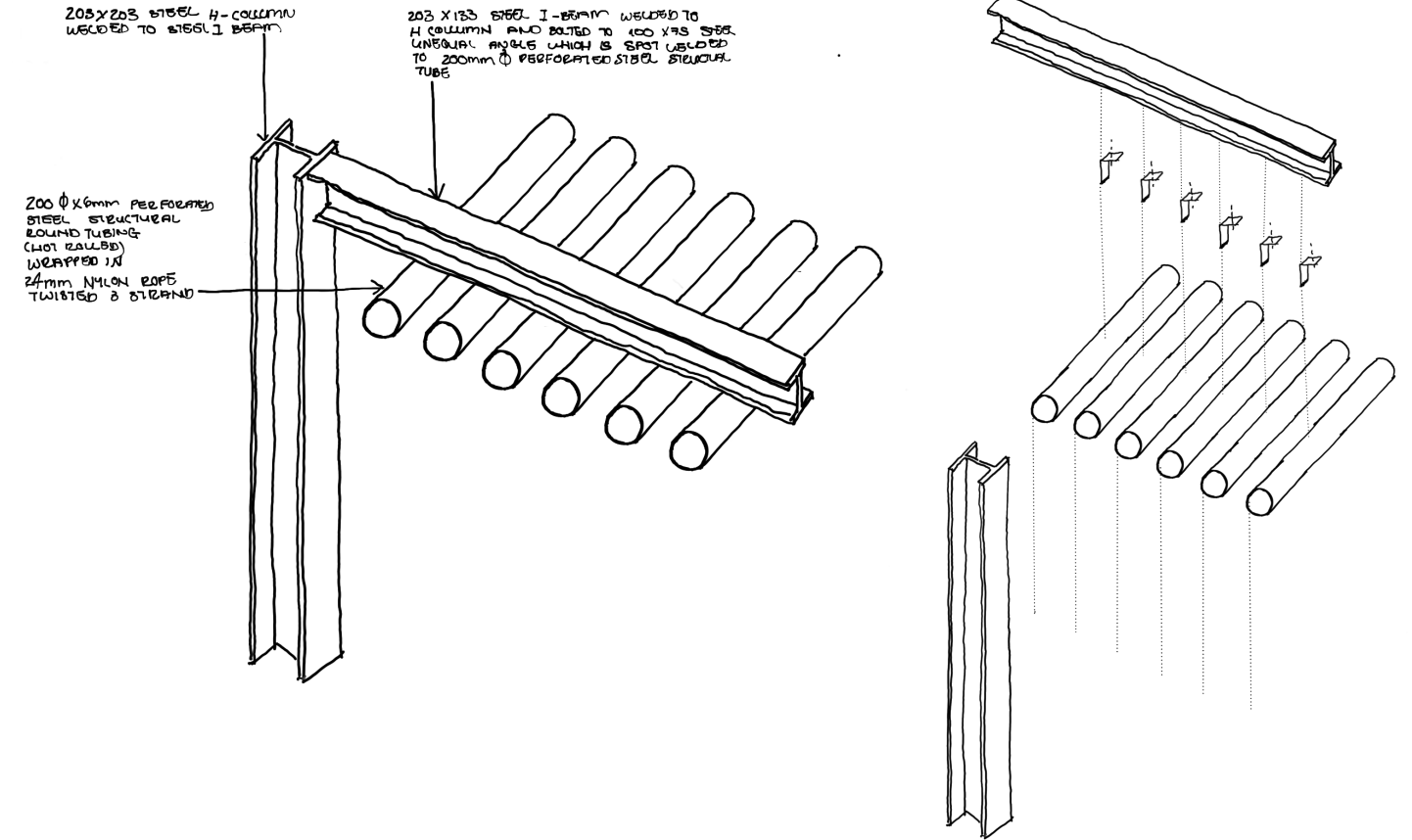
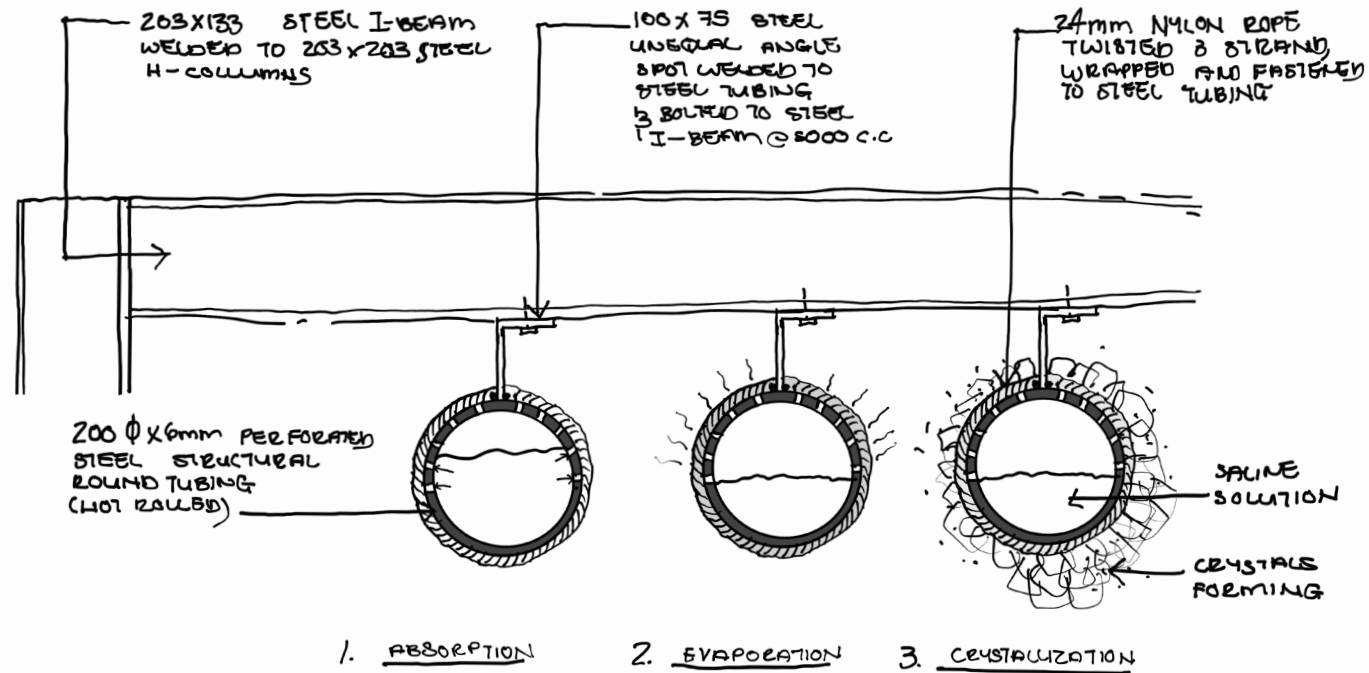
Seawater From Inlet Culvert

0 0.0175 0.035 0.07 km

0 0.0175 0.035 0.07 km

A Technical Exploration

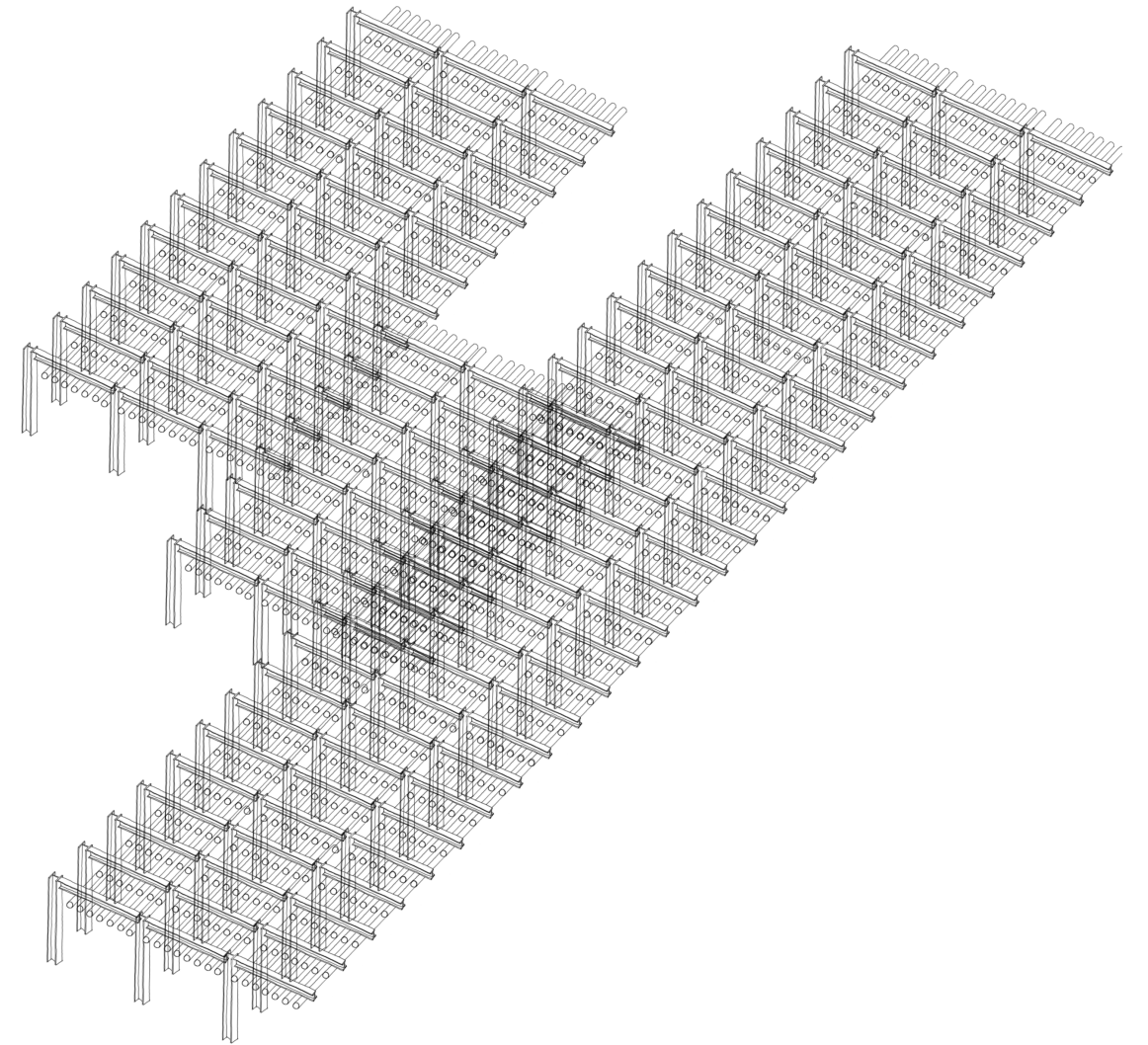
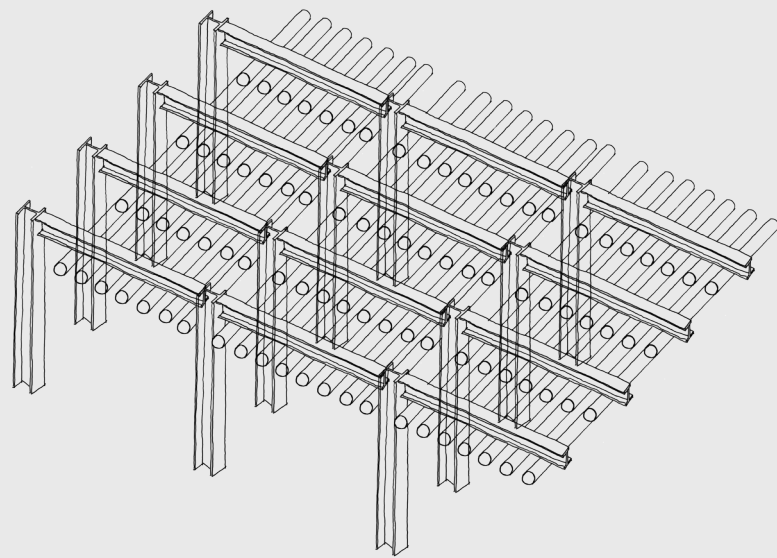
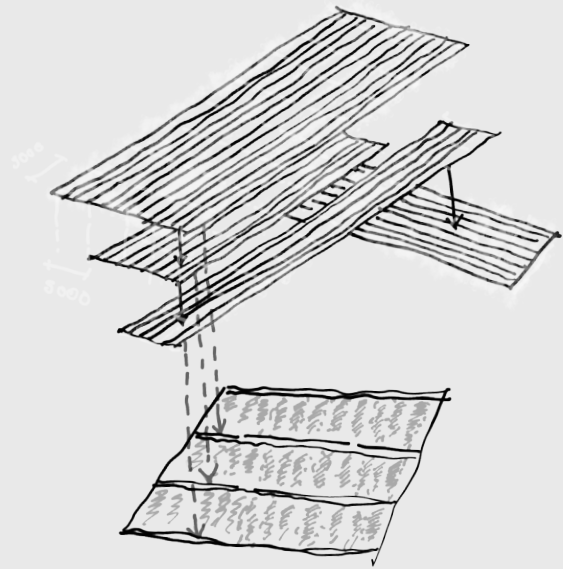
The technical system is comprised of 203mm x 203mm steel H-columns and 203mm x 133mm steel I-beams on a 5m x 5m grid. 200mm diameter perforated steel structural round tubing wrapped in 24mm nylon rope are suspended by steel angles from the steel I-beam. The saline water, that is pumped into the controlled pipe system, is absorbed by the nylon rope which then evaporates causing salt crystals to form on its surface.



58. Technical Detail Drawing of Pipes in Section (Opposite)

59. Pipe System Axo (Top Left)

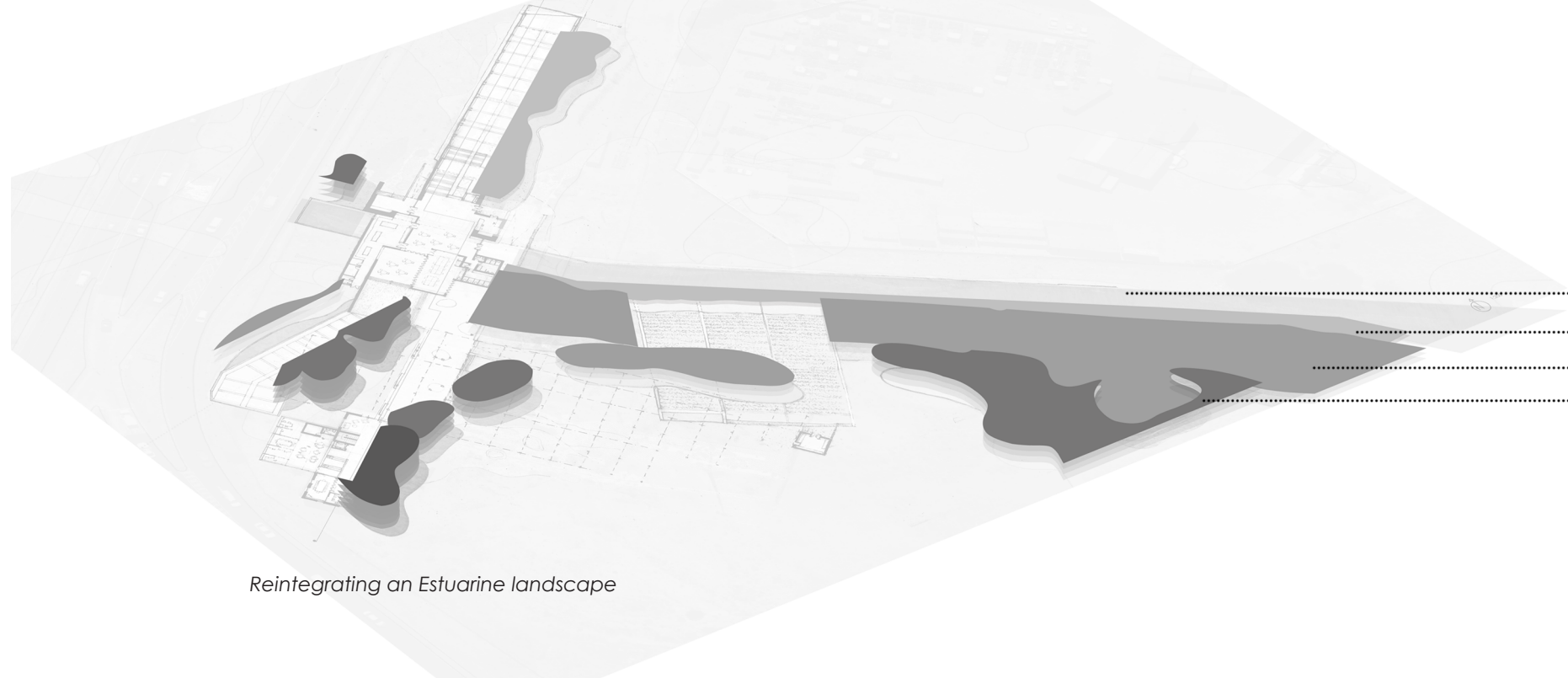
60. Pipe System Exploded Axo (Top Right)



61. Overall Exploded System Diagram (Opposite Left)

62. Modular System 3D Sketch (Opposite Right)

63. 3D Modular System Development into Layered Roof (Top)



.....Canal Water System
Reedbed Filtration Zone
Lower Tidal and Submerged Zone
Supratidal Zone

Reintegrating an Estuarine landscape

According to the City of Cape Town's Bio-regional Plan (2015), the vegetation of the wetlands that were once connected to the site are classified as Cape Estuarine Salt Marshes. Therefore the reintegration of such vegetation into the landscape is proposed.

The proposal includes the implementation of estuarine flats and low riverine terrace systems which support various complexes of low shrublands and herblands, predominantly succulent chenopads and various other food-tolerant halophytes which can be located on upper (supratidal) and middle tidal zones. Salt-marsh meadows of rushes and sedges can be placed in the lower tidal zones, with *Spartina* swards and temporarily submerged *Zostera* sea meadows at the lower end of the tidal zone (Mucina and Rutherford, 2006).



chenolea diffusa



samolus porosus



cotula filifolia



triglochin bulbosa



romulea tabularis



spergularia media



plantago crassifolia



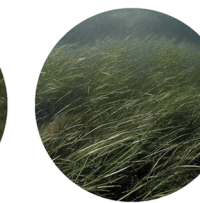
juncus kraussii



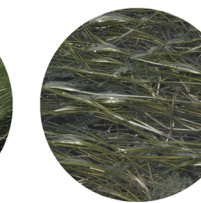
spartina maritima



Ruppia cirrhosa



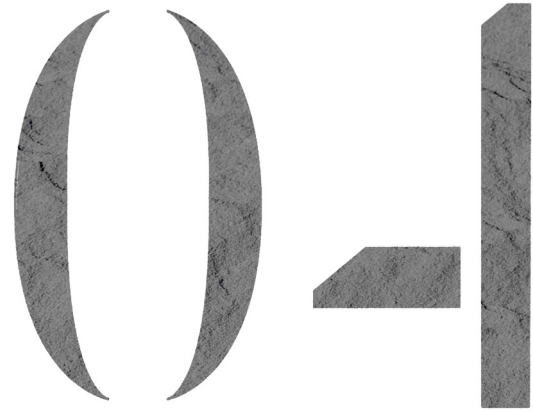
ruppia maritima



zostera capensis

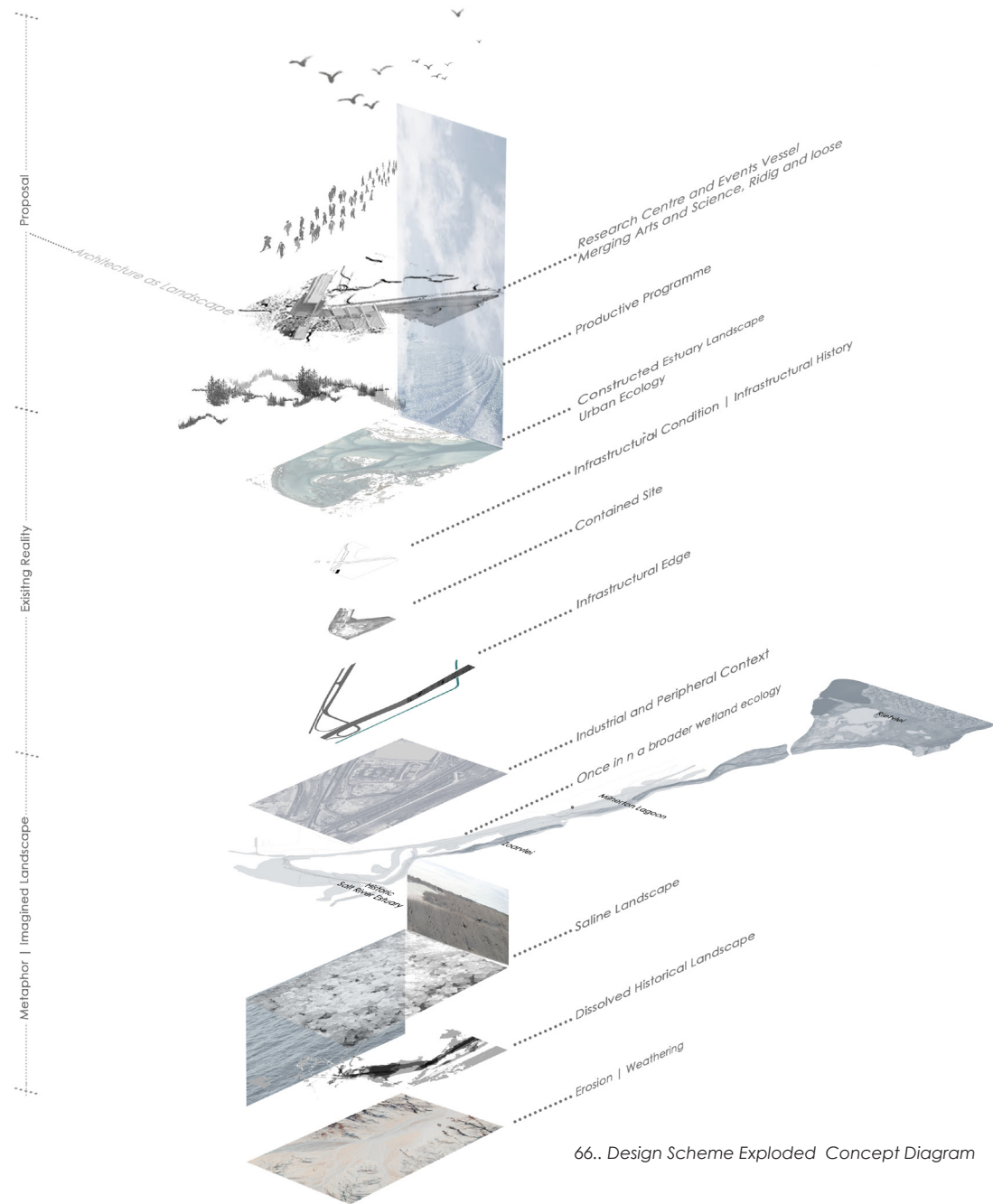
SUPRATIDAL AND MIDDLE TIDAL ZONES
 Low Shrublands and Herblands
 LOWER TIDAL ZONES
 Salt Marsh Meadows
 SUBMERGED ZONES
 Sea Meadows

64. Estuary Terraces on Site (Opposite)
 65. Estuary Plants According to Mucina and Rutherford (2006)



DESIGN DEVELOPMENT

- A Concept Diagram*
- A Saline Atmosphere Exploration*
- Re-Surfacing the Estuary Through Subtraction*
- Micro Embodiment of a Macro Idea*
- Fixed and Loose Site Edge*
- Process of Concept Models*
- Design Strategies*
- Work Drawings*

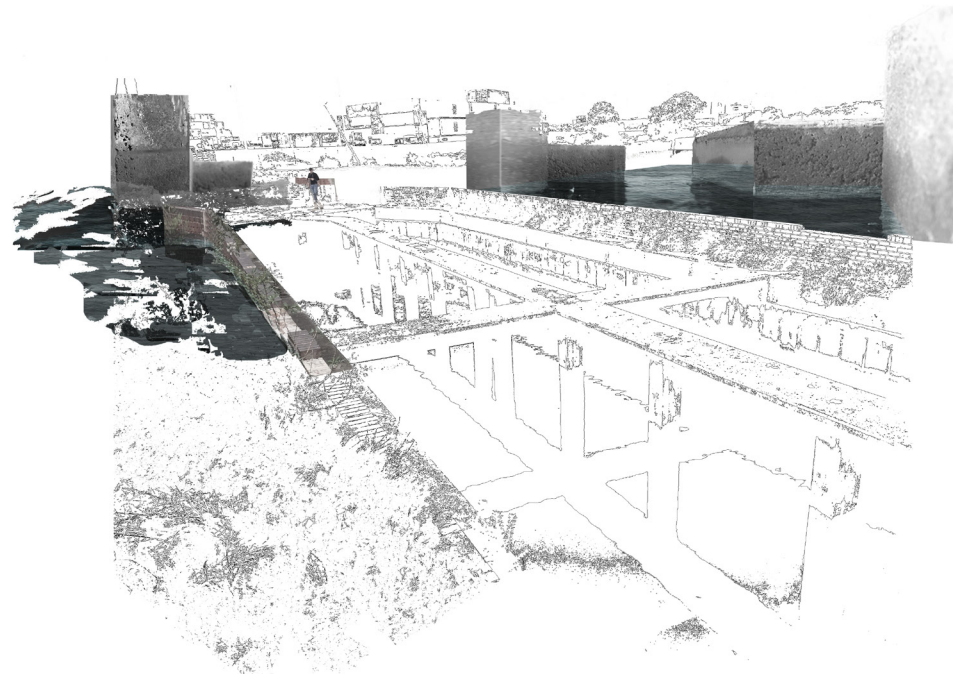


66.. Design Scheme Exploded Concept Diagram

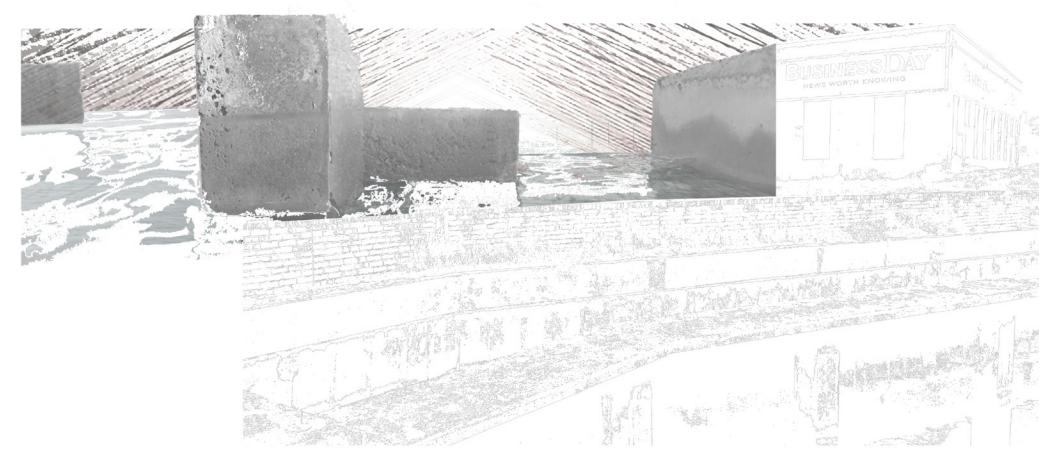
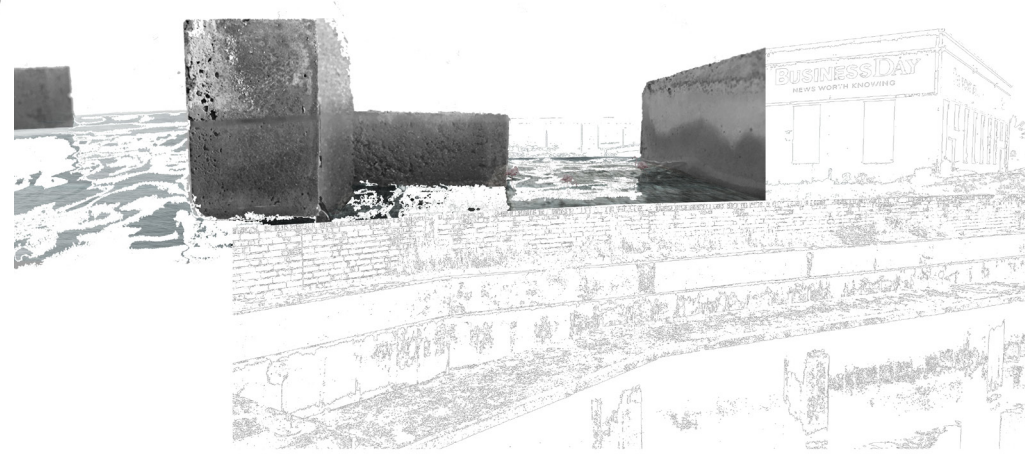
A Concept Diagram

The design of the saline centre developed according to the layers of investigation. From an interest in erosion and a dissolved saline landscape to a site within a weathered landscape and industrial context that has abstractly retained its past condition of confluence in the intersection of the old salt river power station seawater inlet culverts and the old salt river canal, a weathering architecture finds its place. A saline centre which meshes research, event, production and landscape, revealing through subtraction and presencing time through a process of growing (addition).

A combination of heavy and light matter was tested in a series of collages exploring an atmosphere of material juxtaposition. The monolithic saline forms contrast the lightness and translucency of the water on the site, the still forms set in a landscape of fluctuation and process. This embodies the condition of the inlet culvert, a combination of concrete (hard infrastructure) form and the movement of water (soft infrastructure). A reflection of the fluctuating landscape is in the roofscape that is strung between the monolithic forms, meshing them together to create a loosely defined weathered space of temporal activity and process.



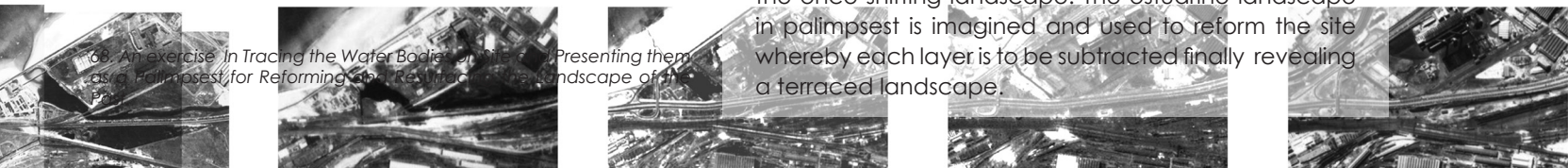
67. Atmospheres Exploration



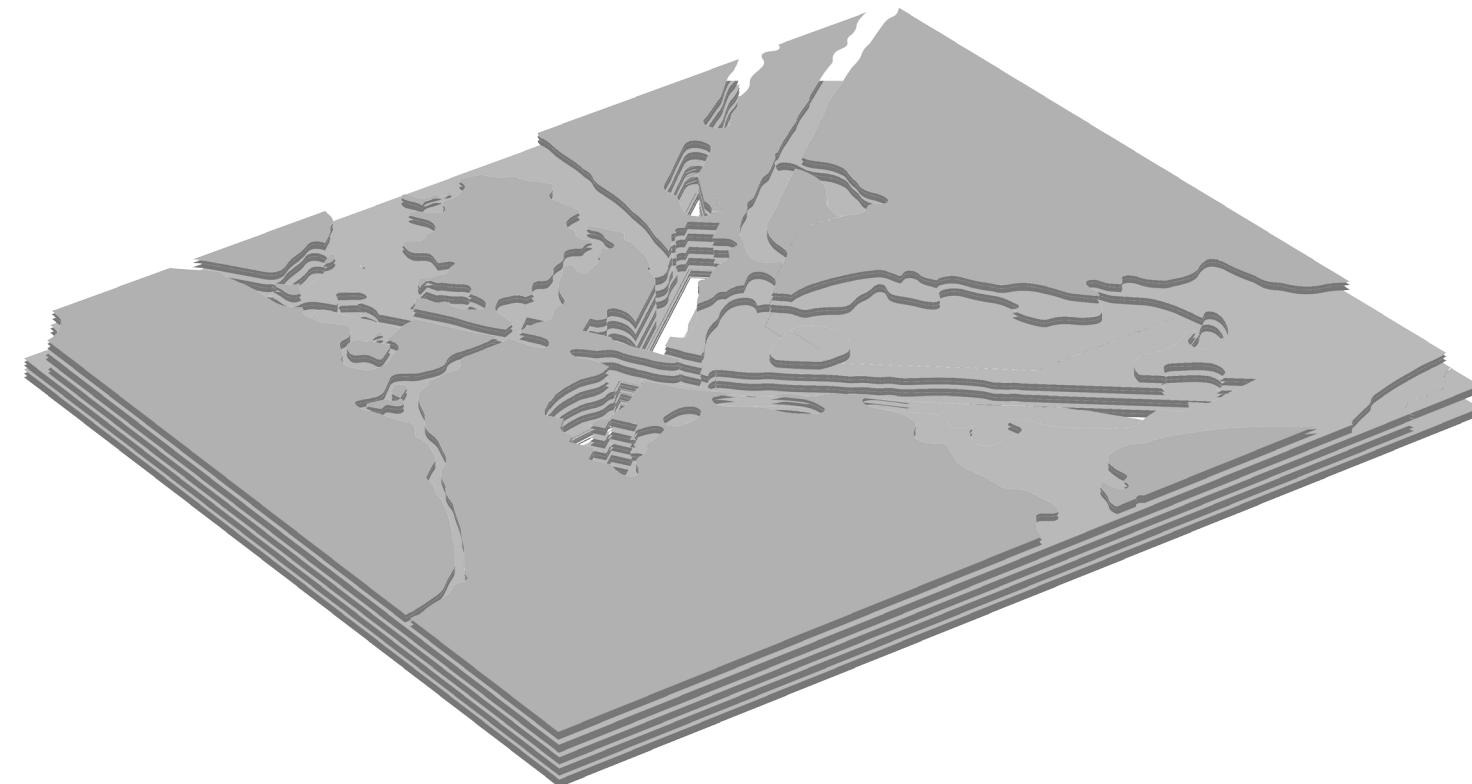
Re-surfacing the Estuary through Subtraction:

Re-surfacing the site and return it to an imagined waterscape is achieved through the overlaying of aerial images from (NGI) the National Geo-spatial information, a component of the Department of Rural Development and Land Reform of South Africa. NGI is the national mapping organisation which has established an integrated survey system and is a provider of expansive mapping and aerial imagery of South Africa (Department of Rural Development and Land Reform, 2013).

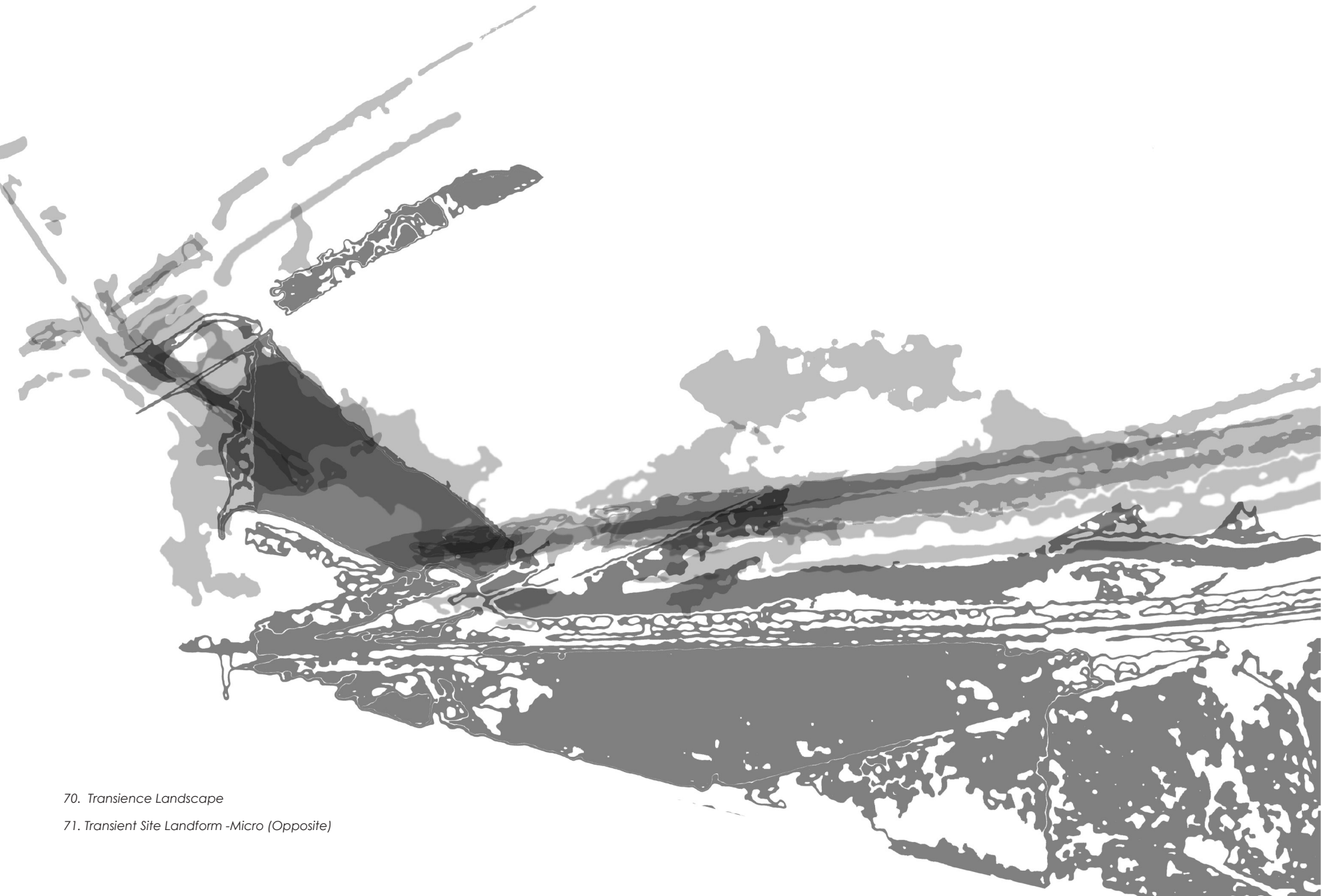
The images of the saltriver mouth used in the composition for resurfacing the landscape are dated, 1945, 1953, 1960, 1973 and 1983 and record the disappearance of the fluid waterscape of the site. The water formations were digitally traced and superimposed to recreate the once shifting landscape. The estuarine landscape in palimpsest is imagined and used to reform the site whereby each layer is to be subtracted finally revealing a terraced landscape.



68. An exercise in Tracing the Water Bodies of the site, Presenting them as a Palimpsest, for Reforming the Resurfacing the landscape of the site.



69. Re-Surfacing the "Hidden" Estuary Through Erosion



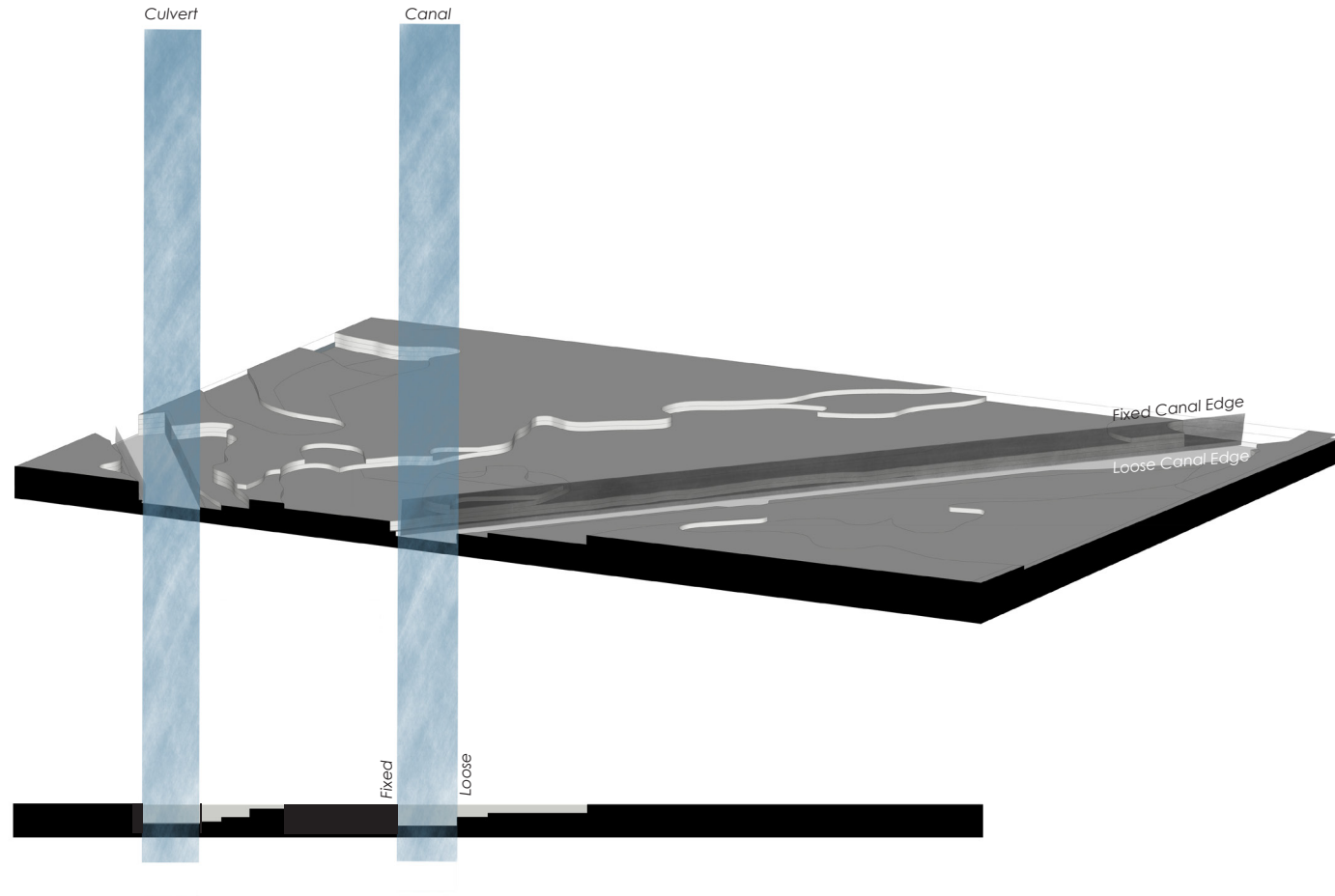
70. Transience Landscape

71. Transient Site Landform -Micro (Opposite)

Micro Embodiment of a Macro Idea (landscape)

This approach to land form is derived from the notion of tracing the movement of water on site in order to create a meandering landscape from which a weathering architecture emerges. This proposed condition allows the site to be in dialogue with its natural past and the broader waterscape it once was connected to.





72. Eroded site, creating a fluid edge to old salt river canal allowing the river to flood into an estuarine terraced landscape.

Fixed and Loose Site Edge

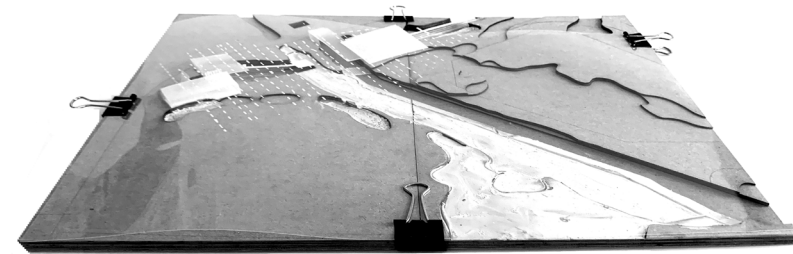
This terracing (erosion) of the site is to permeate and replace the landscape edge of the canal where water is allowed to enter and flow through the site as freely as it once did. The culvert edges are to remain in their current form in order to hold and contain programme (loose event), where the programme embodies and replaces the fluidity of the water that is contained by the culvert.



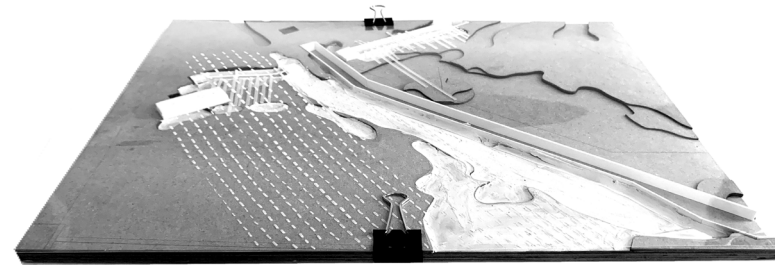
73. Imagined Terraced and Embedded Waterscape Collage

Process of Concept Models

A series of concept models were made in order to explore three approaches to the configuration of forms and systems on the site. The first model looked at the notion of monolithic and translucent form clipped onto the existing infrastructure with a new linear infrastructure bridging the forms. The second strategy explored was using the culverts as an armature to “feed” the landscape with saline architecture in a shifting (dissolved) grid. The last and most developed in the series merged the ideas of the first two. This strategy engaged the notion of retaining one culvert in its original state which feeds the landscape, while placing an intervention in the other. This included a bridging of the canal with a more dissolved form and meshing the intervention with the existing pump house through a saline roof structure.



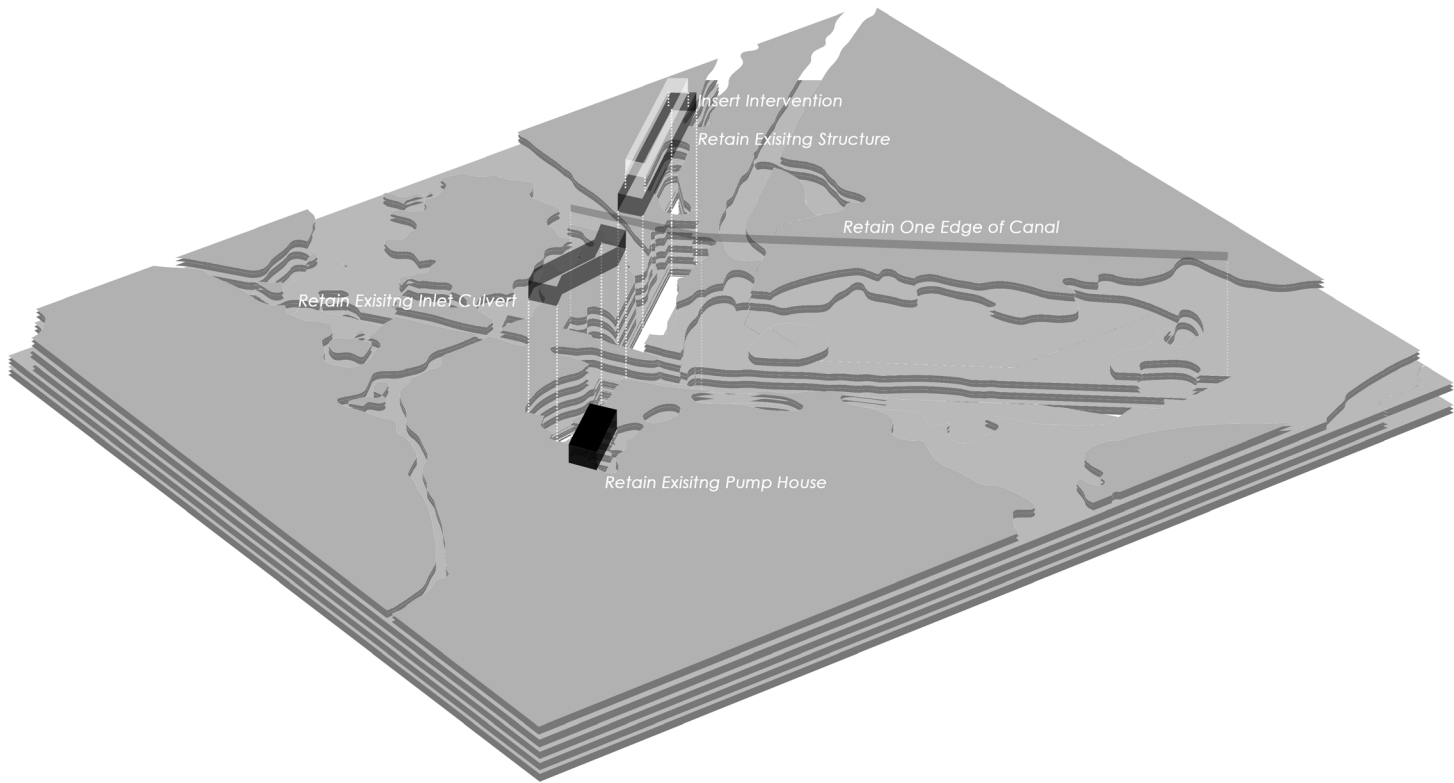
74. Concept Model 1



75. Concept Model 2



76. Concept Model 3



77. Eroded Site and Existing Elements

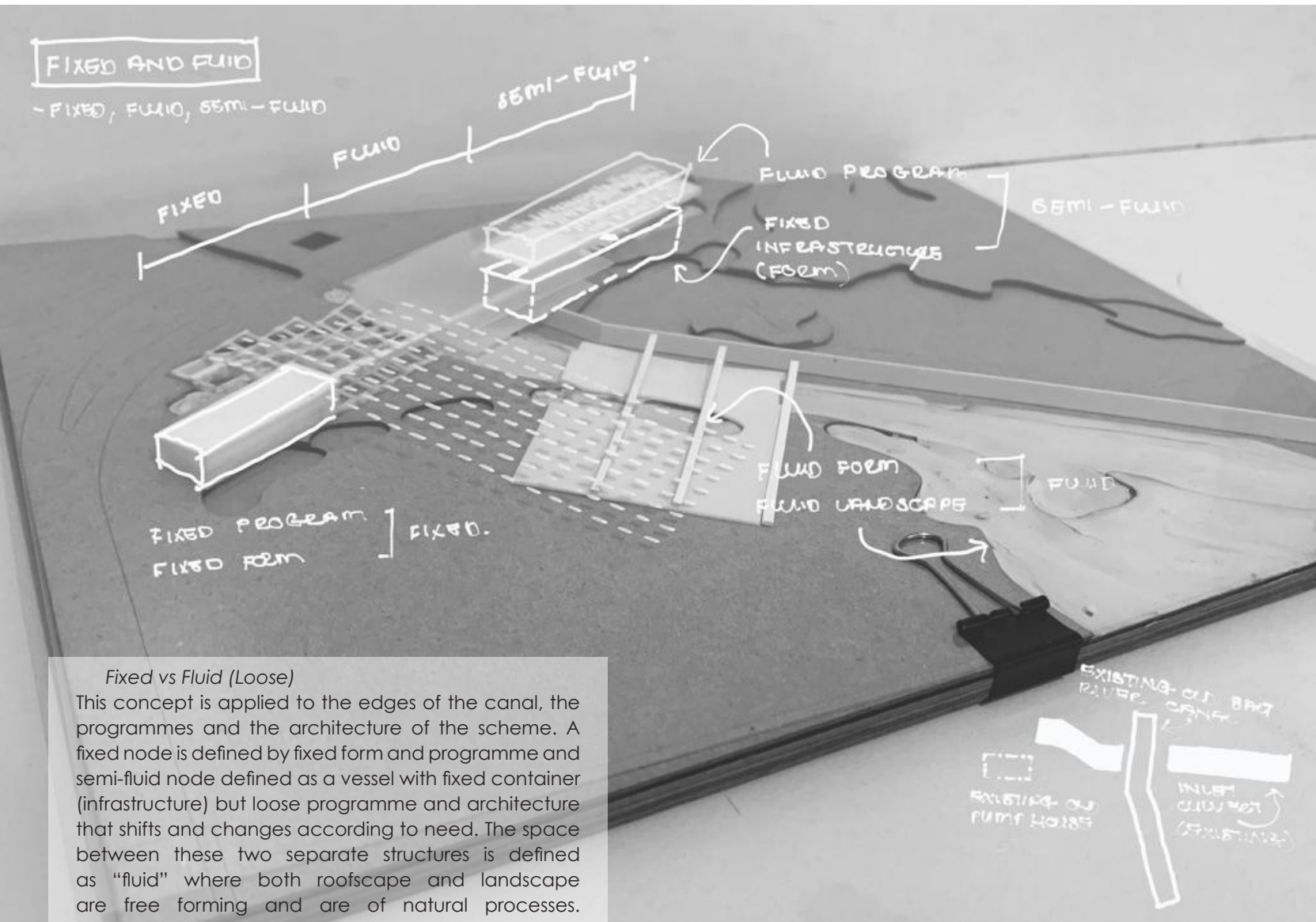
The initial elements that informed the design decisions were the sites estuarine and juxtaposing deteriorative infrastructural past, the current ruinous state and existing structures on the site. The decision was made to take advantage of these structures as they are metaphorically and atmospherically powerful. The pump once a pace of mechanics, production an process and the culverts, a place of moving, carrying and containing water for a power generating process. To strip the site of this to this would be a lost opportunity.

The old pump house is well suited for a research centre in terms of scale and position, as a node for knowledge production. Whereas, the longer culvert is a unique opportunity for intervention as its scale and embeddedness as well as the layering of the internal structure creates an evocative space for inhabitation, experience and expression. Therefore it is well-suited for event and exhibition space.

The axis of the culverts (seawater) and the canal (freshwater) has informed the orientation and direction of the saline roofscape and salt harvesting as well as the salt crop test farm, in the space of meshing.

Other concepts that have inform design decisions, seen in the images to follow, include:

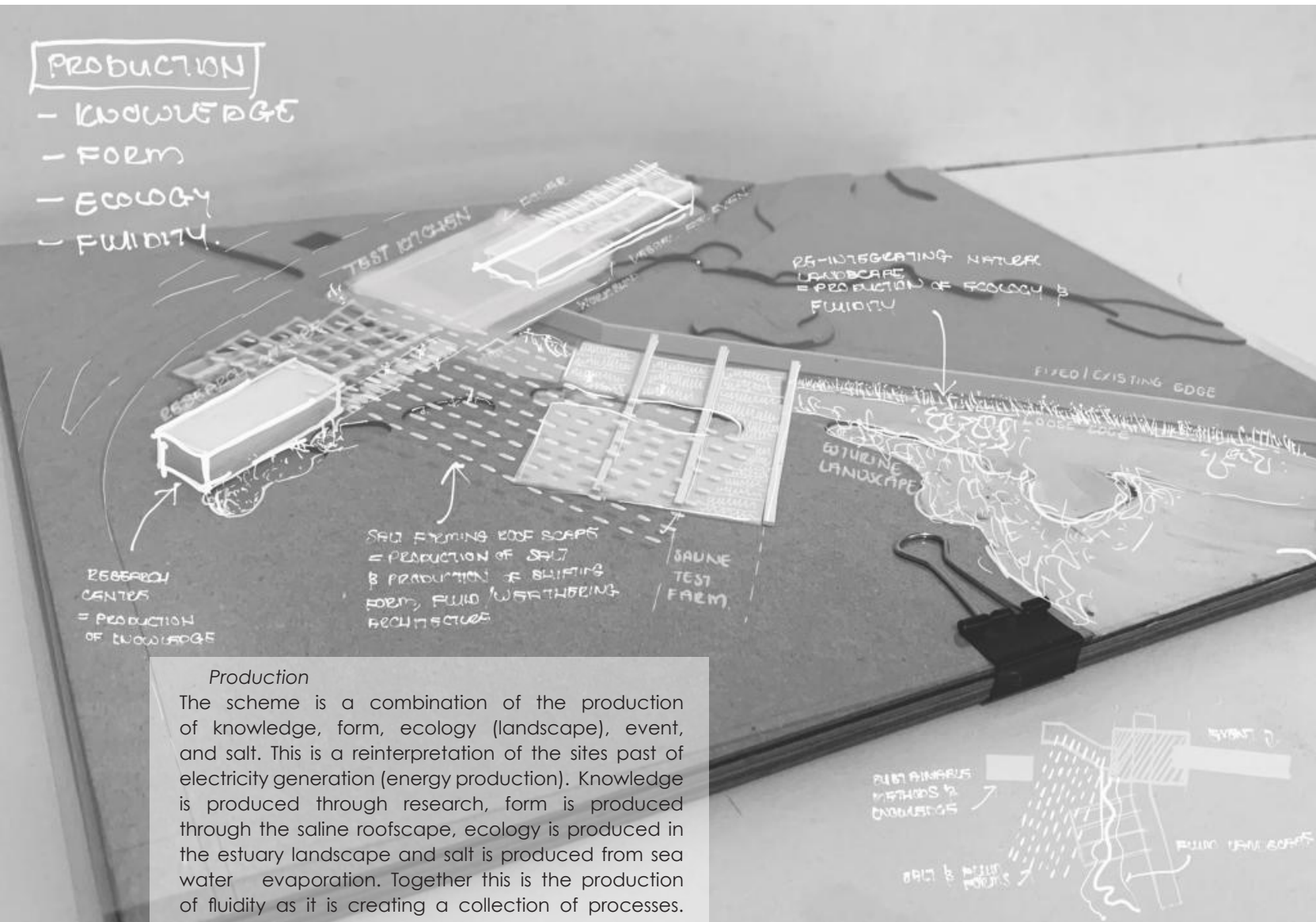
- 1- Fixed vs Fluid (Loose)
- 2 - Production
- 3 - Confluence
- 4 - Enmeshing
- 5 - Inversion
- 6 - Ephemerality



Fixed vs Fluid (Loose)

This concept is applied to the edges of the canal, the programmes and the architecture of the scheme. A fixed node is defined by fixed form and programme and semi-fluid node defined as a vessel with fixed container (infrastructure) but loose programme and architecture that shifts and changes according to need. The space between these two separate structures is defined as "fluid" where both roofscape and landscape are free forming and are of natural processes.

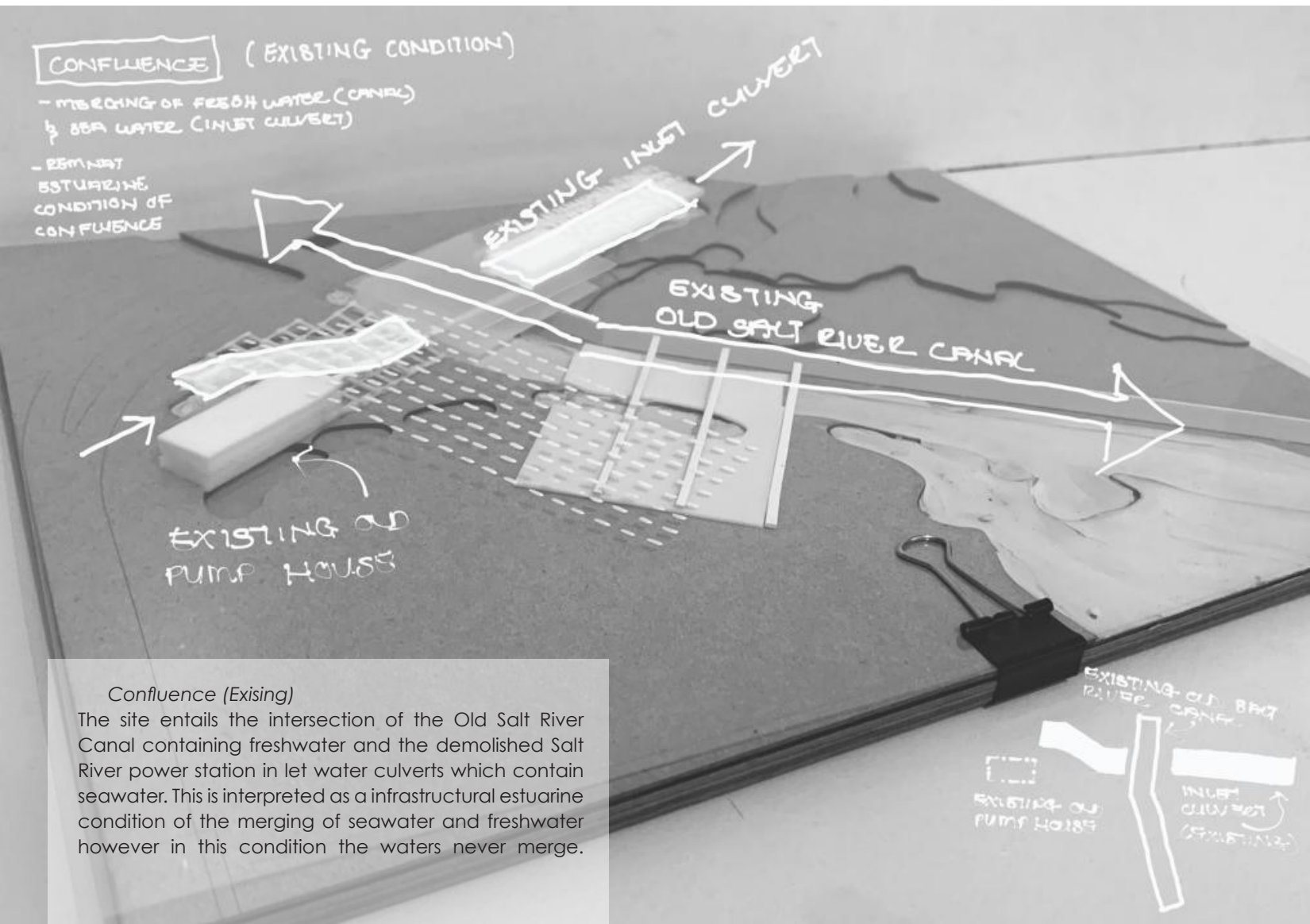
78. Fixed and Fluid Strategy Diagram



Production

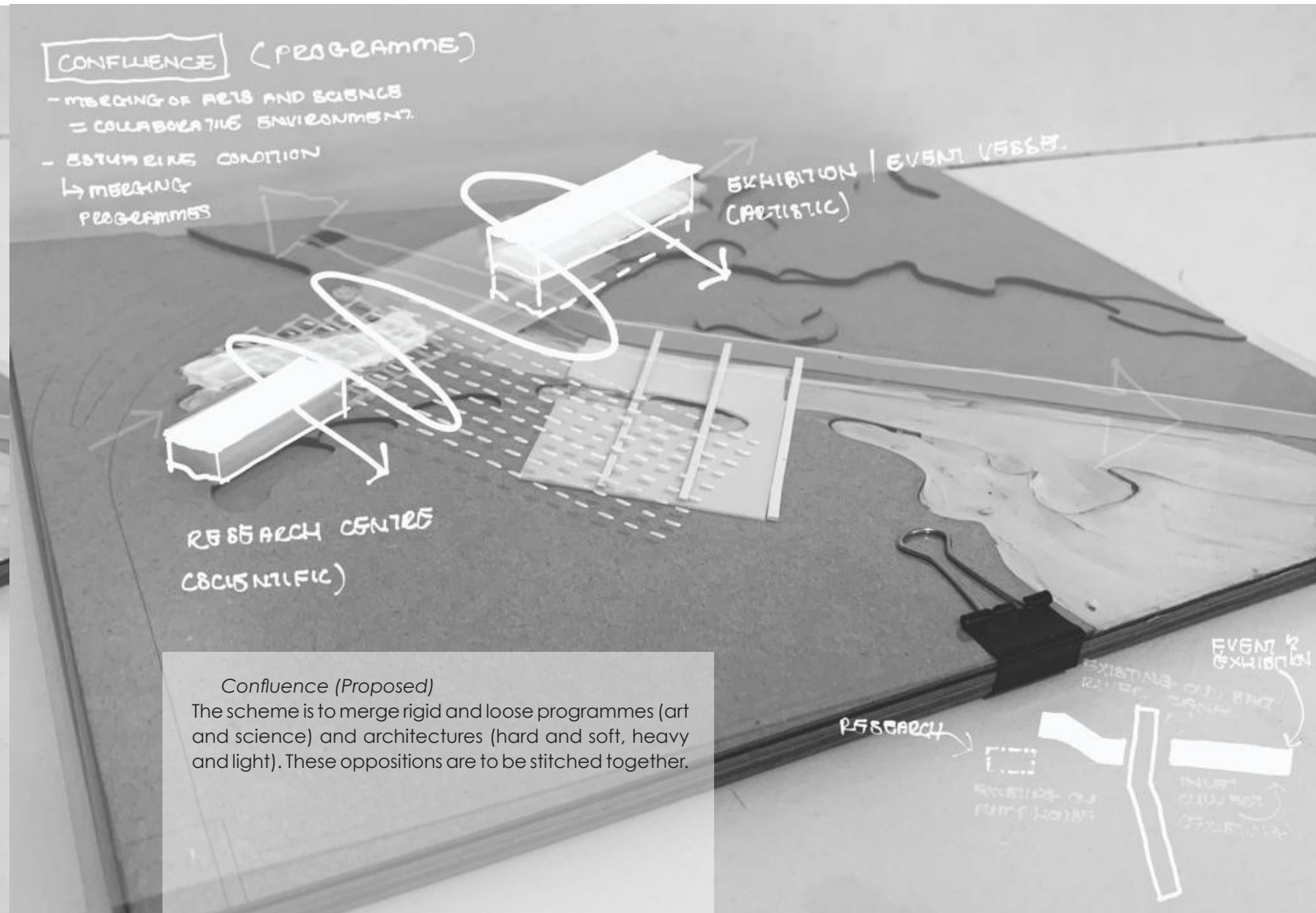
The scheme is a combination of the production of knowledge, form, ecology (landscape), event, and salt. This is a reinterpretation of the sites past of electricity generation (energy production). Knowledge is produced through research, form is produced through the saline roofscape, ecology is produced in the estuary landscape and salt is produced from sea water evaporation. Together this is the production of fluidity as it is creating a collection of processes.

79. Production Strategy Diagram



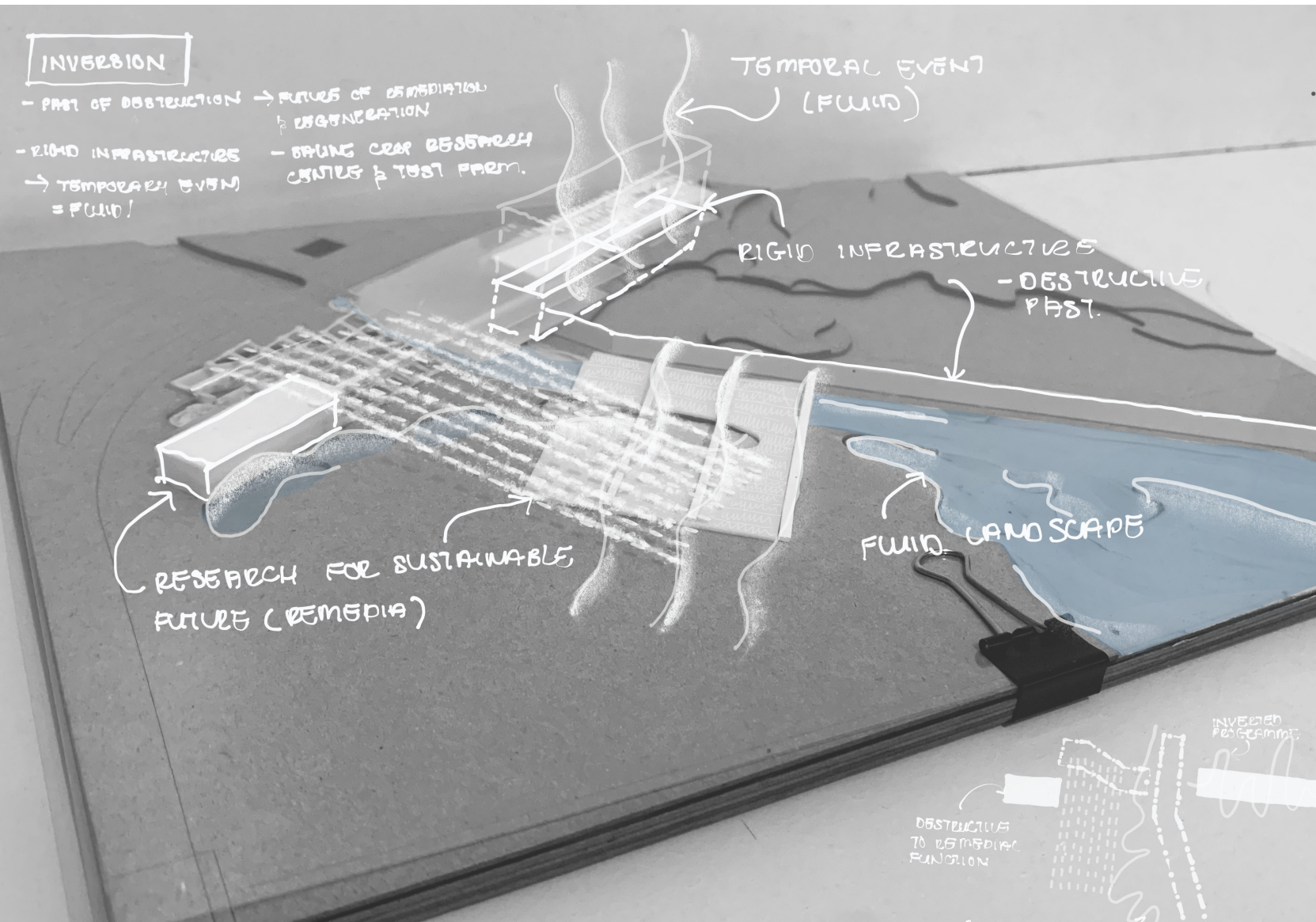
Confluence (Existing)
The site entails the intersection of the Old Salt River Canal containing freshwater and the demolished Salt River power station in let water culverts which contain seawater. This is interpreted as a infrastructural estuarine condition of the merging of seawater and freshwater however in this condition the waters never merge.

80. Confluence Condition Diagram

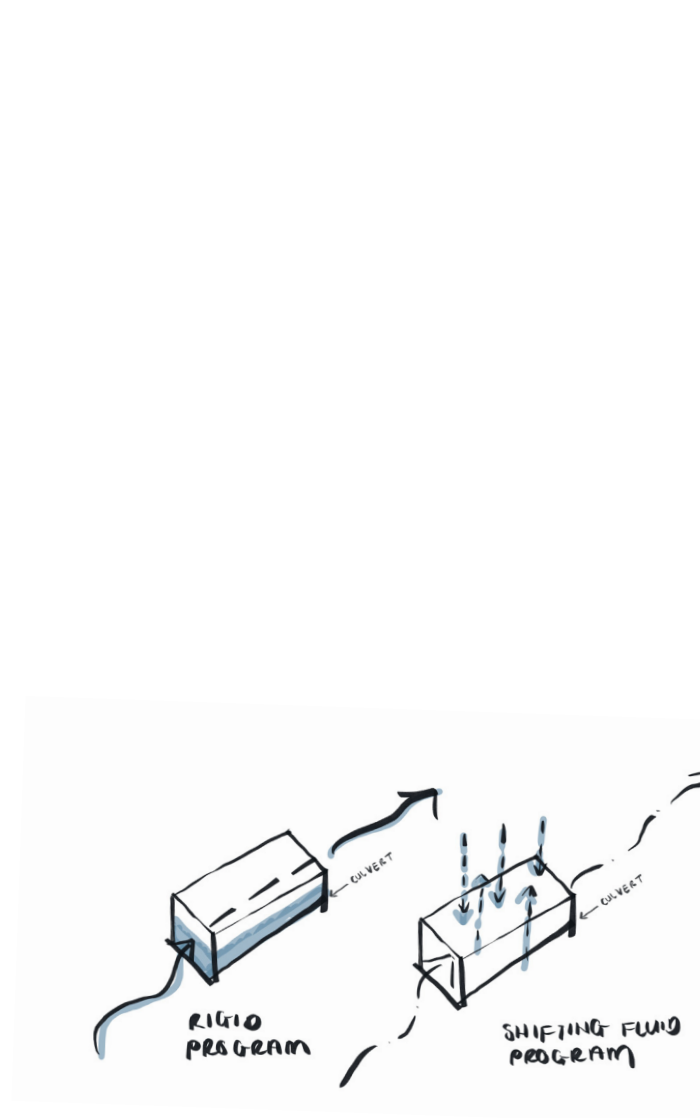


Confluence (Proposed)
The scheme is to merge rigid and loose programmes (art and science) and architectures (hard and soft, heavy and light). These oppositions are to be stitched together.

81. Confluence Strategy Diagram



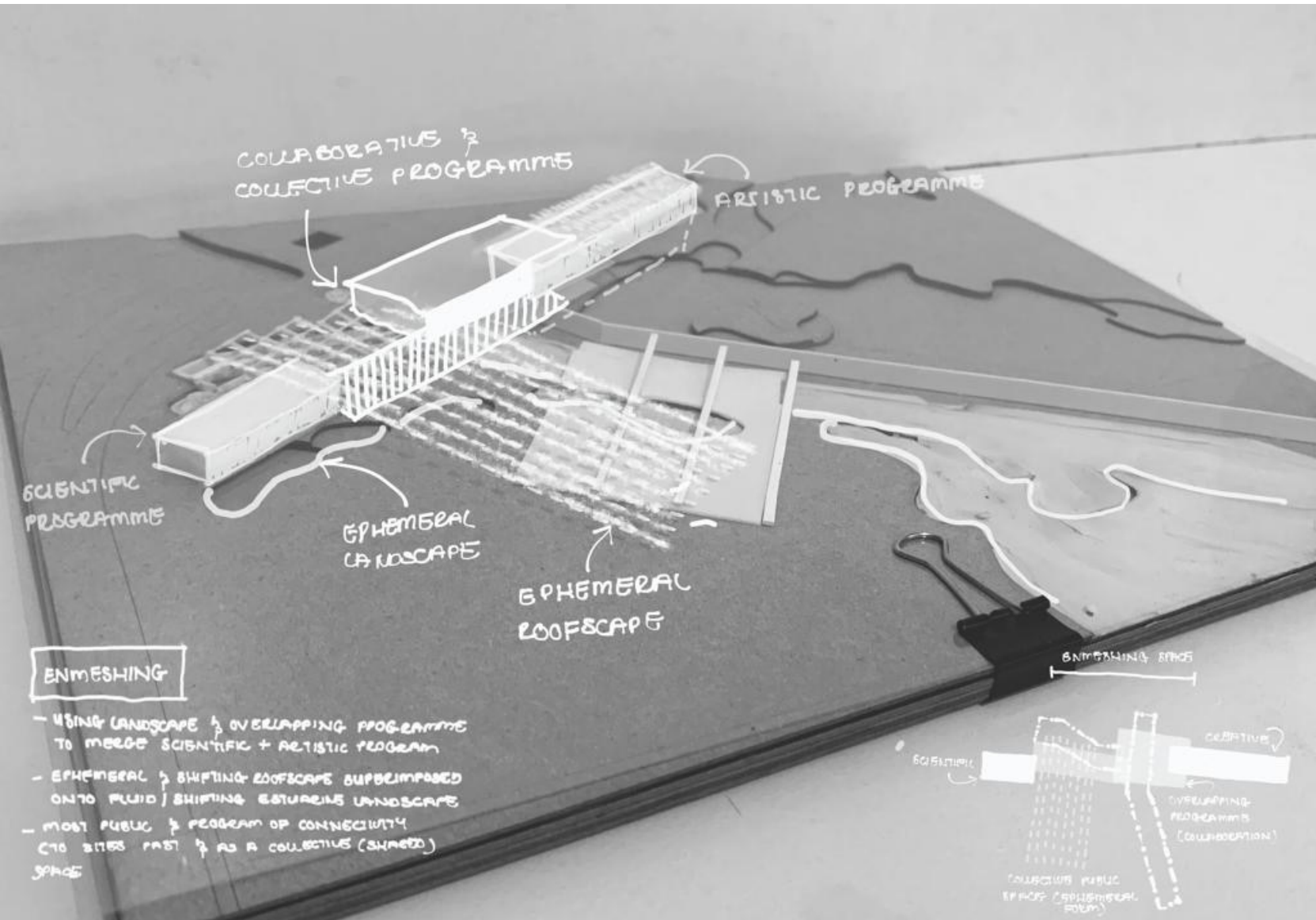
82. Inversion Strategy Diagram



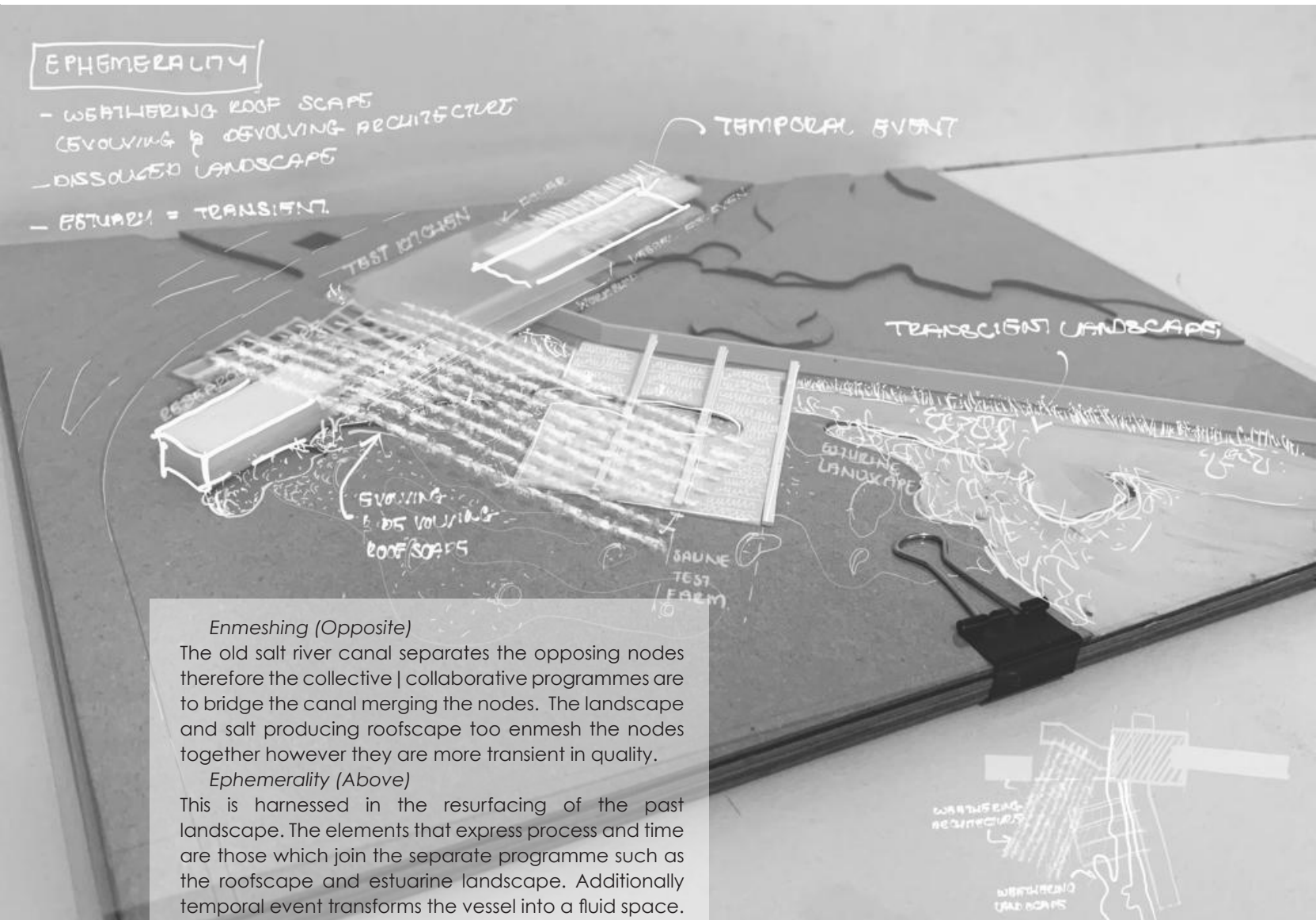
83. Inversion Concept Sketch

Inversion
 The re-appropriation of the ruin creates a present form of a past life (Simmel, 1965) as it holds its entire life span in its being. The intention is to create an interesting dialogue between the sites past and its future through inversion, transforming the culverts from a formerly destructive past into culverts for a regenerative and sustainable future

The culverts are to be used for providing seawater for saline crop irrigation and research into more sustainable agricultural solutions, an inversion of a destructive origin and scientific by programme. Additionally, through intervention, inverting the culvert's programmatic function from that which was infrastructural and rigid to one that is of a more fluid in nature (Art). A multifunctional vessel for event is proposed where by it can accommodate numerous varieties of events through the provision of a non-prescriptive space that has supporting infrastructures to host different events.



84. Enmeshing Strategy Diagram



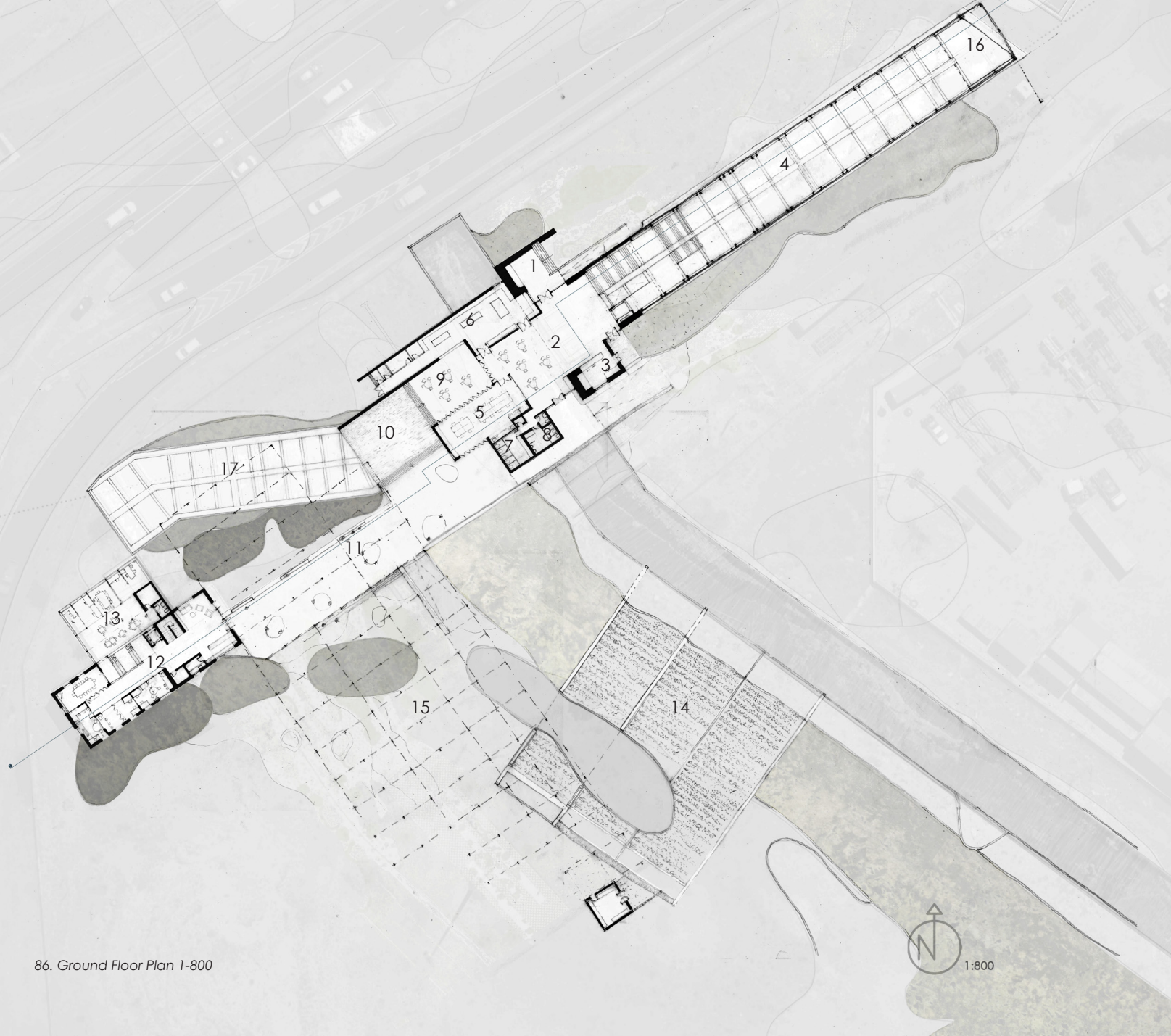
Enmeshing (Opposite)

The old salt river canal separates the opposing nodes therefore the collective | collaborative programmes are to bridge the canal merging the nodes. The landscape and salt producing roofscape too enmesh the nodes together however they are more transient in quality.

Ephemerality (Above)

This is harnessed in the resurfacing of the past landscape. The elements that express process and time are those which join the separate programme such as the roofscape and estuarine landscape. Additionally temporal event transforms the vessel into a fluid space.

85. Ephemerality Strategy Diagram



86. Ground Floor Plan 1-800

- 1 Entrance
- 2 Foyer
- 3 Admin & Info
- 4 Vessel event space
- 5 Studio workshop
- 6 Test kitchen
- 7 Female bathroom
- 8 Male bathroom
- 9 Semi-external courtyard
- 10 External courtyard
- 11 Covered walkway
- 12 Saline crop research centre
- 13 Idea pit
- 14 Saline crop test farm
- 15 Salt harvesting roof scape
- 16 Service delivery & storage
- 17 Existing inlet culvert

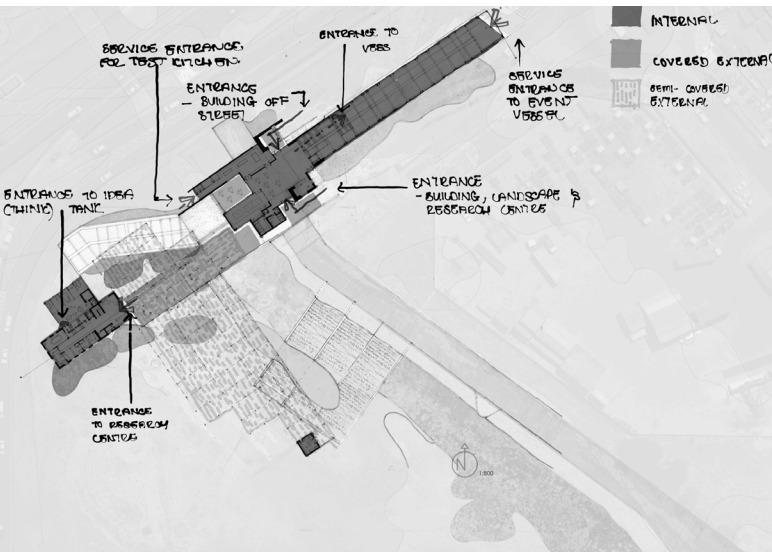
A layering of sculpted oversized walls, that are dynamic and elongated (linear) responding to the vehicular movement, defines the saline centres road edge condition. However, the main building comprised of the entrance foyer, (2) , information and admin (3) which support the vessel (4) event space (Lower level), the studio workshop (5), test kitchen (6) and ablutions (7,8), has two entrances. One off the Marine Drive, north of the project (1), which pulls the visitor through the sculpted edge into the space and one south of the building, which additionally allows visitors to directly access the landscape and research centre without having to pass through the building.

The vessel event space embedded in the ground and covered by a light-weight steel box, which holds and stores programmes that can be lowered into the vessel, is accessed by the means of a cascading stairway. This too can be used as seating and pause space while immersing and descending into the space, moving from the level of the floating box to the bottom of the vessel (4).

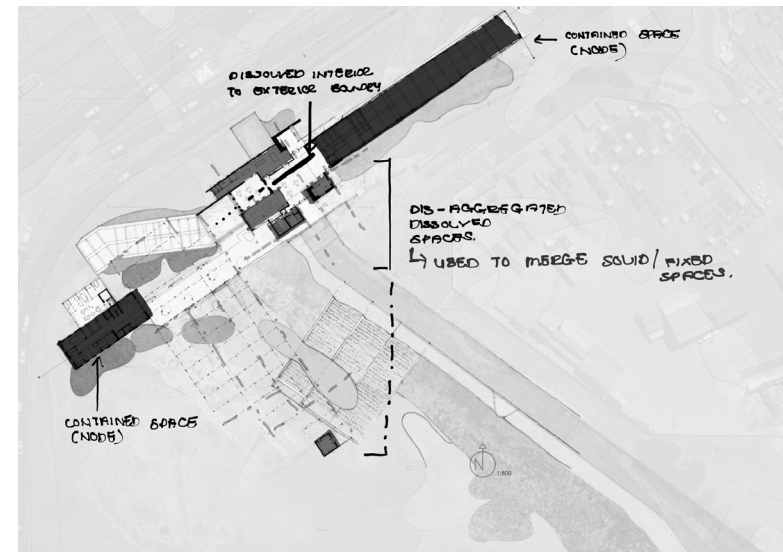
Moving from the foyer (2) into the space between the studio (5), test kitchen (6) and their shared space there is a thickening in the walls in order to celebrate a shift in solid to dissolved spaces. The notion of shifting from solid to dissolved is too articulated in the dissolved interior to exterior boundary where the spaces sequentially move from interior (2) to interior-exterior (9, covered courtyard) to exterior (10, open courtyard, which extends over the open sea water culvert, 17).

The element, along with landscape, linking the creative node (event vessel, 4) and scientific node (research centre, 12), is a glass covered walk way which holds the salt production process above (11). In order for this process to be transparent and define atmosphere, the salt harvesting is physically separated from the public but remains visually and spatially connection. This is afforded by the translucent material.

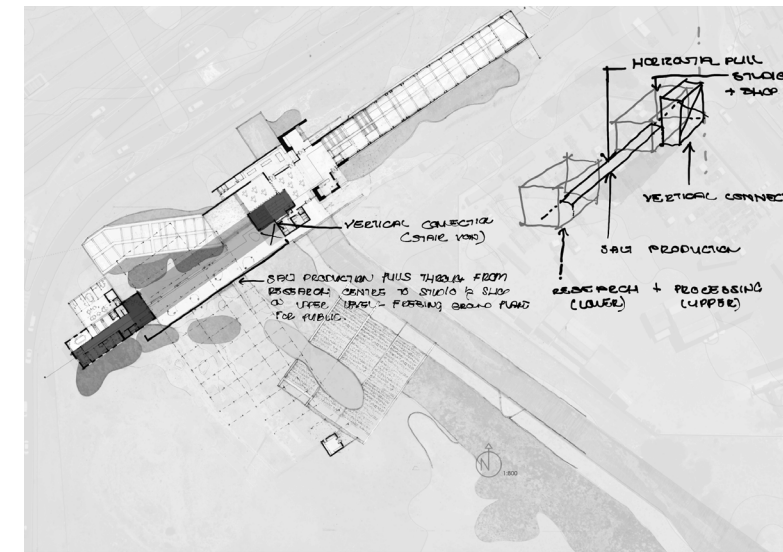
The terracing and layered saline harvesting roofscape system defines sky condition and relates to ground condition defined by estuarine landscape. Together these elements hold and define a softer transient space. The saline roof scape is supported by a grid framework which provides the scaffold for the crystals to fluidly grow, creating an undefined form. This structure embodies the meshing of rigid and fluid (grid and free-forming salt, loose), defined and undefined, transient and permanent, evolution and devolution.



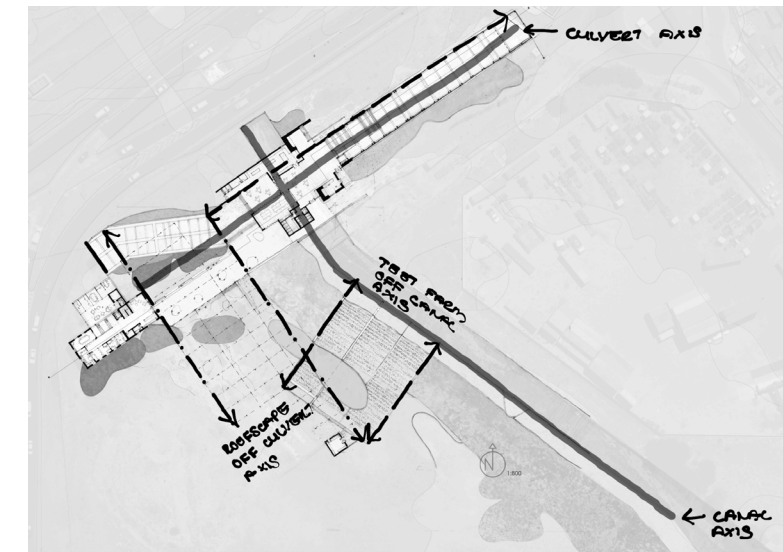
87. Entrance, Edge and Interior Exterior Diagram



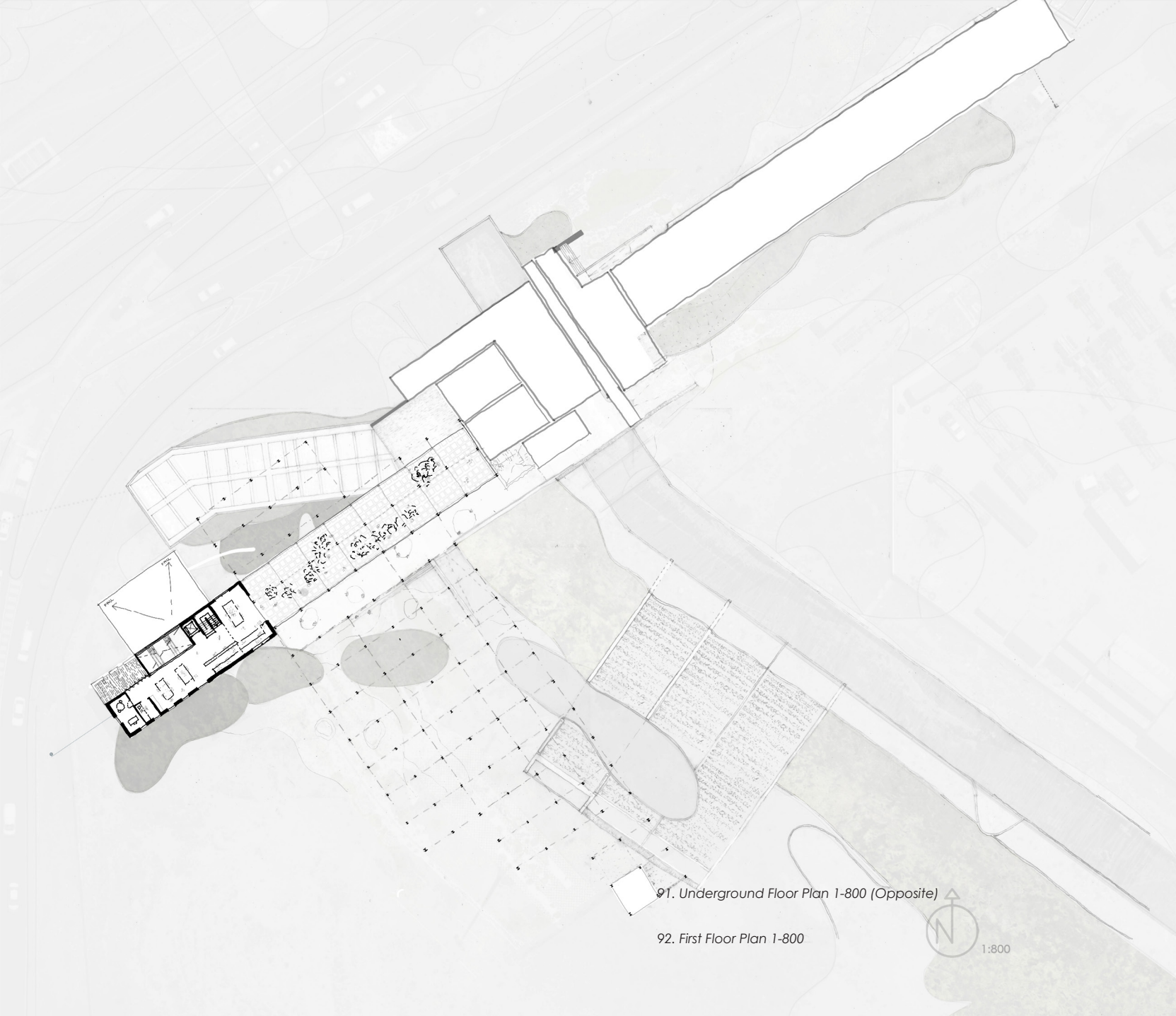
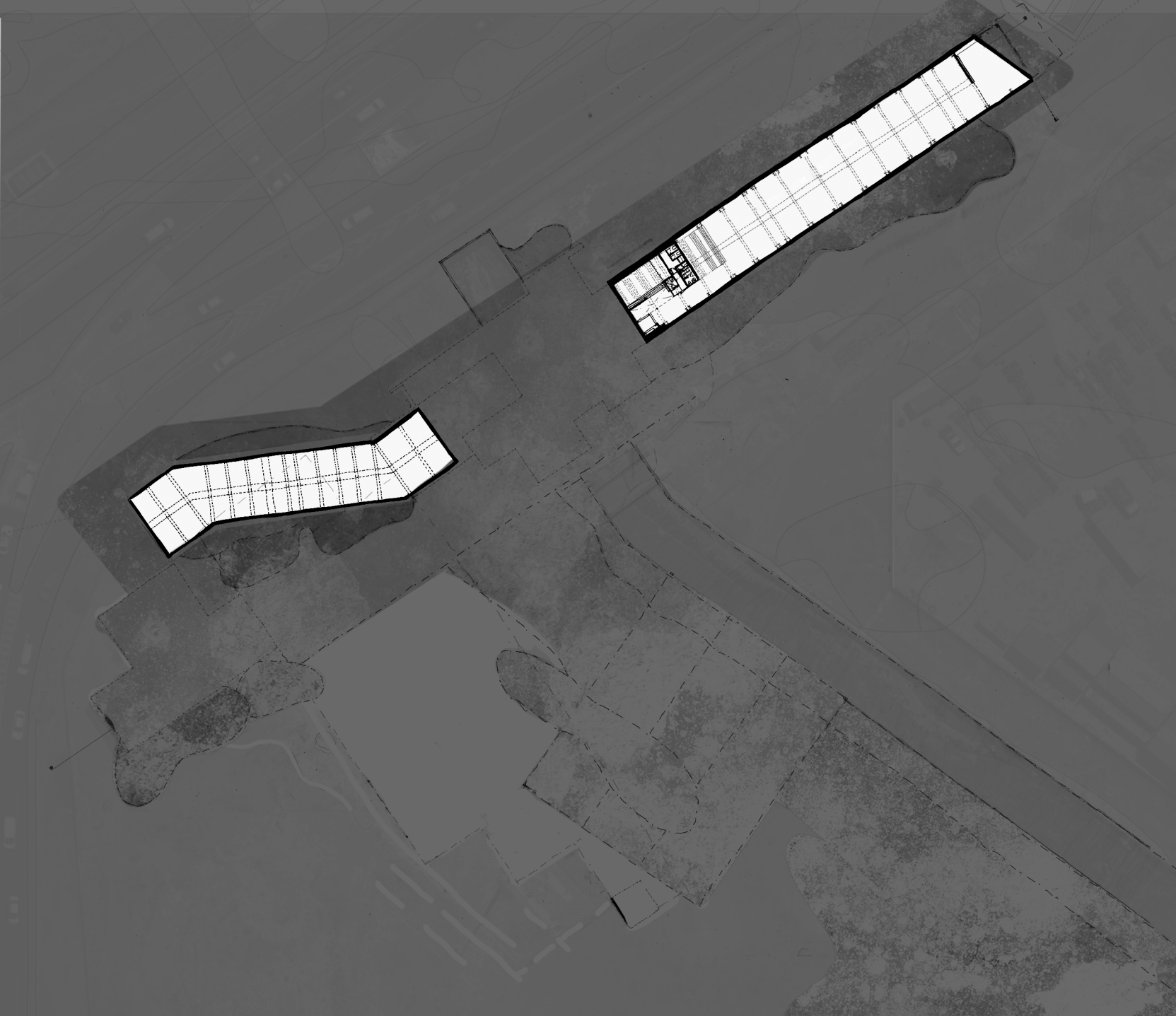
88. Solid and Dissolved Diagram



89. Salt Production Stitching Program Diagram

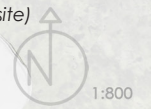


90. Axis and Orientation Diagram

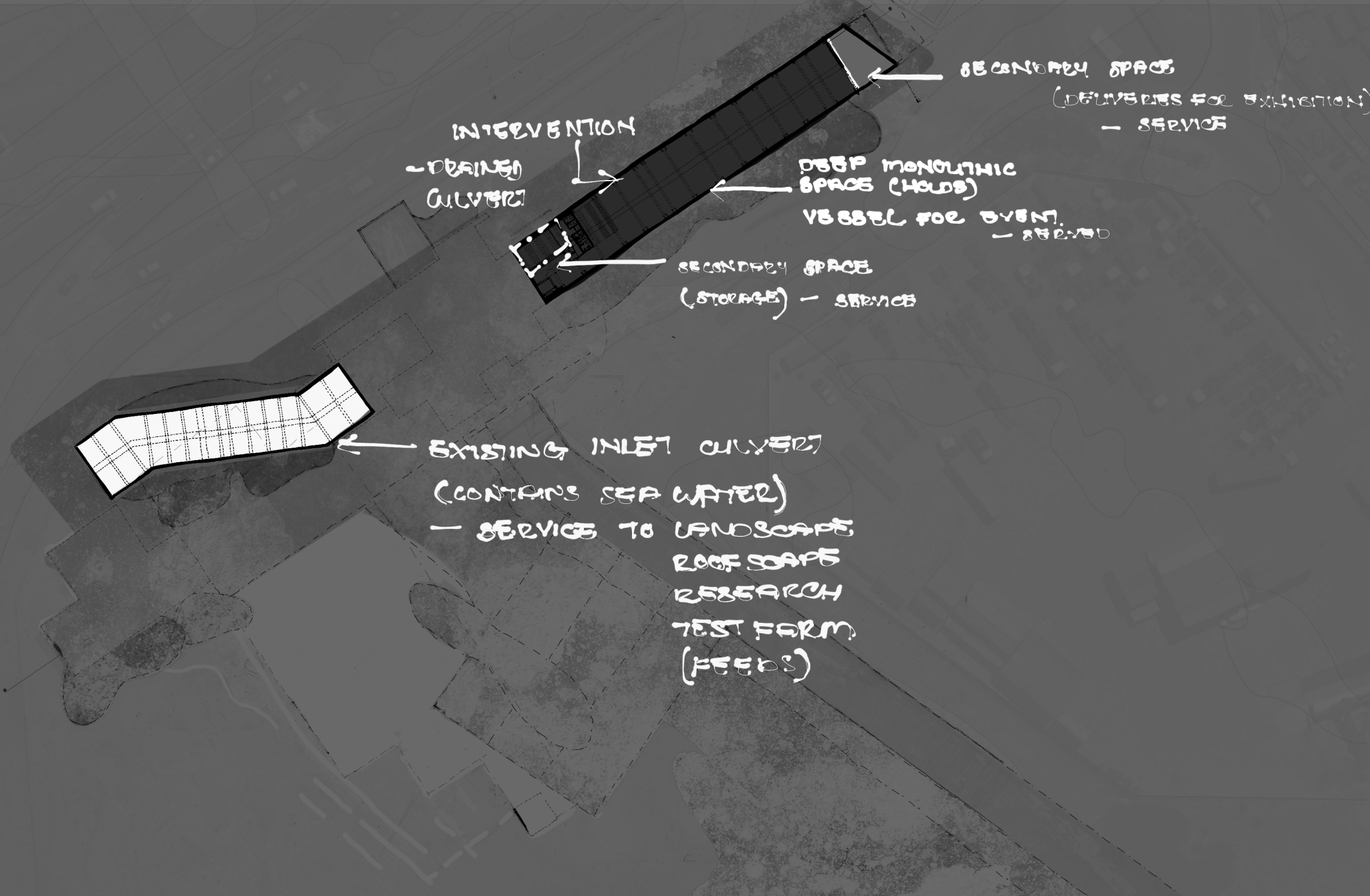


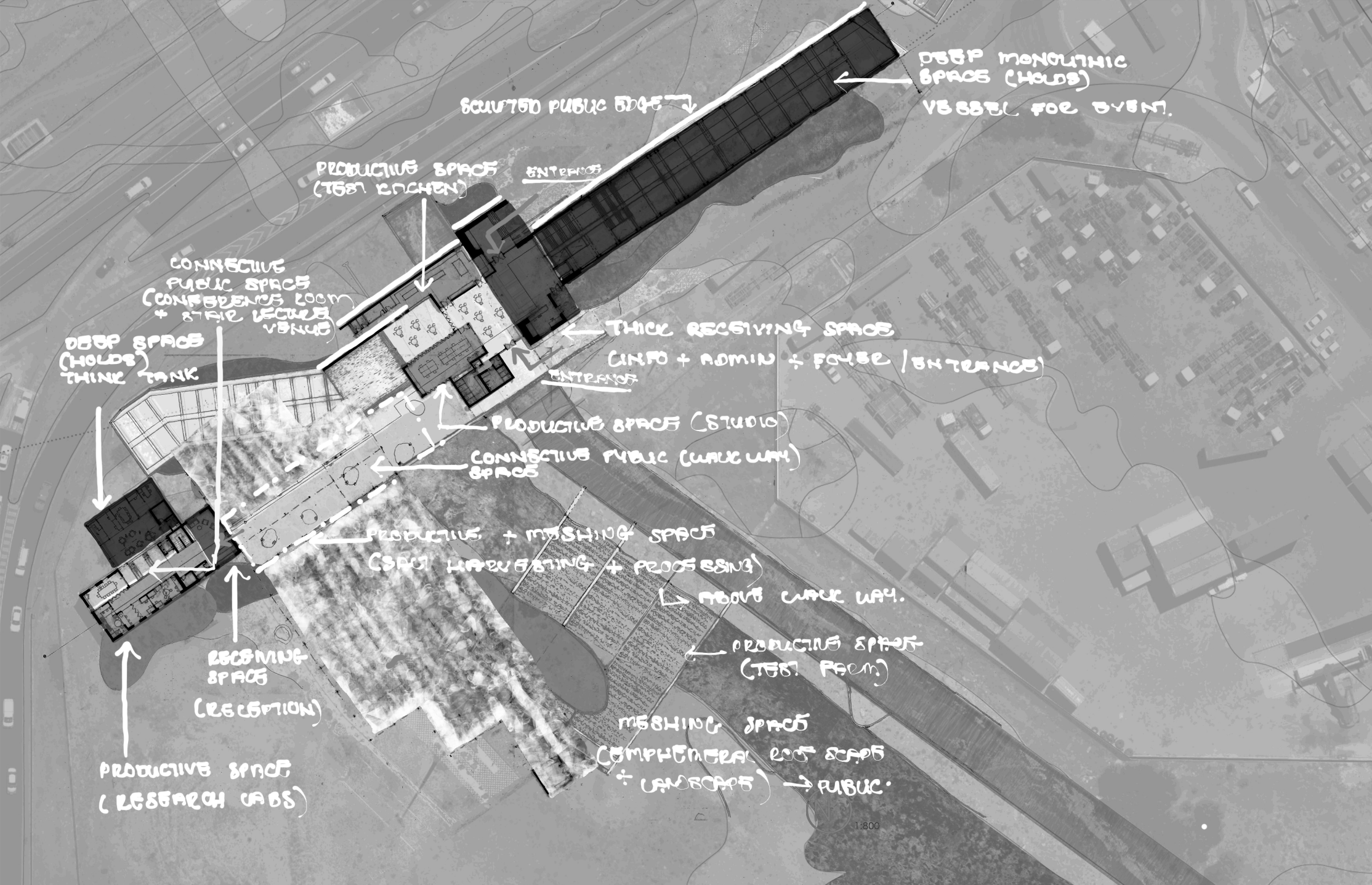
91. Underground Floor Plan 1-800 (Opposite)

92. First Floor Plan 1-800

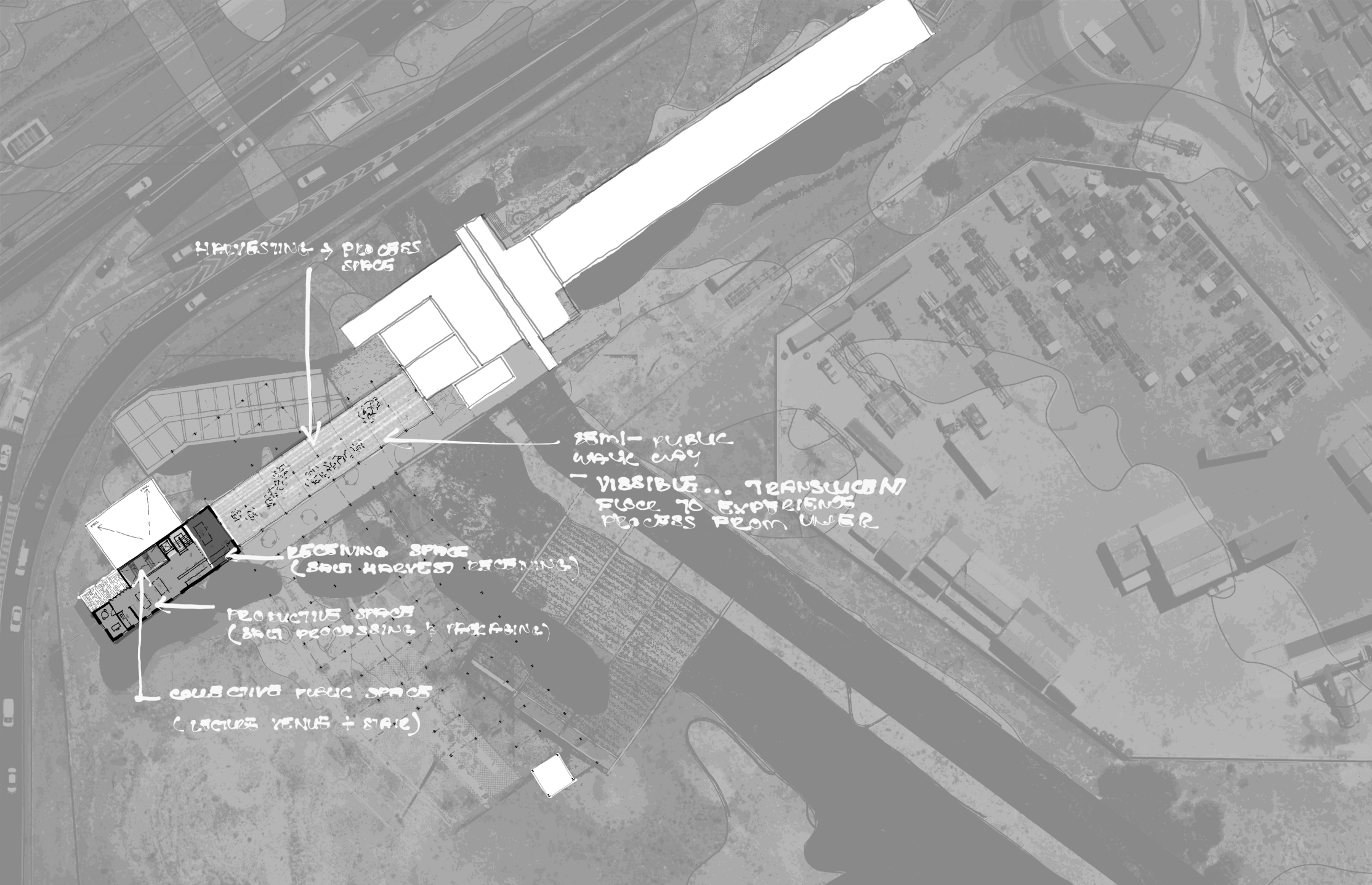


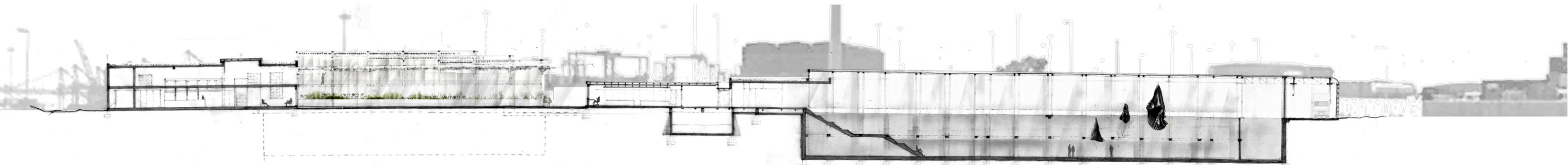
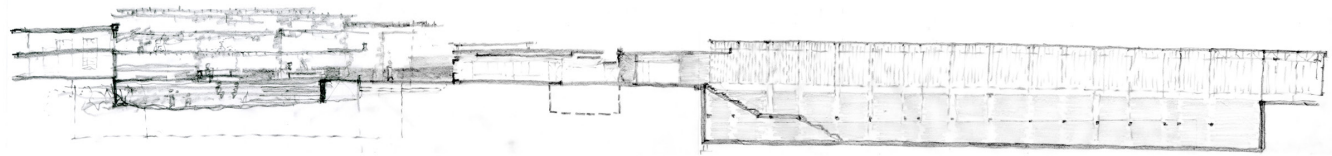
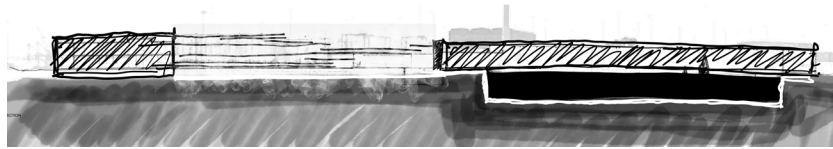
1:800





94. Ground Floor Plan Annotated Diagram

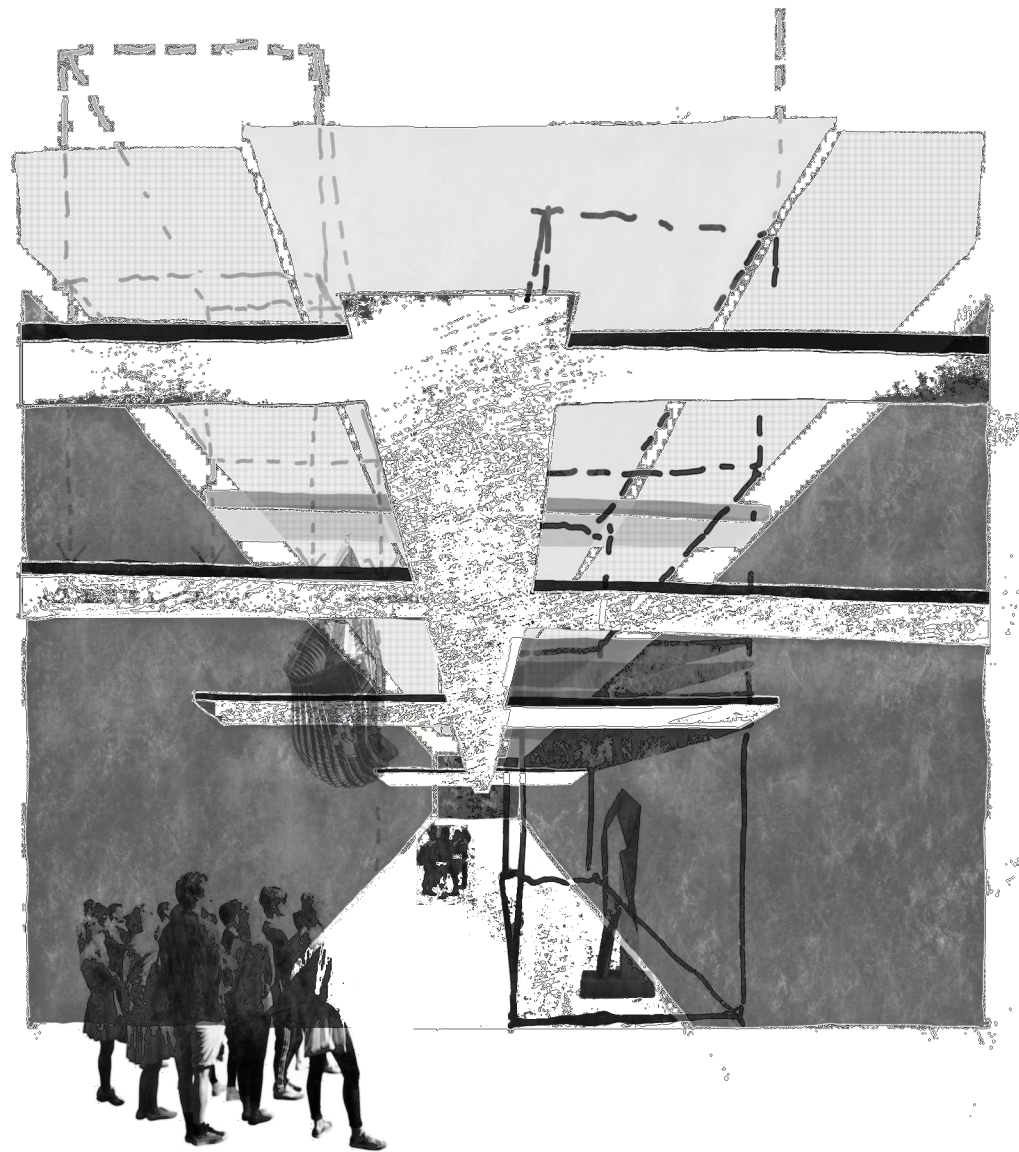




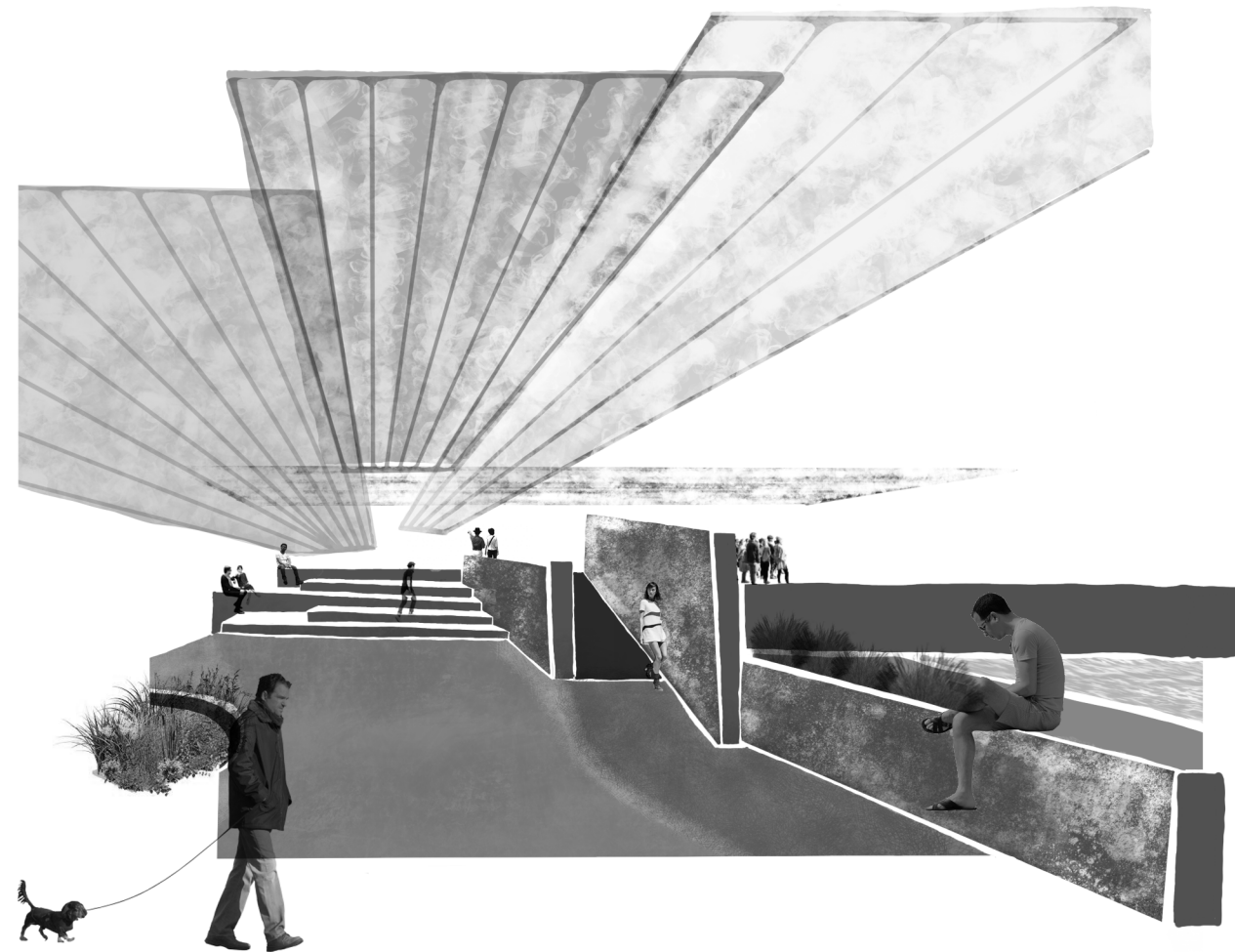
96. Section Development Sketch (Top)

97. Section Defining "Fluid" Spaces (Middle)

98. Working Section 1-800 (Bottom)



99. 3D Vessel Moment Exploration

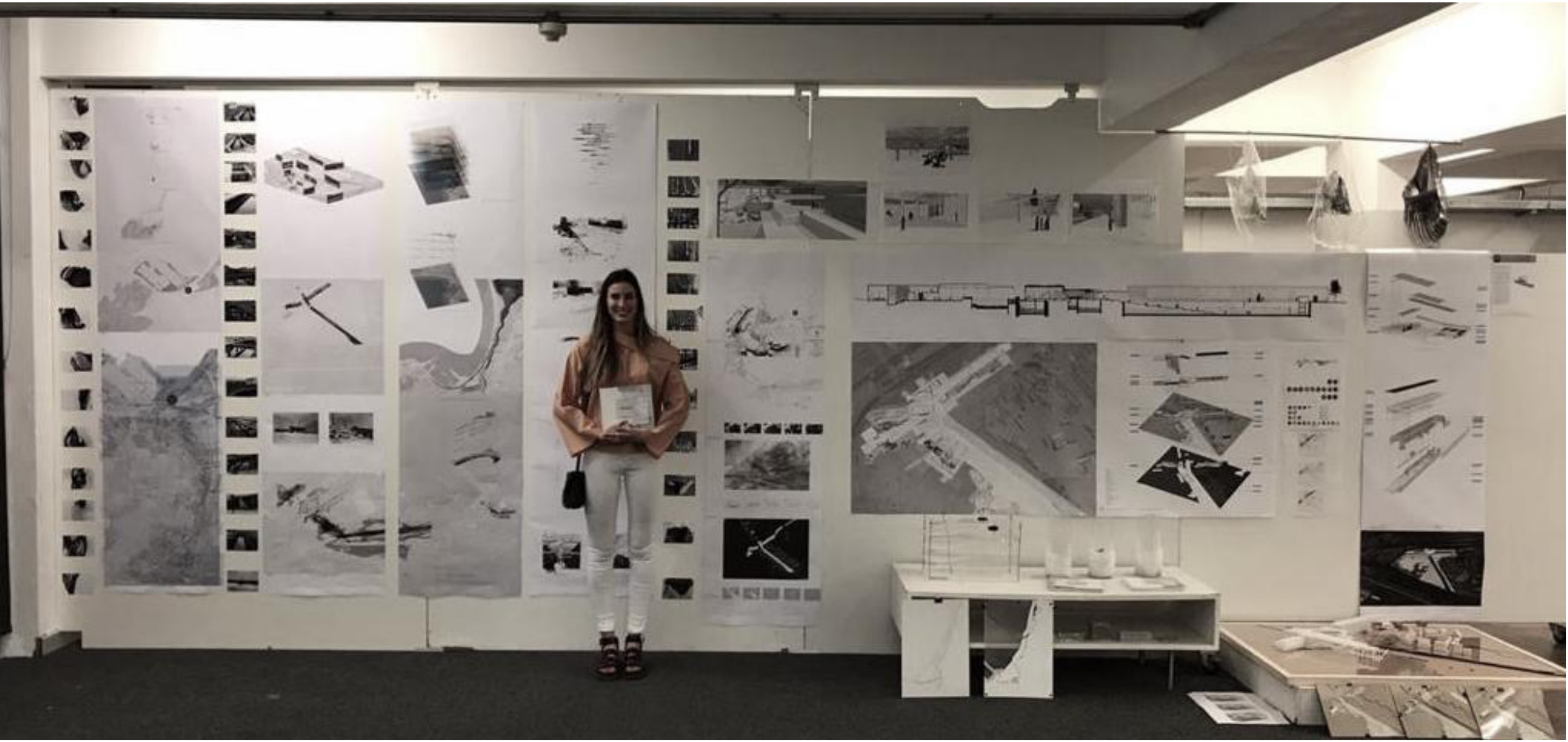


100. 3D Between Ephemeral Saline Roofscape and Landscape Moment Exploration

05

FINAL DRAWINGS

*Final Presentation
Presentation Process Pannels
Final Drawings
Final Model*

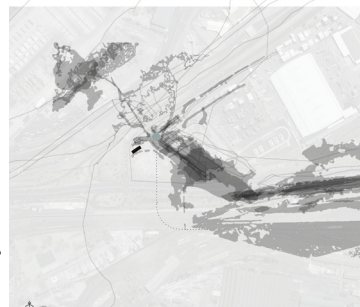
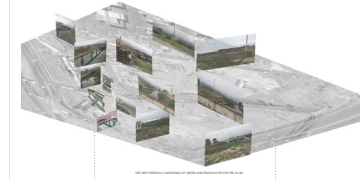


101. Final Presentation Layout

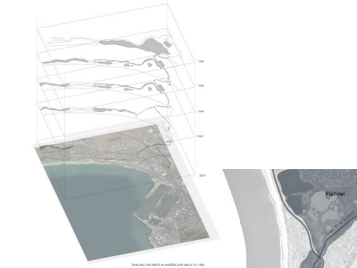
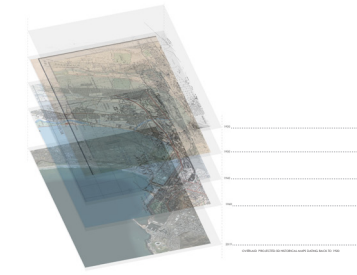
Final Process Pannels



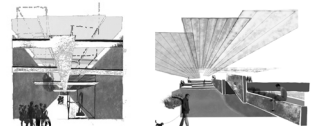
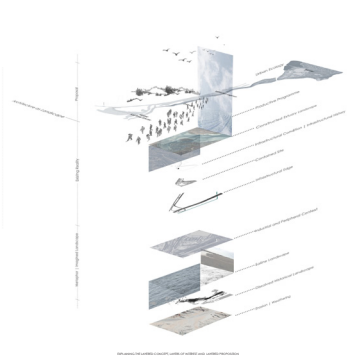
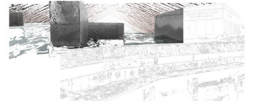
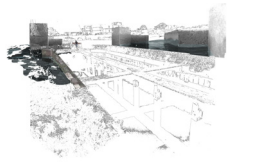
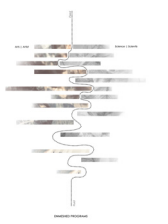
102. Locality



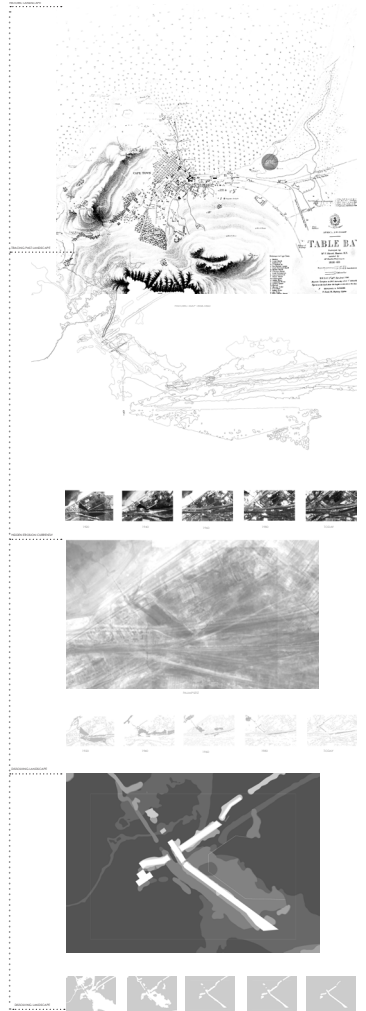
103. Site



104. Landscape



105. Concept



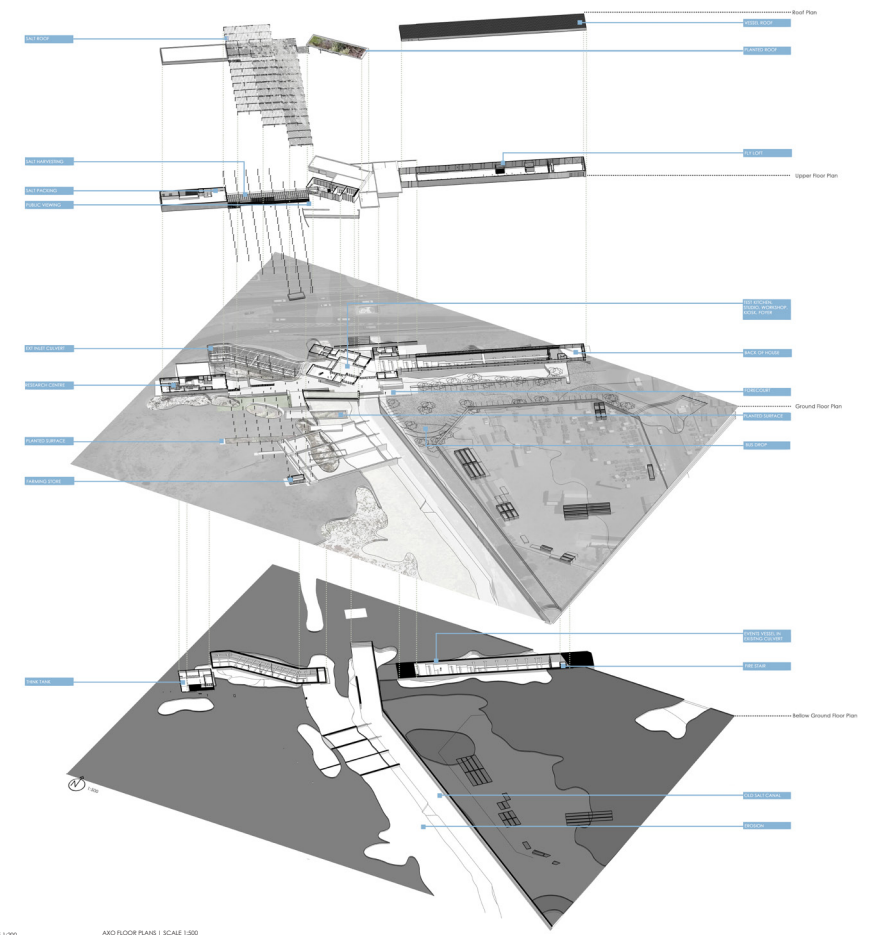
106. Erosion From Past to Present

107. Plans | NTS

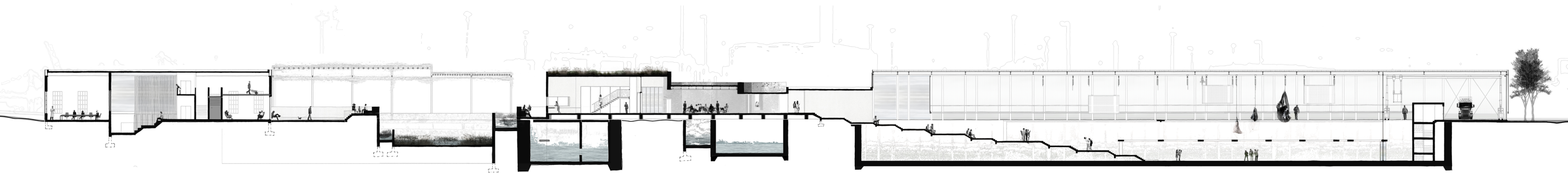


- 1. Entrance
- 2. Store
- 3. Reception
- 4. Exam's Stage
- 5. Waiting & Reception
- 6. Waiting Room
- 7. Operating Room
- 8. Waiting Room
- 9. Reception
- 10. Reception
- 11. Staff Office
- 12. Staff Office
- 13. Staff Office
- 14. Staff Office
- 15. Staff Office
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- 34. Staff Office
- 35. Staff Office

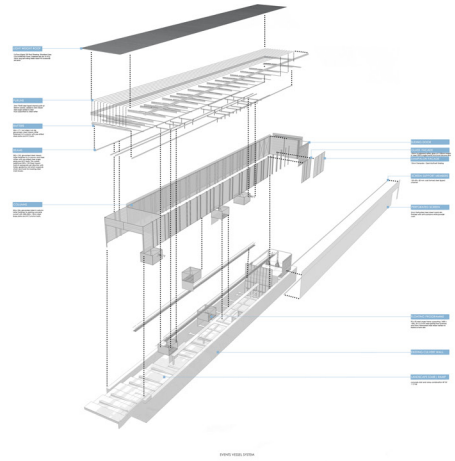
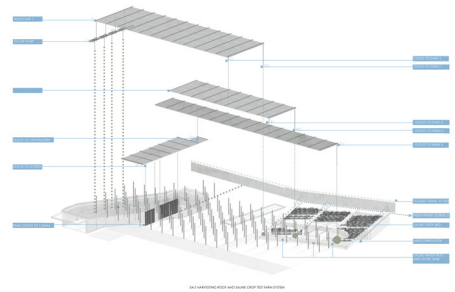
GROUND FLOOR AND SITE PLAN | SCALE 1:200



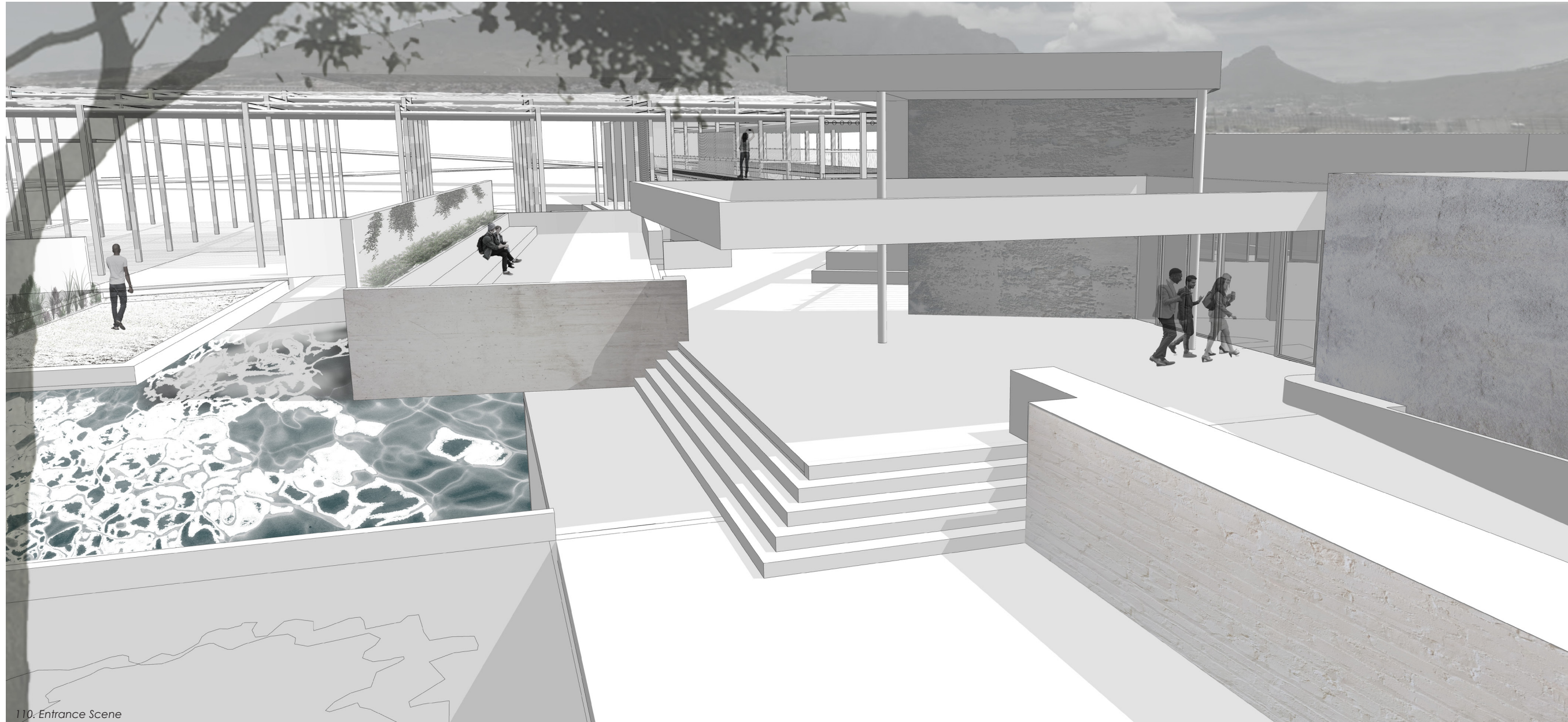
AXIS FLOOR PLANS | SCALE 1:500



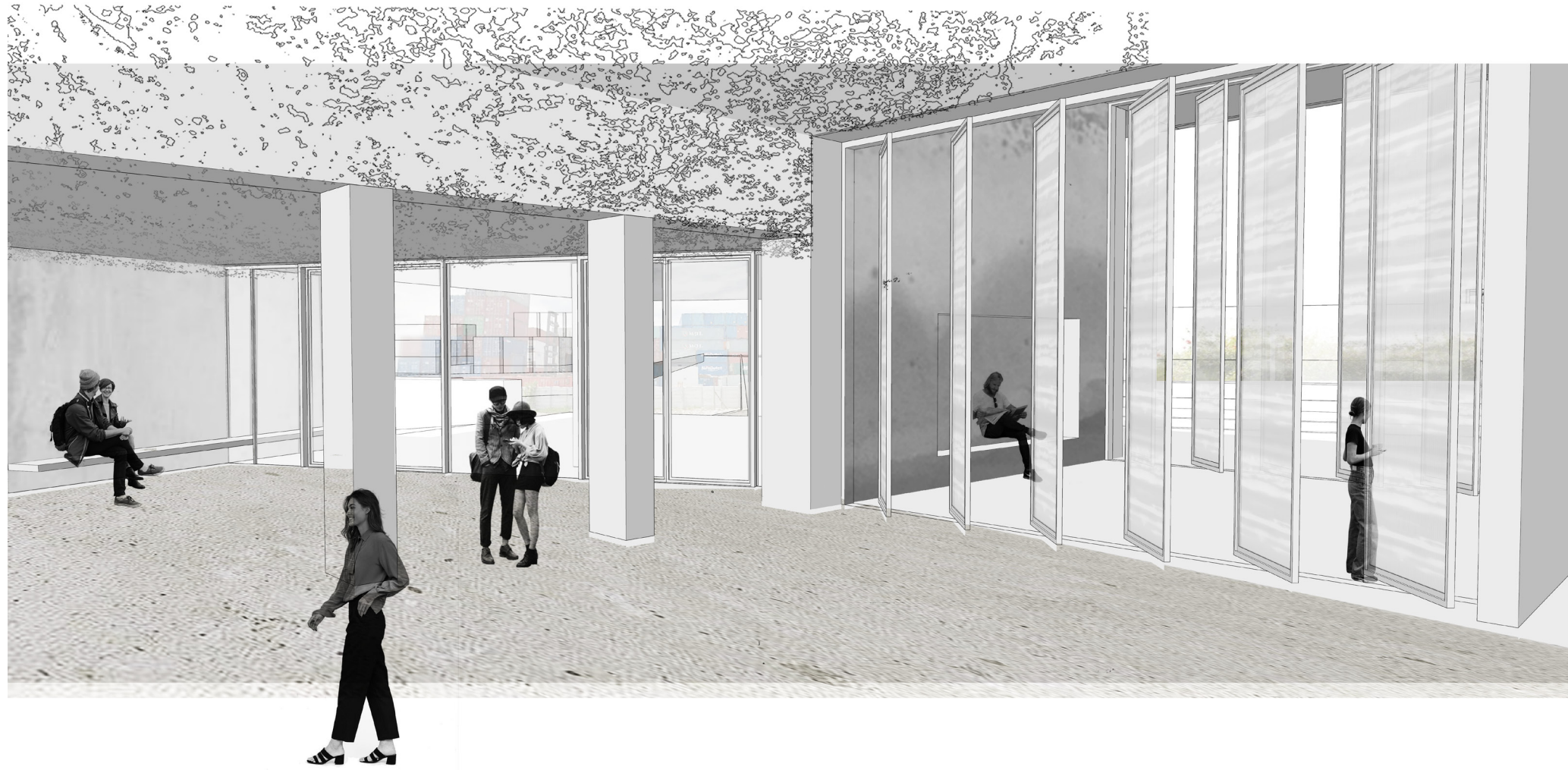
108. Section | NTS



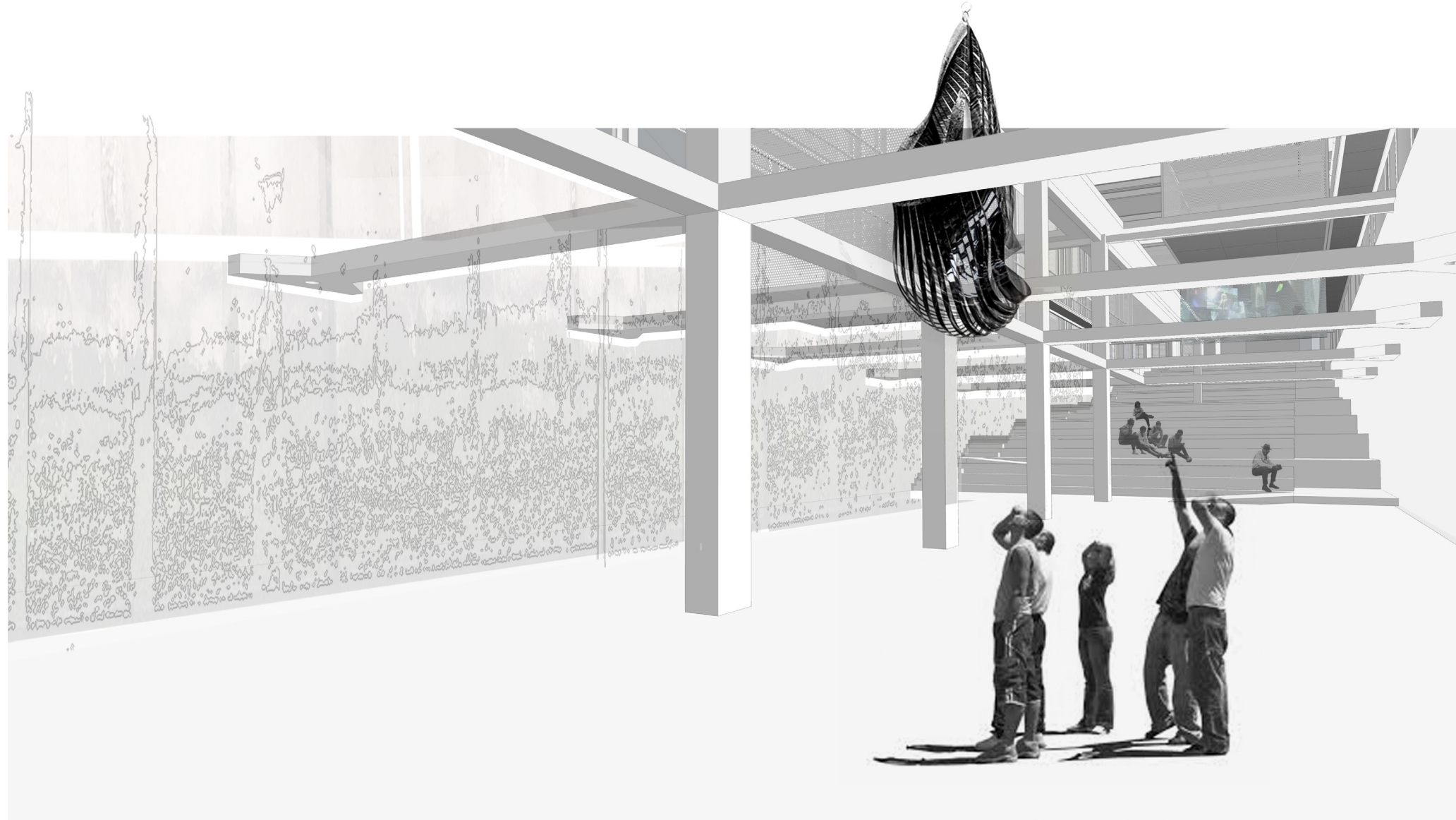
109. Ephemerality Systems



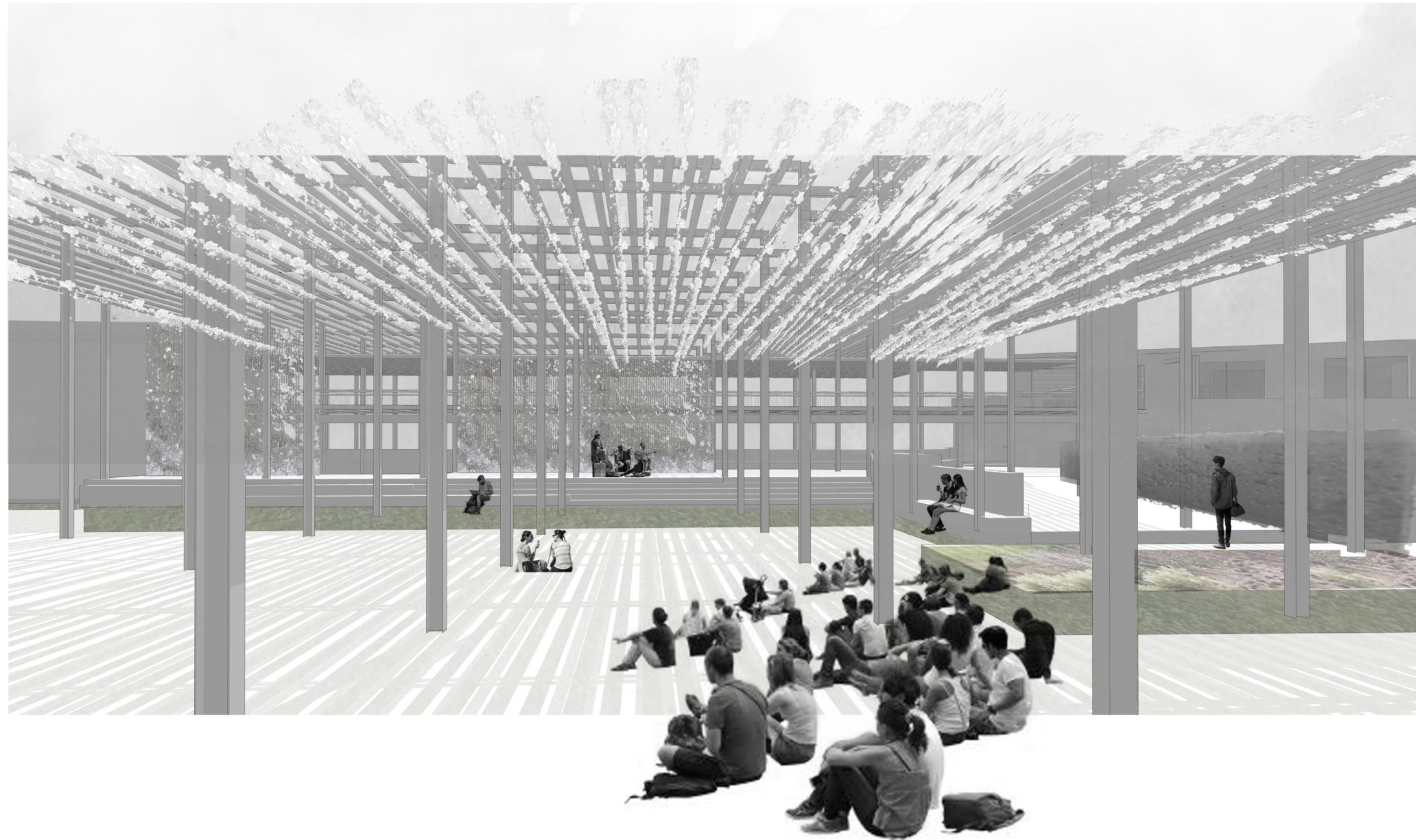
110. Entrance Scene

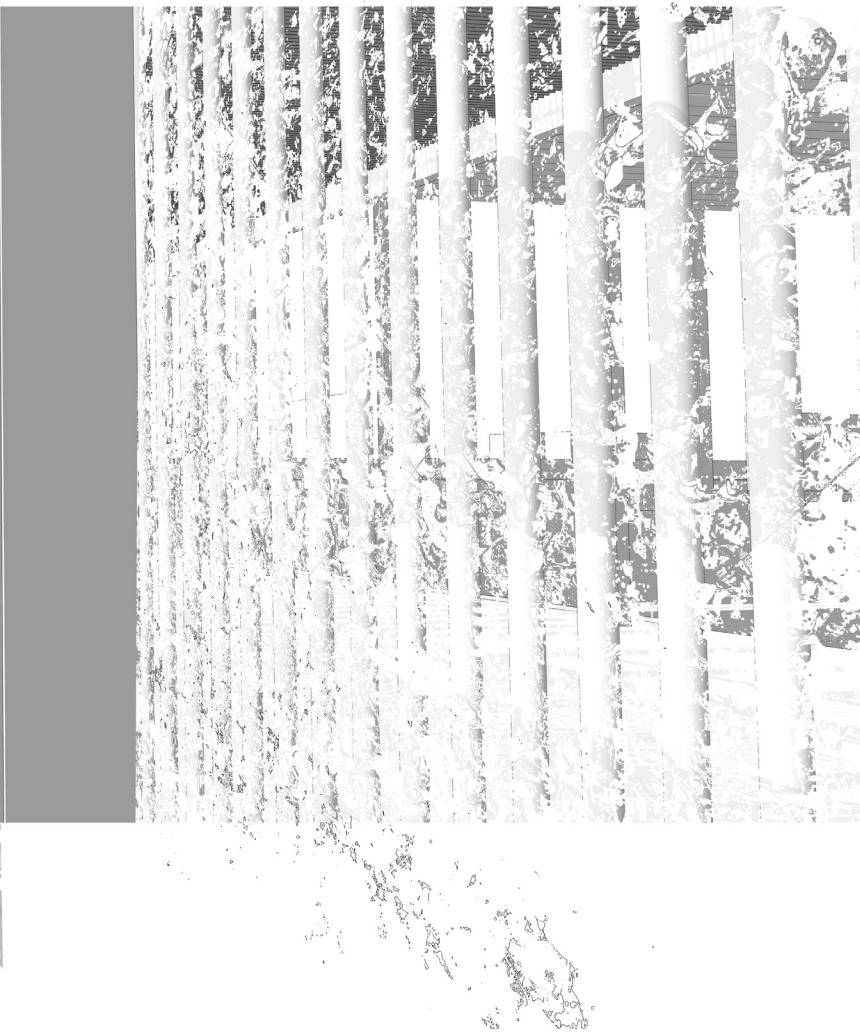
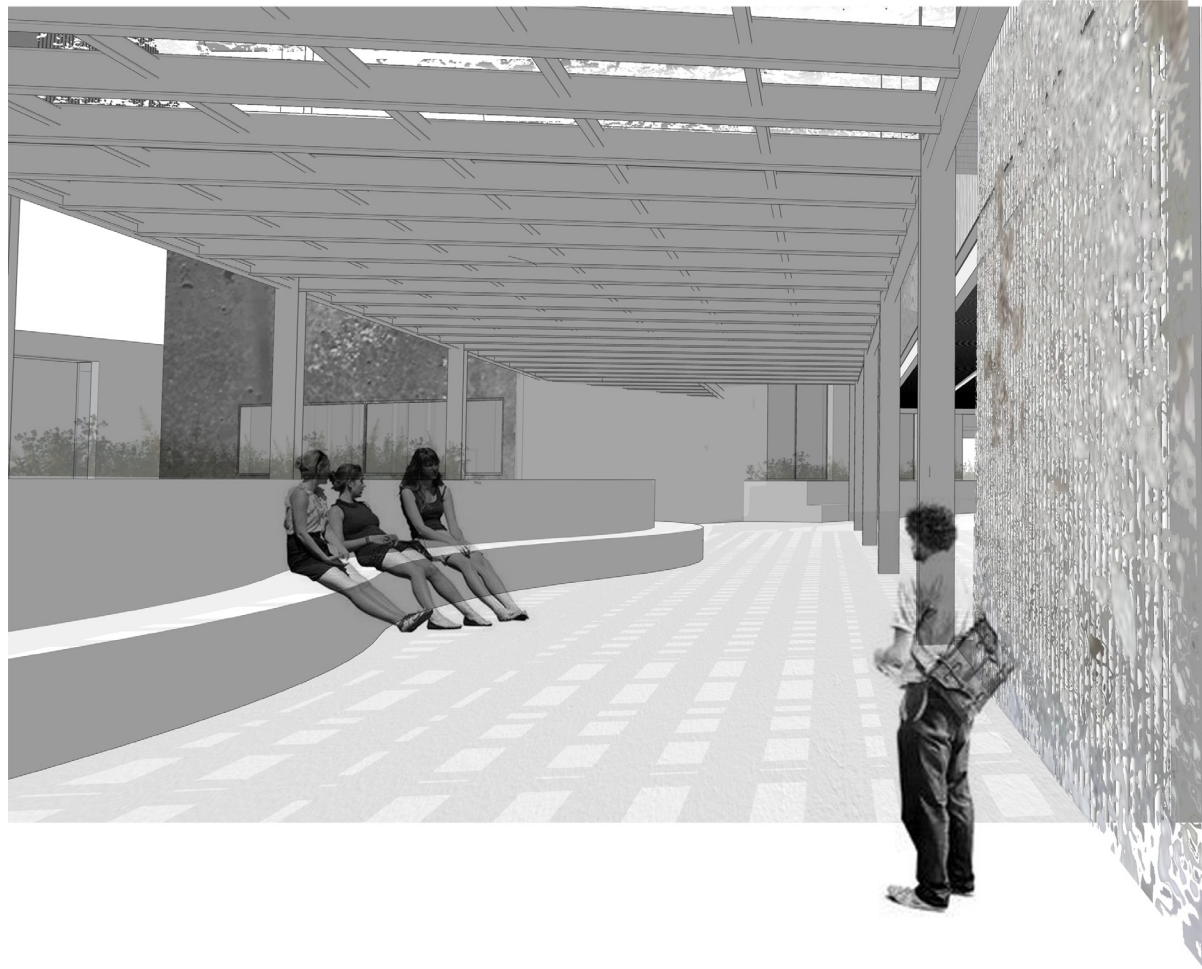


111. Foyer and Kiosk Scene

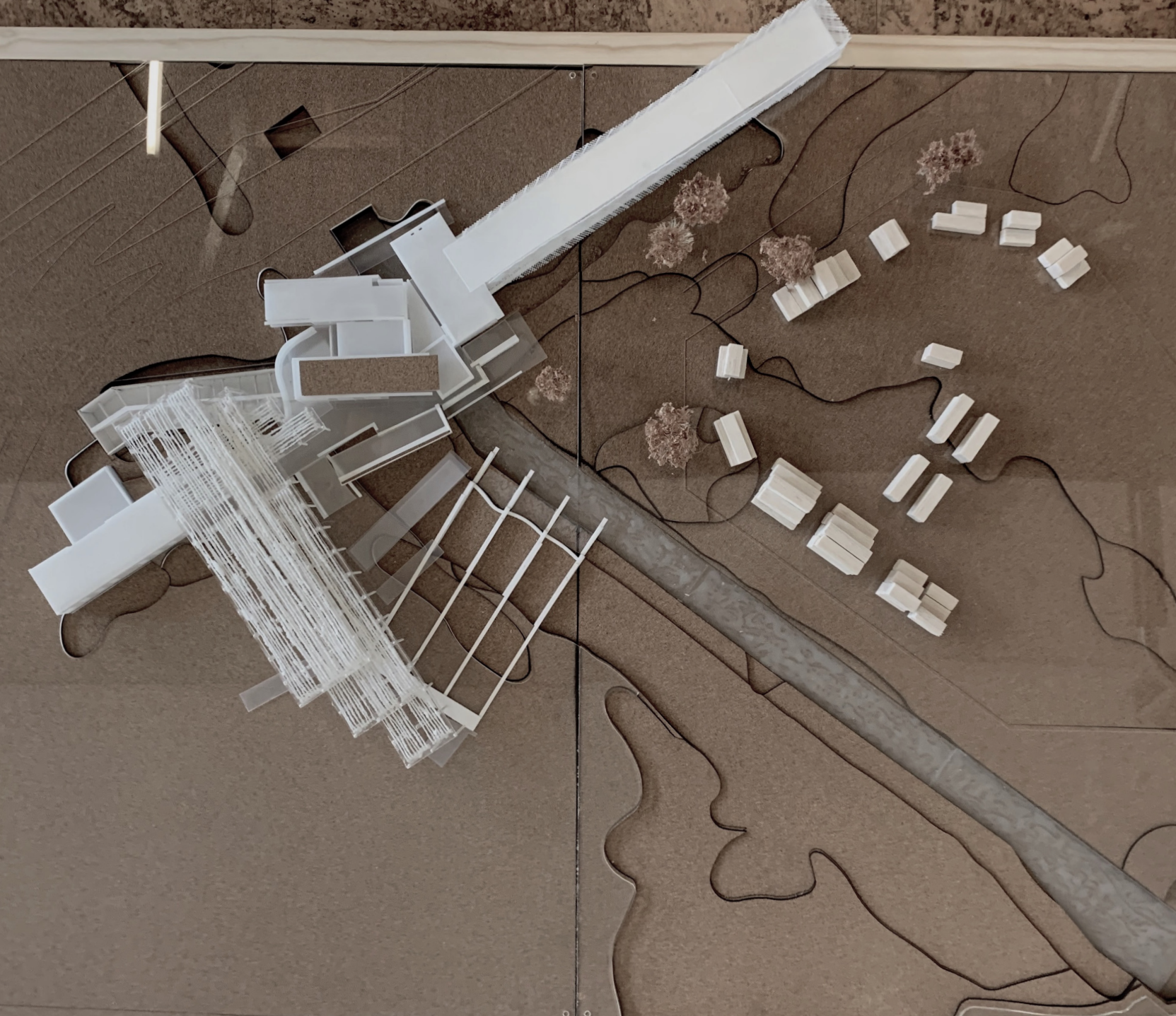


112. Inside Events Vessel Scene





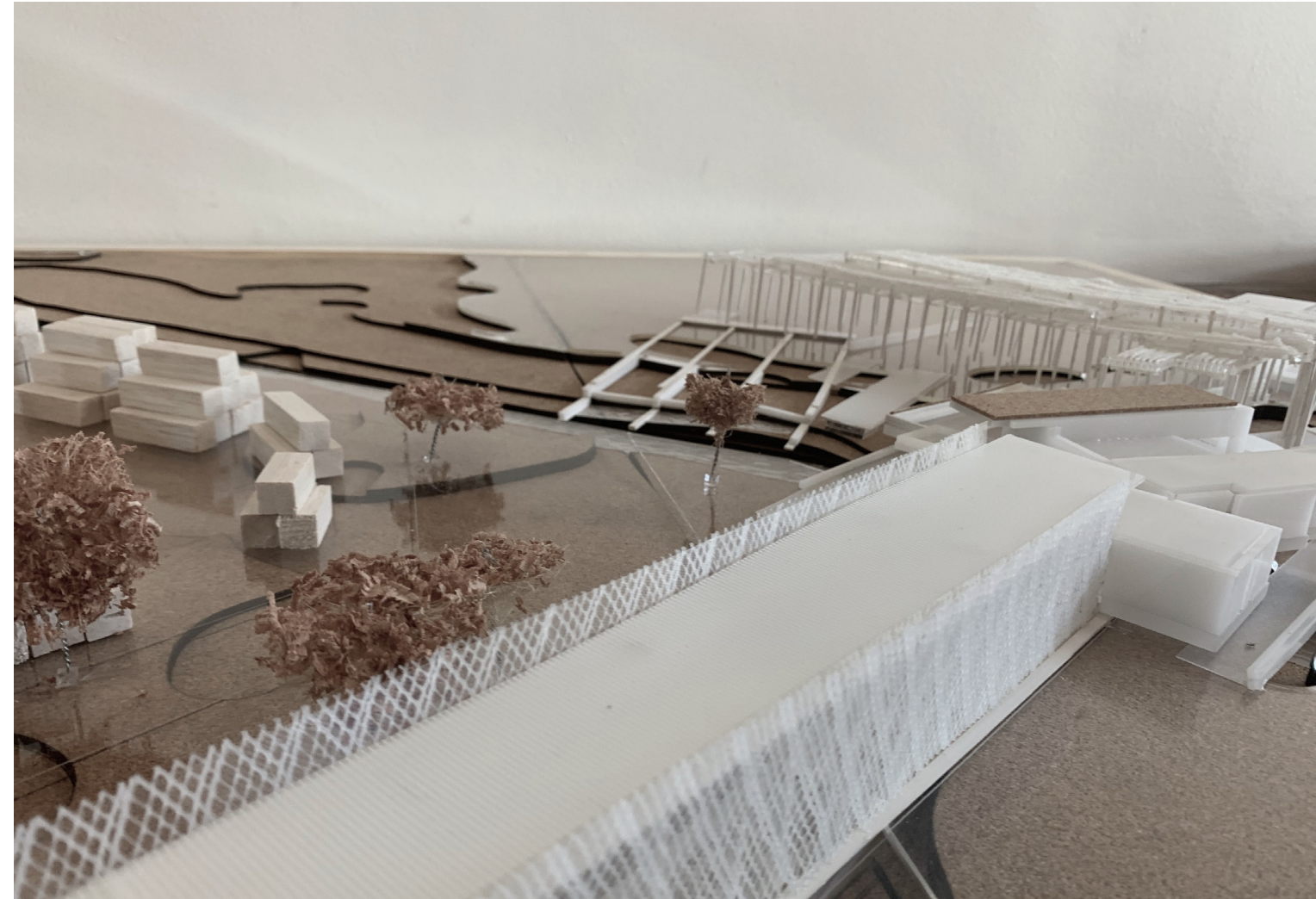
114. Covered Walkway Scene



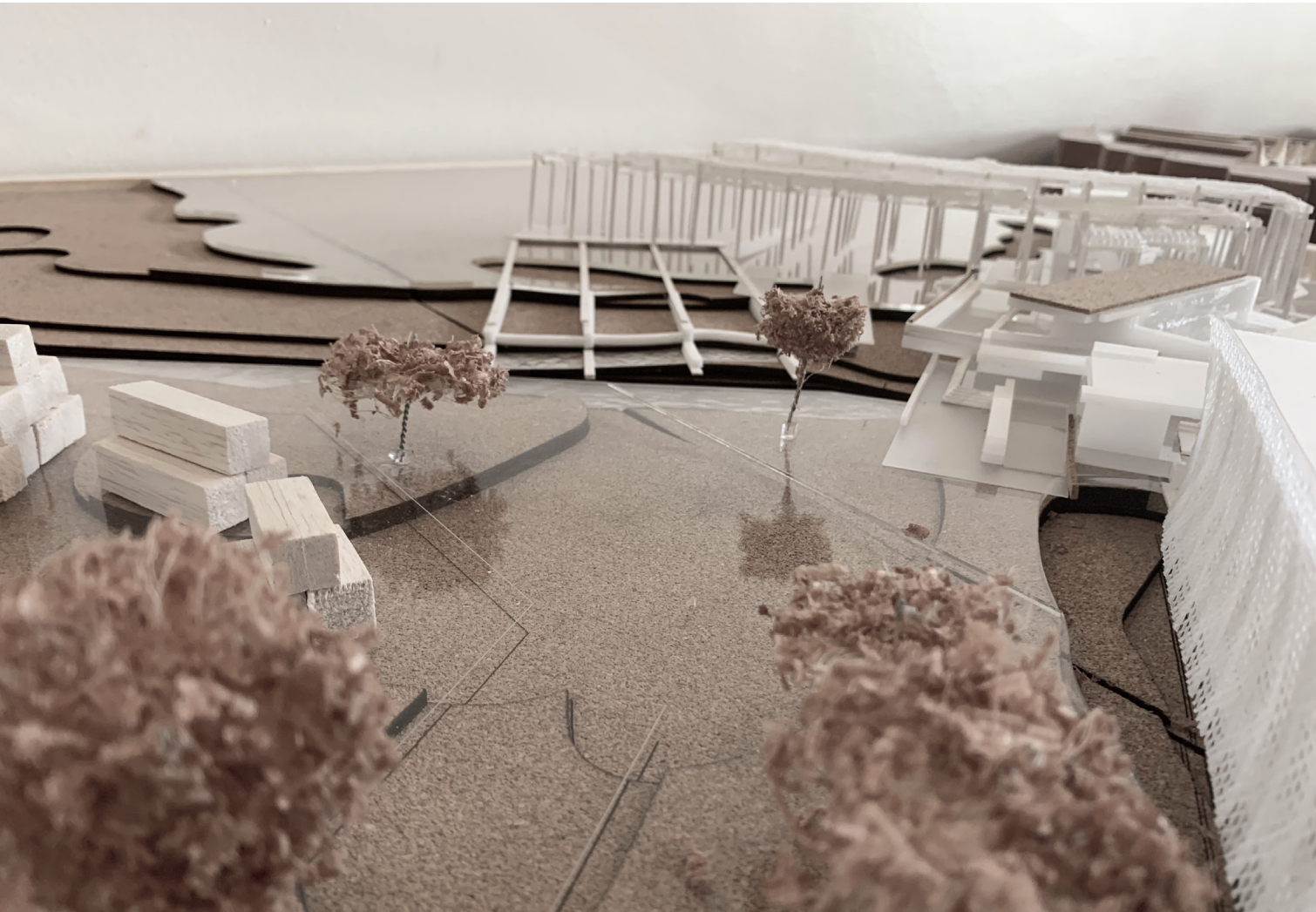
115. From Above



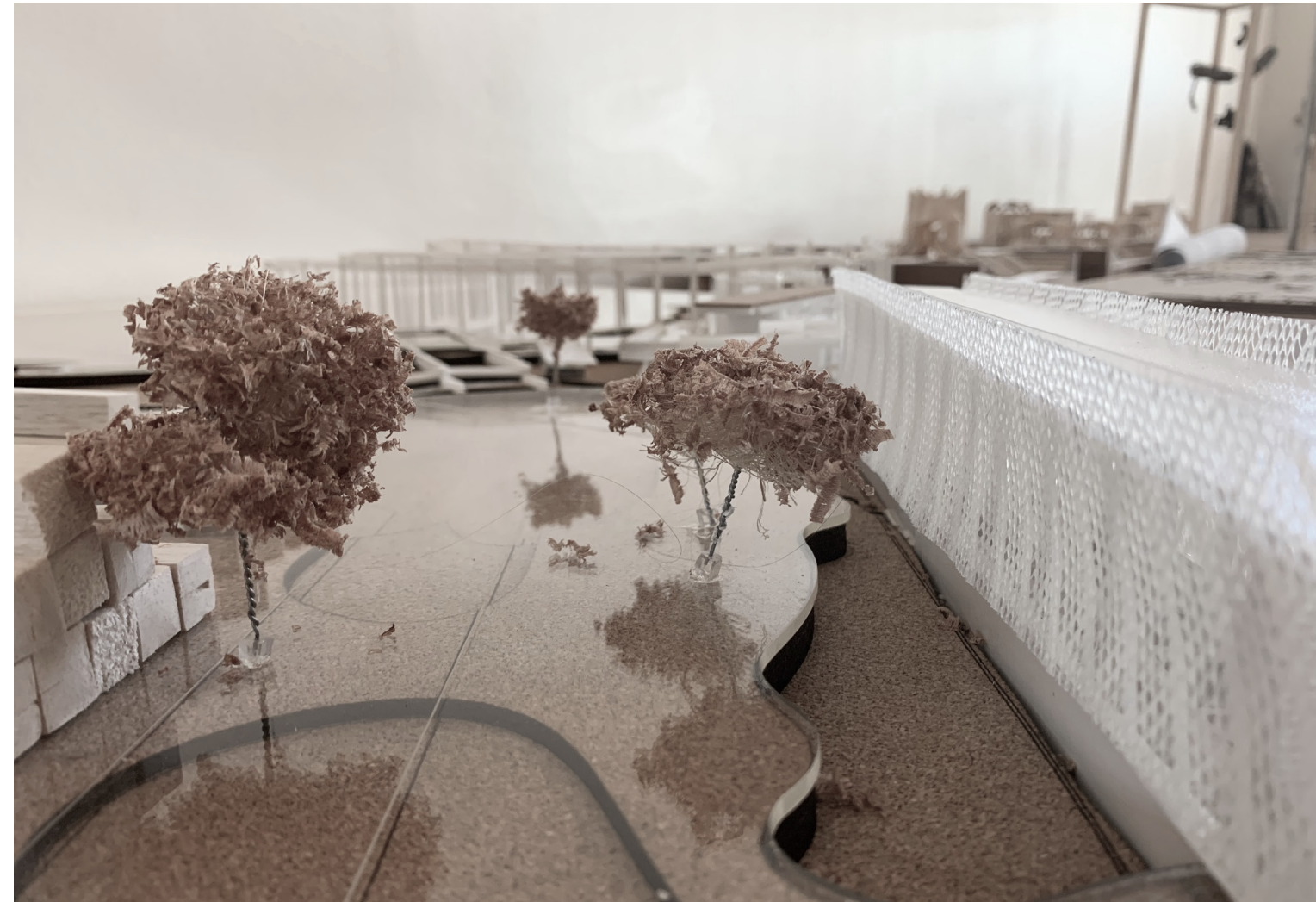
116. Scene 1



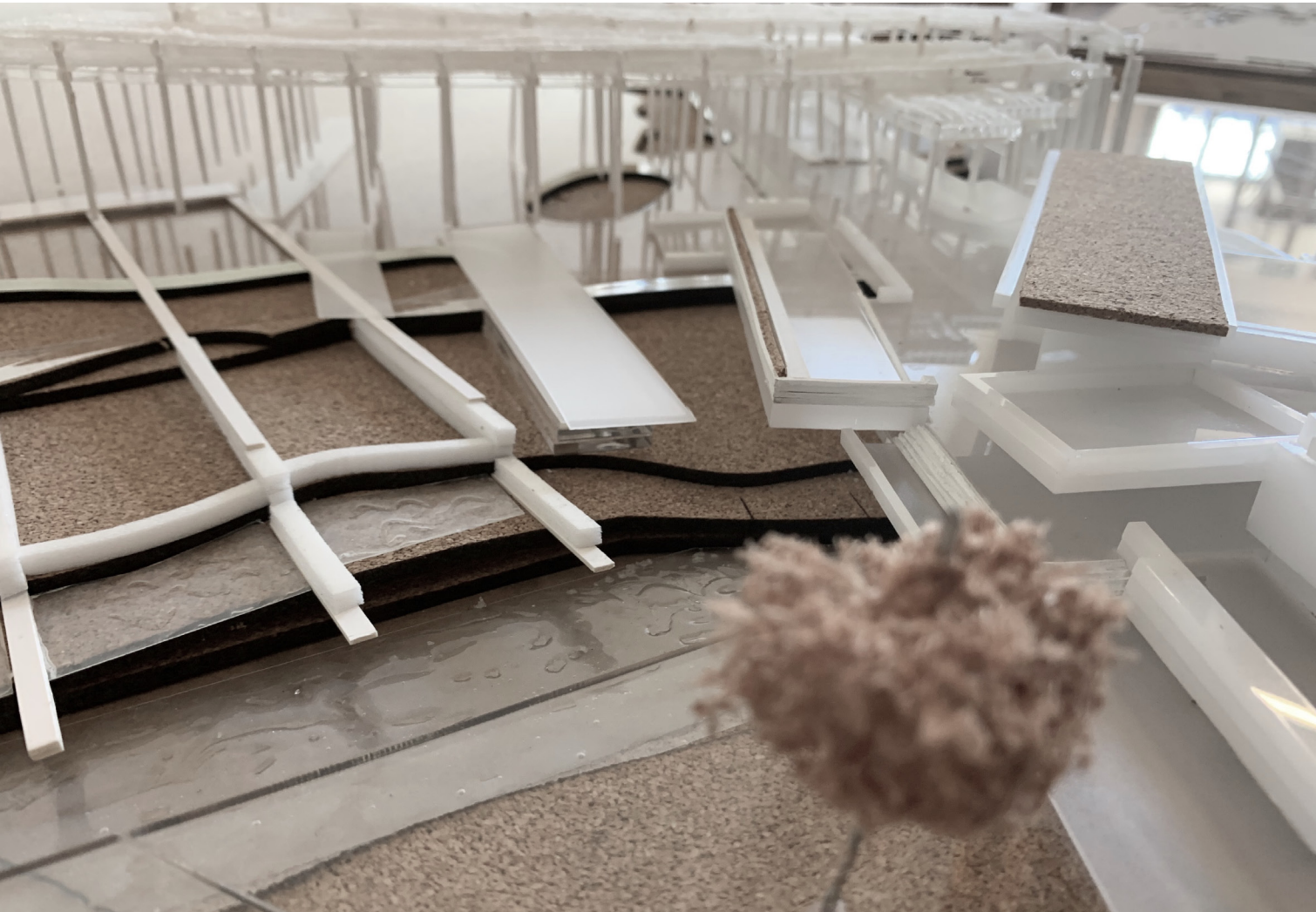
117. Scene 2



118. Scene 3



119. Scene 4



120. Scene 5



121. Scene 6



CONCLUSION

Conclusion

The interest in the transient process of weathering has been translated from a theoretical understanding into an investigation of how to create and design weathering architecture. The investigation has resulted in the proposed architectural product of a Saline Centre for Research and Creativity at the old Salt River mouth, in Cape Town. The saline centre is designed as an embodiment of weathering and confluence and as means to resurface the dissolved estuarine landscape through erosion.

The several layers of history of the chosen site were researched in order to create a contextual narrative and framework from which to design and respond to. It was discovered that the site was once in the midst of transient landscape, the Salt River estuary and broader wetland network. Additionally, the site contains an artificial confluence of saltwater and freshwater in the old salt canal and inlet culverts discovered to have belonged to the demolished Salt River power station, an estuarine quality. Consequently, a return to fluidity (looseness) has been proposed, whereby the edges of the canal and the programme have been developed to challenge rigidity through the removal of the one edge of the canal and insertion of a fluid programme into the culverts.

The tracing of the gradual disintegration of the waterscape provided the understanding that the like weathering the landscape is a process of subtraction

and addition. Therefore this understanding defined the approach to method of design and landform. Resurfacing this landscape was achieved through erosion of the land to create an embedded terraced estuarine landscape and through a weathering architecture with solid and dissolved nodes.

A programme of confluence of art and science was proposed, embodying the sites former and current state of convergence. A series of concept models were made onto which these ideas could be layered and testing with working drawings, sketches and diagrams. This resulted in a form that stretches over the old salt canal, bridging the divide in the site. A floating industrial steel box that inserts programmes hovers over the one culvert, transforming it into a loose space. The old pump house is converted into a research centre for saline crops, a fixed space. The contrasted programmes are merged or stitched together by a programme that is simultaneously scientific (rigid) and artistic (loose), a salt forming architecture fed by the seawater contained in the other culvert. The saline forming architecture is developed into a roof system that grows salt and is harvested, evolving and devolving, a weathering architecture fluctuating like an estuary.

A true resurfacing of the hidden embedded saline landscape through weathering architecture is achieved.

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ETHICS APPROVAL

Application for Approval of Ethics in Research (EIR) Projects
Faculty of Engineering and the Built Environment, University of Cape Town

APPLICATION FORM

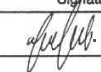
Please Note:


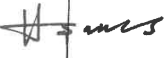
Any person planning to undertake research in the Faculty of Engineering and the Built Environment (EBE) at the University of Cape Town is required to complete this form before collecting or analysing data. The objective of submitting this application prior to embarking on research is to ensure that the highest ethical standards in research, conducted under the auspices of the EBE Faculty, are met. Please ensure that you have read, and understood the EBE Ethics in Research Handbook (available from the UCT EBE, Research Ethics website) prior to completing this application form: <http://www.ebe.uct.ac.za/ebe/research/ethics1>

APPLICANT'S DETAILS		
Name of principal researcher, student or external applicant	Micaela Jacobson	
Department	Architecture, Planning and Geomatics	
Preferred email address of applicant:	micaelajacobson@gmail.com	
If Student	Your Degree: e.g., MSc, PhD, etc.	March (Masters of Architecture)
	Credit Value of Research: e.g., 60/120/180/360 etc.	120
	Name of Supervisor (if supervised):	Kevin Fellingham
If this is a researchcontract, indicate the source of funding/sponsorship	N/A	
Project Title	A Forgotten Landscape: Re-surfacing the Salt River Estuary through an Ephemeral Industrial Architecture	

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	Signature	Date
Principal Researcher/ Student/External applicant	Micaela Jacobson		13 May 2019

APPLICATION APPROVED BY	Full name	Signature	Date
Supervisor (where applicable)	Kevin Fellingham		13 May 2019
HOD (or delegated nominee) Final authority for all applicants who have answered NO to all questions in Section1; and for all Undergraduateresearch (Including Honours).	Fadly Ismael		10.07.19
Chair : Faculty EIR Committee For applicants other than undergraduate students who have answered YES to any of the above questions.			