01

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REVITALISED

INTERSECTIONS

The Palimpsest of Durban and its Port. A critical examination on port-city identity concurrently with neoliberal agendas. A Dissertation by Yoshlan Printhavanan Mudaly in association with the University of Pretoria's Boukunde School of Architecture for the degree March (Prof)

Declaration

In accordance with Regulation 4(c) of the General Regulations (G.57) for dissertations and theses, I declare that this dissertation, which I hereby submit for the degree Master of Architecture (Professional) at the University of Pretoria, is my own work and has not previously been submitted by me for a degree at this or any other tertiary institution.

I further state that no part of my dissertation has already been, or is currently being, submitted for any such degree, diploma or other qualification.

I further declare that this dissertation is substantially my own work. Where reference is made to the works of others, the extent to which that work has been used is indicated and fully acknowledged in the text and list of references.

Yoshlan Printhavanan Mudaly

November 2021

Submitted to fulfil part of the requirements for the degree of Master of Architecture (Professional), Department of Architecture, Faculty of Engineering, Built Environment, and Information Technology (EBIT), University of Pretoria

University of Pretoria, 2021

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Author:
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Study leader:
Mr Dario Schoulund

Course Co-ordinator:
Dr Arthur Barker

Research Field:
Regenerative and Resilient cities

Client:
Transnet National Ports Authority (TNPA)
City of eThekweni
MSC Group

Programme:
Mixed use retail space
Office
Beer Tavern
Gallery/Exhibition space

Macro Case study area:
Durban Harbour & Lower CBD

Meso Case study area:
Durban Point Waterfront

Micro Case study area:
Heritage Ruins Site with old sewerage plant along Albert Terrace and the old office precinct adjacent on Mahatma Gandhi Road / opposite the new MSC Cruise terminal.

Co-Ordinates:
29°52'20.9"S 31°02'53.9"E

Abstract

The discourse of the dissertation is focused on the near future development of Durban's premier port towards the year 2048 (Transnet 2019: 37) whilst reflecting on the developmental interest of the city to extend or overlap within port boundaries to create more dynamic and integrated programmes. The dissertation focuses on a particular characteristic of port design related to the architectural discipline being the immediate harbour mouth interface to existing infrastructure. By doing this the researcher is able to outline opportunities or constraints on-site and develop possible building strategies concurrently with available theory.

The aim of the study is then to dissect concepts/precedents of harbour/port-city identity and explore how Durban shapes up to other international port-city expansions that deal with modernisation proposals regarding port efficiency, programme and productivity.

The methodology breaks down the main research question and sub question(s) with their particular needs in parallel with the port extension development project envisioned by Transnet and Transnet National Port Authority port expansion documentation (Mpuku 2018, Tnpa 2019: 21-37, Transnet 2019: 19) and from such methods, an architectural possibility arrises by noticing absences in planning and opportunities through the research questions investigated. The intention is to recognise the port as an extension of civic possibility as well as industrial/commercial development that can deal with functionality, architectural innovation and spatial integration issues that spill into the city.

The project seeks to explore challenges and potentials of the site as well as combine and/or overlay programmes and typologies to benefit the fluid nature of constant movement and access around the harbour and the vision is to create a dynamic and inviting urban environment that promotes innovation and trade whilst bringing in leisure, craft, events and conference in a singular space. This living 'waterfront' can therefore form basis of a catalyst for the resurgence of an identified seaport.

FOR BEST VIEWING PURPOSES - VIEW AS SPREAD OVER 2 PAGES

Glossary of Words

Neoliberal:
The driving discourse within the dissertation which relates the Transnet National Port Authority to port activities in the city urban fabric. The potential of this interface is driven by the market for national interest and economic success

Port-city:
The cultivated environment of port operations derived into an urban context mediated by civic investment and socio-economic movement

Interface:
The hybrid language relation between eThekweni and the TNPA

Private sector:
Private investors/stakeholders who have an interest in the city/urban development

Operational space:
Space satisfying the needs of commercial activities in tangent with harbour programs

Transnet:
State owned private company running port operations in Durban

Acknowledgements

The collective amalgamation of this dissertation would not have been possible without the guidance of God for which I am blessed every day.

I would like to thank my supervisor, Mr Dario Schoulund for whom I have the utmost respect and admiration for. This dissertation under your guidance has been a journey which I believe has created something really special.

To the Boukunde lecturers and staff who welcomed me to Pretoria from the first day I started this journey in 2016.

A huge thank you to my whole family who have supported me.

Specifically, to my parents who constantly stayed up all night waiting for me to submit, feeding me whilst I didn't have the energy. Mum & Pappa, thank you for sacrificing your time and efforts to put me through university and allow me the space to live my dream.
To Kam and Vani Ather who have been the most loving aunts.
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To my little brother Sen, who kept me on my toes and guided me when I needed it.

To my *honorary* co-supurvisor Mama. You started this expedition into architecture for me when I first walked into the university building with you and guided me with your words which I hold dear. Thank you for opening up the opportunity to start this dissertation.

To my grandmothers who never fail to show me off to the world and give me unconditional love.

To my partner, Priyantha who *never* left my side, rain or shine, day or night, and *always* supported me - thank you.

And lastly to my two late grandfathers. Tubby Thatha and Dave Thatha, who have been my guardian angels throughout this year, especially you Dave Thatha who I wish could have seen me finally complete this year. I owe you both my gratitude for the love you've given me, from the JC mansion flat building architecture out of toilet rolls, to sitting with you hearing about India architecture whilst watching SunTV. I am the man I am today because of what you taught me from a young age. Thank you for always believing in me.

I dedicate this body of work to you two.

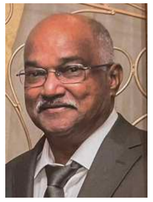
I love you

Your grandson, Yoshlan

Tubby Thatha

1939-2009

Dave Thatha



1944-*2021*

Preface

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Preface

Revitalised Intersections, VOL. 1

By YP Mudaly

01. Introduction

General to micro strategies and issues contained in the Durban Port

1.1. General Issue : Main issue of inefficiency and its implications on urban contexts

In a reading of contextual sites of enterprise and historical significance, the narrative of most post modern harbours are described as outdated places that are frequently desolate or heavily industrialised (Davis 2014). Many harbours are now disassociated from cities they used to breathe life into and from this perspective through the lens of inefficiency and misaligned planning one sees the demise of the port and greater context.

1.1.1. General Breakdown

Maritime operations in Durban's port are degrading (Rodrigue, Cooper and Merk 2014: 44) due to capacity constraints and the relocation of many programmes to Richards Bay and the southern basin new port dugout (Tnpa 2019). Internationally, the issue of inefficiency has come about from a combination of changing market circumstances being the globalisation of trade and greater participation of China (Dray et al. 2006: 32-22). This operational mentality is negative because as much as it negates the need to upgrade infrastructure to facilitate programme - the acceleration in cargo volumes of which is container handing and bulk capacity becomes overwhelmed. However, a further reading on the development of port-cities by Cheung and Yip (2011) assert that the impact of de-industrialising urban nodes post 1980 decentralised many activities away from the fringe of the harbour mouth to the hinterland, forcing the port to lose its identity and create brownfield sites.

1.1.2. Potential of Brownfield Sites

Brownfield sites offer developmental potential in socio-cultural and recreational programme to facilitate a boost in 'absent' space that aid in identity restructuring. This rebranding of port identity offers up the potential of examining abandoned brownfield port district nodes, revitalising them back to public use through comprehensive strategies of regeneration (Dündar et al. 2014). The author Ryan Centner enterprises that the priority becomes "a more narrow environmental sustainability alongside sociopolitical participation and economic competitiveness, which lead to the fragmented projection of conflicting landscapes" (Centner 2009: 2).

Fig. i. Macro to Micro map analysis diagram (Author 2021)

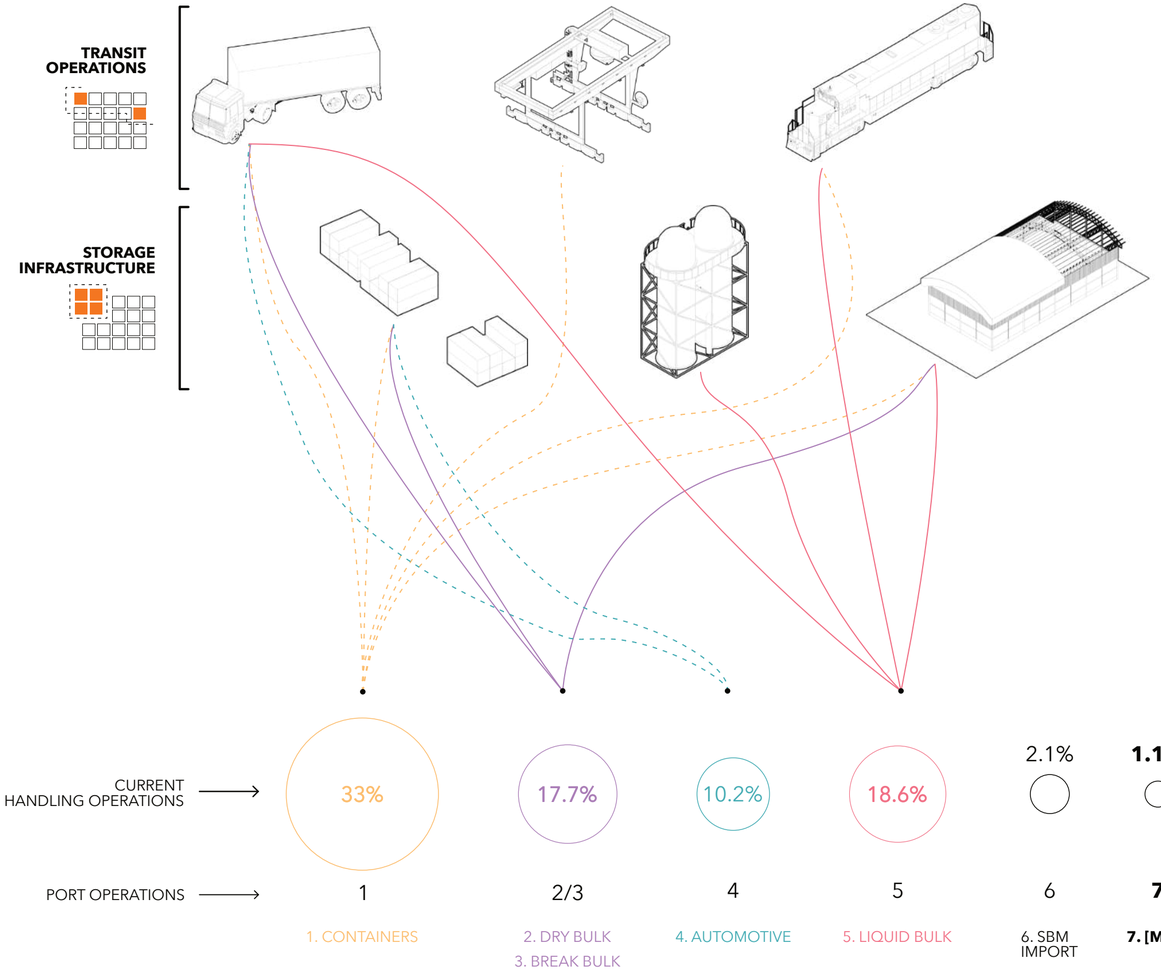


Fig. ii. Port operational management diagram pertaining to Durban Harbour and scale of operations (Author 2021)

1.2. Urban Issue : Misalignment of planning

Historically, the nature of a waterfront/port-city has always been identified as a prominent economic interface to the greater reaches the city. They not only act as the economic centres for many water bordered cities but also act as important civic quarters for activity from the central points of the city. Port-cities not only allocate programme which facilitate economic sustainability but are a vital urban quarter which holds socio-cultural success in many sectors of the zoned site. This organisation of private operational space to public co-operative space is a key denominator in the development/operation of the context, however, it may cause spatial or commercial conflict where the roles and responsibilities of parties involve overlap and do not coincide (Dündar et al. 2014: 4).

The main author of 'New Faces of Harbour Cities' Şebnem Dündar (2014: 3) contributes to the position stipulating the importance of the waterfronts and its unique urban quality by stating that"developing port cities have increasingly become the most important element of the world economy, parallel to the development of international trade through the neoliberal free market and industrialisation". This position advances the rhetoric that because of their distinctive identity in the urban context, waterfront hold important transit nodes, urban development or civic genii loci that set them apart from other cities world confirmed by Peter Bosselman's book Adaptations of the Metropolitan Landscape in Delta Regions (Bosselmann 2018).

From the analysis of typical harbour spaces the main urban issue assessed the critical intersection of the waterfront which lies between the working port and the city as seen in fig. 1 showcasing the Durban Point Waterfront. The area rationalises the circulation of organised sites and public quarters in between operational space where edge conditions and linkages draw in synergies from surrounding areas. By outlining the discontinuity between the city and its waterfront edge, functions such as scale and sensibilities to development are introduced and superimposed onto existing contexts.

1.2.1. General Breakdown

Due to the accelerated growth, Durban's port is a major hub in Africa for container traffic and commercial passenger threshold so a major redesign of infrastructure to widen the port and improve programme is necessary. They are the object of comprehensive planning without yielded success, despite TNPA (Transnet 2019) and eThekweni (Mkhize 2016) making local area plans, they isolate each other in conflict of interest and disagreement of land parcel allocation.

Durban port being a historically significant seaport, from its genesis in docking in a lagoon to its larger expansion, has been an integral part of its international heritage, identity and continuity to the success of the export/import industry in South Africa. Performance of the port is integral for bringing life into the city from operational programme spilling out into commercially viable space which has urban characteristics of threshold and recreation. Investigations on the attitude of space in its proximities and the form of the harbour basin become principle informants to aid the researcher in the approach of the problem.

Fig. iii. Urban framework map outlining current handing of port import/export and colour coded locality. (Author 2021, Mapbox 2021)

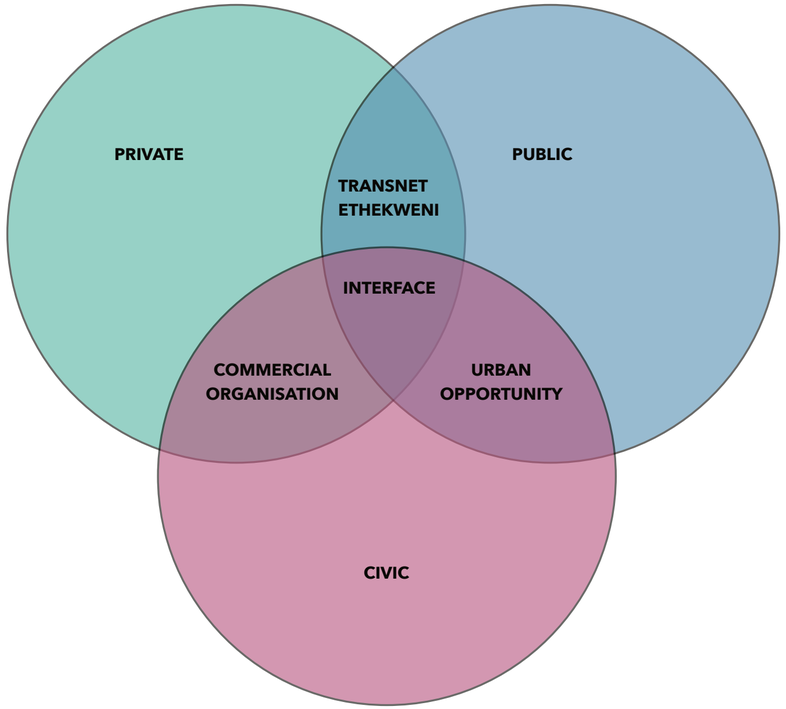


Fig. iv. Diagram of neoliberal interface parties (Author 2021)

1.2.2. Neoliberal strategy as an informant to urban planning

Strategies of regeneration situate the port city as comparatively different to those pre-1908's industrialisation as the layout seeks a socio-economic mediation. The level of integration is then the complete separation of port and urban structures complying with simple commercial maritime offerings. Since the 1980's, neoliberalism was adopted as a new model of development for port production of which container ports are the spear head. The junction area of the waterfront has the potential to denote maritime identity and port related industry and services (Pardali 2008).

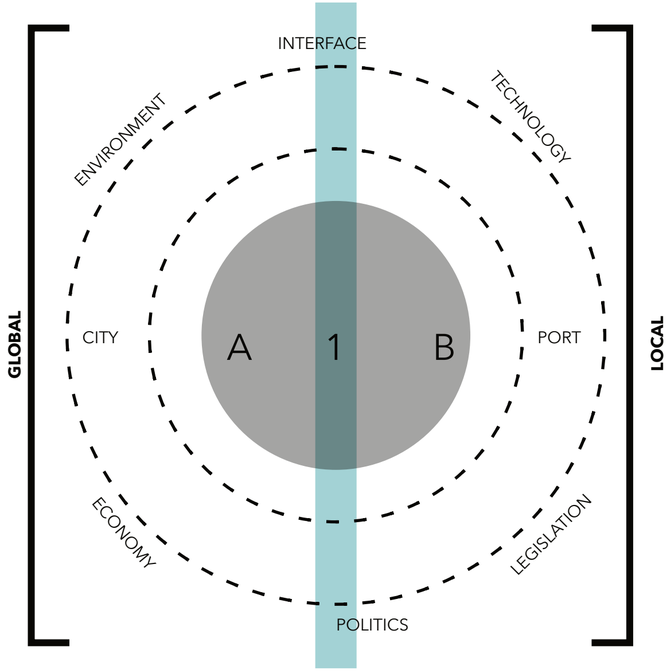


Fig. v. New faces of harbour cities adaptation diagram (Dündar et al. 2014)

The logistics link is then broken into the following neoliberal strategies by Pardali (2008: 83):

1. Emphasis on effectiveness

2. Aim of competitiveness of stakeholders involved in the seaport

3. Investment into new production of modern facilities

4. Public-private partnership (PPP) investment to develop port capacity maximisation

5. Maintaining safety and security through ISPS accreditation which is the main security certificate for a port.

Backing the research, the author (Dündar et al.) suggests that the port can then operate as a domain for entrepreneurial/national activity inclusive of new facilitation of programme in the harbour interface. Further progression in port competitiveness is achieved through the institutional cooperation between the port and city with PPP's, through collaboration efforts (Rodrigue, Cooper and Merk 2014: 10).

1.3. Architectural Issue : de-industrialisation and abandonment

During the periods of 1980-2000+ within the reconstruction stage of development of waterfront cities (Dündar et al. 2014: 6), globalisation requires a change in the functional mode and design of port infrastructure and the re-established link with the city (Hein 2012). From this standard previously allocated land was de-industrialised to make way for new developments which left the previous generation of infrastructure to decay and abandonment. The issue here lies the notion that because the new development was more hinterland the observable edge of site lost its identity and strength, desolating the space as non place (Tulsiram et al. 2007).

1.3.1. General Breakdown

Compared to other port cities such as Rotterdam, Shanghai, Buenos Aires and San Francisco , Durban was identified as the least integrated in its relation to the water edge and mediation of ground typologies from the working port threshold back to the city. Durban port does not make use of any urban port strategies relative as described in the theoretical framework mentioned in the 'Guide-of-Good Practice' document authored by the AIVP 'worldwide network of port cities' (Aivp 2015: 9-132):

1. Spatial organisation (13-69)
2. Environmental challenges (75-97)
3. Economic market strategies (103-114)
4. Governance and policy adaptation (117-126)

Fig. vi. Durban point waterfront diagram (Author 2021)

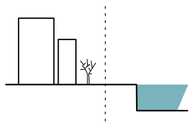
Durban Point Waterfront

PORT

HARBOUR-CITY INTERFACE

SPATIAL INTERSECTION

ARCHITECTURAL LANGUAGE



1.4. Research Methodology Problem Statement

Fractures between the city of Durban's enclave into Point Waterfront and the working harbour controlled by the TNPA have created landscapes of heavily outdated places which sit desolate or abandoned. This dissertation aims to focus on the interface of the ports heavily industrialised past through its infrastructure and attempt to catalyse the area to tie the working port back to the city.

1.4.1. Research Question

How do we architecturally, or urbanistically reconnect the diminishing Durban port back to the city in order to create a resilient port-city identity that Durban lacks?

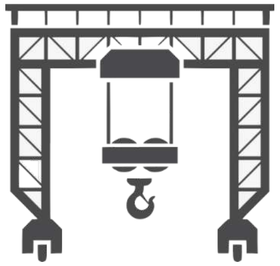
1.4.2. Detailed additional research questions

Further questions were authored by Olaf Merk (2014: 23) - a ports and shipping administrator. In a document published by the eThekweni Municipality, Merk determined that there were further challenges posed as questions:

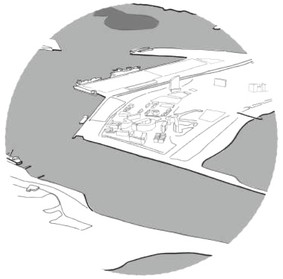
i. How can the use of neoliberal theory align the economies of the city to the port model to catalyse a resurgence in development and agency?

ii. How one is able to align global markets to local market ideologies (Municipality 2014: 23) [sic] through the use of neoliberal strategies?

iii. How one is able to align private interest to public interest through space making and infrastructure?



PORT OPERATION



PORT-CITY IDENTITY

1.4.3. Research objectives

The structure of the dissertation set into the following objectives in order to determine and break down information. Sectors regarding contextual, functional issues as well as technological issues were investigated.

<u>The objectives were:</u>

i. To evaluate the efficiency of the port as well as the types of port operations occupied by each land sector and zone of the port in accordance with programme and use;

ii. To explore the necessity and the reasoning for the expansion of the port and the impact a long term phasing may have on the identity of Durban's port structure; and

iii. To collect and interpret opinions about whether the current port city typologies are comparatively better or worse to international port city typologies.

Fig. vii. Co-operation between port handling and identity diagram (Author 2021)

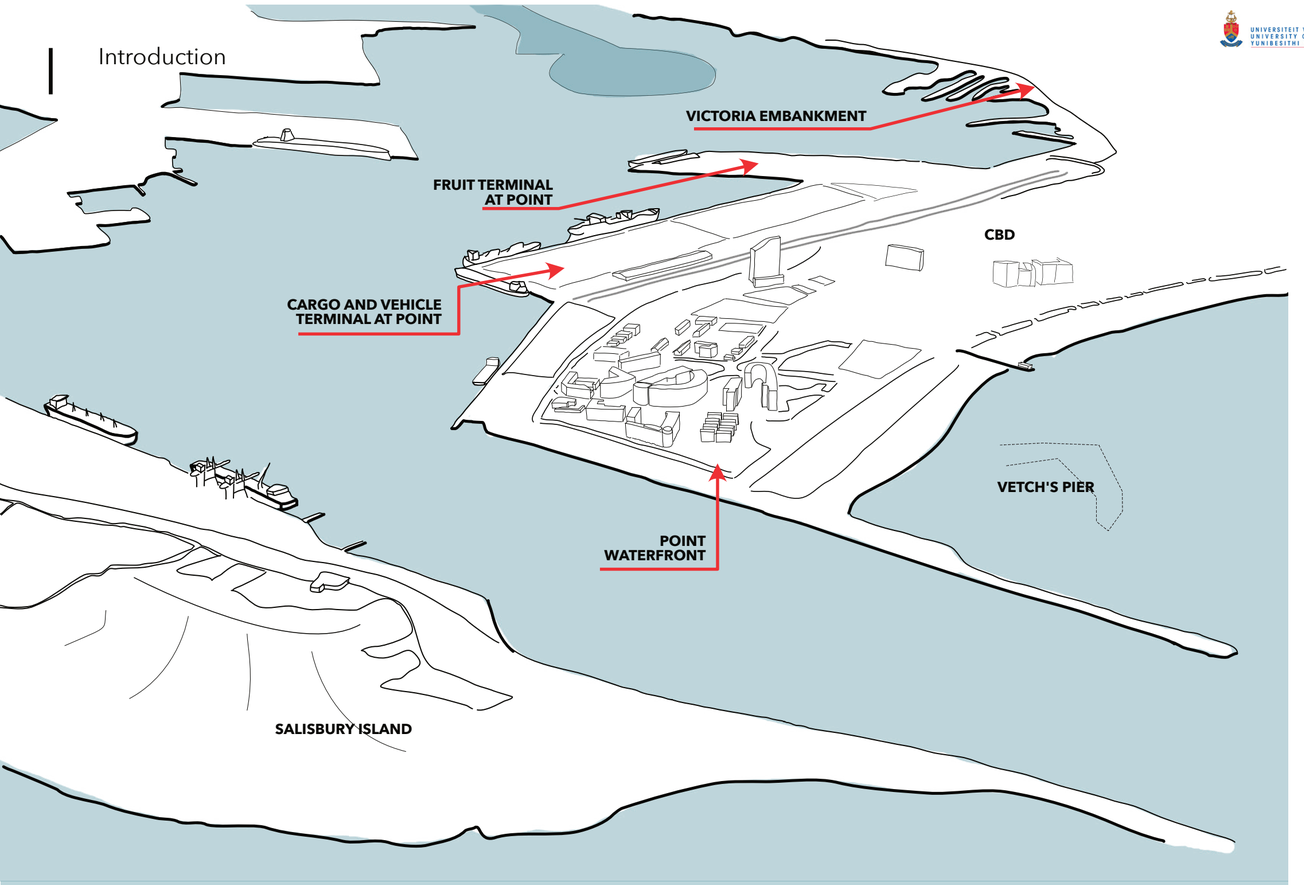


Fig. viii. Diagram of Durban Port (Author 2021)

Logistics and its frameworks are crucial to economies of both local and national governments which facilitate business operations of its citizens.Efficient systems are necessary for the global chain link management of these developments

Durban port is a handling facility for such trade and with the current operational conditions, there is a drive to revamp the existing area to deal with the facilitation of trade on the global markets

1.5. Literature and data collection

The aim of the dissertation is to address a contextual and spatial problem regarding the disassociation between the city and the relation to the harbour mouth within the Point Waterfront and analyse the sites infrastructure which sits on the Transnet boundary formally known as Mahatma Gandhi Road (Transnet 2008). These contextual problems are the consequence of port inefficiency relating to operations, programme, socio-cultural activity and governance of the port-city interface. The clarification of the research will be combined through a more qualitative lens established by selection of interviews where groups of representatives from stakeholders in the project address questions posed by the researcher.

As a response to research, a qualitative approach was used in order to get an in-depth analysis of data; through interviews and appropriate literature. There was a reflection on operational v theoretical research which underpinned and assessed assumptions of the past, the current and future development of port-cities and the neoliberal implication/assistance.

An interpretivist paradigm analysed the research through the scope of governance and the smart port-city theory within the methodology. The scope of governance examined the existing dualities of ownership and conflict by stakeholders involved in the project, namely TNPA (Transnet 2019) and eThekweni (Mkhize 2016), the existing interface between land parcels and the exploration of a future collaboration to mediate a solution which satisfies both the roles and responsibilities of parties involved that may serve both economic requirements. The other lens is the smart port-city ideology which was a consequence of the AIVP (Aivp 2015: 9-132) and further writings by the following authors on port-city theory.

1.5.1. Research Theory

i) (Dyer 2014) addressed the necessity of the port expansion and its implication on adjacent land parcels.

ii) (Iyer 2012) consolidated the back of port infrastructure movement and the potential for what the existing Durban Point Waterfront harbour site could become.

iii) (Flynn 1991) explains the requirement of temporal continuity in open space and this takes a turn on the evaluation of the Durban Point Waterfront site.

iv) (Meurs 2012) the main urban precedent of Rotterdam.

v) (Dündar et al. 2014) Harbour city theoretical stance on space and contextual change.

vi) (Hoyle 2000) global and local assumptions on port cities.

vii) (DiedrichDahl and Babette 2020) transformation of port city theory.

viii) (CollerMaasdorp and Mavundla 2007) a deep analysis of Durban's Maritime industry.

The methodology informed the research and set up basic design principles to introduce current and future discourses on the subject of harbour development. The relevance of this research-lead-design was to sustain a common narrative existing in the condition of port development and critically scrutinise it so it may present itself as more efficient, urbanely inclusive and address the research question.

1.6. Data collection structure

1.6.1. Interviews

In relation to the case study collection as well as relevant theory collected in the research body, there was a requirement by the researcher to collect and interpret opinions of the working port as well as the waterfront through structured interviews. This was done concurrently with the on going theory postulation on harbour theory (Hoyle 2000, Dündar et al. 2014) as well as port city interface readings (Konvitz 1982, Hein 2012, Meurs 2012).

The willing participants who took place in the study were chosen based off the underlying issue of disassociated planning and cooperation from the two main parties involved in the port; the Transnet National Port Authority (2019) and the eThekweni Municipality (2016) whom have not as of yet updated their local area plan and site vision for the city of Durban's Point Waterfront.

The participants were the following individuals:

I. Captain Justin Adams (2021): represents the TNPA and manages the handling of the working port with its various standard operating procedures and regulations. (Mpuku 2018)

II. Mr Kiran Parthab (2021): represents the Transnet Urban Planning sector

III. Mrs Mridulekha Allopi (2021): represents strategic planning for the city of eThekweni.

IV. Mr Nathan Iyer (2021): Representative of private urban development firm IYER who worked on the Durban Point Waterfront

The structure of the interview was set into the following objectives in order to determine and break down information. Sectors regarding contextual, functional issues as well as technological issues were asked.

1.6.2. On site data collection

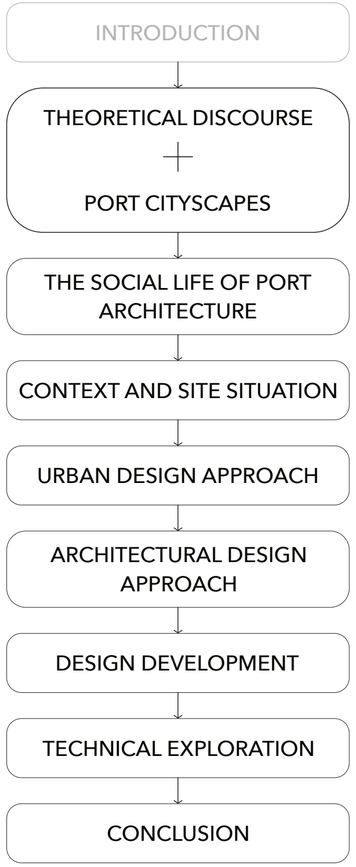
The site acted as an active study and presented itself through active observation, distinguishing how the harbour functioned daily and how the intersection between city and port was handled. This approach was utilised to gain a deeper comprehension of the complex operations the architecture surrounding the port has on the logistical events that define such spaces. This took the form of note taking, site diagrammatic investigation as well as photographs. Furthermore, ancillary data was collected in tangent with the site observations such as planning urban vision documents, journals, books and statistical information.

1.7. Delimitations and assumptions

The dissertation focused on a particular characteristic of the Durban Point Waterfront and its urban conditions between the working port and the Mahatma Gandhi Road threshold. Portions of the work could be implemented in real world development such as the urban development framework and theory.

As the Harbour is privately owned by the Transnet National Port Authority access to the water edge was strictly forbidden and access to the site through the year became difficult as the new cruise terminal for MSC was erected opposite the site. It is acknowledged that these disruptions and developments primarily affected the observations recorded during the area site visits.

1.8. Roadmap



Revitalised Intersections, VOL. 1

By YP Mudaly

02.

Theoretical Discourse

Based off the readings of precedent port cities and how they manifest along water bodies and infrastructure

2.1. Harbour space - Urban condition in need of transformation

The dissertation identifies Point Waterfront as a significant and integral part of Durban's Waterfront revival and proposes a mixed use intervention which focuses on maintaining and enhancing the strong points in the Port of Durban. This design therefore narrates the spirit of the harbour with a modern interpretation of identity and spatial agency. Currently, there is no edge condition mediating the harbour mouth to the city land due to the harbour being a working port. Subsequently, the existing canal acts as a water edge by bringing in the ideal of the harbour into the city to create internal waterfronts

Due to the hinterland centralisation of programme and misalignment of urban planning, the port/harbour interface is identified as an outdated place; desolate/ abandoned or heavily industrialised in infrastructure and is now clearly severed from the cities they once used to liven up. The argument for the dissertation is seen from a pragmatic and economic lens to merge historical and future aspirations of the site into a palimpsest of mixed-use neighbourhoods and connectivity.

2.2. The organisation of the water edge of harbours

Port cities not only act as the economic centres for many water bordered cities but also act as important civic quarters for activity from the central points of the city. The importance of threshold and gathering along the water edge proves to be important and as precedent, 4 ports were analysed coherently with Point Harbour in Durban to determine significant differences.

The main junction point concentrated on within the essay is the intersection between the working harbour and the city (being the waterfront). This area rationalises circulation between sites and develops public quarters in between operational space where edge conditions and linkages draw in synergies from surrounding areas. The rationalisation is created by defining routes and articulate promenades and precinct frameworks. According to readings from Dündar et al. (2014: 4) the waterfront is a more recognisable urban structure in a city framework which is able to expand or shrink whilst embracing specialised industrial landscapes from harbour centres. As shown in fig. ix; compared to the other grand port-city layouts, Durban was identified as the least integrated upon research critique.

Fig. ix. Port precedent typologies. (Mapbox 2021)

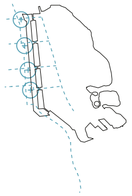
SPATIAL
INTERSECTION

ROADS

NODES

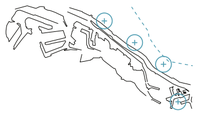
HARBOUR
OUTLINE

PUERTO MADERO
BUENOS AIRES



SAN FRANCISCO

ROTTERDAM



SHANGHAI

POINT HARBOUR
DURBAN

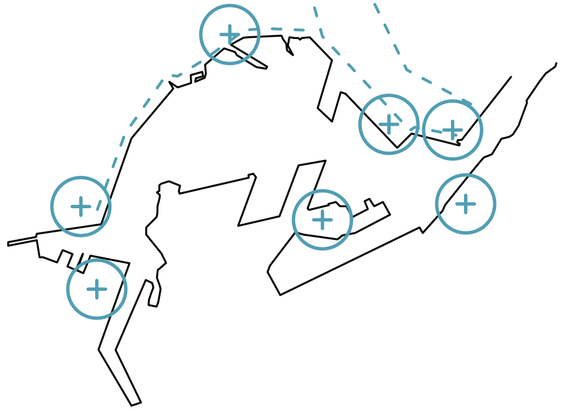


Fig. x. Port interface diagram (Author 2021)

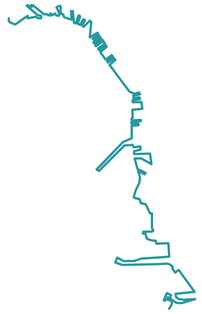
2.3. Port City Mechanics

Mechanics behind the workings of a port city were important spatially and for threshold and circulation. The spatial arrangement of port typologies such as wharf, pier or dock as shown in fig. 3 were explored along with factors of interface of port cities as shown in fig. 4. In the current epoch, we are in the 6th phase of development where there is a need to re-establish the port link to the city (Dündar et al. 2014).

From this analysis the curated urban framework was cultivated from the other appropriate arrangements of port-city typologies and merged the successful synergies from their context to create a normative position on how the port of Durban should be transformed. The water edge was the main informant and creating an internal harbour narrative was key.

Durban, as it currently exists, is on the fringe of a working harbour and the water edge is lost through industrialisation and privatisation of land through the boundary controlled by the TNPA (Transnet 2019).

WHARF
EXAMPLE DURBAN

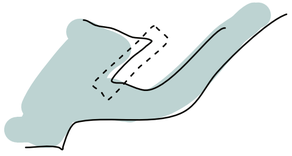


PIER
SAN FRANCISCO

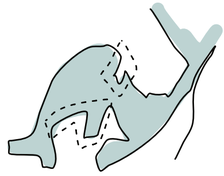
DOCK
PUERTO MADERO

2.4. Location of port-cities according to water edge

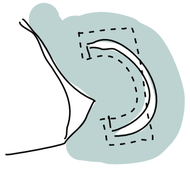
COMPLEX DIRECTLY
ON THE SEA



COMPLEX LOCATED INLAND
AT A DISTANCE FROM
NATURAL SEASHORE



COMPLEX LOCATED ON
THE SEA BUT DEVELOPED
TOWARDS LAND



COMPLEX LOCATED
ON PENINSULA

2.5. Architectural interface

Most modern ports are organised along a familiar base urban anchor, and this successful civic space encourages people to congregate along the water edge. The example of the Rotterdam river system exhibits this strategy, secreting from the harbour periphery into the city (Meurs 2012). The Port of Shanghai, on the other hand, creates a level mediation for a new ground typology which creates urban landscapes which mediates the language both employed by the city of Shanghai and the industrious landscape of the working port as seen in fig. 5. Durban on its boundary does not make use of urban port strategies as there is physical fencing off on site as a result of the disassociation of contextual interfaces. This is a problem, which creates a rift between a potentially successful urban space and a derelict one.

Access holds users away from the site as the ownership and governance of the water edge is controlled by Transnet and as such there is no relatable waterfront for Durban when compared to other privatised ports around the world. There needs to be a restructuring of the urban quadrants or an allowance for the CBD to spill into Transnet boundaries for a successful interface from built structures to water edge.

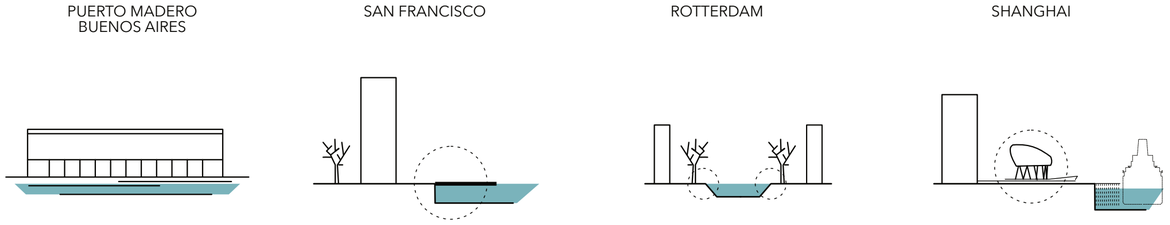
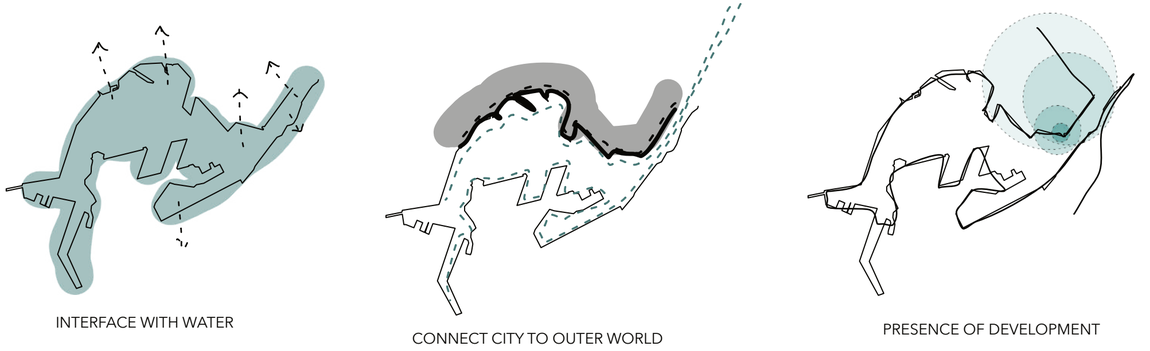


Fig. xi. Architecture relation to water body (Author 2021)

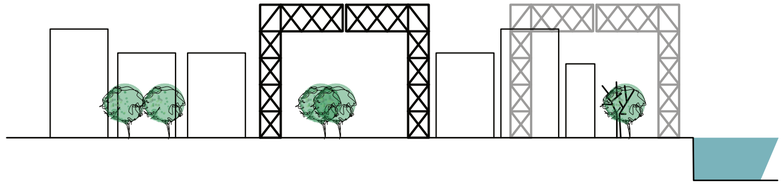
2.6. Successful factors of a port city



2.7. Conclusions made about Durban Harbour

The conclusions made about the Point Waterfront deduct that the assembly of poor infrastructure and lack of development that adds value to space suggest that it is not a good public urban realm. This is concluded due to the analysis of the urban quarters and proximities of anchors such as the canal to new development. There is was requirement for the dissertation to create a viable solution to poor investment from designers and urban interventions through developers.

One main issue apart from the water edge neglect was land parcel allocation for development. Land parcels are allocated to different investors and hence there is no coherency between urban spaces in the Waterfront.



2.8. Access to controlled information

2.8.1. Interviews data

The objectives were:

i. To evaluate the efficiency of the port as well as the types of port operations occupied by each land sector and zone of the port in accordance with programme and use;

ii. To explore the necessity and the reasoning for the expansion of the port and the impact a long term phasing may have on the identity of Durban's port structure; and

iii. To collect and interpret opinions about whether the current port city typologies are comparatively better or worse to international port city typologies.

Data collected from all interviewees were consolidated into urban design and building principles which would guide the end design.

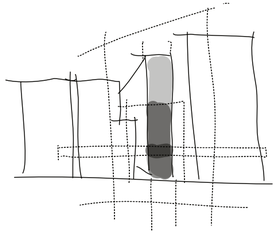
Two important quotes from Mrs Mridulekha Allopi (2021) - a representative of strategic planning for the city of eThekweni stated [sic]:

1. *"There is little connection where the port has not realised the understanding between public interface and the working port. The expansion realises this digression and hopes to solve it but apart from such there are no other linkages available. The promenade is the only link from the city towards the harbour. LAP and TNPA plans don't synergise." (Allopi 2021)*

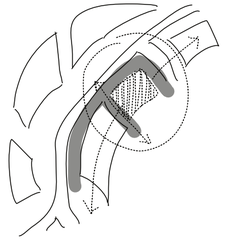
2. *"The limitation is that the city does not do extensive research on planning and the private sector is left to clean up the area which is being developed leaving the rest to fencing off. Separating planning ideals and creating a more segregated planning ideal." (Allopi 2021)*

The following diagrams represent an amalgamation of urban and architectural strategies that, through the opinion of the interviewees, would reshape and improve the current Durban Point Waterfront and add a crucial port-city identity to the urban fabric.

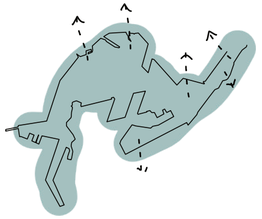
Fig. xii. Interview results diagram (Author 2021)



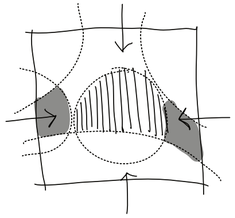
CONTROL BUILDING SCALE



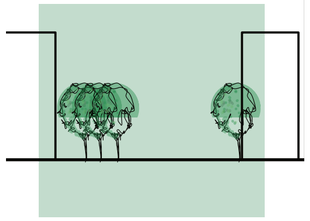
TRANSMISSION BETWEEN NEW & EXISTING



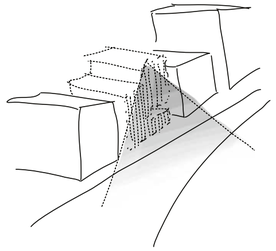
WATER EDGE CONDITION



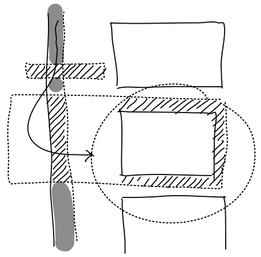
ATTRACT CIRCULATION



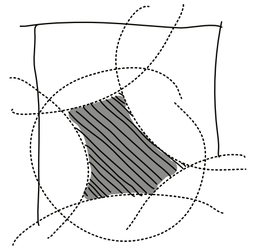
BIODIVERSITY



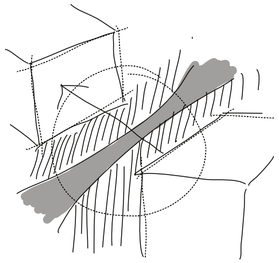
LIGHT UP AREA AT NIGHT



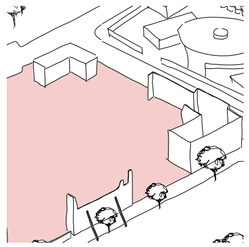
ISPS SECURE SITE



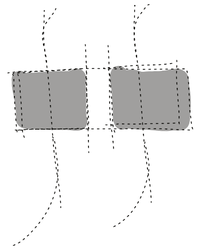
URBAN SPACE



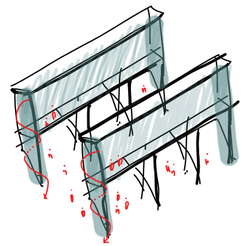
CONNECT CRUISE TERMINAL



MATERIAL STRENGTH THROUGH RUINS



CONTINUITY OF SITE



USE EXISTING INFRASTRUCTURE

03.

The Social Life of Port Architecture

The development and nature of a seaport and how history and culture influence its public interface

"Port Architecture also reflected the social interactions which were crucial for knitting together trading networks both within and beyond the city, while the configuration of internal building spaces reveals both implicit and explicit assumptions about the ordering of social relationships and the structuring of class-specific hierarchies more widely" (Lee 2012: 1).

3.1. Harbour Development in the Global context

3.1.1. Expression of the Port City

There is an association between specific elements of a harbour and port to any architectural design flow, be it technological, conceptual or within the manifestation of building material intervention. There is a commonality of traits which show the exchange of sea-trade and transformation within the waterfront. There is a further operation on the multifaceted nature of port dynamics where there is no single form, pattern in design but there are traits regarding resemblance in design and recognisable characteristics.

Here we find relation between programme of built environment and function of port operations:

i. Emphasis on waterfront as public space.

ii. Taking into account financial and functional needs of the future proprietors, specified the sizes of the lots near the waterfront, creating a landscape of warehouses, wharfs, shops, factories and homes mediating between the sea and the city centre were of importance

iii. Importance of PPP's

iv. Relation of public interests and private investment was established in the workings of the East India Company which still have companies in Durban.

Throughout history, port and city have been closely interrelated in political, economic, and social structures as well as in the built environment. That relationship between port and city has changed dramatically over time, as these examples illustrate, but as of global cargo ship movements, maritime transport continues to be a major element of globalisation

3.1.2. Durban Port Cityscape

Durban has lost its intrinsic essence of a port city as the harbour is as far disconnected as the activities that situate themselves in the site, from this point the author Hein (2012) digs into the relationship between the port and city to state that they are a supporting relationship built on structures that are interconnected. Beyond the port the relation of commercial activity depends on factors such as local conditions, institutions as well as network traders. There is a language of warehouse to planned space as you move outwards from port to city, holding goods to dispensing. The waterfront are shaped by function of the port as she references Philadelphia, London, and Tokyo, three port cities (or ports, waterfronts, and cities) that are very different from each other and that have seen very different development patterns for their harbours and waterfronts (Hein 2012). Through this interface. Local interaction contributes to successful patterns and design for the spaces

3.2. History, Politics, Commerce and Culture

The nature of port architecture is widely and socially commissioned by the dominant political elite and the subsequent consequence created a major architectural language relating to dock development, creation of commercial space which set out to enable a materialisation of the politicians status in prominent urban spaces. These buildings then represented visual representations of local traditions and achievements (Lee 2012).

Factors set out were the following

i. the impact of trading patterns and commercial relationships on the availability and use of raw materials in building construction;

ii. the role of architects in reinforcing the language and materialist imagery of imperial authority;

iii. the processes of wealth creation through commerce and trade and their legacy in terms of the business centres of port cities and the domestic residences of individual merchants;

3.2.1. Establishing a port-city typology

Port city architecture is developed and orchestrated according to port function, relative size, principal trades but at the same time governance, ownership and administration through certain political factors. Previous architectures reflected culture and imperial power which is since outdated but historically relevant. This therefore relates to the quality of urban structuring where the changing pattern of trade influences spatial needs and concepts in the port. How the urban situation is made is from smaller pieces by protecting the port condition through a human scale singularity of grand scale to small scale.

Through these links created by trade and business, new connections were adopted by architectural stylistic queues and practice within the harbour space.

Port cities such as Buenos Aires are successful due to their multi functionality but port cities such as Singapore are successful due to their policy as city states (Lee 2012) backed through economies.

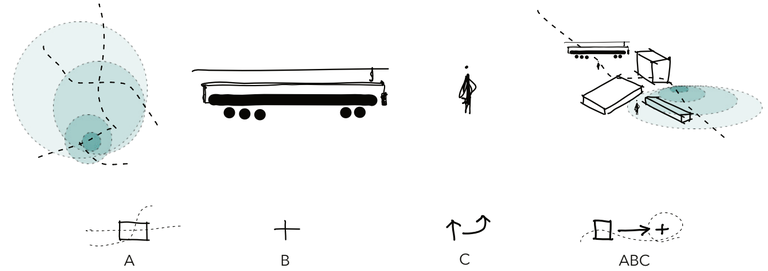


Fig. xiii. Ingredients for a good port city. A - proximity. B - transit oriented access. C - public interface. (Author 2021)

3.2.2. Nature of a Township

As a result of certain seaboard linkages to different parts of the world, there was an expectation of the local condition of a certain seaport to accommodate migrants of different contextual origins who would reside in the waterfront whilst the ship docked. This integration of culture to seaport created international styles which included human scale, port communities and attraction of capital (Lee 2012: 37).

This would circulate people, goods and information and helped accommodate different mix of people shaping the characteristic of a context. The architecture then is able to express "contested and ambiguous national identities" (Lee 2012: 37). This narrative is the introduction of religious monuments or architecture which represented specific migrant groups to reflect their national heritage and continued sense of belonging to certain seaports which were regularly visited.

An example of church identity in Scandinavian/European countries in port cities to preserve national common interest and network associations (Lee 2012).

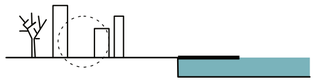


Fig. xiv. Port as it exists without recognisable figure in landscape (Author 2021)

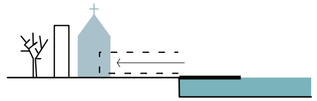


Fig. xv. Adding recognisable figure in landscape (Author 2021)

3.2.3. The Sailor Town

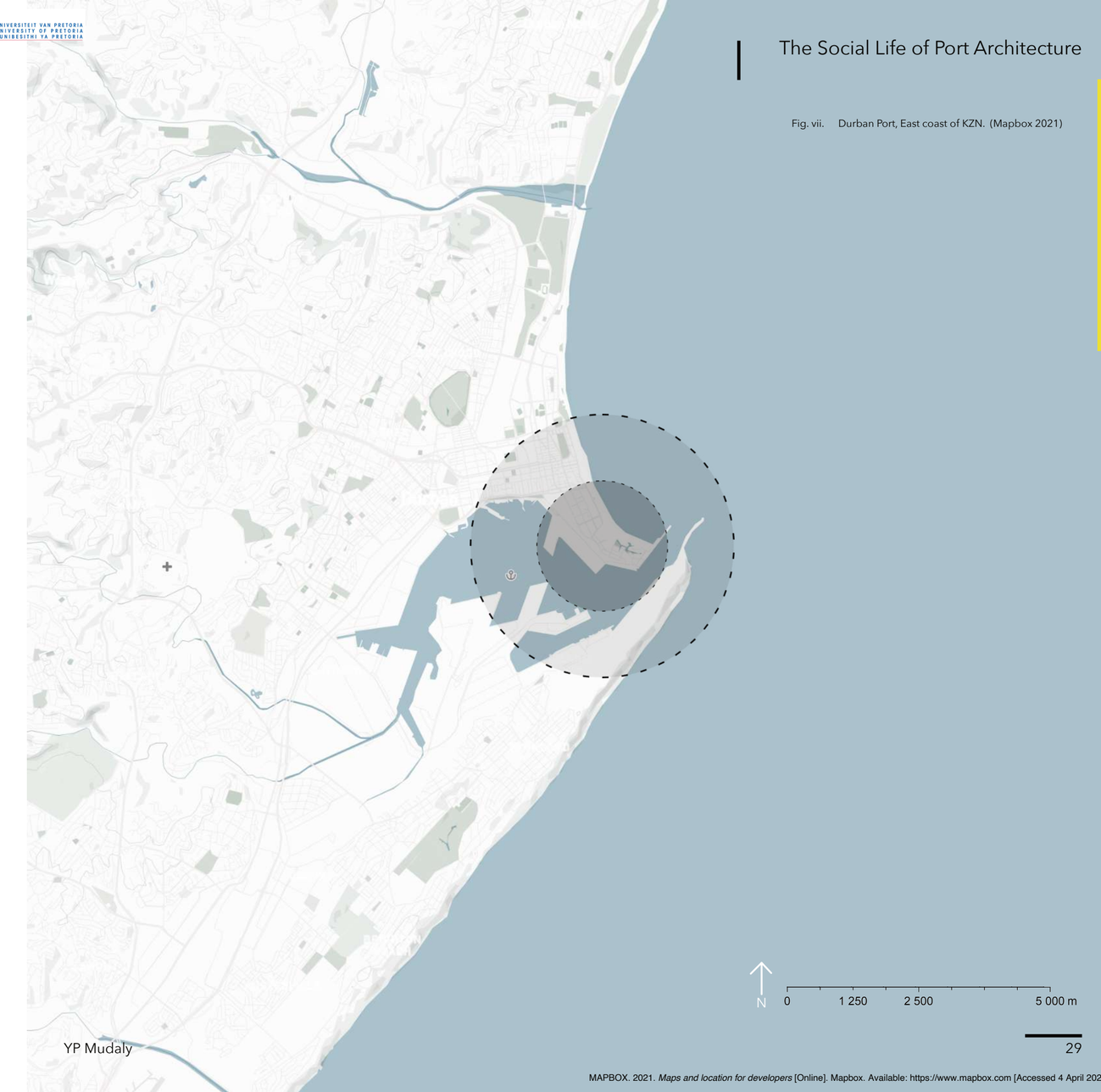
A fundamental characteristic or focal point of many ports was the condition of a sailor town. Apart from recognisable characteristics being the total township in a port-city context, the connection may be purely recreational - where the building draws in users and creates unique enclaves.

This architecture promotes the relationship between inside and outside. As with traditional Japanese architecture, through devices such as transparency and high ceilings there is a tradition of building as context, building as garden or even building as harbour. How to deal with the inside v outside is a very important consequence, but new solutions are required to realise such a blurred boundary. The *'watering holes'* and *'bath-houses'* of Yokohama were well known amongst foreign seamen (Lee 2012) where there was a condition of water but as recreational experience instead of working experience.

This combination of programmes, festivities and inclusive programmes was an important aspect of the social life of port cities. As described within the article by (Lee 2012), this was the main cultural contact zone in waterfronts. In many cases the port contained a distinctly gastronomic and delightful sailor town quality which was the focus for most travellers containing activities such as dancing, drinking and recreation.

As the new Durban cruise terminal is built through the year 2021 there is a lack of cultural hubs where people would interact within the urban quarter.

Fig. vii. Durban Port, East coast of KZN. (Mapbox 2021)



MAPBOX. 2021. *Maps and location for developers* [Online]. Mapbox. Available: https://www.mapbox.com [Accessed 4 April 2021].

ICOMOS

Location:

Buenos Aires

Argentina

Architect:

Weyss und Freitag

Value to Research:

Reuse of existing structures and prototypes in architectural and urban decision making

3.3. Puerto Madero. Evolution of a Warehouse Area

Puerto Madero demonstrated the requirement to use existing infrastructure to remodel and consolidate the waterfront edge using the warehouses of the western bank (Conti 2012: 135). This new architectural interface became the characteristic image for the new developments regarding Puerto Madero. A similar take on the port was the obsoletion of dock systems which inhibited new modern developments that could have employed sufficient infrastructure to maintain and operate the port. The consequence of this was that 10 years after the port was inaugurated, it was abandoned and a new port was created and used.

Abandonment within the port and the surging demand for development brought developers into action to revitalise the area using the existing facades of the warehouse to modernise them using government and local authority action through urban transformation schemes and private-public partnerships (Conti 2012: 136).

Architecturally the interventions were based strictly on the facades and the original materiality of the buildings to respect and maintain the historical character whilst using waste material to create new pedestrian walkways and minor components were restored in the port. Now the programme boasts coffee shops, flats, offices and restaurants and through these establishments, Puerto Madero has become a renowned gastronomic district in the city of Buenos Aires (Conti 2012: 136).

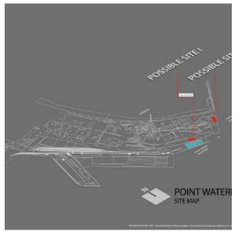
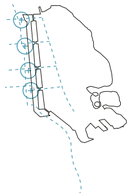


Fig. i. Images from CONTI, A. 2012. Puerto Madero, Buenos Aires, Evolution of a Warehouse Area. ICOMOS, 54, p.134-139.

Conclusions and relevance to Port of Durban

The conclusions made about the urban and architectural revitalisation strategy are therefore successful economically as the land has been reformed and the heavy influx of pedestrian traffic sustains businesses around the area. Consequently from a heritage point of view the preservation according to author Alfredo Conti (2012: 137) regarding the example as partially complete of preservation.

Application to Durban Port: the existing waterfront age requires an economic and urban transformation and the chosen sites are mainly ruined buildings left abandoned and desolate. The Author (Mudaly 2021) is required to consolidate options of the master plan and development to state which would be a better preservation, of site or heritage spaces, and how this may add value and resilience to a site needing remodelling.



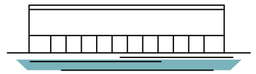


Fig. xvi. Puerto Madero (Author 2021, Mapbox 2021)

Location:

Rotterdam

Netherlands

Architect:

Various architects

Value to Research:

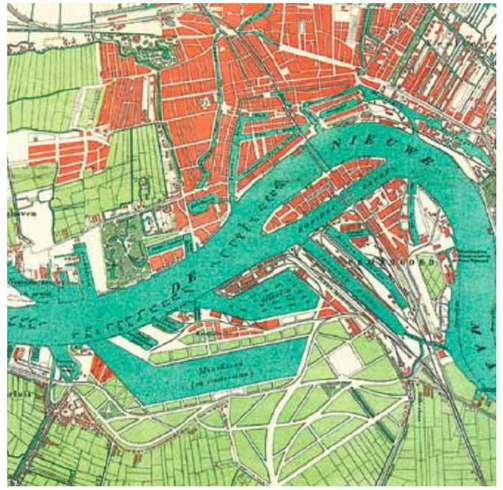
Conversion of port into transit oriented access through maritime infrastructure

ICOMOS

3.4. Rotterdam, Port City to Harbour Landscape

When compared to other grand port cities with the dock yard typology and wharf design, Rotterdam, sways away from such design. According to the author Paul Meurs (2012: 109), from 1895 onwards, to the harbour landscape significantly changed and like the Durban Port, tied its connections to the city. From this direction, there was dereliction of infrastructure and developments were needed to uplift the site. Through the use of raw materials and new rhetorics, Rotterdam became a transit harbour instead of soft commodity import/export.

The banks of the river were mixed with various quays and warehouse upliftment which kickstarted new linear parks and green public spaces. The new landscape became a functional asset dug out of the land and the water edge was covered with infrastructure for *"quays, rail, roads, storage areas and warehouses"* (Meurs 2012: 109).



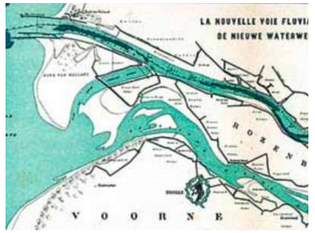


Fig. i. Images from MEURS, P. 2012. Rotterdam: from Port City to Harbor Landscape. ICOMOS, 54, p.109-112.

Conclusions and relevance to Port of Durban

As a comparative port to Durban this is where the direction of the port is going as the coal and hard commodities are moving towards the southern basin dig and the Richards Bay port. Durban is thus becoming a Transit orientated harbour which would hopefully yield success.

As a precedent based more off an example where change in infrastructure can yield success, this proves the rationale that a transit oriented programme to facilitate and assist the new cruise terminal built by MSC.

Durban needs to further use the existing infrastructure along the main Mahatma Gandhi Road which ties to the new programmed space along the developmental edge. Durban therefore contains all the same ingredients Rotterdam did to change its harbour operations and thus the landscape became resilient through the changing spaces.

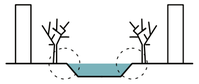
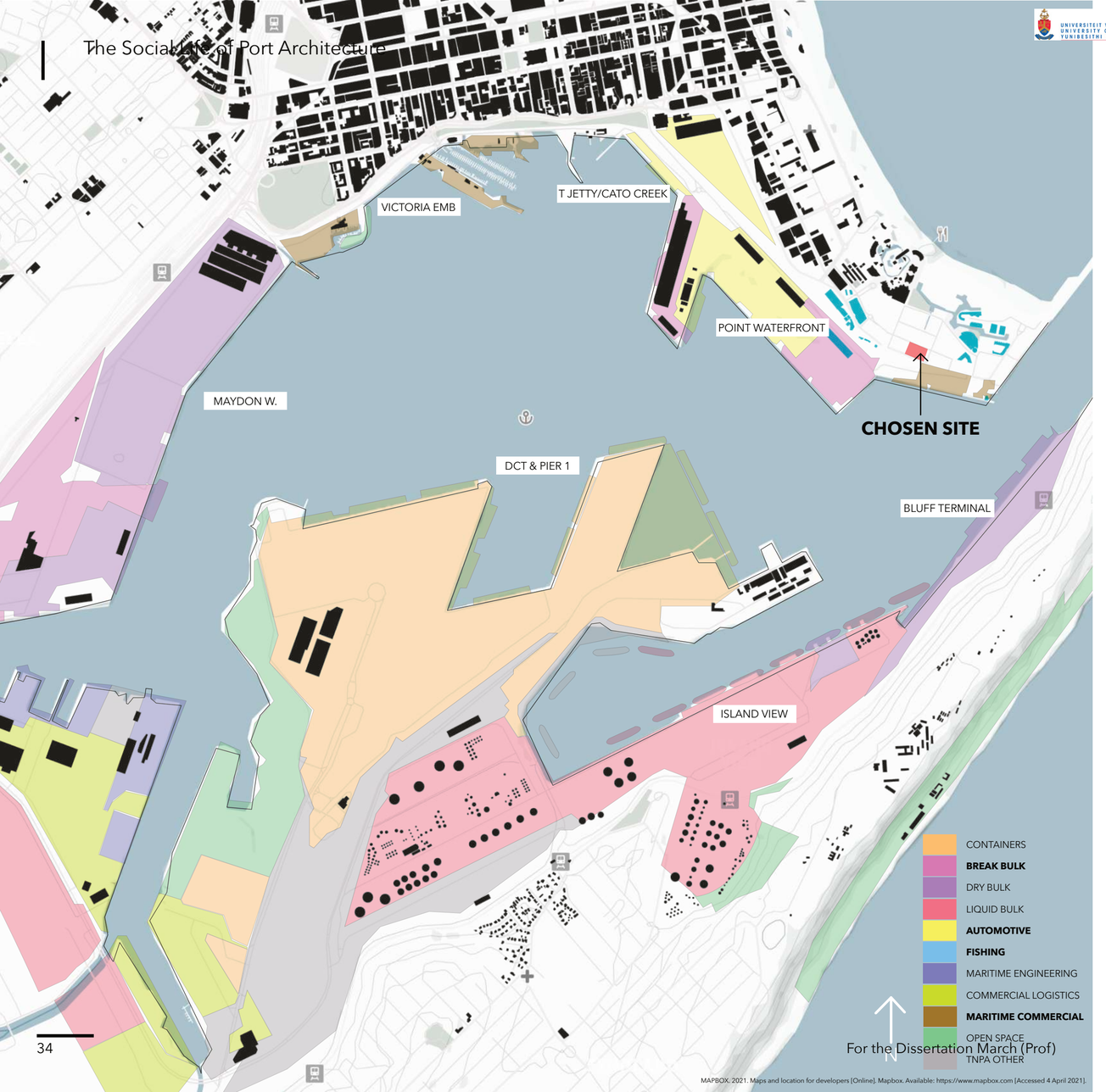
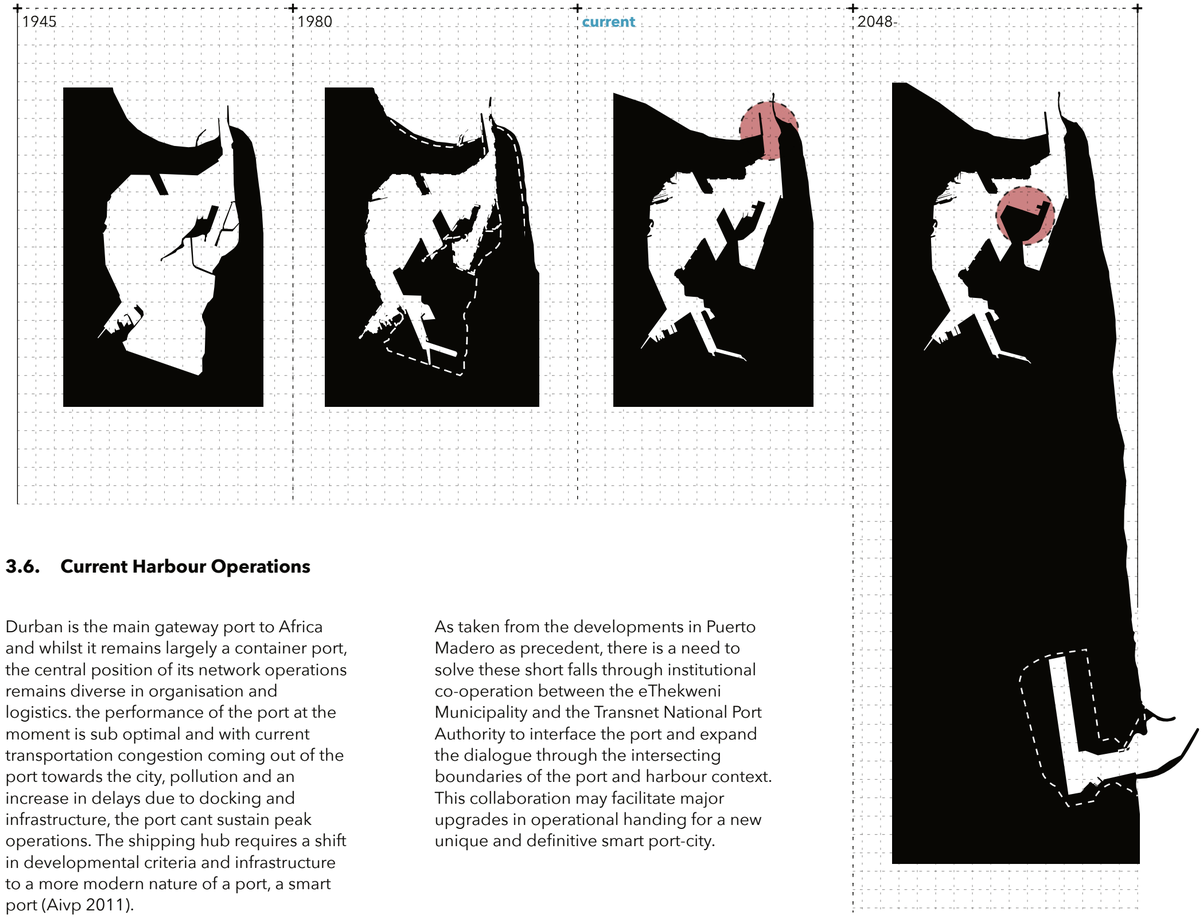


Fig. xvii. Port of Rotterdam (Author 2021, Mapbox 2021)



MAPBOX. 2021. Maps and location for developers [Online]. Mapbox. Available: https://www.mapbox.com [Accessed 4 April 2021].

3.5. History of the Durban Port



3.6. Current Harbour Operations

Durban is the main gateway port to Africa and whilst it remains largely a container port, the central position of its network operations remains diverse in organisation and logistics. the performance of the port at the moment is sub optimal and with current transportation congestion coming out of the port towards the city, pollution and an increase in delays due to docking and infrastructure, the port cant sustain peak operations. The shipping hub requires a shift in developmental criteria and infrastructure to a more modern nature of a port, a smart port (Aivp 2011).

As taken from the developments in Puerto Madero as precedent, there is a need to solve these short falls through institutional co-operation between the eThekweni Municipality and the Transnet National Port Authority to interface the port and expand the dialogue through the intersecting boundaries of the port and harbour context. This collaboration may facilitate major upgrades in operational handing for a new unique and definitive smart port-city.

Fig. xviii. Existing port operations - Durban Port. Map exited from (Author 2021, Mapbox 2021)

Fig. xix. History of the Durban Port 1945-2048 onwards (Lumby 1992: 110-111, Transnet 2019: 31, Author 2021)

3.6.1. Harbour services

MOORING

LIFTING

LIQUID BULK

FMCG

PASSENGER SERVICES

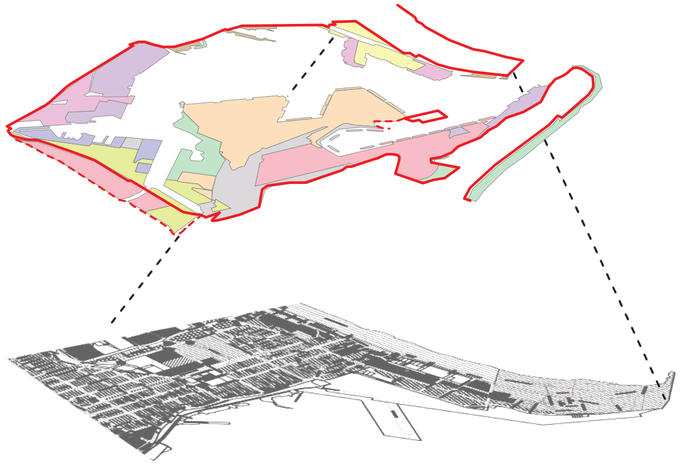
WATER WASTE RECYCLING

SOLID WASTE COLLECTION

PILOTING

3.7. Community who uses the Port

Worker	Citizen	Traveller
TRANSNET	The daily commuter	The international traveller
MSC	The weekend commuter	The local traveller
Shipping/logistics worker	Recreational user	
Shipping/logistics management	families	
	The elderly	
	Women and children	
	Marine users	
	Yachting, boating and craft users	



TRANSNET

PORT-CITY

OPERATIONAL

CITY

IDEOLOGICAL VIEW

WORKING PORT

MIXED USE

RUN BY COUNCIL

Fig. xx. Alove: Layering of Transnet development plan (Transnet 2019:31, Author 2021) and City Plan (Openstreetmap 2021)

The Social Life of Port Architecture

3.8. Mediating the TNPA and the City through programme

As part of the research, although the community is the main recipient of the port, there is a requirement to merge both actors being the TNPA and the city.

All users are to merge within the identity of the new urban scheme which is safe and feasible for recreation, work and play.

"There is little connection where the port has not realised the understanding between public interface and the working port. The expansion realises this digression and hopes to solve it but apart from such there are no other linkages available. The promenade is the only link from the city towards the harbour. LAP and TNPA plans don't synergise." (Allopi 2021).

By YP Mudaly

Context and Site Situation

04.

Understanding how Point Waterfront functions

4.1. Connection to the Harbour through the city

4.1.1. Durban Point Waterfront

The site itself presented a challenge to integrate both the city as well as the TNPA to develop a successful urban framework which mediated their intersections. From the reading of landscape as a cultural entity, it is meant to play a role as an active character in the ever evolving urban condition it may find itself with relations and associations to users who situate themselves in the space.

4.1.2. Spaces for investigation

I. Water Edge condition

II. Built/unbuilt space

III. Harbour elements v city elements

The urban strategy was therefore not to start new but to draw synergies by extending the urban block morphology through appropriate programme mixes based on adjacencies and individual conditions.

Through this intervention one is able to link:

I. The city to the landscape

II. Citizenship to socio-cultural significance

III. Leisure to working port conditions

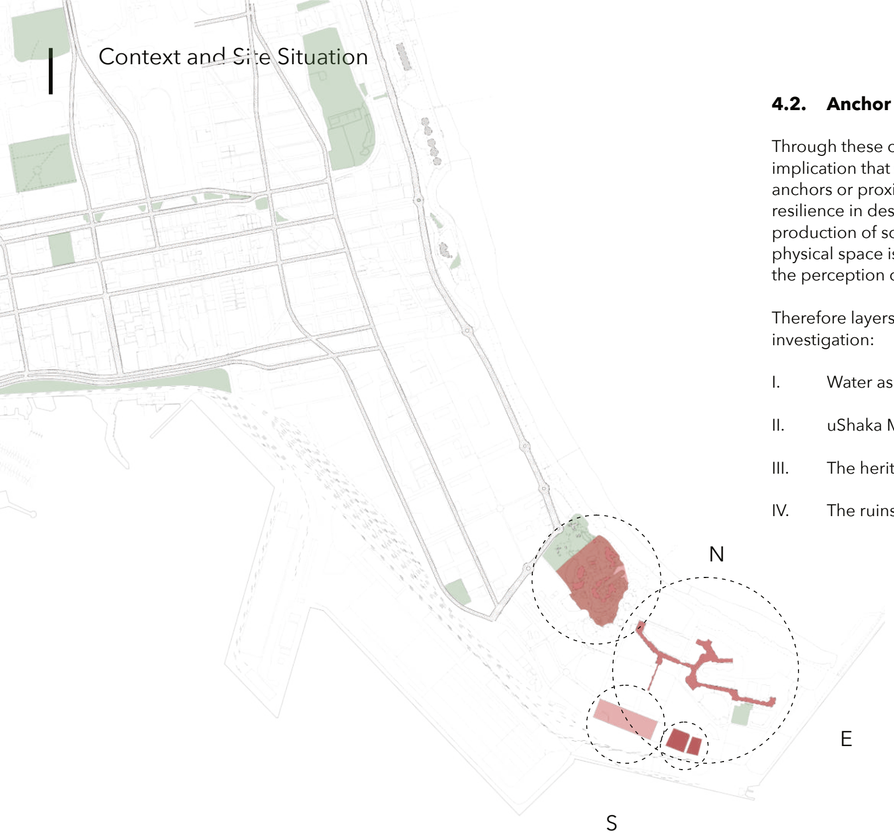
4.1.3. Spatial Limitations

Limitations such as public-zoned space within brownfield spaces may be left off as tertiary space conflicting a possible success for urban regeneration. Ryan Centner enterprises that the priority becomes *"a more narrow environmental sustainability alongside sociopolitical participation and economic competitiveness, which lead to the fragmented projection of conflicting landscapes"* (2009: 2).

Derived from theory relating to Neoliberal spaces (Venkatesh 2014: 1), the author mentions French philosopher Michel Foucault on the nature of space which has outlived its physical usefulness, but still has the capacity for programmatic richness. Foucault is described as saying the treatment of space if left stagnant is dead space and as a consequence, it is fixed in context and represents the "undialectic, the immobile" (Flynn 1991: 1). 'Space' is therefore locked as a weighted element and an environment which does not serve the context which it occupies. On the other hand, Foucault converses and debates 'time' as rich, generative in terms of production, full of life and able to create a narrative (Flynn 1991). This same narrative can be applied to built architectural structures.

The site does offer developmental potential which can boost the 'absent' space that aid in identity restructuring. This restructuring of port identity offers up the potential of examining abandoned brownfield port district nodes, revitalising them back to public use through comprehensive strategies of regeneration (Dündar et al. 2014).

Fig. xxi. Existing Map of Point Waterfront (GoogleMaps 2021)



4.2. Anchor infrastructure

Through these conceptual generators, there is the implication that spatiality is formed by the interference of anchors or proximities in relation to context which form a resilience in design much explored in Henri Lefebvre's production of social space. Here we see the distinction that physical space is defined "by purely practical activities or the perception of 'nature'" (Lefebvre 1991: 192).

Therefore layers of the site were anchored for investigation:

I. Water as edge condition: the Canal

II. uShaka Marine world

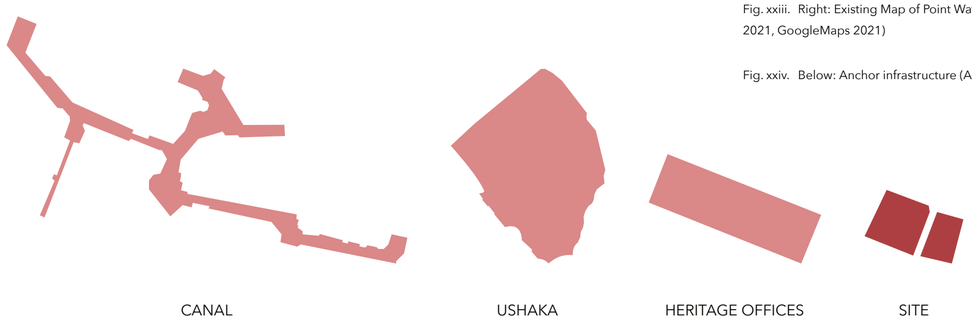
III. The heritage quarter on Mahatma Gandhi Road

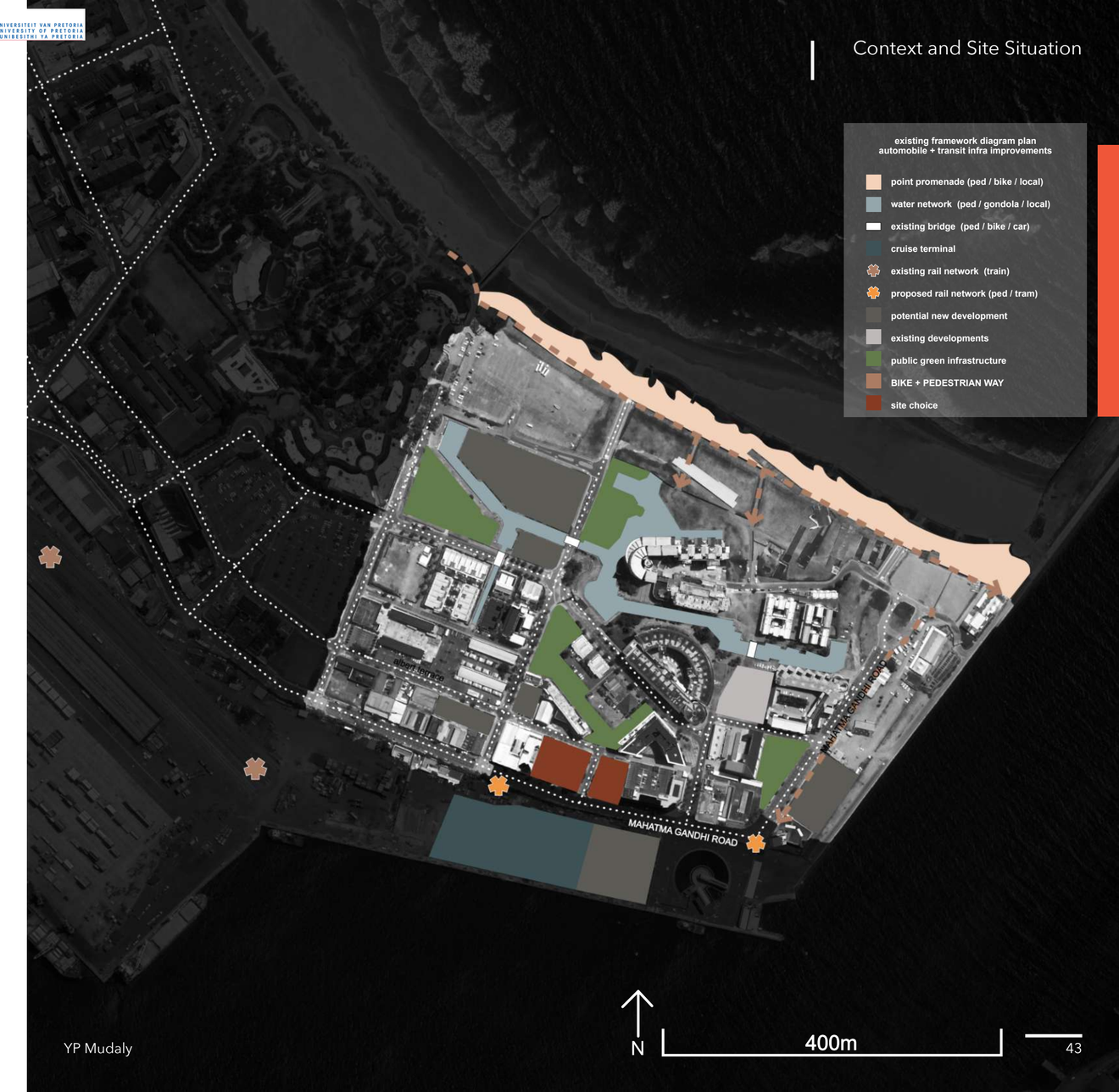
IV. The ruins of the site as magnet for synergies

Fig. xxii. Left: Durban Port anchor infrastructure (Author 2021, Openstreetmap 2021)

Fig. xxiii. Right: Existing Map of Point Waterfront (Author 2021, GoogleMaps 2021)

Fig. xxiv. Below: Anchor infrastructure (Author 2021)



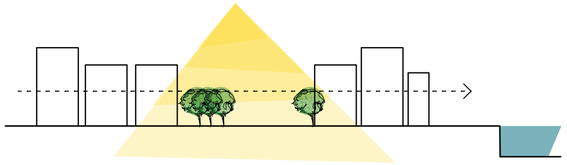


4.3. The nature of Durban Point Waterfront

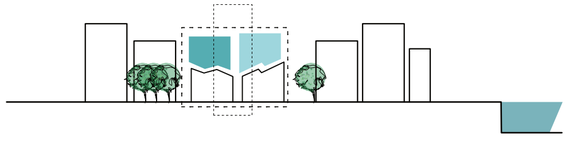
4.3.1. Defining the precinct vision and catalyst

Going beyond the nature of how architecture is manifested through programme conceptual creation, a ubiquity of urban intent was required to fill the site using anchor sites. As described in the production of space by Henri Lefebvre, these conceptual generators imply that spatiality is formed by the interference of anchors or proximities in relation to context which form a resilience in design. The distinction that physical space is defined "by purely practical activities or the perception of 'nature'" (Lefebvre 1991: 192).

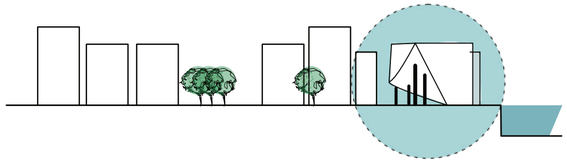
The dissertation focused on the dynamism of an economically bound context to a present city context and how the urban design process is able to enrich the architectural solution through a grander conceptual lens. Through identifying the proximities the architecture is curated through its chosen urban strategies and is modelled along a process of insertion and juxtaposition from the macro to the micro sensitivity of design. This supports the architectures final position as a catalyst and lantern building in the Durban Point Waterfront and gives resilience towards its primary condition as iconic in a new urban vernacular.



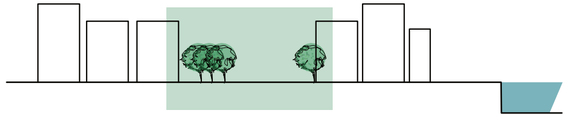
ATTEMPTING TO STRENGTHEN THE POSITION OF THE CITY AS A COMPETITIVE ORGANISATIONAL STRUCTURE



ATTEMPT TO CREATE NEW COMMERCIAL ZONES TO REVITALISE FRAGMENTS OF CITY

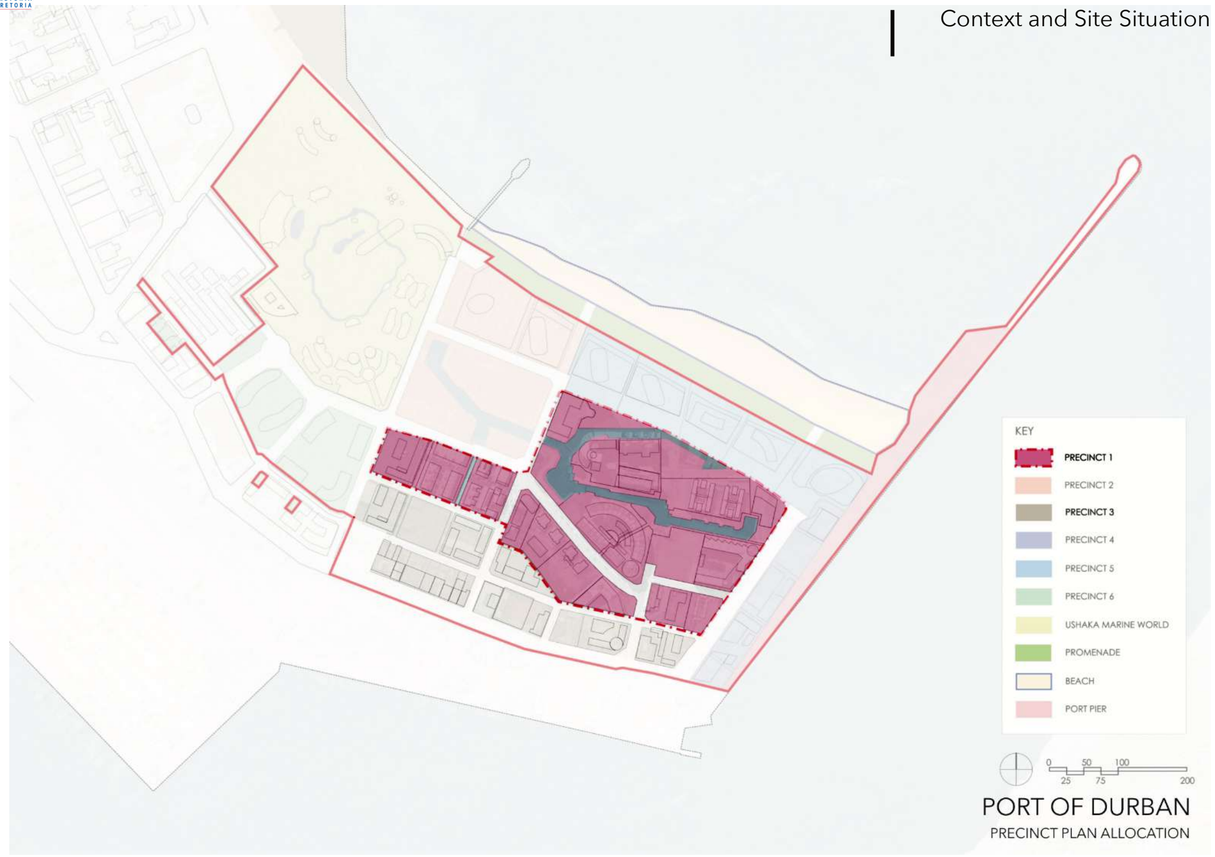


CREATE WATERSIDE AREA TO GIVE NEW IMAGE TO THE CITY



CREATE NEW URBAN SPACES TO CHANGE FATAL IMAGE OF CITY

Fig. xxv. Urban ambitions of site (Author 2021)



4.3.2. Precinct Allocation Plan

Existing as an allocation map is the precinct allocation plan taken from eThekweni urban planning (Allopi 2021) and UEM Sunrise developers. The main zones were precinct 1 in pink and precinct 3 on the southern edge which situates the chosen site for development. The crucial detailing in this map considers how segregated and isolated developmental concepts are within the Point Waterfront. As an opinion by the Author Mudaly (2021), the concern raised is far beyond architecture but urban cohesion and good urban spaces along a water edge.

Fig. xxvi. Precinct allocation plan for Point Waterfront (Allopi 2021)

4.4. Site Selection Process

4.4.1. Proximities and anchorage to infrastructure

The end site was chosen based off its proximity to the newly designed cruise terminal and its association to the main heritage strip on Mahatma Gandhi Road.

Possible site 1 was therefore the obvious choice

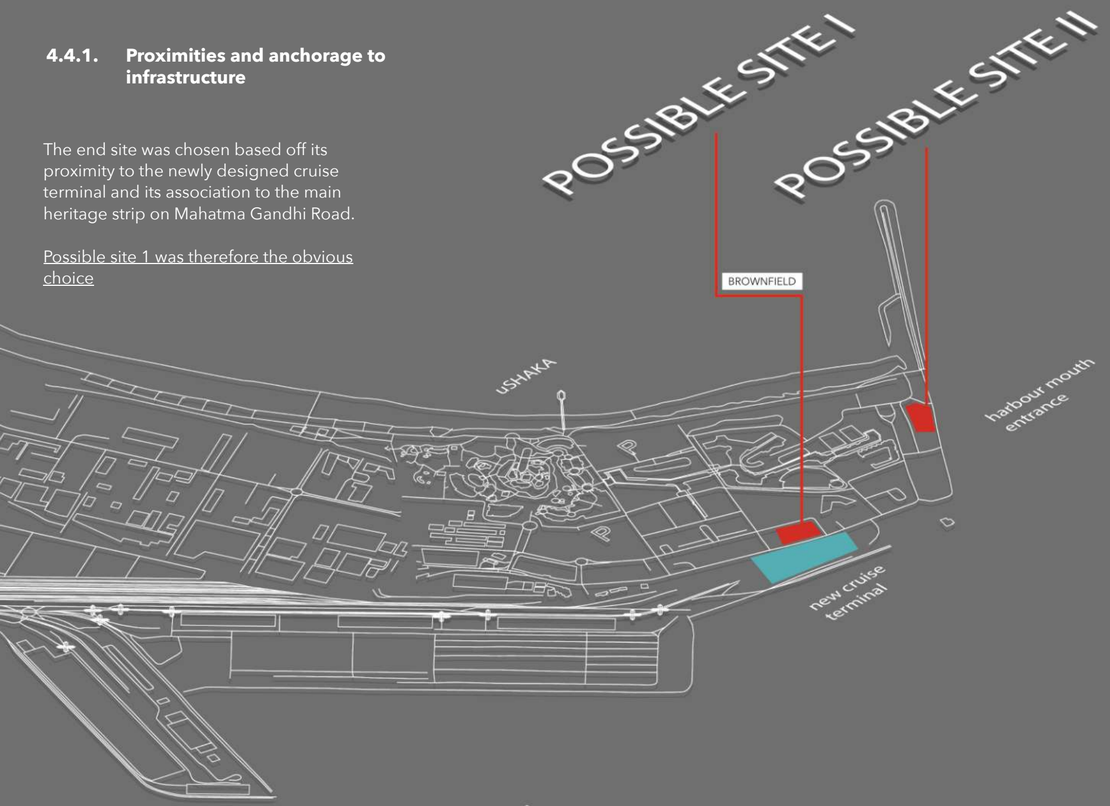


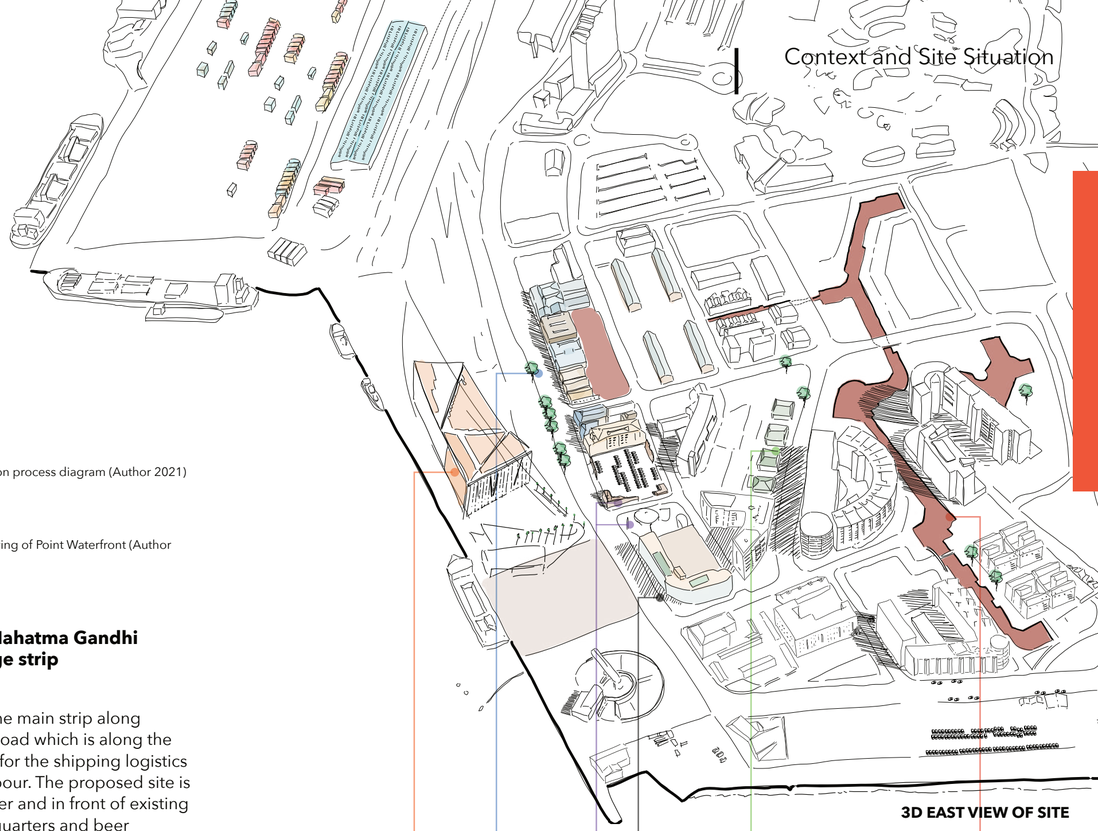
Fig. xxvii. Left: Site selection process diagram (Author 2021)

Fig. xxviii. Right: Arial drawing of Point Waterfront (Author 2021)

4.4.2. Main Mahatma Gandhi Heritage strip

The site is part of the main strip along Mahatma Gandhi Road which is along the former head office for the shipping logistics of the Durban Harbour. The proposed site is along a retail quarter and in front of existing shipping logistics quarters and beer production along the main road axis. There is a proposed programme of mixed use retail and conference. The new cruise terminal that is built brings in tourism so market retail space would be required in the site for threshold access and pulling in congestion from travel. The functional aspect of programme creates a ground typology of leisure whilst a future node tram terminal is possible along the main road axis to bring in more users to the space.

OPENSTREETMAP. 2021. OpenStreetMap [Online]. Available: https://www.openstreetmap.org/#map=14/-29.8825/31.0270 [Accessed 29 March 2021].



Context and Site Situation

4.5. Site Imagery

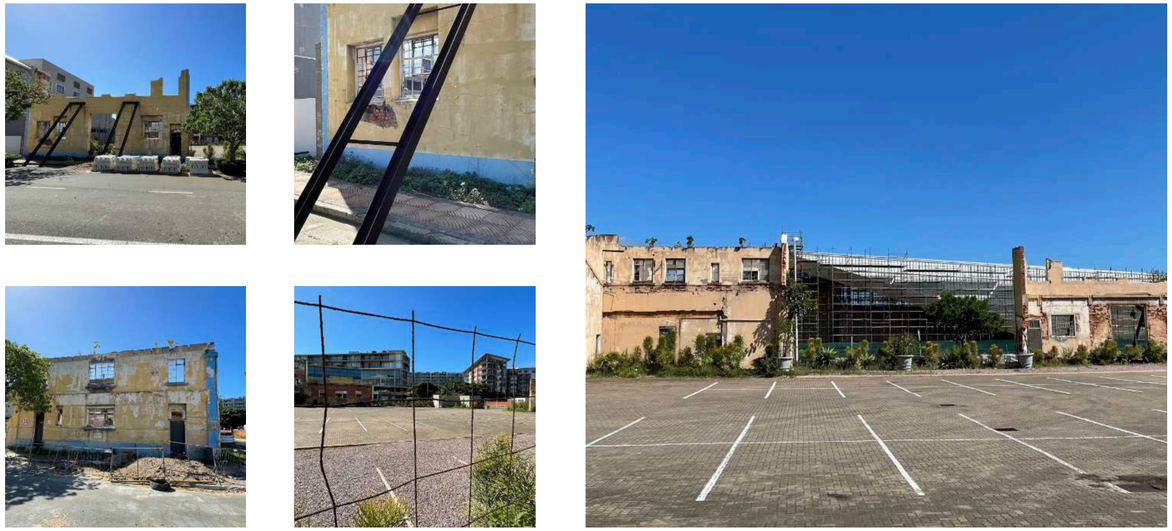


Fig. xxix. Images taken on site (Author 2021)

Fig. xxx. Images taken on site (Author 2021)



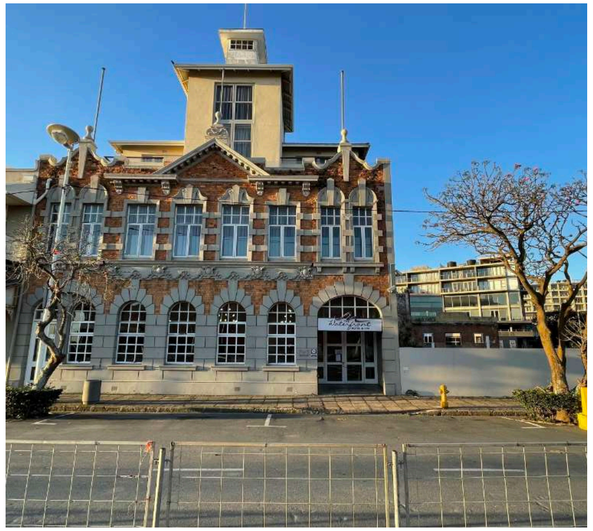
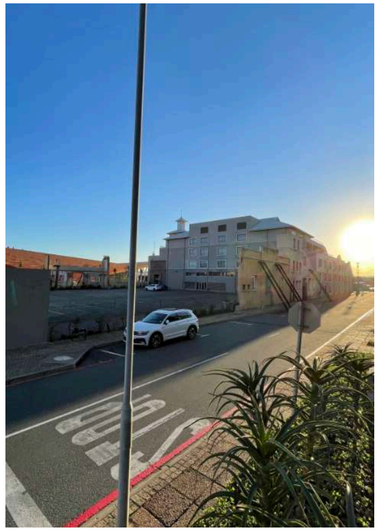






Fig. xxxi. Images taken on site (Author 2021)





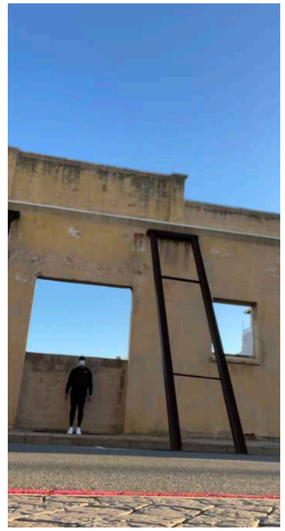



Fig. xxxii. Images taken on site (Author 2021)

4.6. Site Analysis

The site had to be unpacked by the palimpsest of physical elements to perceive a final potential of what the site could have become. The elements critiqued represented:

I. The historical

II. The transient

III. The analytical

IV. The anchor space

This allowed for an initial investigation of space to begin the creative process which was Meso in scale and collectively considered the broader site in the final iteration of the urban vision. The strategies investigated then highlighted the integration of space through the juxtaposition of elements which represents itself as conscious infill. Elements were not seen in isolation and they understand the energy of the city through urban and critical theory. The final site vision then encapsulated these narratives by extending the canal and adding fractured urban space along the water edge to create the internal harbour.

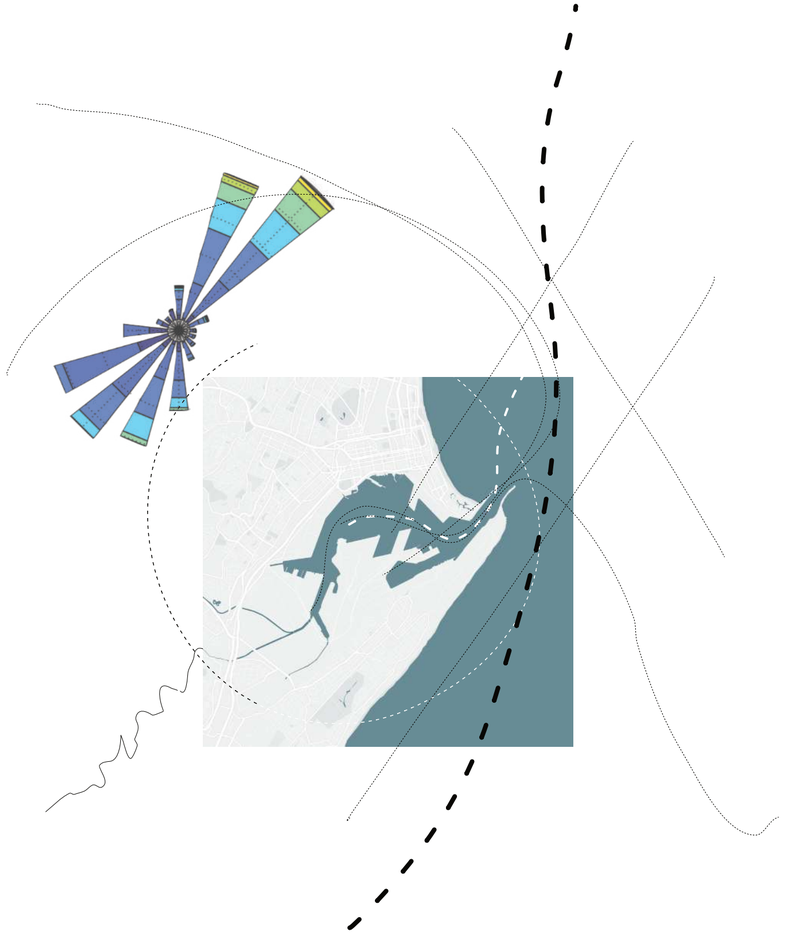


Fig. xxxiii. Climate analysis of Durban and entrance threshold to port (Author 2021, Mapbox 2021)

Fig. xxxiv. Site analysis map (Author 2021, Openstreetmap 2021)

4.6.1. Noise and Road structure Study

Two main roads exist as Mahatma Gandhi Road on the Southern boundary and the Northern promenade road with major noise traffic existing on the Southern basin from ships and existing shipping logistics and the Northern quadrant noise traffic comes from active users and wind.

4.6.2. Heritage study and nodal view analysis

The site contains any major heritage spaces and many have been left to ruin such as the chosen site for this dissertation. The views of the harbour are preserved through flat developments but diminished through active fencing off of the site.

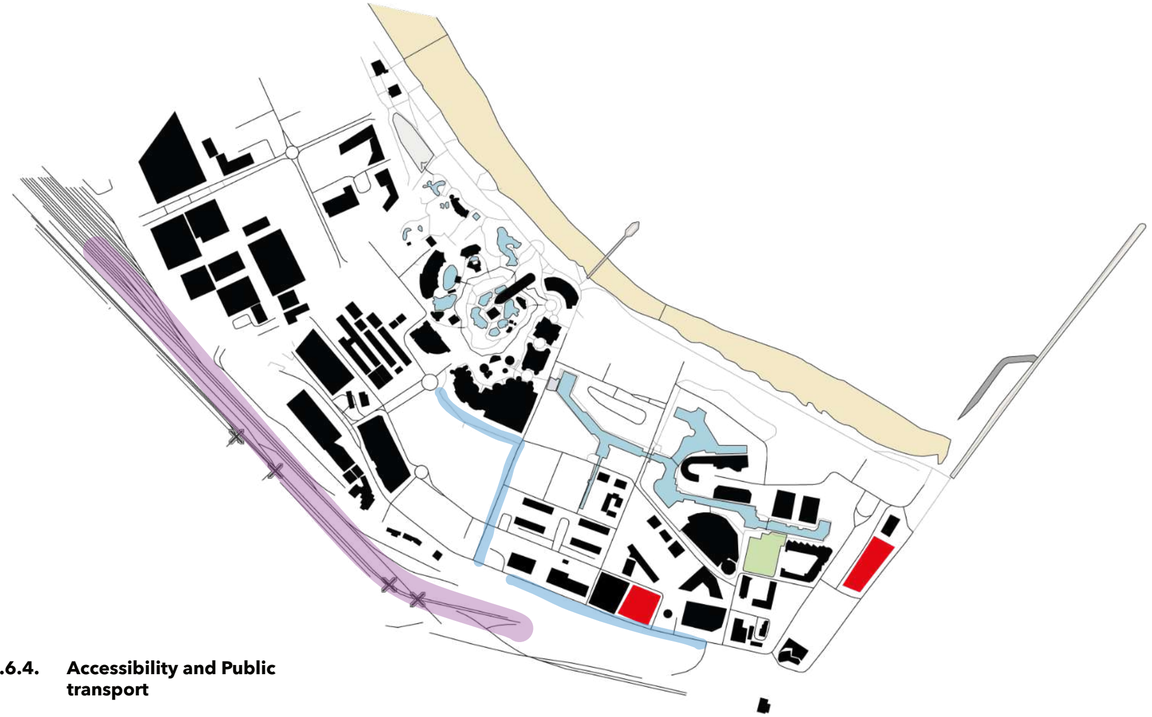
Fig. xxxv. Site analysis map (Author 2021, Openstreetmap 2021)

4.6.3. Land Use Study

Due to the Precinct Allocation plan as seen on page 55, there is a distinct character difference between developments in the Southern quarters and central district where there is mainly residential to office buildings.

There are many heritage opportunities as well as collaboration operations with the TNPA and PRASA to consolidate a tram/ railway network

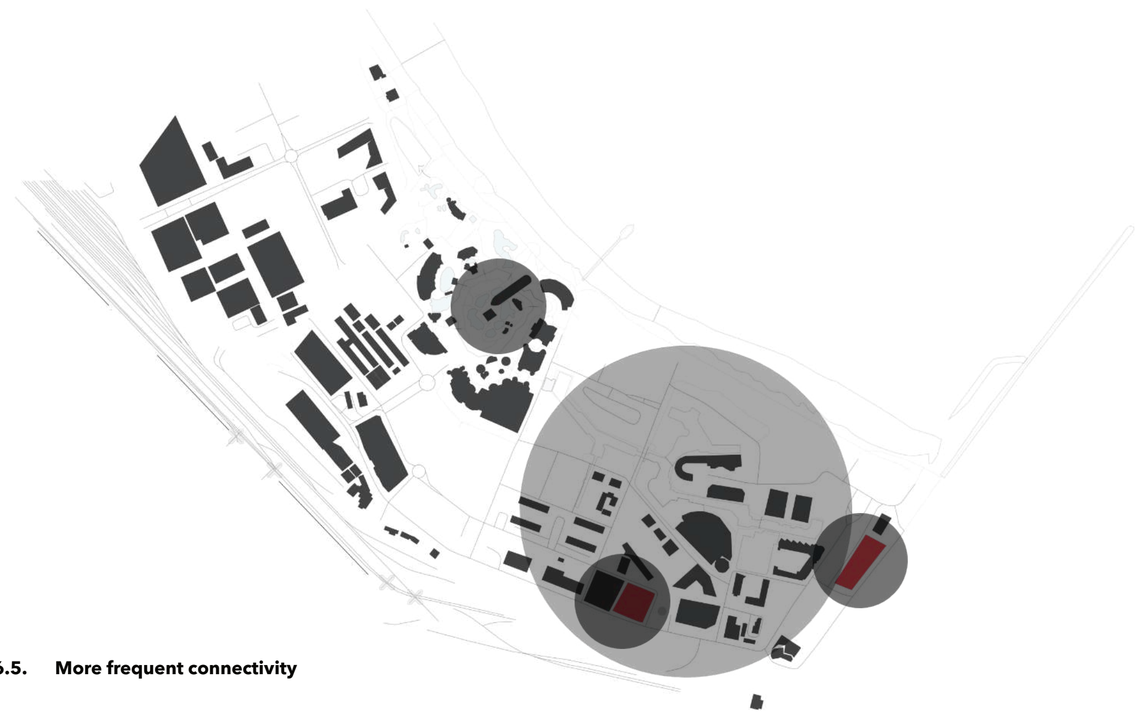
Fig. xxxvi. Site analysis map (Author 2021, Openstreetmap 2021)



4.6.4. Accessibility and Public transport

There is a proposed tram line proposed by the city planning committee according to Mrs Mridulekha Allopi (2021) but this ideology diminishes with poor planning from the city. Lying on the Souther quarter is an old existing railway which circulates towards 80% cargo rail. 20% road. More effective on Point quarters in order to reduce truck congestion.

Fig. xxxvii. Site analysis map (Author 2021, Openstreetmap 2021)



4.6.5. More frequent connectivity

Due to the Precinct Allocation plan as seen on page 55, there is a distinct character difference between developments in the Southern quarters and central district where there is mainly residential to office buildings.

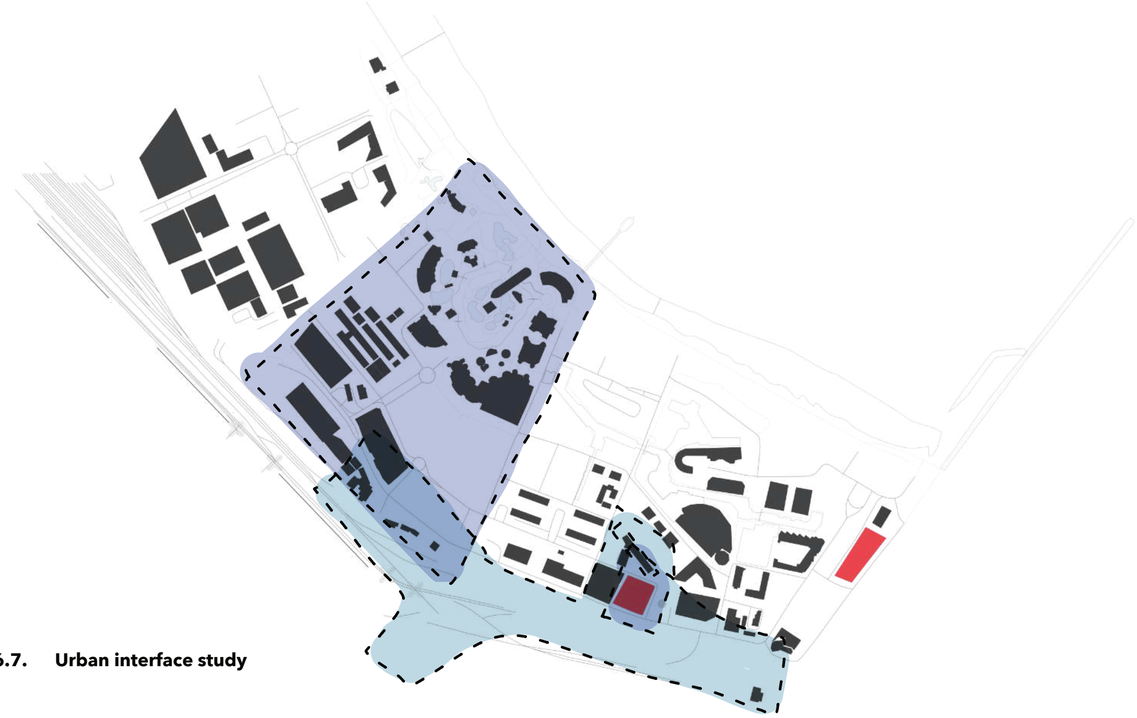
There are many heritage opportunities as well as collaboration operations with the TNPA and PRASA to consolidate a tram/ railway network

Fig. xxxviii. Site analysis map (Author 2021, Openstreetmap 2021)

4.6.6. Diagonal Connections

There is a prominent axis from the main road on Mahatma Gandhi towards the promenade road which create a web of intersections towards the central quadrant of the site and the edge of the existing canal periphery.

Fig. xxxix. Site analysis map (Author 2021, Openstreetmap 2021)



4.6.7. Urban interface study

Main infrastructure in the central CBD pull programme and important developments towards different precinct allocation areas which in turn should homogenise the sites overall character.

Fig. xl. Site analysis map (Author 2021, Openstreetmap 2021)

By YP Mudaly

05.

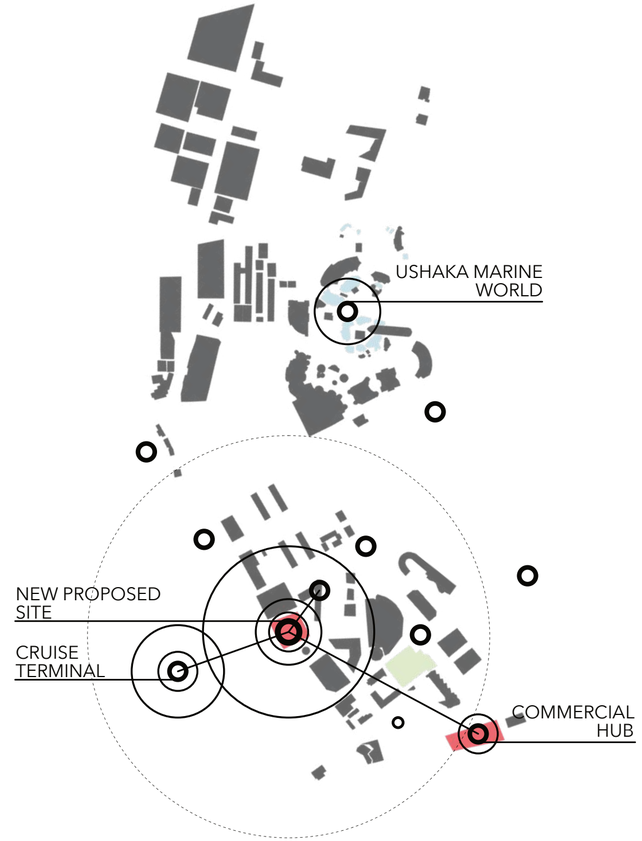
Urban Design Approach

Interfacing anchor infrastructure to the site and creating a masterplan

Fig. xli. Left: Arial drawing of Point Waterfront (Author 2021)

Fig. xlii. Right: Proximity diagram of Point Waterfront (Author 2021)

The project seeks to explore challenges and potentials of the site as well as combine and/or overlay programmes and typologies to benefit the fluid nature of constant movement and access around the harbour and the vision is to create a dynamic and inviting urban environment. The architecture can change the way developments catalyse dead sites and how one uses existing systems to add to an urban fabric.



UEM SUNRISE URBAN FRAMEWORK

Plan courtesy of eThekweni planners, is publicly available

5.1. Development through an urban revitalisation

The development of the urban framework focused on developing the anchor areas to create an impactful density on the overall waterfront precinct. The Durban port is a dynamic infrastructure which is integral in the economies of South African import/ export as well as tourism in recent years with the advent of improved cruise infrastructure for MSC.

The careful methodologies followed in the design of an urban scape considers locations such as the canal, uShaka Marine World, the existing site and the heritage scapes around it to achieve the dissertations selected goals. The feasible area studied concentrated the canal through the whole scheme of the site and its intention to bring in a recognised water frontage in the Durban Point Waterfront. In the end it creates an international character and the dissertation focuses on 4 zoning strategies of space for the urban vision.

5.1.1. UEM Sunrise Plan Analysis

The first iteration of the urban vision critiqued the existing development plan designed by UEM Sunrise. Categorically the critique was extracted into 3 elements as seen in figure 2.

I. The canal - which was not expanded upon and was made smaller - possibly to create more space for development within the urban block system.

II. The urban densification of buildings and public realm which did improve on the existing landscaping of the site, however, fell short of designed integration within the building footprints and was determined as very typical and poorly designed

III. Within the urban block, edge conditions for building pads seemed to be ignored due to development ownership of land parcels, resulting in dissociative urban spaces which seem to separate by programme and use.

Fig. xliii. Left: UEM Sunrise urban development plan (Company 2021)

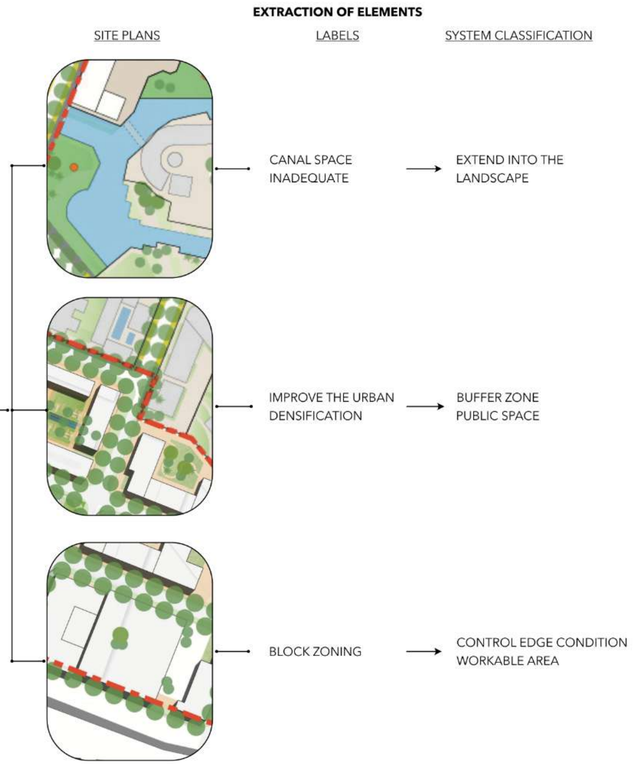


Fig. xliv. Right: Analysis of UEM Sunrise urban development plan (Author 2021)

5.2. Creating the urban design scheme

Celebrating the essence of the anchor connections and the spirit of the 'port-city', the site is revitalised through an identity restructuring of appropriate used space and anchors to exemplify the total port city narrative. Here, the theme of resilience is brought in to show how a system is able to withstand change through dereliction and reflect a city's fortunes through adaptation, use and activity as well as relationships and civic use. All strategies were studied for their opportunities and uses according to existing conditions, surroundings, and site advantages.

The urban design approach was implemented to ground the architecture tactilely within the new scheme to provide intricate detailing on edge conditions and fringe boundaries to tie it to its environment.

Within the block as the use of the new Durban Harbour changes towards a more tourist oriented and business park themed space, sites surrounding chosen site A (fig.5) are designated as public mixed use space, some with intermodal transit nodes with high density pedestrian traffic flow. These strategic locations are all to be connected to the water canal network.

Fig. xlv. Existing Site and Harbour (Author 2021)

5.3. Rethinking the existing Durban Point Waterfront Salt Water Canal

One of the main components of the schematic is a reliance on the water edge brought in by the salt water canal. The canal is devised as a connective system pulling in different land parcels from each quadrant and quarter of the Waterfront through water networks and fresh water canal integration into buildings. This ideology suggests that the Durban Harbour is not closed off as the city internally contains a visible water edge through the canal as a 'device'. This new salt water canal proposed acts as the backbone for new recreational space to emphasise the distinctive nature of a seaport/ waterfront town identity that Durban requires.

The open canal will not only provides connectivity towards the tabula rasa of a water edge but also act as a pedestrian urban space as mediation between buildings. As a service, the canal further acts as a water collector for overflow storm water to alleviate flooding throughout the side as well as provides active ventilation and cooling strategies which would be discussed in chapter 8.

Currently the canal is used as a breeding pond for salt water fish used at uShaka Marine World as well as a recreational space for gondola rides.

5.3.1. Salt water typology

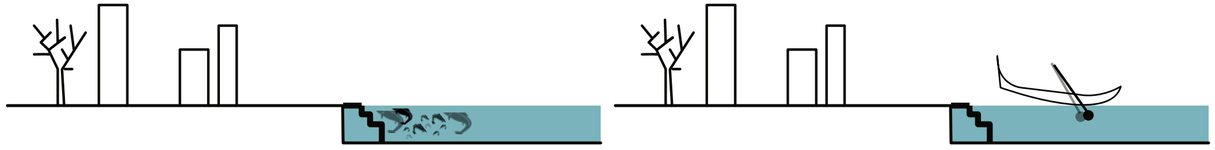
The canal features as a lower walkway in-between block footprints and the concept is applicable to run along the street.

5.3.2. Fresh water typology

The second type of canal is one that runs within buildings as a freshwater typology which is a catchment for rainwater and provides as water management for chosen, designed buildings.

Fig. xlvi. Bottom Left: Fish breeding typology in canal (Author 2021)

Fig. xlvii. Bottom Right: Gondola activity in canal (Author 2021)



5.4. Key components of the new canal system

5.4.1. Bridge Walkway

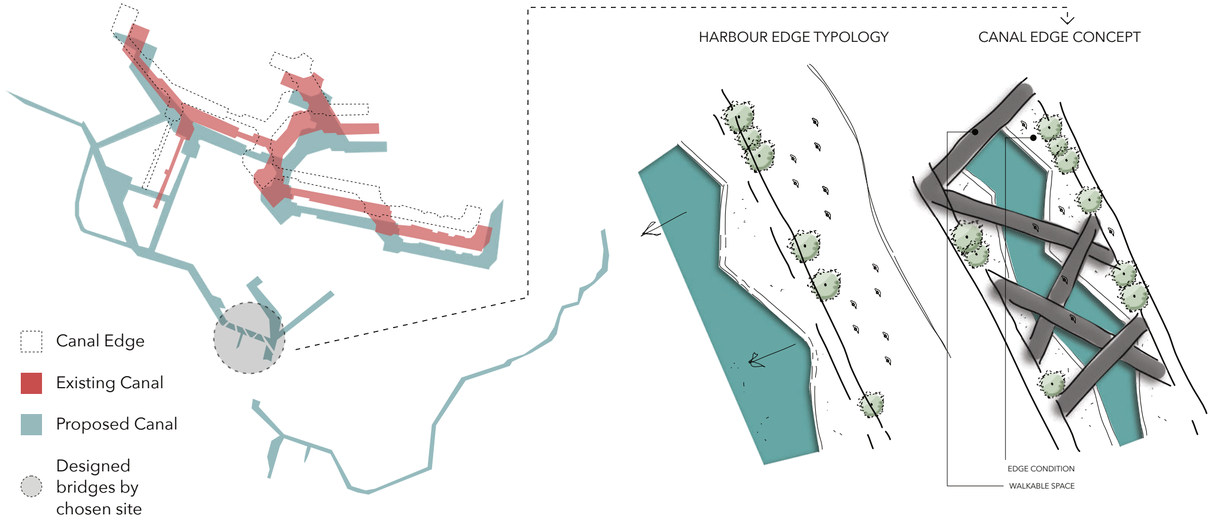
Along the canal the walkways across the scheme serves as a major pedestrian walkway from block to block. Such walkways also include bicycle lanes as well as in-situ concrete block seating within the canal for recreational activities close to retail and restaurant offerings such as the beer garden programme for the dissertation chosen site.

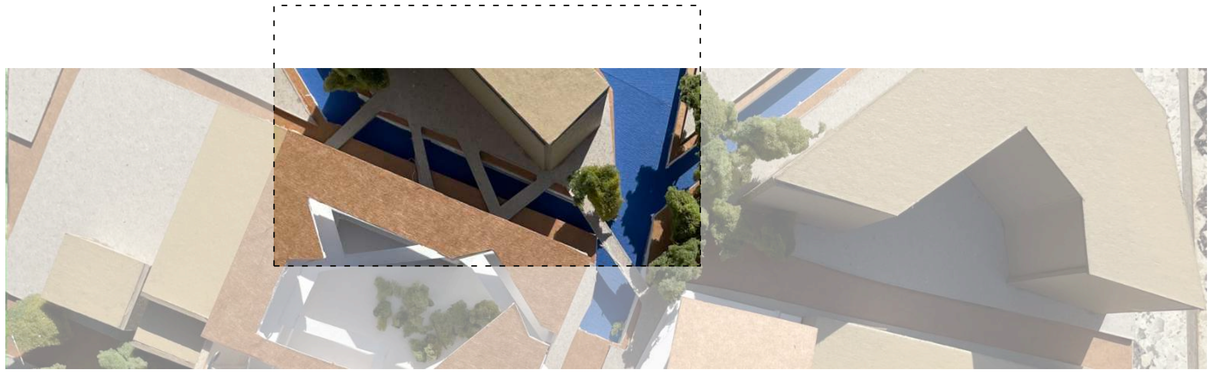
5.4.2. Water Treatment

One of the existing programmes of the existing canal near the uShaka quadrant is the ecology of fish breeding for the marine world which is an innovative machine programme. This programme is cordoned off from the water treatment facility which treats the salt water for the buildings to use as clean water. This system shall be cheaper than conventional water procurement in buildings and chemical forms of water purification and provides as an ecological step in a greener urban fabric.

Fig. xlviii. Canal exploration diagram (Author 2021)

Fig. xlix. Below: Canal maquette (Author 2021)





Precedent

Urban design Integration

Location:

Paris

France

Architect:

CEMEX Matériaux

Value to Research:

Reclaim of existing land, reformatting space, inclusive of context functions

5.5. Port of Tolbiac

As a starting anchor to situate the design informants of the dissertation, the theoretical framework was broken up into the categories mentioned in the 'Guide-of-Good Practice' document authored by the AIVP 'worldwide network of port cities' (Aivp 2015: 9-132)

The breakdown of the spatial organisation section within the AIVP Guide of Good Practices report suggests the need to "share the use of the water and waterfront between urban and port functions" (Aivp 2015: 17). This is done to reclaim as much existing industrial land as possible whilst improving the existing landscape which the harbour situates itself. The 'site' contextually functions within a working port as Durban Harbour and the approach specified within the architectural and urban recommendations were vital to improve its environment.

The success of the Port of Tolbiac was the identification that much of the original port space which was not used was transformed into walkable promenade space (Lynch 2015). The activated area draws in pedestrian traffic and allows the space to still have access to prominent water edge space whilst being well lit and safe for users.

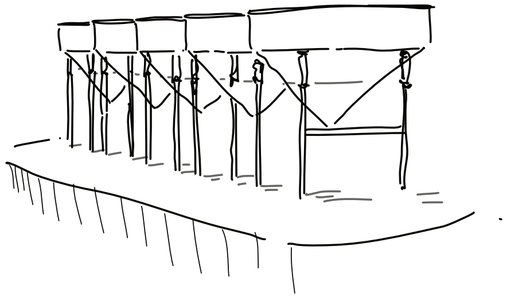
Fig. I. Images from AIVP. 2015. Plan the city with the port: guide of good practices. Available: https://www.aivp.org/wp-content/uploads/2021/01/AIVP-guide-of-good-practices-english_adherent.pdf [Accessed 2 June 2021].

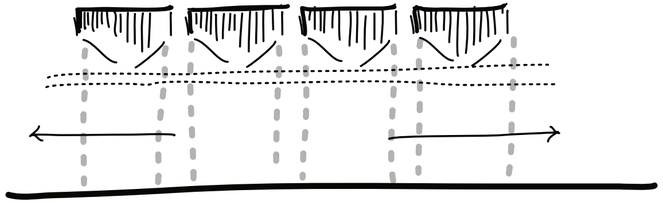
Conclusions and relevance to Port of Durban

In the end concept, the architectural form would make use of oil tankers from Island View terminal in the Bluff area of Durban Harbour and the Tolbiac Industrial Port makes use of the same silos but places them on pilotis in order to create walking space and views beyond the firm ground condition.

The integration of space is therefore achieved by using existing spatial structures and the organisation of walkable space

Fig. Ii. Exploration diagram of precedent (Author 2021)





Precedent

Location:

Vigo

Spain

Architect:

Jean Nouvel

Value to Research:

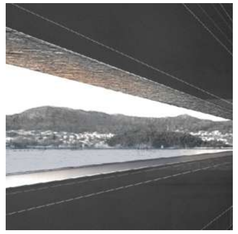
Historical identity unfolded, water edge integration

Port and user interface

5.6. Port Vigo

Port Vigo by Jean Nouvel depicted a new developed landing zone for passengers which was about the circulation interface within the harbour space. From a reading of their manifesto, the intention of the scheme was to “bring the city to the port and the port to the city” (Nouel 2007).

In terms of the layout of the port and the quay there is a sense of continuity where through amplifying existing space the port is able to interface with the water edge to contrast solid to liquid ground conditions. From here the play on landscape creates a catalogue of themes where user perception changes from the length of the scheme. Jean Nouvel is successful in tacking the issues of historical identity loss in the Port of Vigo and understands the relationship between the marine and the infrastructure around the context.



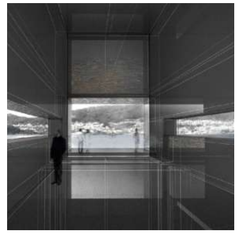


Fig. lii. Images from NOUEL, A. J. 2007. *Port of Vigo* [Online]. Paris: Ateliers Jean Nouel. Available: http://www.jeannouvel.com/en/projects/port/ [Accessed 28 April 2021].

Conclusions and relevance to Port of Durban

At the current moment there is no connection between the harbour infrastructure and any architectural scheme in the Port of Durban. The success of the port of Vigo lies in its ability to link water and architecture together where the architecture immerses itself unapologetically into the landscape.

In the case for the Point Waterfront the water edge needs to be created to familiarise users with the marine identity that is no existent in the current context.

Location:

Bornholm

Denmark

Architect:

White Architects

Value to Research:

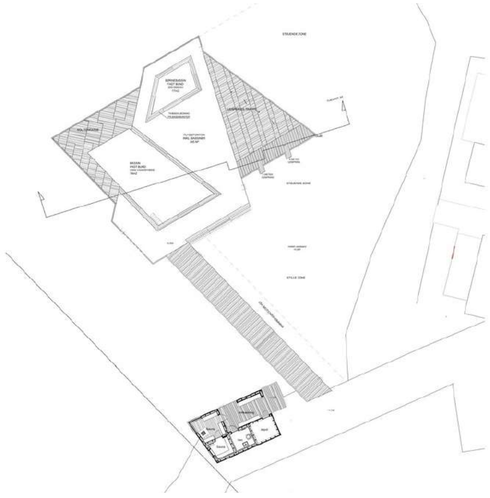
Defined edge condition on water, public gathering point, strong identity of place

Water edge threshold

5.7. Hasle Harbour Bath

There is no active water edge in the Durban Harbour as it is a working port with strict operational management (Mpuku 2018) as well as zoned space which is bordered and not accessible from the main road. Therefore, the the schematic of the waterfront the only active water edge exists through the canal. The end intervention is required to draw in the synergies of space through this anchor infrastructure to create a resilient space which adapts and moulds itself into its context and place. The precedent of the bath explores the idea of active edge on the island on Bornholm in its local port sector which is known for fishery and ferry servicing. According to Paula Pintos (2019), the declining fishing industry was in need of restructuring and the opportunity to revitalise the harbour was catalysed.

The baths form a sequence of activity on the harbour on floating platforms which undulate as built landscape on the water edge and plane. The success of this environment cultivates a threshold space as curatorial where end users fluctuate and congregate space on a daily basis, forming part of a ritual of circulation through the harbour.



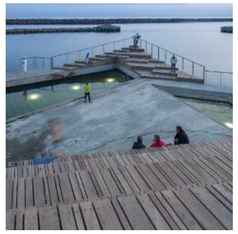


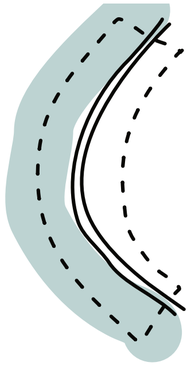
Fig. liii. Images from PINTOS, P. 2019. *Hasle Harbour Bath / White* [Online]. Archdaily. Available: https://www.archdaily.com/535966/hasle-harbour-bath-white?ad_source=search&ad_medium=search_result_projects [Accessed 2 July 2021].

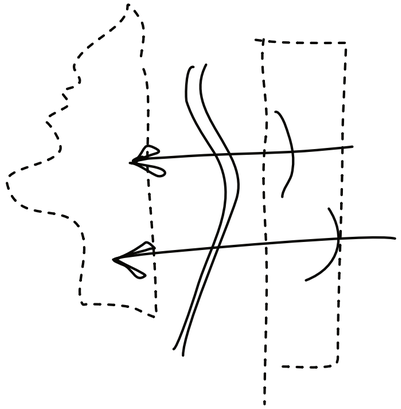
Conclusions and relevance to Port of Durban

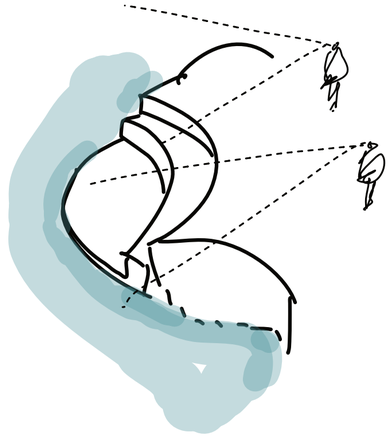
The necessity of such a used space shall be explored in terms of the extension of the canal which should in theory cultivate a greater urban language of the Point Waterfront in Durban. Water edge plays a vital role in the understanding of smart port-city enclaves and demonstrates how successful design approaches dealing with prototyping and simulating could dynamically add to diminishing ports.

This criteria theorises how context and place is linked with practice of development through theory. The whole characteristic of a city/port interface is reliant on the presence of water (Aivp 2015: 15) and use of existing anchor infrastructure such as the salt water canal would actualise urban amenities through functionality and new uses in the city interface. By moving the city to the water, the space is defined as maritime 24/7. Increasing the anchorage of space migrates urban functions around water instead of water around urban functions which is the challenge facing the Durban Port.

Fig. liv. Exploration diagram of precedent (Author 2021)







Urban Design Approach

5.8. Urban development scheme

The iterative process flowed by improving the quality of the canal, improving the pedestrianisation of the site as shown in figures 6-8 in orange and the intention was to let these intersections link the block forms through the anchor feature considered in the new urban scheme. The junction between the canal and the new proposed building was then chosen to be resolved architecturally and link to the proximity systems.

5.8.1 Iteration 1: Changing pedestrian channels and canal

The urban strategy was not to start new but to draw synergies

Through this intervention one is able to link:

I. The city to the landscape

II. Citizenship to socio-cultural significance

III. Leisure to working port conditions

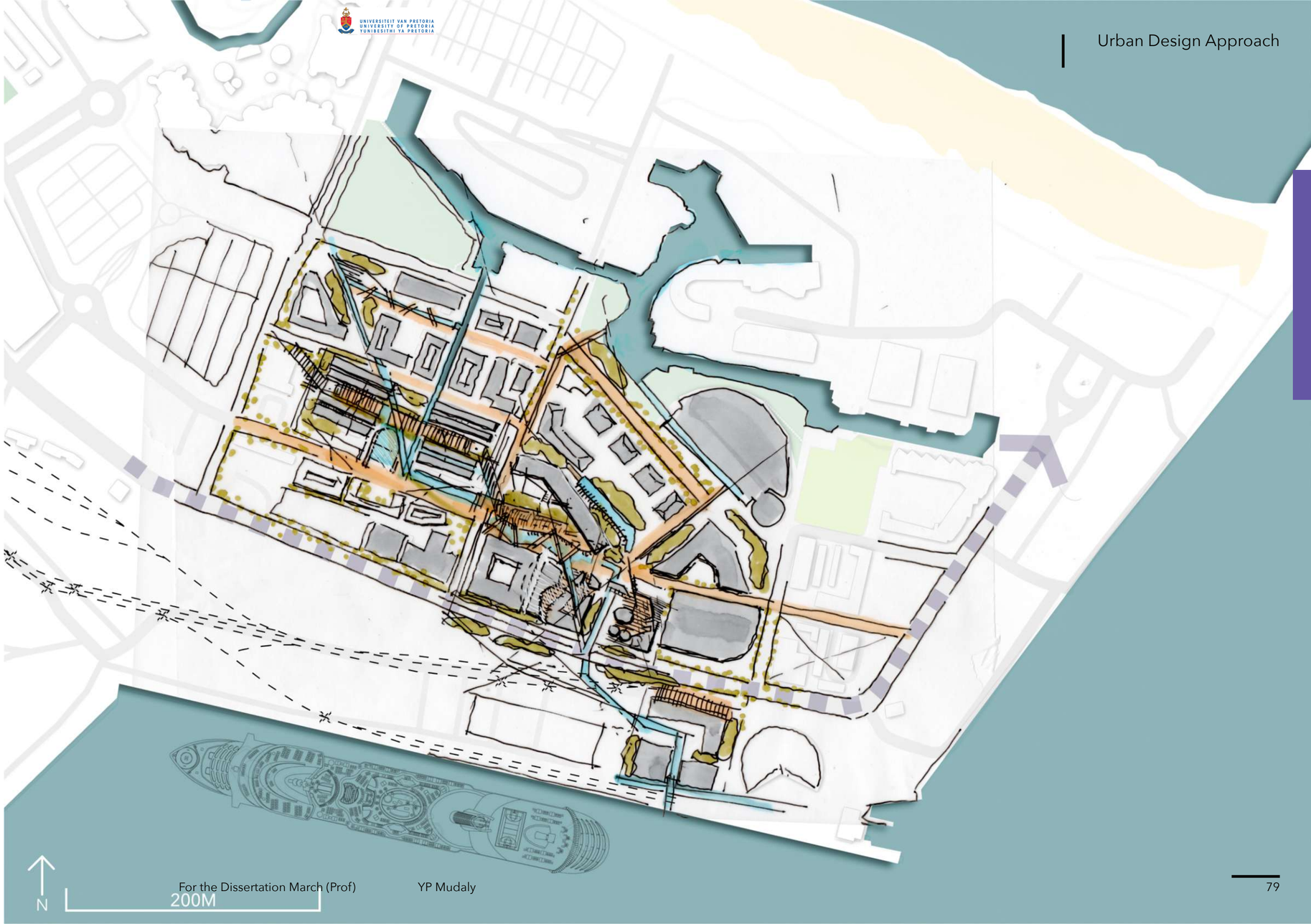
Fig. lv. Literation 1 Urban map (Author 2021)

5.8.2 Iteration 2: Using the existing environment

The potential site development seen to the right therefore theoretically latches onto existing synergies to anticipate links to points through all layers of investigation. The moment of stimulation through the canal is from the water edge and its corridors for threshold. The ubiquity of canal makes the harbour water edge more accessible and connected.

Fig. lvi. Iteration 2 urban map (Author 2021)

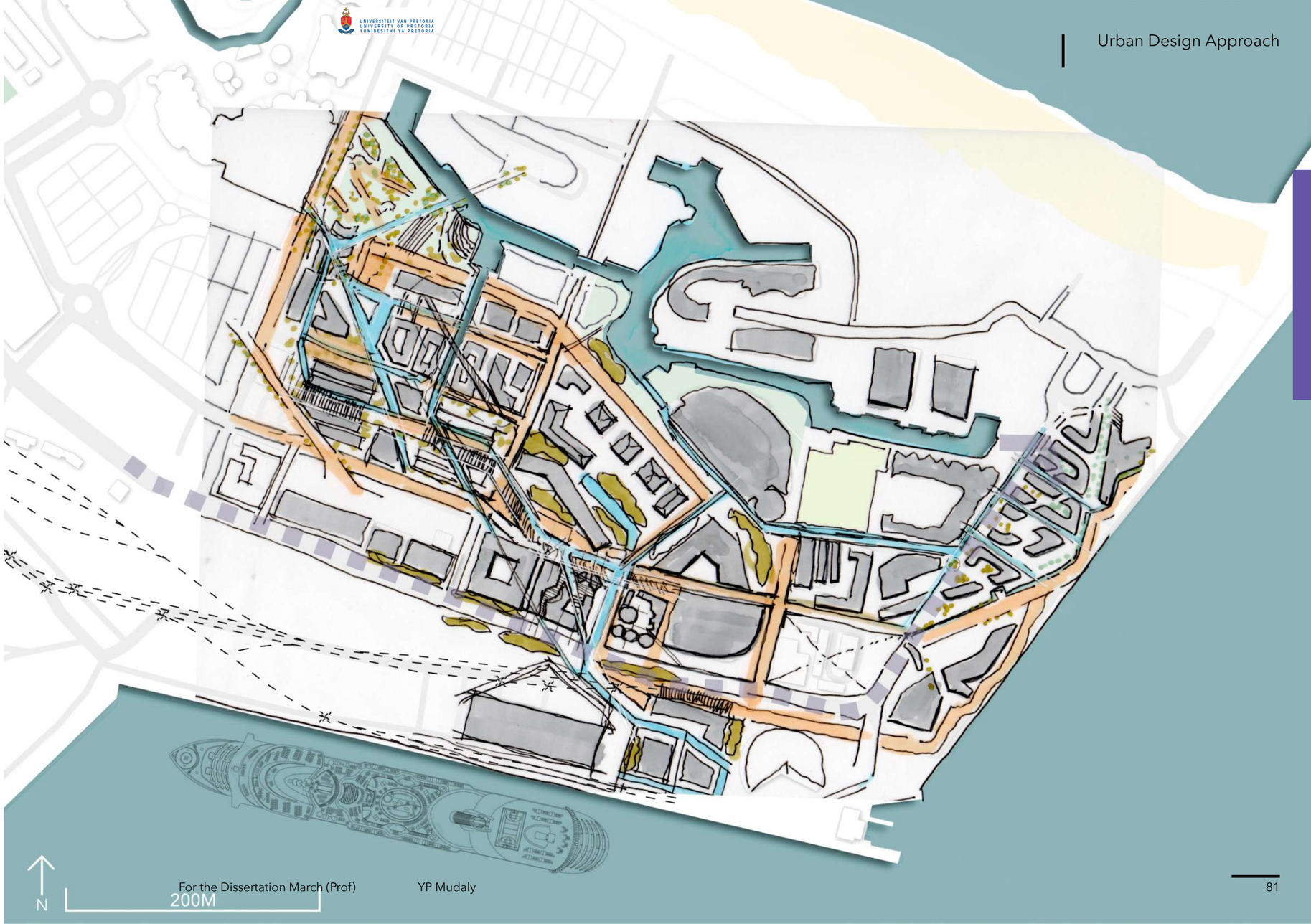
Urban Design Approach



5.8.3 Iteration 3: Consolidating the canal and urban edge density

Celebrating the essence of these connections and the spirit of the 'port-city' the site is revitalised through an identity restructuring of appropriate used space and anchors to exemplify the total port city narrative. Here, the theme of resilience is brought in to show how a system is able to withstand change through dereliction and reflect a city's fortunes through adaptation, use and activity as well as relationships and civic use.

Fig. lvii. Iteration 3 urban map (Author 2021)



5.8.4 Iteration 4: Final Urban Framework

The end design was placed in the existing parking space near the Waterfront hotel and the old sewerage space on Mahatma Gandhi Road. Seen in red, the new building sits in a cross roads between the operational harbour and the Point Waterfront. Reuse of existing heritage facades are used to form part of the intervention and grain/liquid bulk silos from Island view terminal as seen in the Durban Harbour Map in chapter 4 form a new facade element in the scheme.

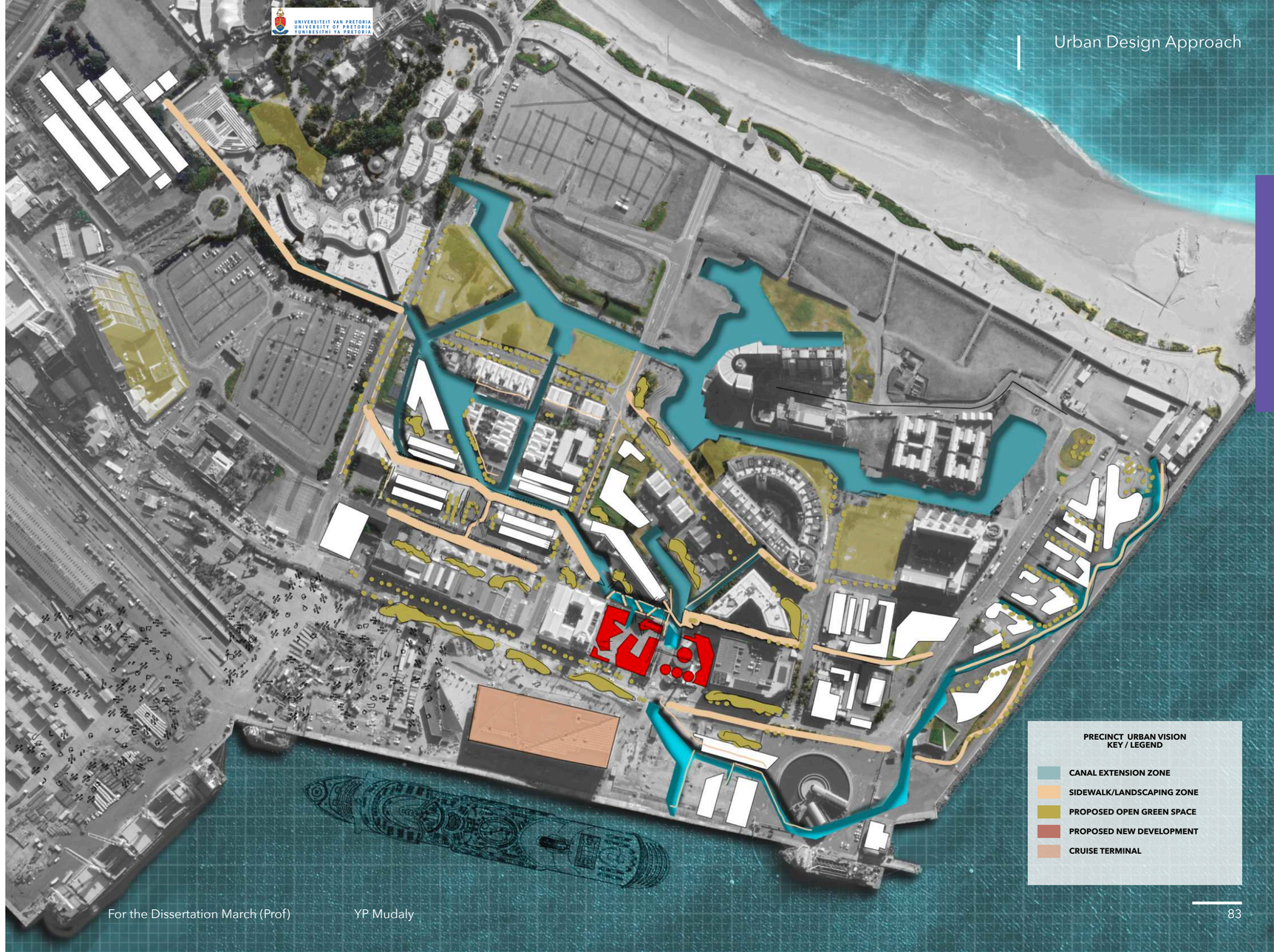
From here, the final site vision was informed by the way the Local Area Plan constructed by eThekweni Strategic Planners (Mkhize 2016) was set up concurrently with the Precinct investigation plans drawn up by Transnet (Tnpa 2019). The scale of enquiry situates itself in the bigger picture through accessible scales of movement, city connections and arrival.

The new urban scheme therefore theoretically fulfils its physical usefulness in space and time (through the readings of Lefebvre (1991)) and latches onto existing synergies to anticipate links to points through all layers of investigation. The canal is an interwoven network introducing new linear pathways which annotate programmatic responses and consequences around the site.

These elements exemplify the Rotterdam quality of the river (Meurs 2012) which encourage play and recreation along a defined water edge and persist a walkability on site through its mixed programmes. The urban strategy reconnected urban remnants of past seaport conditions (Lee 2012) to uncover their current dissociative condition and recover their regenerative potential.

As seen in the right urban framework, the site itself nestles itself within the embrace of existing structures and the new canal integration. Celebrating the essence of these connections and the spirit of the 'port-city' (Hein 2012) the site is revitalised through an identity restructuring of appropriate used space and anchors to exemplify the total port city narrative. Here, the theme of resilience is brought in to show how a system is able to withstand change through dereliction and reflect a city's fortunes through adaptation, use and activity as well as relationships and civic use (Davis 2014: 3).

Fig. lviii. Iteration 4 urban map (Author 2021)



Revitalised Intersections, VOL. 1

By YP Mudaly

Architectural Design Approach

06.

Formalistic generative strategies and heritage analysis according to Henri Lefebvre (1991)

Architectural Design Approach

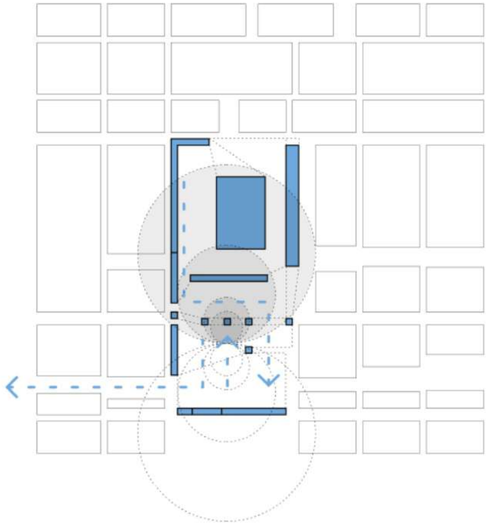
6.1. Formalistic generative strategies

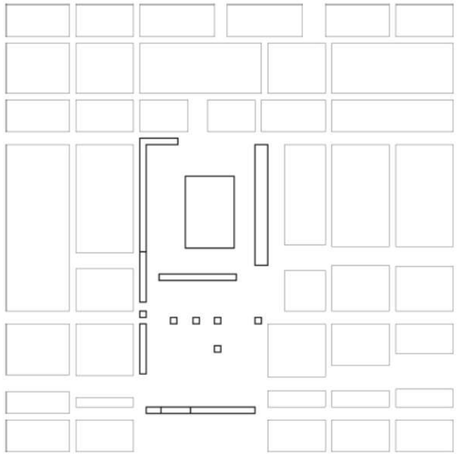
6.1.1. Character of Heritage Ruins

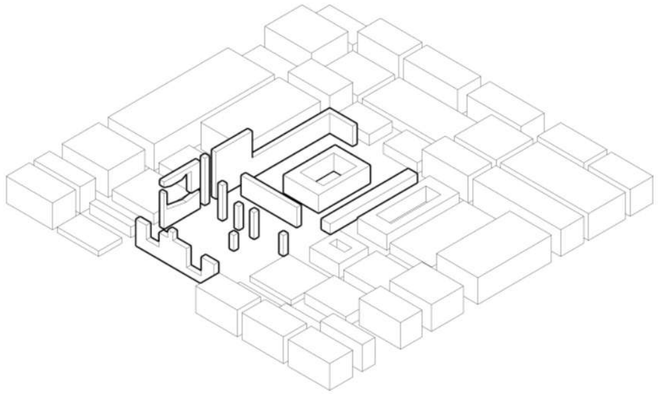
The potential idea of restructuring is exemplified by the heritage ruins which are the perimeter of the site. There are, however, limitations within the restructuring and implementation of interventions in the city space especially when neoliberal strategies are utilised as there is a required state-led agenda which should align with economic progress. The idea is to recognise the site as a historical significant fabric which requires intervention to strengthen its position in the landscape in order to contribute to its industrial past and commercial future (Diedrich, Dahl and Babette 2020: 2).

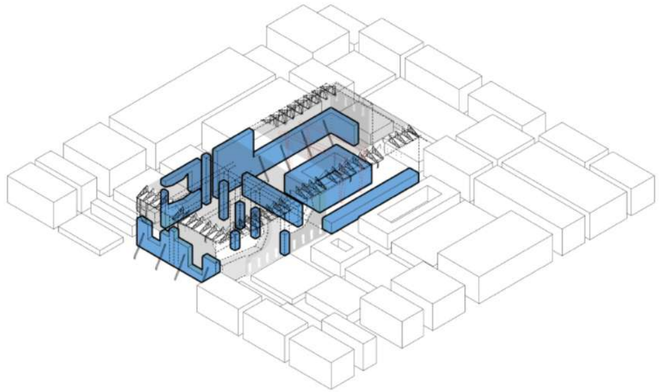
Fig. lix. Below: Heritage ruins diagram (Author 2021)

Fig. lx. Right: Production of space diagram (Author 2021)









6.1.2. Production of Space

Thomas Flynn (1991), in his critique of Foucault, explains the requirement of temporal continuity in open space and this takes a turn on the evaluation of the Durban Point Waterfront site. The existing ruins have been stagnant for a period of time and the palimpsestic layering of a new narrative within the space is crucial for the revitalisation of context. Being respectful of existing ruins and not demolishing it was important, however integration of a new language of materiality with stylistic instances were drawn from existing spaces. The end goal is to amplify the buildings existing character and express its evolution in space and time.

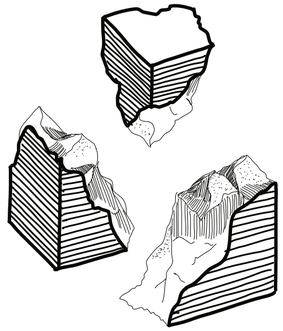
Furthermore, the intention was to fracture the nature of the ground plan then introducing very recognisable (facade-ical) elements in the elevation. As contributed by Lefebvre's dialect in The Production of Space (Lefebvre 1991), the facade is a monumental component of built structure which dissipates. One could understand how ruinosation could cement a structure as strong metaphysically but backwards in narratives and evolution. The fracturing of elements through identity restructuring adds the new layering of Durban's palimpsest through revitalisation strategies. The site, in its relativity to other spaces, cannot go backwards to relive its past but needs to emphasise its adaptation of change.

6.1.3. Historical Materialism

Backed by this stance, Lefebvre, speaks of a 'historical materialism' (Lefebvre 1991: 181) which asserts that monuments - which bear no productive nature nor work in time - are categorised as 'raw material' fig. 18 in space. Therefore, this backs the design intent to use the existing ruins (as seen in the first diagram in figure 18) but reinvent it through new structure through a dialect of materialism where it has a tolerance of transformation. New functions and programme are introduced through celebrating the hospitality industry and creating a building which not only contains a range of retail offerings but institutions which facilitate operations of the working port and spaces in the city as well as facilities which show the adaptable nature of the framework such as an open air market near the existing hotel.

6.2. Architectural strategy

The architectural strategy involves pushing the envelope of the building outwards towards the street edge to respect the linear threshold of the ruins. This allows for the creation of new connections towards the canal as the building is constructed in its new urban context through spatial fractures. The benefit of this fracture is that it is a literal palimpsest of architecture which allows the building to continue to change and adapt over time but the existing ruins remain. The new building not only exemplifies the change in rhetoric in the urban fabric but is able to draw synergies from the spaces around it similar to the urban context and create a space which focuses on complementing and creating the resilience of the new site. The main goal of the architecture is to combine all layers of continuity into a space which celebrates innovation and progression through a discourse of identity. This architecture then becomes resilient because the ruin doesn't only survive, but it adapts for new use, activity and relationships with people and the landscape. The canal amplifies the urban quality of space thus, the building is able to hold cultural value and appreciation.



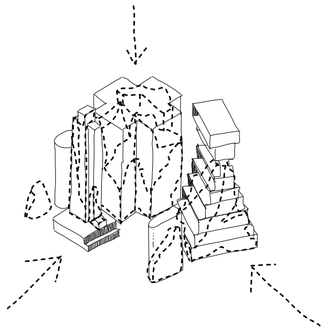
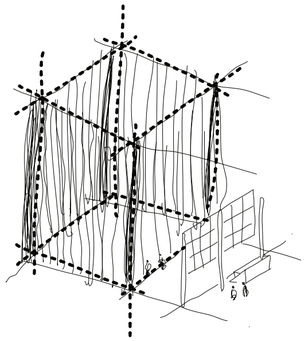


Fig. lxi. Below: Material strategy diagram (Author 2021)

Fig. lxii. Right: Architectural intention diagram (Author 2021)



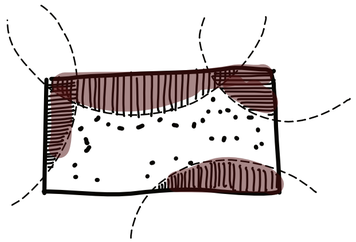
6.3. Critique of design explorations and intentions

6.3.1. Urban intentions

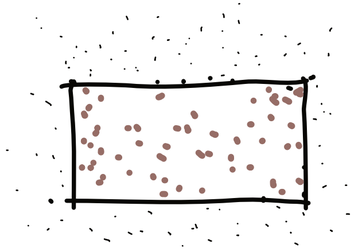
1. Connection
2. Historical grain restored
3. Activation of lantern node
4. Green fabric
5. Mixed use neighbourhood
6. Threshold

6.3.1. Architectural intentions

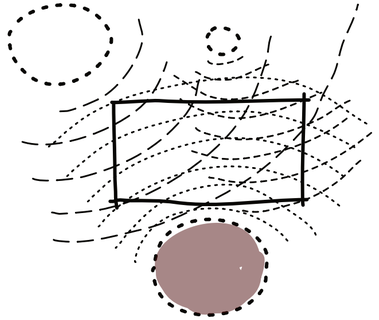
Create space out of edges



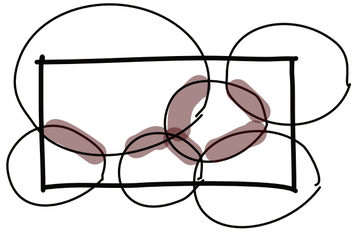
Enable new 'civic' typology



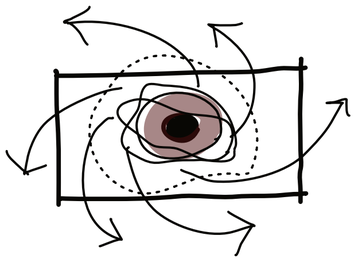
Connection from drawing in synergies



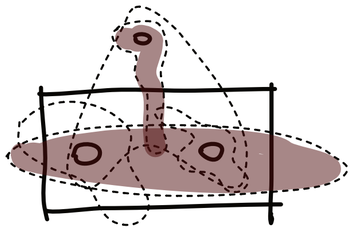
Create synthesis within space



Volume as central catalyst for programmes



Site extends from boundaries



07.

Design Development

Iterative design development and final building manifestation

Fig. lxiii. Concept sketch of building (Author 2021)

7.1. Summary of Project intentions

The project is a critical examination on port-city identity concurrently with neoliberal agendas.

The discourse of the dissertation is focused on the near future development of Durban's premier port towards the year 2048 whilst reflecting on the developmental interest of the city to extend or overlap within port boundaries to create more dynamic and integrated programmes. The dissertation focuses on a particular characteristic of port design related to the architectural discipline being the immediate harbour mouth interface to existing infrastructure.

The project seeks to explore challenges and potentials of the site as well as combine and/or overlay programmes and typologies to benefit the fluid nature of constant movement and access around the harbour and the vision is to create a dynamic and inviting urban environment that promotes innovation and trade whilst bringing in leisure, craft, events and conference in a singular space. This living 'waterfront' can therefore form basis of a catalyst for the resurgence of an identified seaport.

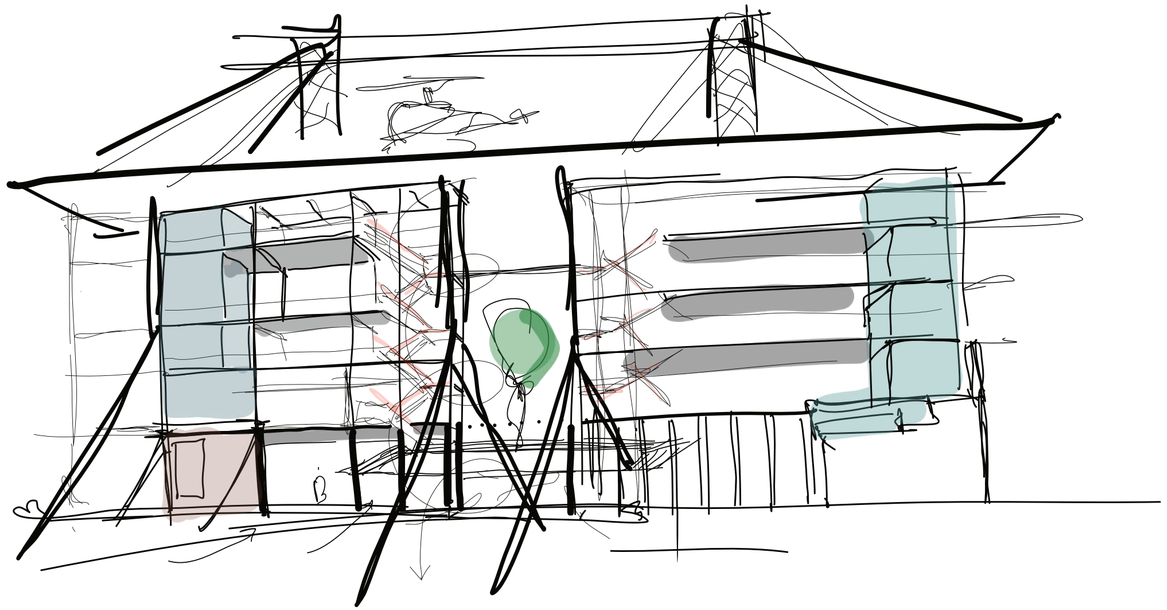


Fig. lxiv. Existing site (Author 2021)

7.2. Iteration 1: Creating a new typology

Elements of the street were examined such as the building, the street paving and lines as well as greenery and within each category there was an exploration of intended and unintended consequences. An example being the new building which is intended to accommodate people but not meant to deregulate space to other buildings.

Another example is building lights where it must attract circulation but not disrupt incoming ships that need to dock

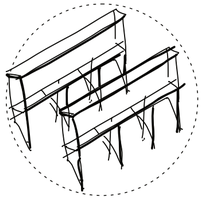
ELEMENTS OF THE STREET	INTENDED CONSEQUENCES	UNINTENDED CONSEQUENCES
BUILDING	TO ACCOMMODATE PEOPLE	DEREGULATE CIRCULATION TO OTHER SPACES
BUILDING FACADE	TRANSMISSION BETWEEN NEW BUILT AND EXISTING	
BUILDING LIGHTS	ATTRACT CIRCULATION	DISRUPT INCOMING SHIPS THAT NEED TO DOCK
STREET PAVING	GIVE BETTER WALKABILITY TO SITE	CREATE VISUAL BLOCKAGE
STREET LIGHTING	LIGHT UP AREA ZONE AT NIGHT	DISRUPT MARITIME COMMERCIAL ACTIVITIES
STREET LINES	REGULATE PEDESTRIANISATION AND PUBLIC TRANSPORT	
SIGNAGE	ADVERTISING FOR COMMERCIAL PROGRAMME	
GREENERY	INCORPORATE BIODIVERSITY: MAKE AREA FAVOURABLE HABITAT WHILST IMPROVING HARSH INDUSTRIAL OPENNESS	COST OF MAINTENANCE

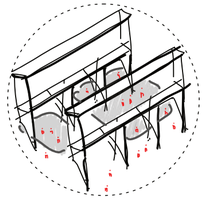
Fig. lxv. Right: Iteration 2 concept (Author 2021)

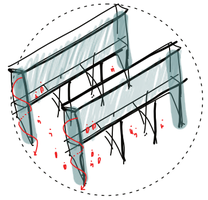
Fig. lxvi. Left top: Steel diagram (Author 2021)

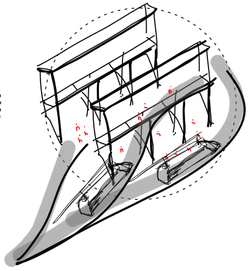
Fig. lxvii. Left bottom: Silo diagram (Author 2021)

7.2.1. Paying homage to steel structures

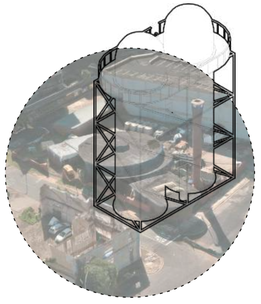


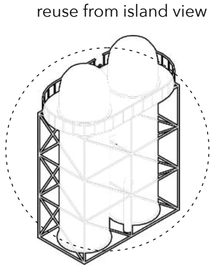


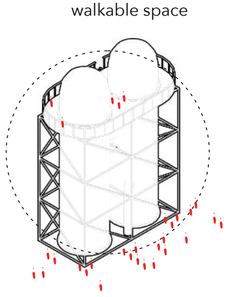


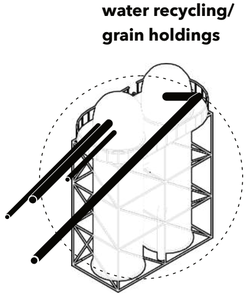


7.2.2. Reuse of liquid bulk silo from island view terminal





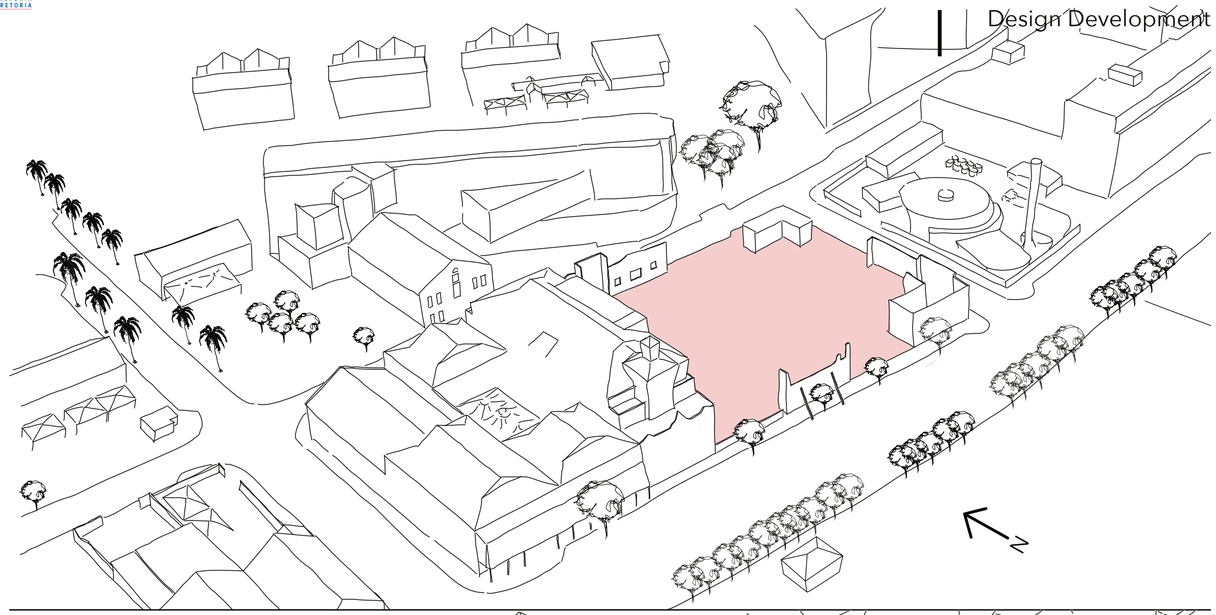




As a reuse strategy, revitalising abandoned brownfield sites was a key informant of the new design typology. Due to the waterfront district gradually losing its initial role and function from an initial container port towards a newly commercialised rhetoric.

Formalistically the design used existing ruins within the existing site as well as creating a new visual element in the landscape by making use of the yet-to-be demolished liquid bulk tanks from island view.

These will store the grain, hops and beer for the beer garden as well as serve for storage for fast moving commercial goods.



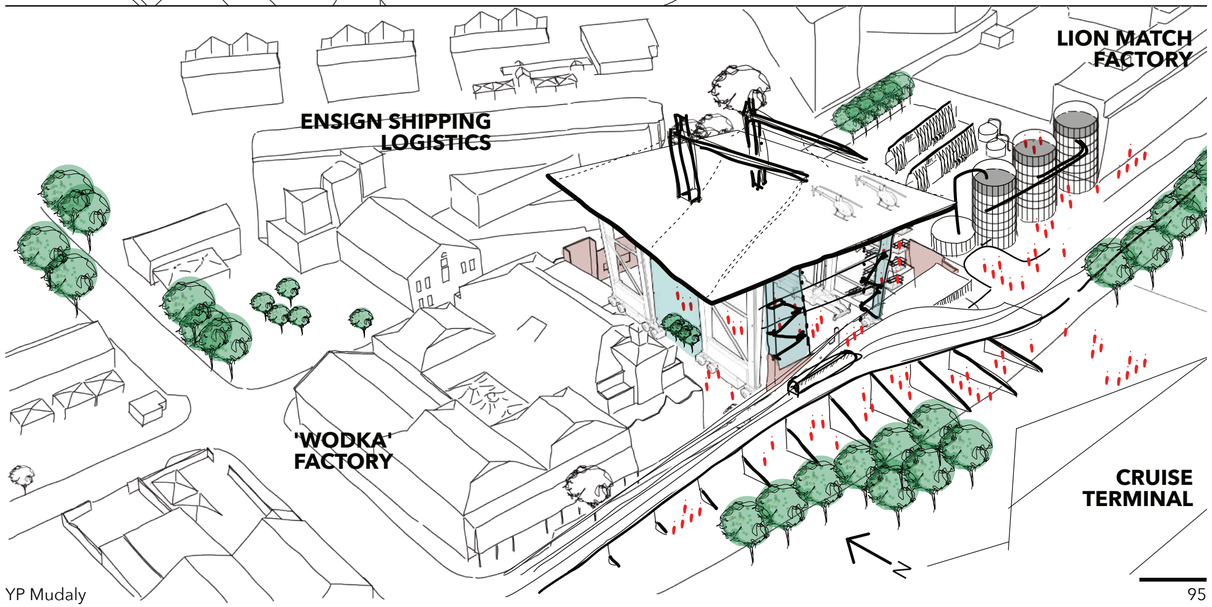


Fig. lxviii. Iteration 1 concept section (Author 2021)

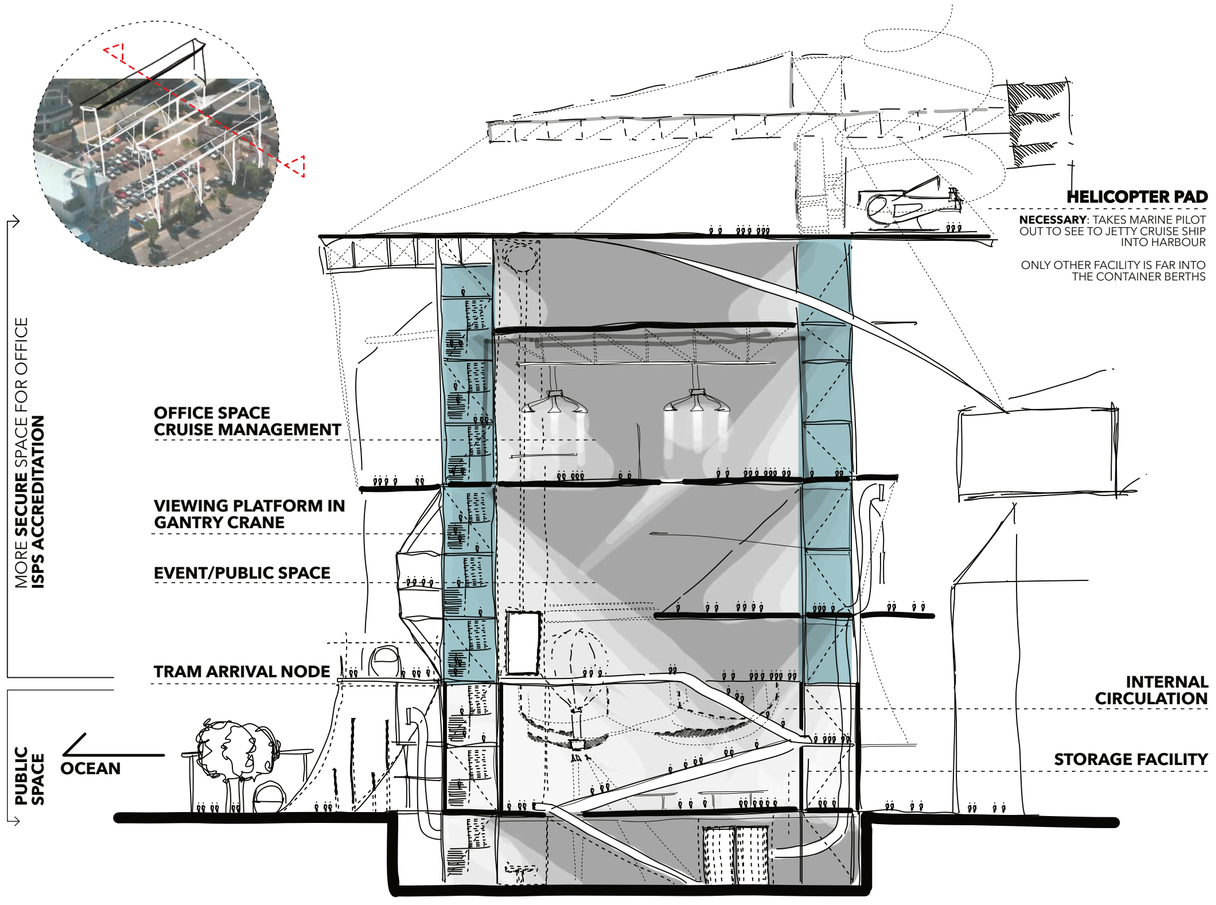
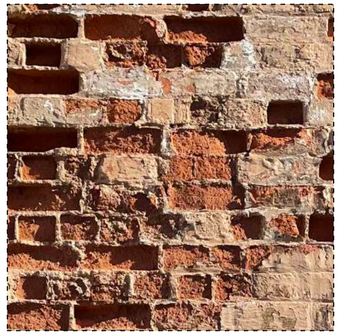
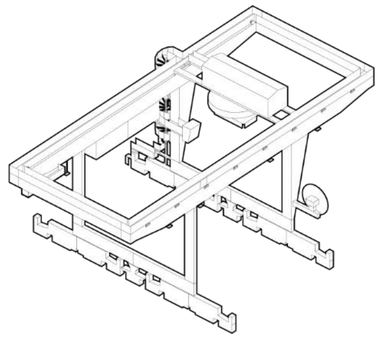
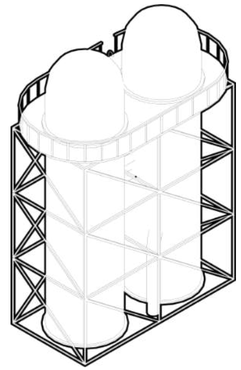


Fig. lxix. Material and existing structure exploration (Author 2021)







7.2.3. Conclusions made about Iteration 1

Focus on maintaining and enhancing the strong points in the Port of Durban, elevating the promenade with a strong refusal to touch the ground the design narrates the spirit of the harbour with a modern abstract language .

Focused on the dualities of discovery and operation, the new cruise terminal influenced the nature of form giving, making the gantry crane as a motif of the design stylised through geometric shapes.

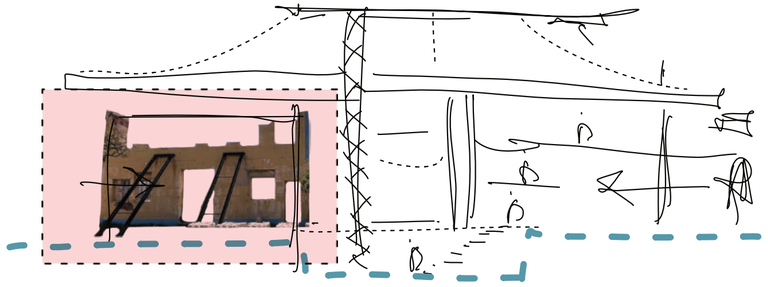


Fig. lxx. Heritage interface in structure diagram (Author 2021)

7.3. Iteration 2: Heritage impact on architecture

Focus on maintaining and enhancing the strong points in the Port of Durban, elevating the promenade with a strong refusal to touch the ground the design narrates the spirit of the harbour with a modern abstract language .

Focused on the dualities of discovery and operation, the new cruise terminal influenced the nature of form giving, making the gantry crane as a motif of the design stylised through geometric shapes.

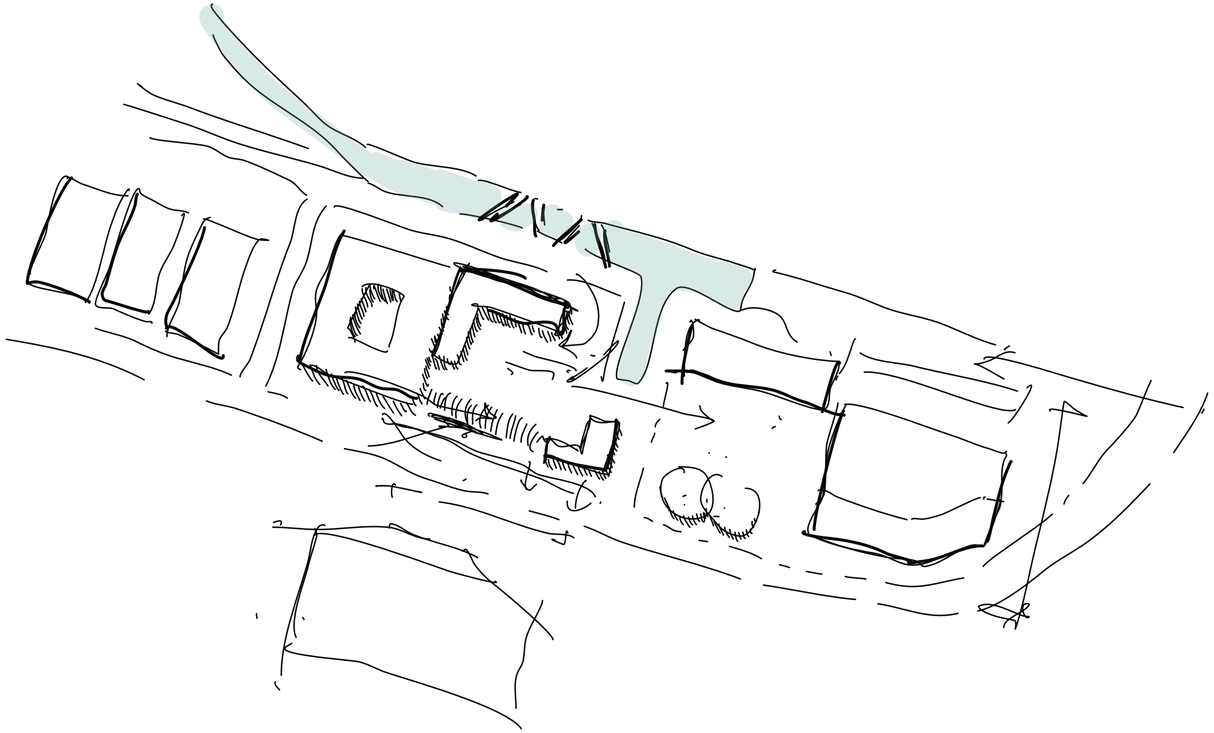


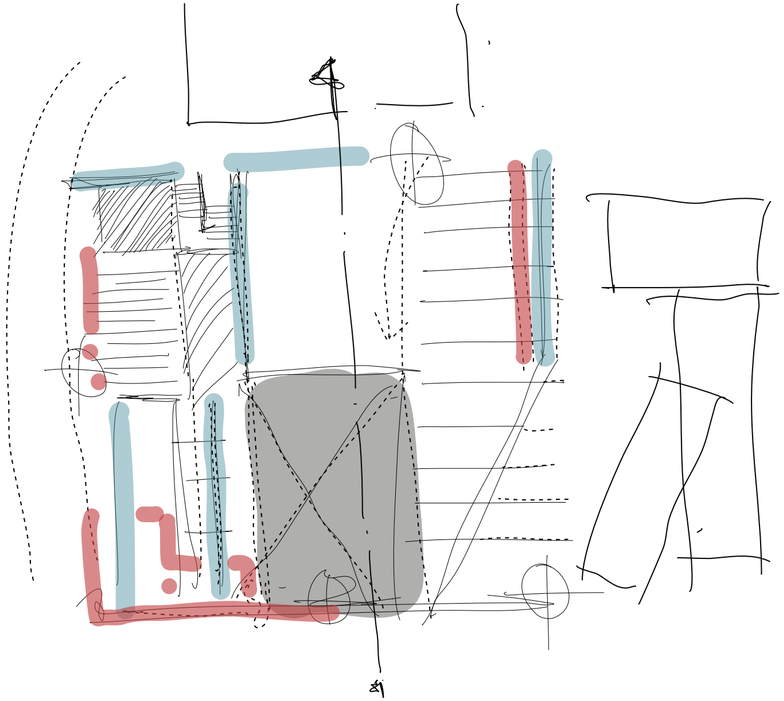
Fig. lxxi. Site block exploration (Author 2021)

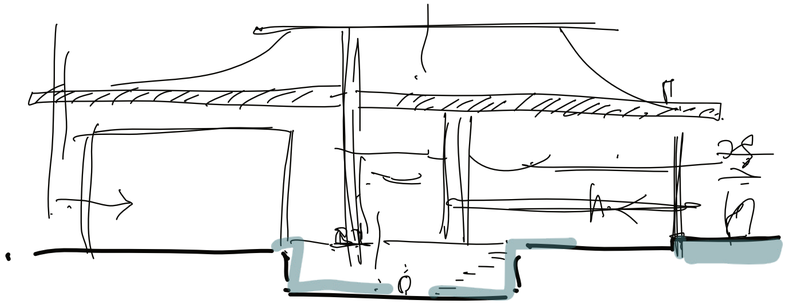
7.3.1. Defining the organisation of space

The second concept was more sensitive to heritage of the site by revitalising the ruins and creating a more architectural language between the built and the unbuilt.

The strategy of regeneration of the site aims to provide recreational and cultural programs in the various quadrants of the site for the users of the space by reusing existing structures such as the silo and heritage landscapes.

All of these strategies are characterised by a specific identity and storytelling. As seen where the waste management centre was, the beer garden is situated. The aspect of heritage is not just in the pure preservation of space, but it also preserves a nature of identity.





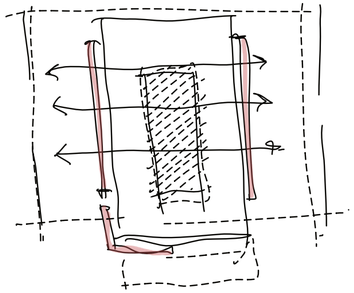


Fig. lxxii. Building manifestation exploration (Author 2021)

Fig. lxxiii. Iteration 2 concept section (Author 2021)

Fig. lxxiv. Iteration 2 concept 3D section (Author 2021)

7.3.2. Form creation and materiality in facade

By contrasting materiality, spacial arrangement, dialectic of space and correspondence, a building is able to distinguish old from new. The silo component from island view also forms part of the beer garden. The building concept then followed on a few strategies on ground floor and the intention was to fracture the nature of the ground plan then introducing very recognisable (facade-ical) elements in the elevation. In the end you get a gathering space circulated through urban space and the final diagram is the end parti.

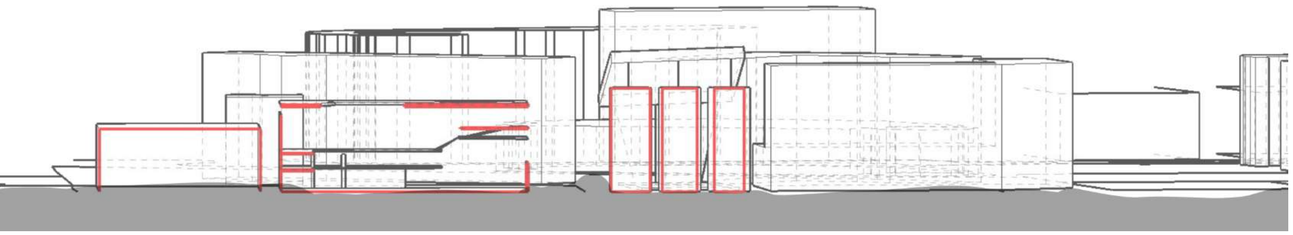


Fig. lxxv. Iteration 2 Maquette 1 (Author 2021)

7.4. Iteration 2 Maquette 1

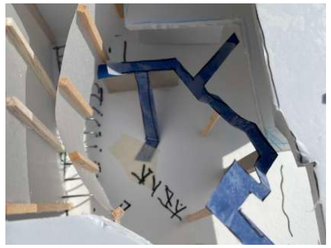


Fig. lxxvi. Programme diagram (Author 2021)

7.5. Programme

7.5.1. Inspired by mixed use commercial space

The dissertation project focuses on the resolution of an office complex which utilises the site infrastructure being the fresh water canal and proximities to anchor infrastructure such as the new built cruise terminal to reveal a catalytic built space which increases productivity and spacial use in the Durban Point Waterfront. The retail allocation on ground forms as a main informant for bringing in users and will benefit the relationships near neighbouring retail offerings on site. For the purpose of the dissertation different levels from macro to micro shall be designed.

7.5.2. Scale

Primary programme [MICRO]

1. Main TNPA (2019) office space
2. Shared office
3. Market
4. Rainwater management

Secondary Programme [MESO]

1. Art Gallery
2. Cafe
3. Beer Garden

Tertiary non-designed programme [MACRO]

1. Tram line

7.5.3. Intent of intervention

The proposed intersections which are spatially manifested in the Durban Point Waterfront show how going from fragmented neoliberal space linked to public space in the inner city can be deemed successful by merging the two in a palimpsest of heritage, identity and use. The accessibility of space offered creates an integrated public network and supports the upliftment of developed space around the harbour and towards the inner CBD.

1. **Typological intent**: the nature of neoliberal space is fragmented within the South African context. The dissociation of programme to infrastructure creates neglected space which negatively impacts the surrounding public space. The dissertation proposes a palimpsest of mixed use ideologies along identified nodes to create a manifested space unified by site anchors and proximities

2. **Programmatic intent**: the merging of production through the use of office space and the productive nature of retail and public space to contribute to a trade experience which brings in users to the site whilst accommodating the new users who would fill space through MSC tourism.

3. **Architectural intent**: the architecture aims to encourage a new way of thinking about neoliberal development whilst linking experiences of economies from retail to corporate in one built function on site. This interface can reach far grander demographics and is a more sustainable approach than standard infrastructure pre-built and existing. The architectural strategy involves pushing the envelope of the building outwards towards the street edge to respect the linear threshold of the ruins. This allows for the creation of new connections towards the canal as the building is constructed in its new urban context through spatial fractures. Celebrating the essence of these connections and the spirit of the 'port-city'(Hein 2012) the site is revitalised through an identity restructuring of appropriate used space and anchors to exemplify the total port city narrative.

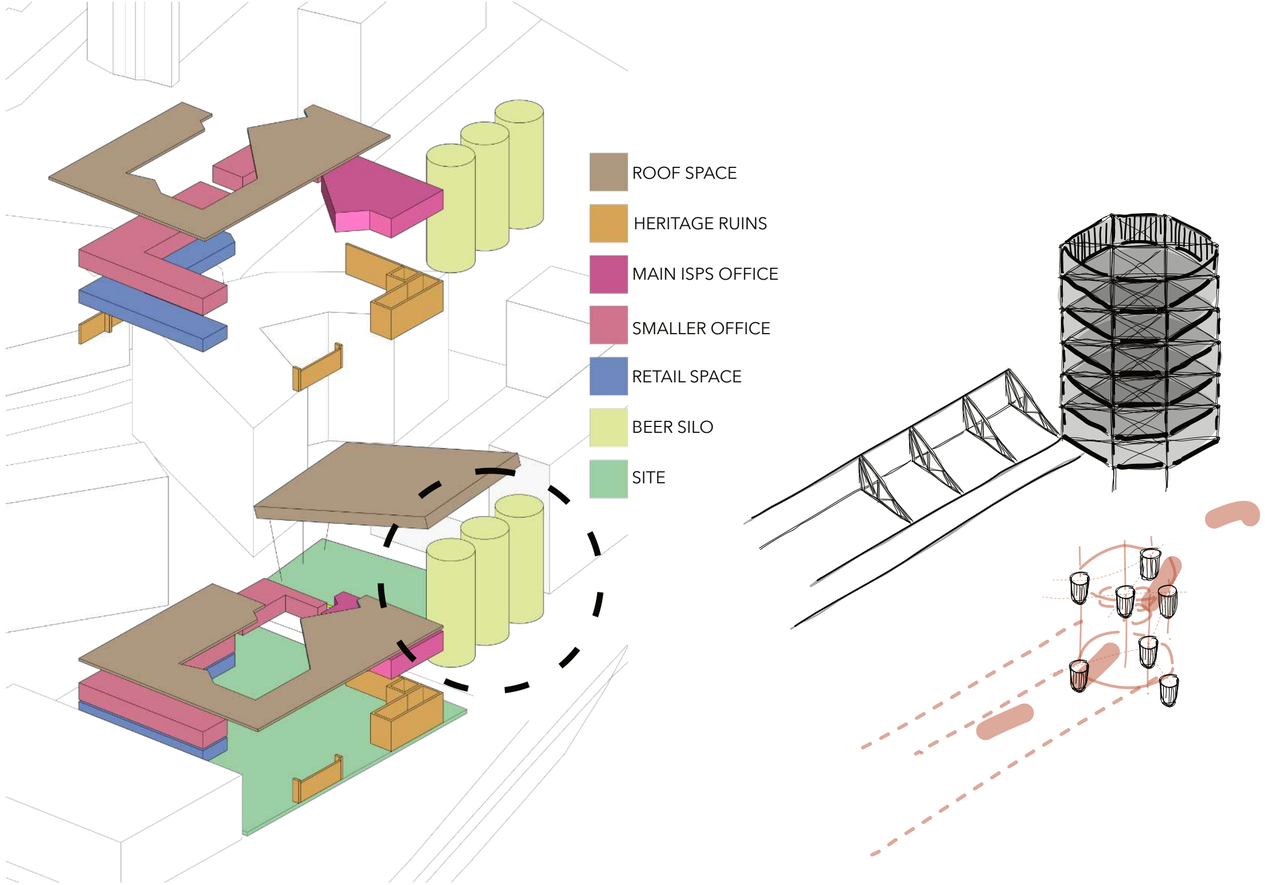


Fig. lxxvii. Below: Iteration 2 ground floor plan concept (Author 2021)

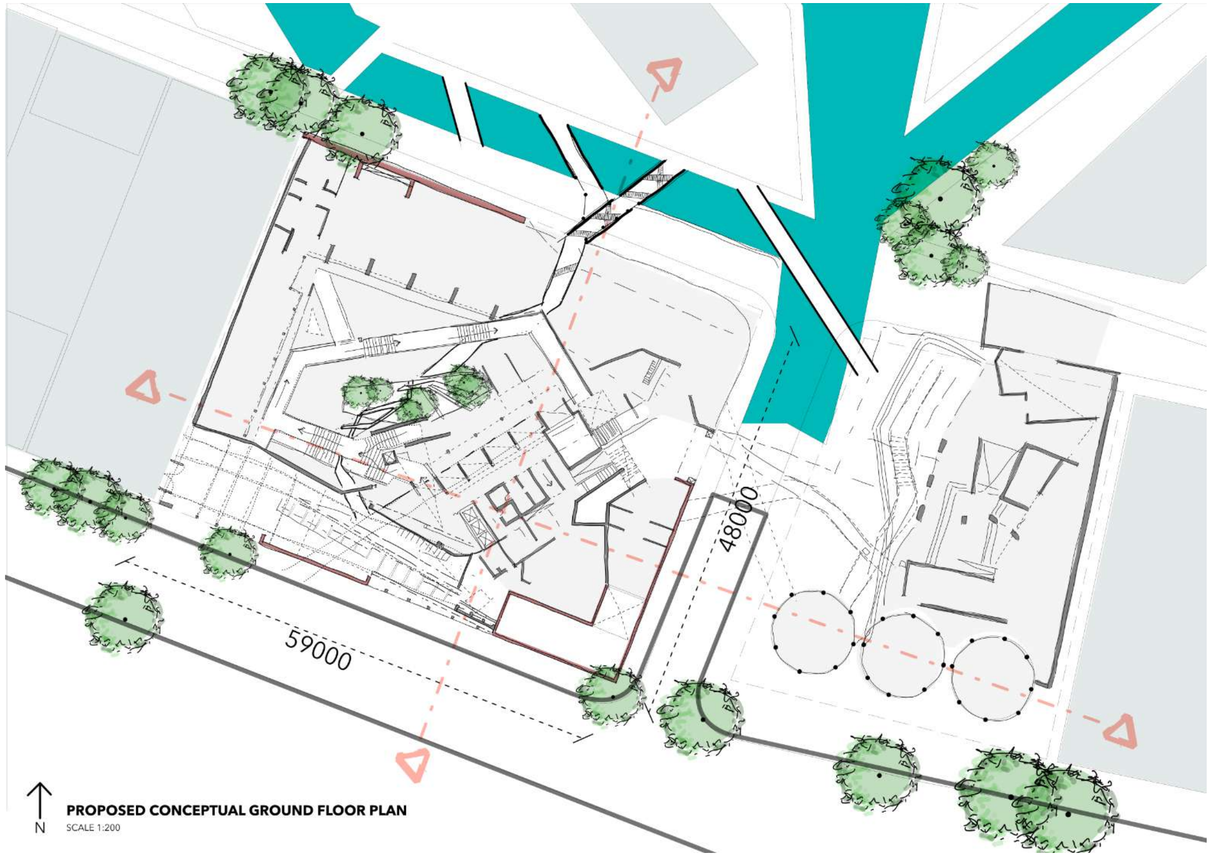
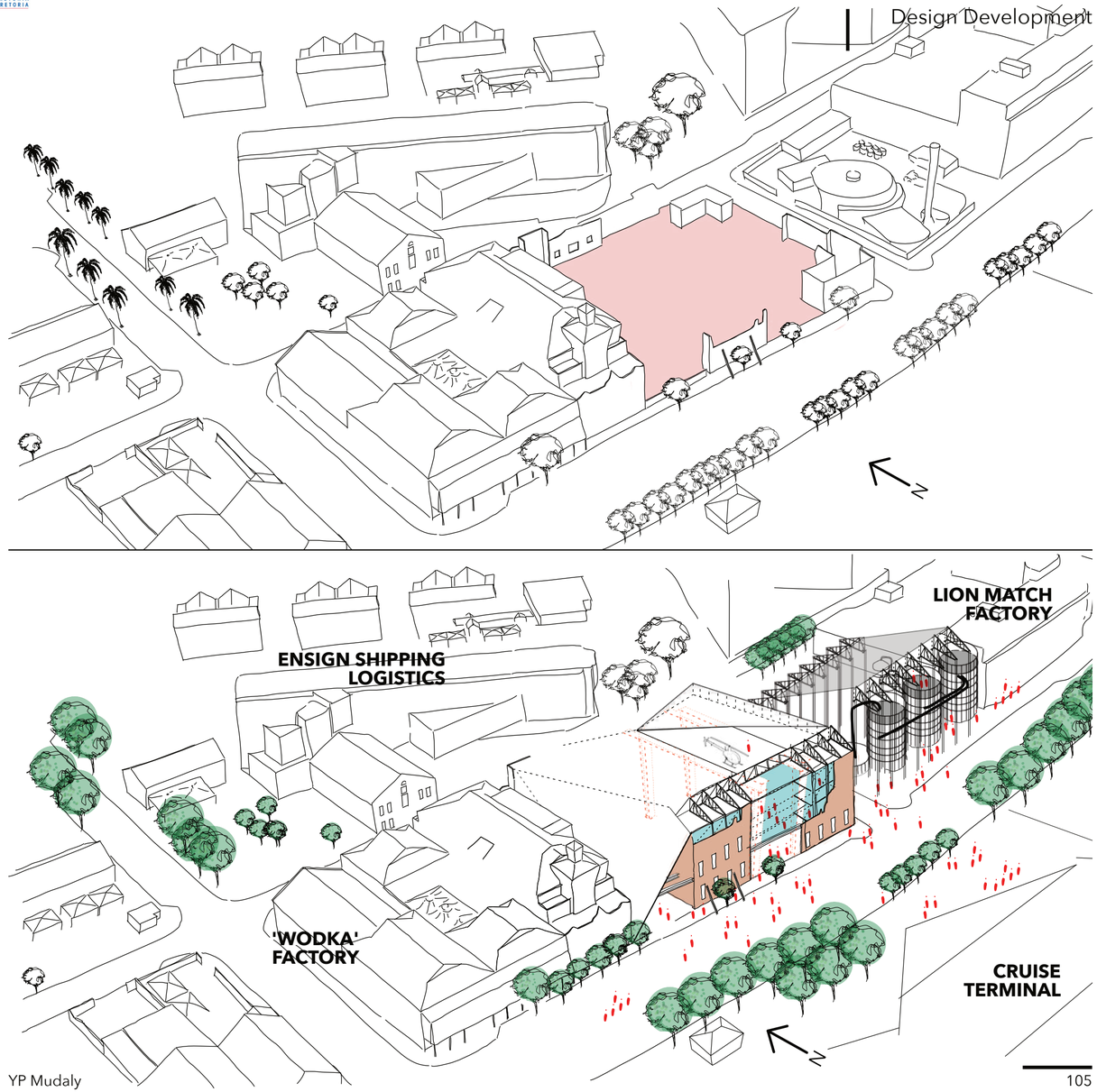


Fig. lxxviii. Right: Iteration 2 concept (Author 2021)



7.6. Iteration 2 Maquette 2

Upon reflection of the design the following critiques were identified:

I. The connection between the new building and any water bodies were required to be stronger

II. Where is a critique of the existing languages of architecture in the harbour precinct as the well as an understanding of the relationship between function and form (and identity) in such an industrial precinct?

III. The relationship between interior and exterior edge has so many spatial possibilities inherent in it that were under-explored at present.

Fig. lxxix. Iteration 2 maquette 2 (Author 2021)

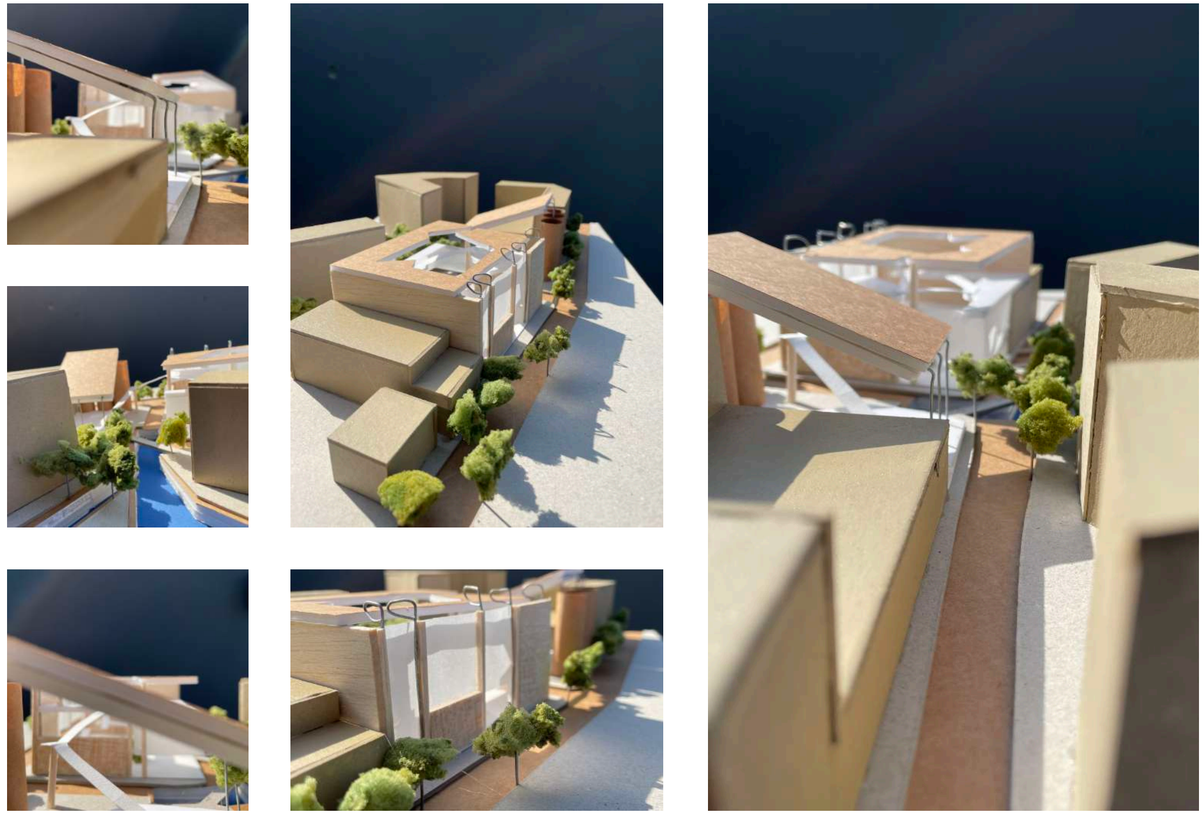


Fig. lxxx. Iteration 2 maquette 2 (Author 2021)

Location:

Chippendale

Australia

Architect:

Tzannes Associates

Value to Research:

Using existing infrastructure, programme implementation.

Revitalisation

7.7. The Brewery Yard

The AIVP Guide of Good Practices report suggests that (Aivp 2015: 65) port-city interfaces are ever-changing according to the current condition of their context. Concurrently, through the identification of heritage nodes or value space, the need to preserve or revitalise such sites becomes important to establish the palimpsest of histories through the age of the site. This is done to affirm the identity of the port, but at the same time, encourage a unique quality of space in the port that does not exist anywhere else in the world. Such is the case in the Port of Durban where many heritage structures situate themselves as desolate and abandoned but contain rich heritage value, the implication implying that there should be consideration for revitalisation.

The aspect of heritage is not just in the pure preservation of space, but it also preserves a nature of identity and the ability to situate a site in context and 'place' through history. This new history is therefore able to transcend old histories and encourage a new language through building structures which are redone and developed using new creative ways to interface the port. By contrasting materiality, spacial arrangement, dialectic of space (Lefebvre 1991) and correspondence, a building is able to distinguish old from new.

Fig. lxxxi. Images from ARCHDAILY. 2015. *The Brewery Yard / Tzannes* [Online]. Archdaily. Available: https://www.archdaily.com/770027/the-brewery-yard-tzannes [Accessed 2 July 2021].

Conclusions and relevance to Port of Durban

A similar revitalisation site to the one in Durban, The Brewery, was one of the largest retained heritage buildings on site in Chippendale and expressed the memory and history of place in context. Within the urban context, it was able to enhance the significance of the heritage facade of the building; whilst increasing the technical demand of the programme (Archdaily 2015). The design both respects the historical fabric but also embraces a change in condition, where the physical usefulness requires revitalisation to bring significance and a new urban identity to the place.

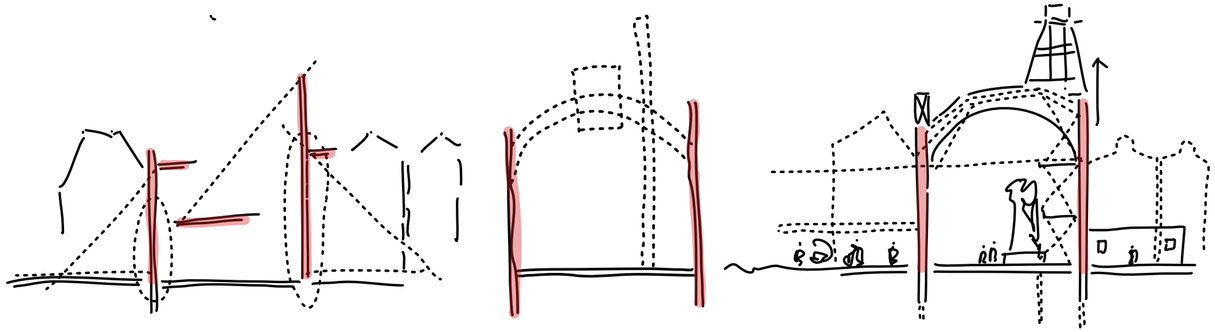


Fig. lxxxii. Precedent breakdown diagram (Author 2021)

Location:

Leuven

Belgium

Architect:

Ontwerpbureau Pauwels

Value to Research:

Canal integration, public urban design interface

Canal Integration

7.8. Student Residence REGA Exterior Landscape

Following the collapse of the river on site, the architects were tasked with a revitalisation structuring and infrastructure improvement on site. The project is manifested through strong water connections and instead of covering the canal with just bridges, the architect designed seated spaces for students and active users to enjoy through a continuous cycle (Pintos 2019). Through the use of terrain and existing masonry walls the riverbed was opened up and the programme became frivolous in descending concrete blocks towards the water edge.

This recession follows a similar rationale towards the Rotterdam development where the edge of water is designed and encourages public relaxation along the water edge.

In terms of planting the design is conceived as a courtyard with various plant species which work around water treatment and shallow planting. Vegetation provides a vital plateau which mediates hold materials and gives a soft tone to the scheme

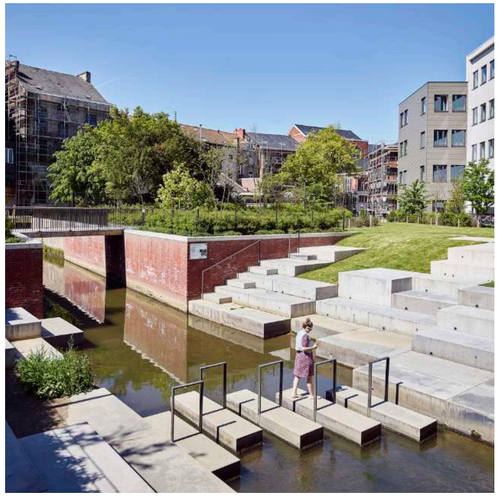
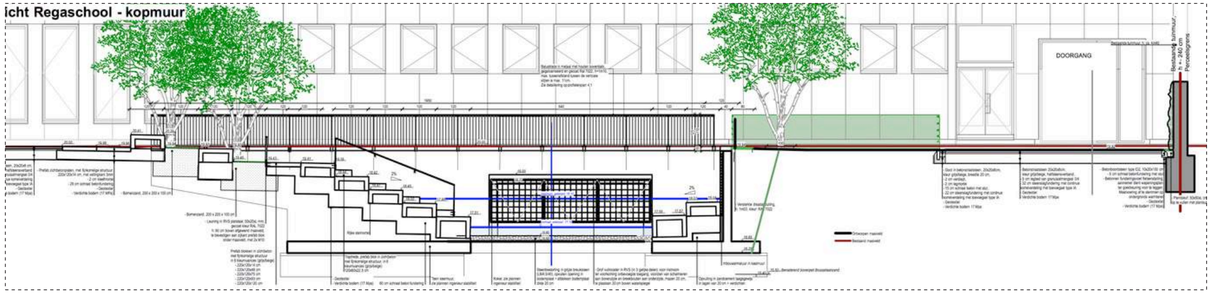


Fig. lxxxiii. Images from PINTOS, P. 2019. *Student Residence REGA Exterior Landscape / Ontwerpbureau Pauwels* [Online]. ArchDaily. Available: https://www.archdaily.com/926354/student-residence-rega-exterior-landscape-ontwerpbureau-pauwels?ad_medium=gallery [Accessed 9 August 2021]. Photographs: Studio Chloki.

Conclusions and relevance to Port of Durban

Durban port as described in previous chapters lacks a visible water edge and as described in the urban approach and the previous iterations there have been attempts to use the canal as an anchor system. From this point the precedent will be used to fully assemble active users along the salt water canal so that it becomes a designed space rather than a step over which is just a visual piece in the landscape. Made from masonry along the edge the intention is to bridge the site on Albert terrace using this stepped terrace typology through seating areas and scattered vegetation along cobbled walkways.

Fig. lxxxiv. Precedent Section diagram (Pintos 2019)



Design Development

7.9. Iteration 3: Finalising an architectural language

The new design development aimed to consolidate the urban iteration one with architectural iteration 2-3 in order to achieve a more holistic composition as well as clarify the limited areas of design and the implementation of the canal as a design and spatial informant.

The new building design not only exemplifies the change in rhetoric in the urban fabric but is able to draw synergies from the spaces around it similar to the urban context . At the end of the day, the main goal of the architecture is to combine all layers of continuity into a space which celebrates innovation and progression through a discourse of identity. Programme on the southern edge are the open public space pushed back from the one heritage ruin, a cafe and art gallery and centrally the stair case circulation takes on the fractured language of the canal. There is also a market and retail space and the right is the beer garden with its back of house. There are event spaces and bar offerings with the canal mediating the site. New functions and programme are introduced through celebrating the hospitality industry and creating a building which not only contains a range of retail offerings but institutions which facilitate operations of the working port. The beer is stored in drums in the silos and the technical requirements are going to be explored further.

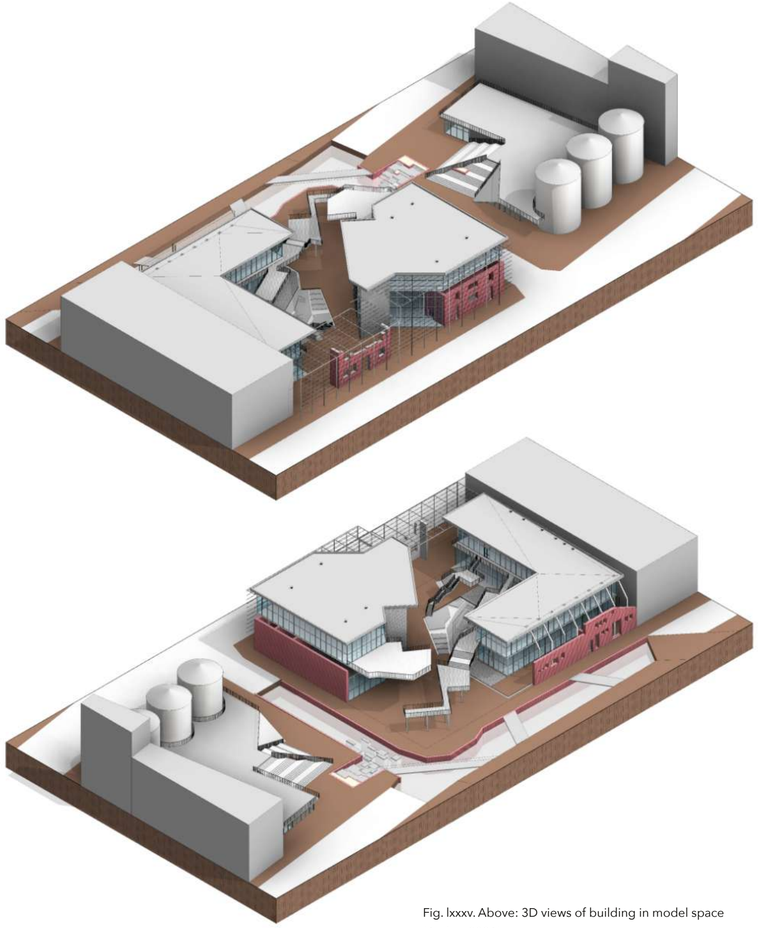


Fig. lxxxv. Above: 3D views of building in model space (Author 2021)

The canal not only acts as a formal element in the landscape but is transformed into an interactive element by stepping down from the ground level into concrete steps where users can sit and interact within the landscape rather than view the canal as just a visual device to connect building sites. This dialogue with the canal shapes the way the building is circulated and used and also provides an active ventilation space from the north eastern quadrant.

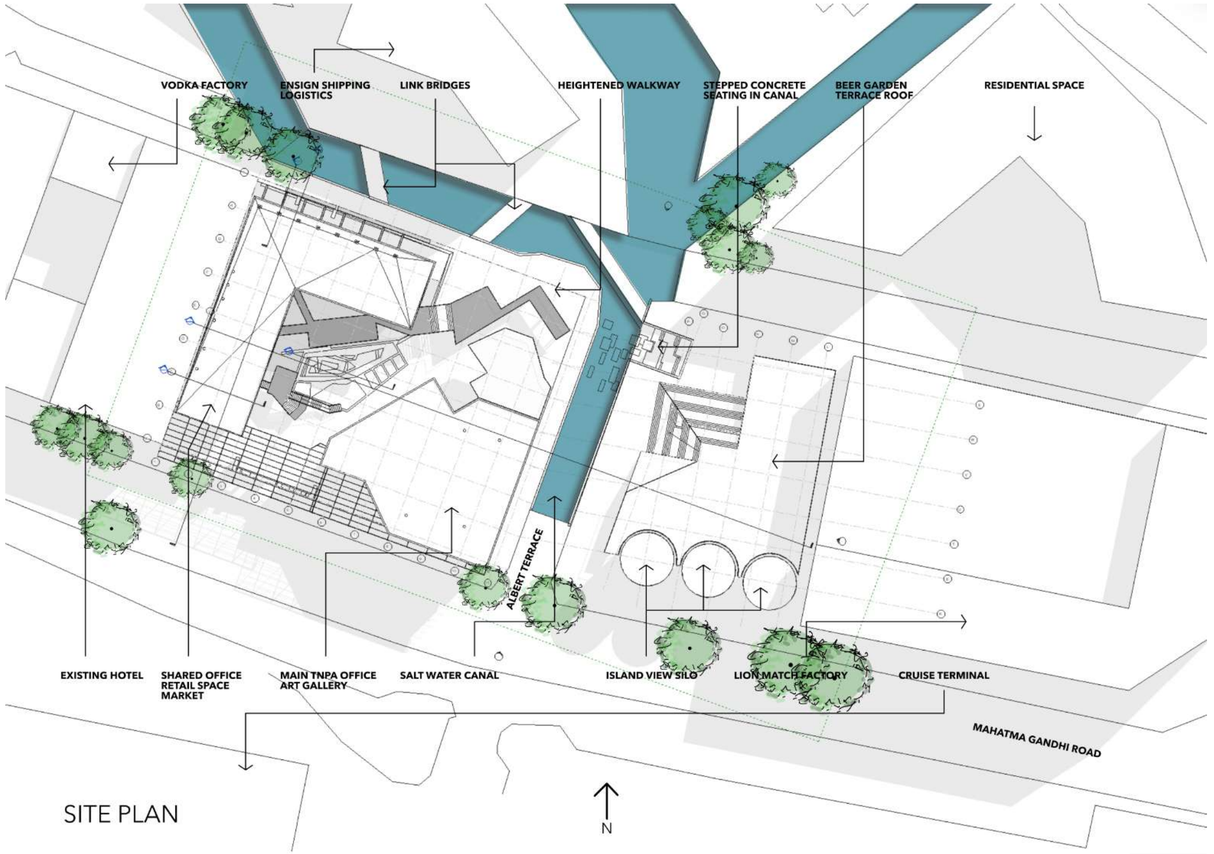


Fig. lxxxvi. Right: Iteration 3 new site plan (Author 2021)

7.10. Final Design

The final design development concept and building was a palimpsest of historic, material investigative qualities and the previous 3 iterations. The new design is sought to exemplify a modern seaport typology with a defined water edge within the Point Waterfront Precinct 3 allocation.

Success is built on layering and cutting through the urban fabric to stitch together synergies of space whilst being unique and true to the dissertations normative position spoken about in chapters 1-3.

Built upon strong gastronomic and business programmes the new precinct follows a standard of continued evolution which the Port of Durban and the city of Durban require to be able to handle new transit traffic from MSC as well as facilitate operations on port handling throughout the eastern coast. This does not however compromise the urban feel through unique enclaves and canal corridors where people are meant to congregate and circulate through gathering areas.

7.10.1. Building concept

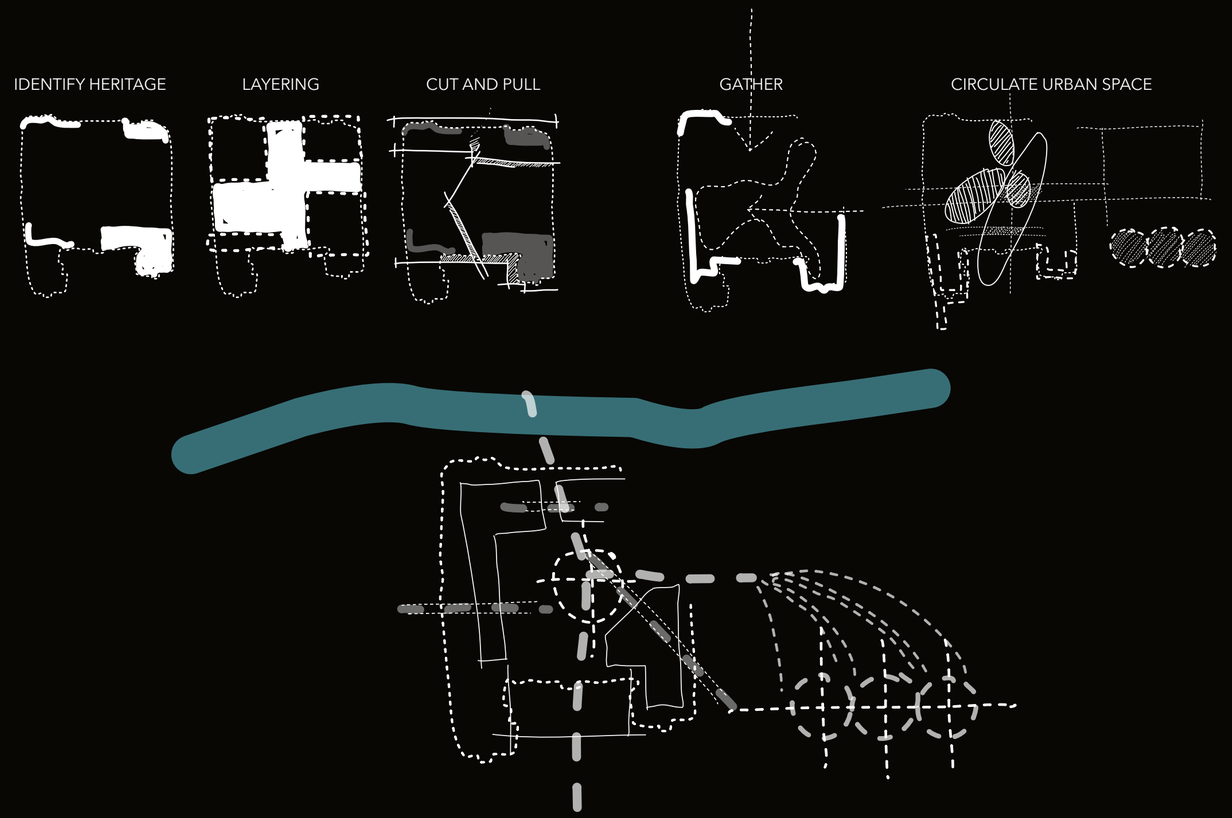


Fig. lxxxvii. Building concept diagram iteration 4
(Author 2021)

Fig. lxxxviii. Final site plan (Author 2021)

7.11. Final Site Plan

The site plan references many examples of successful port infrastructures through the precedent development, understanding water as a major player in the facilitation of active edging by penetrating the site and allowing activity to form in and around the level mediations on site.

Access to site is found on the Southern quadrant and Northern quadrant whilst Albert Terrace has been converted to a full canal space which has concrete stepping blocks for active users to walk across to get from the main site to the beer garden and terrace roof space for viewing of ships and the harbour mouth.

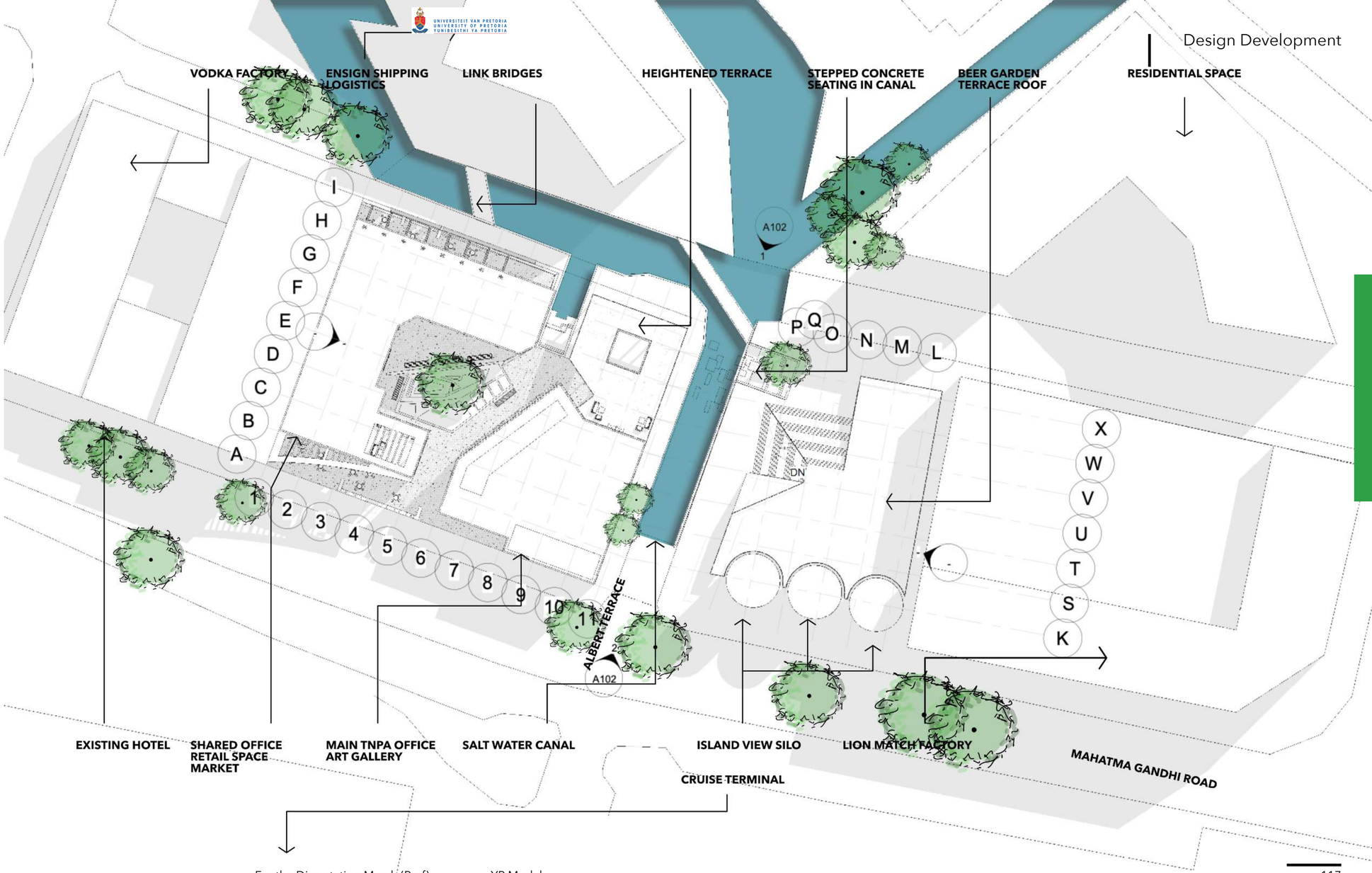


Fig. lxxxix. 3D diagram Southern elevation (Author 2021)

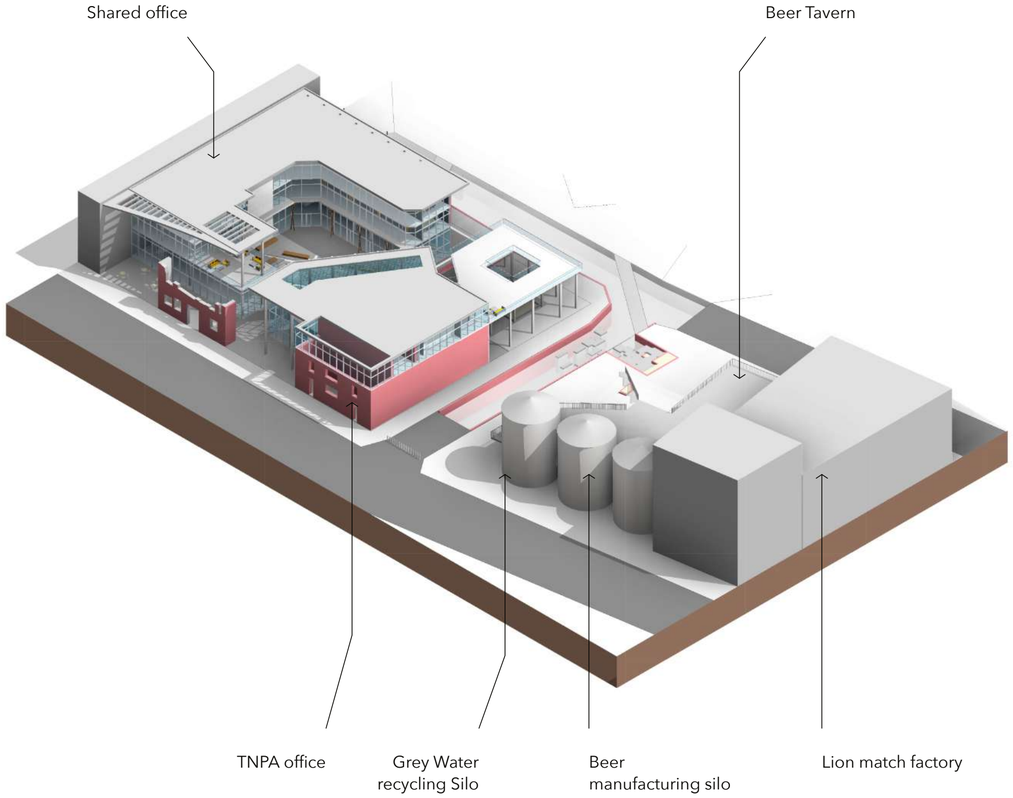


Fig. xc. 3D diagram Northern elevation (Author 2021)

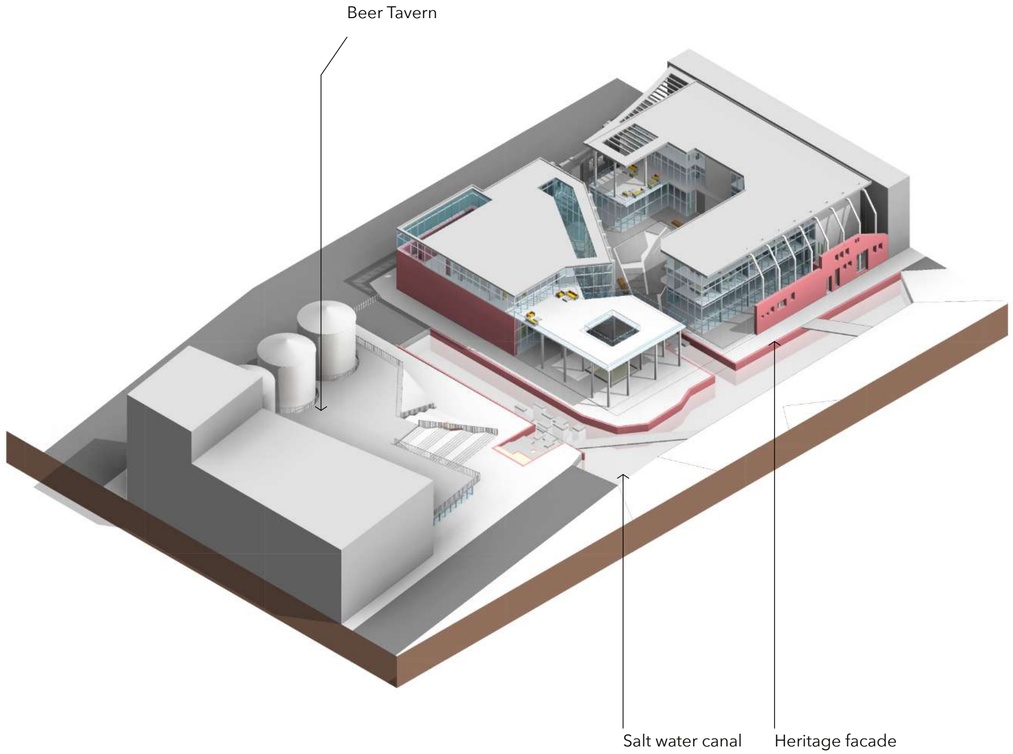


Fig. xci. 3D diagram Southern elevation (Author 2021)

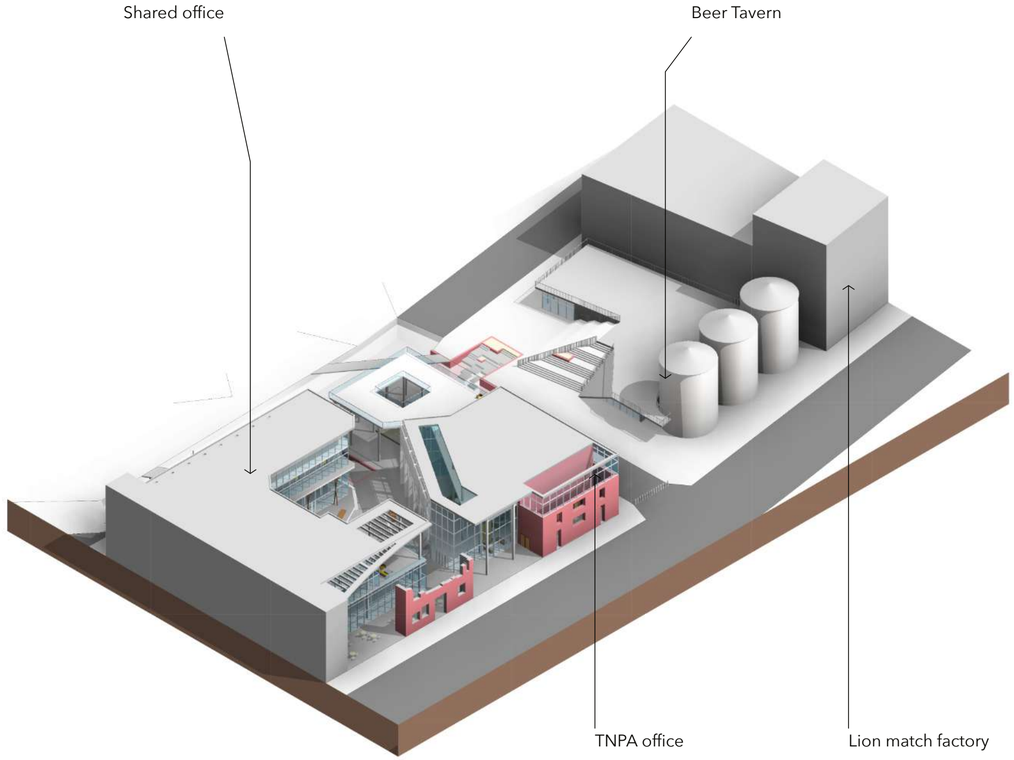
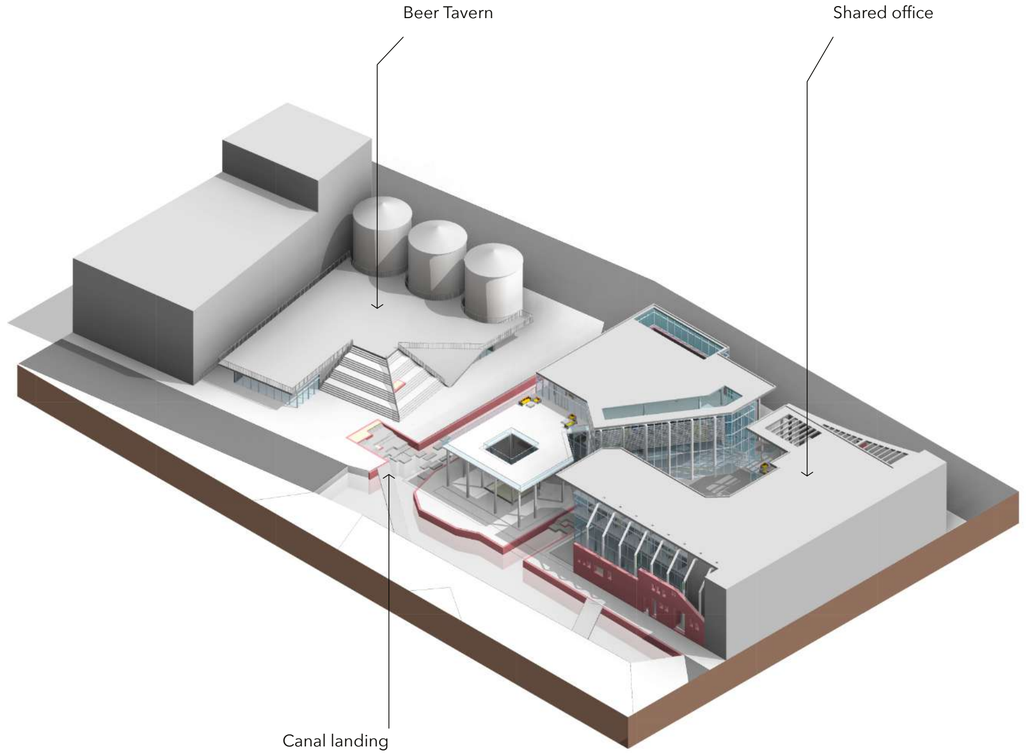
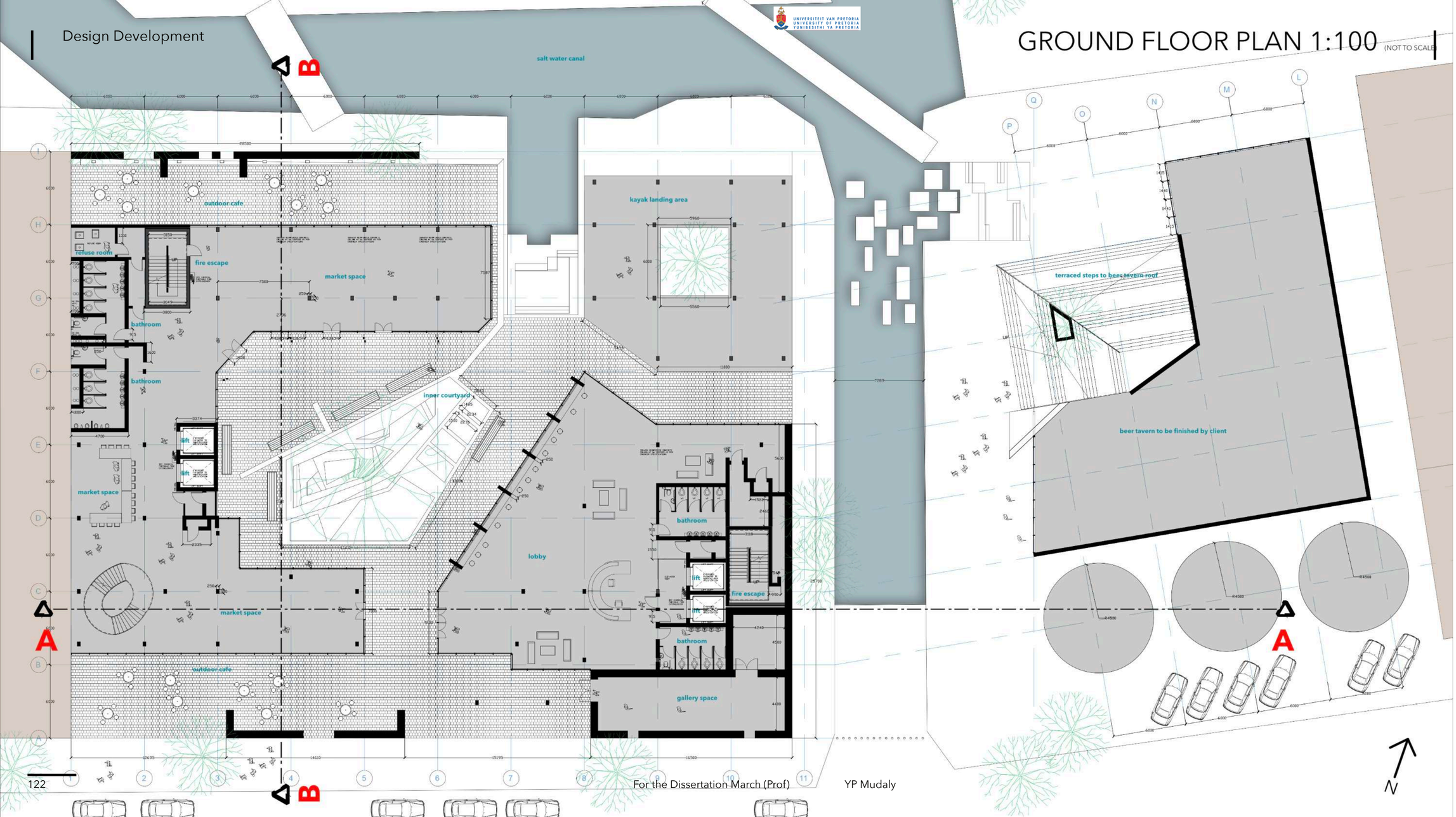


Fig. xcii. 3D diagram Northern elevation (Author 2021)



GROUND FLOOR PLAN 1:100 (NOT TO SCALE)

Design Development



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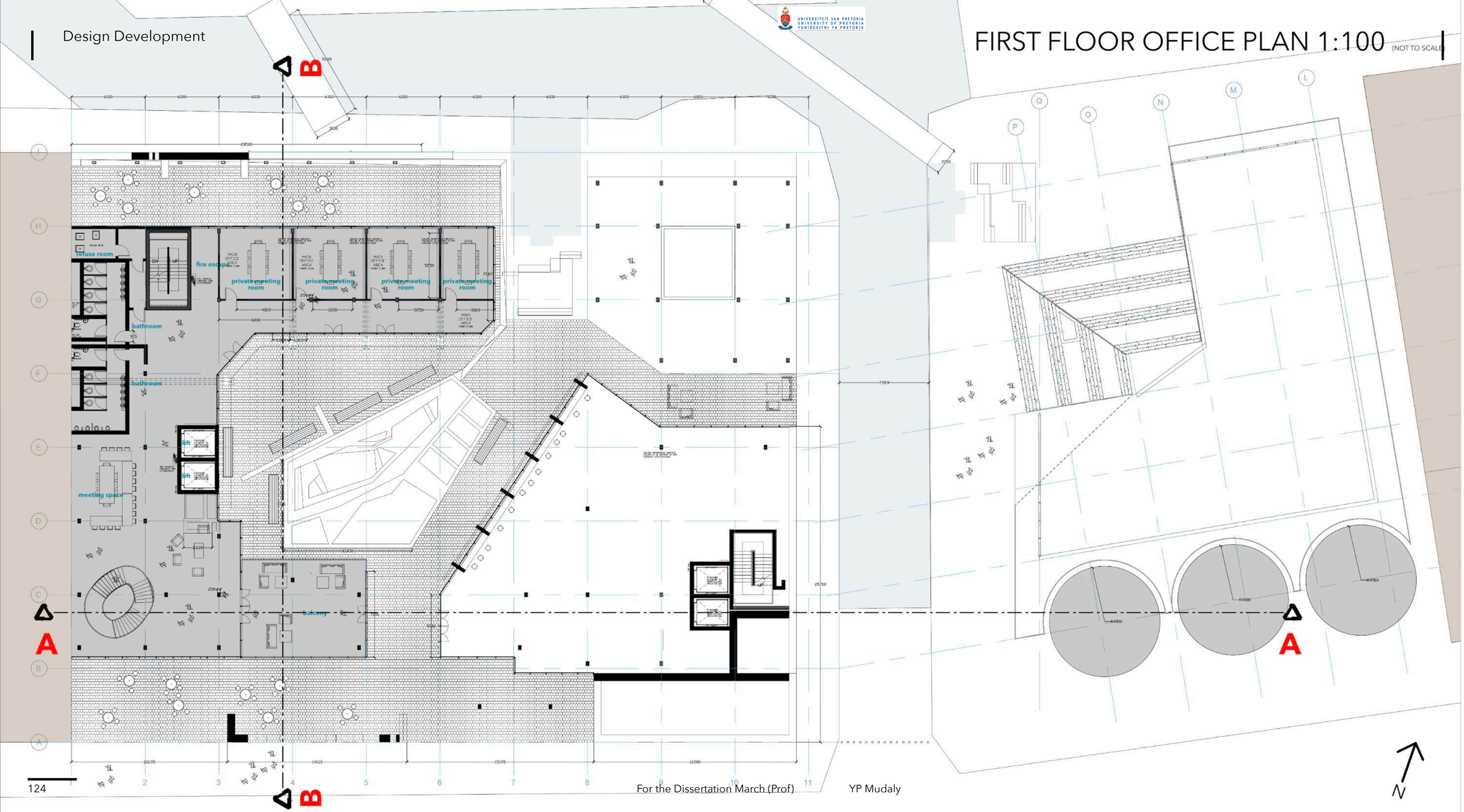
FIRST FLOOR OFFICE PLAN 1:100 (NOT TO SCALE)

Design Development



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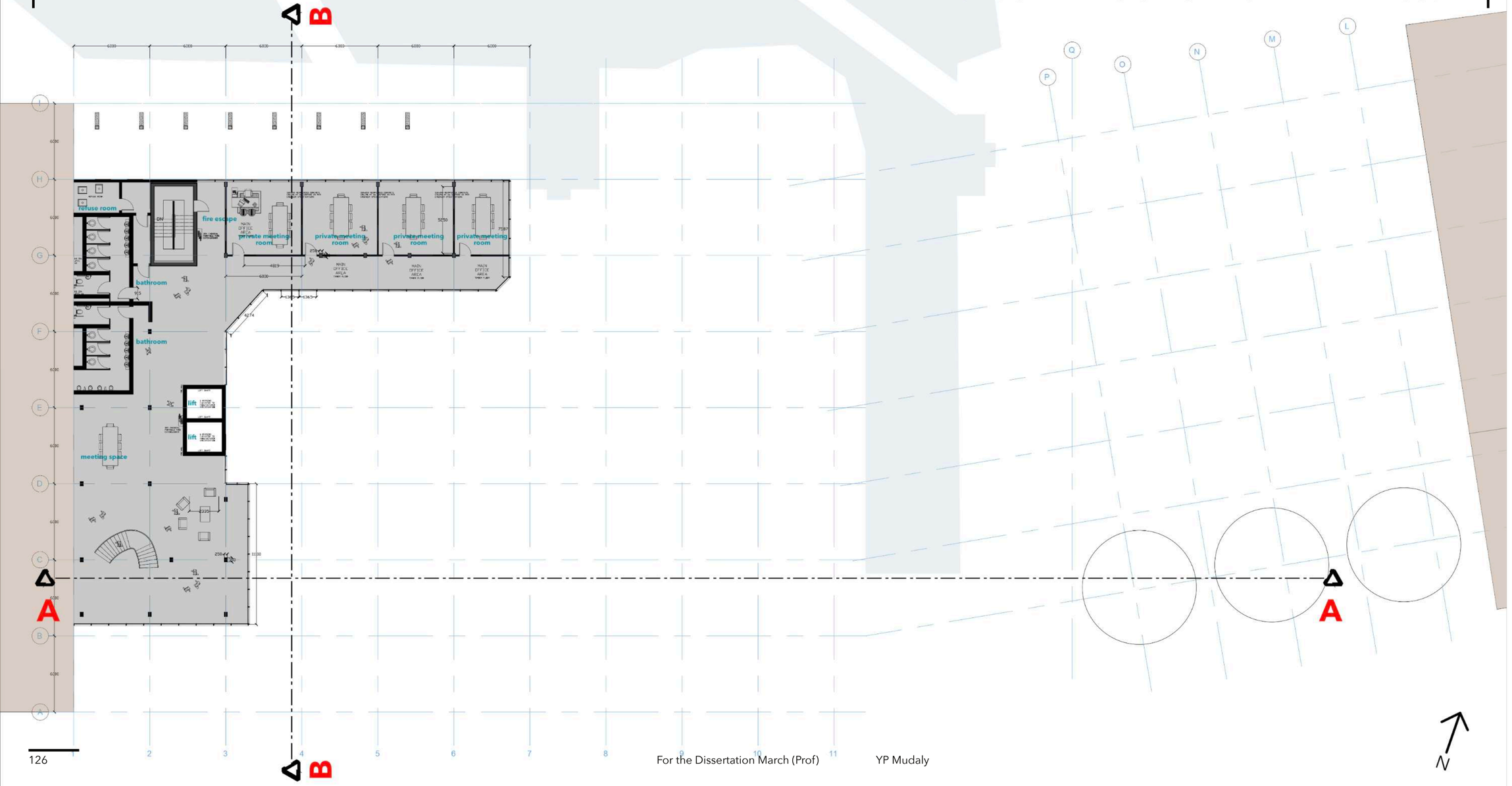
SECOND FLOOR OFFICE PLAN 1:100 (NOT TO SCALE)

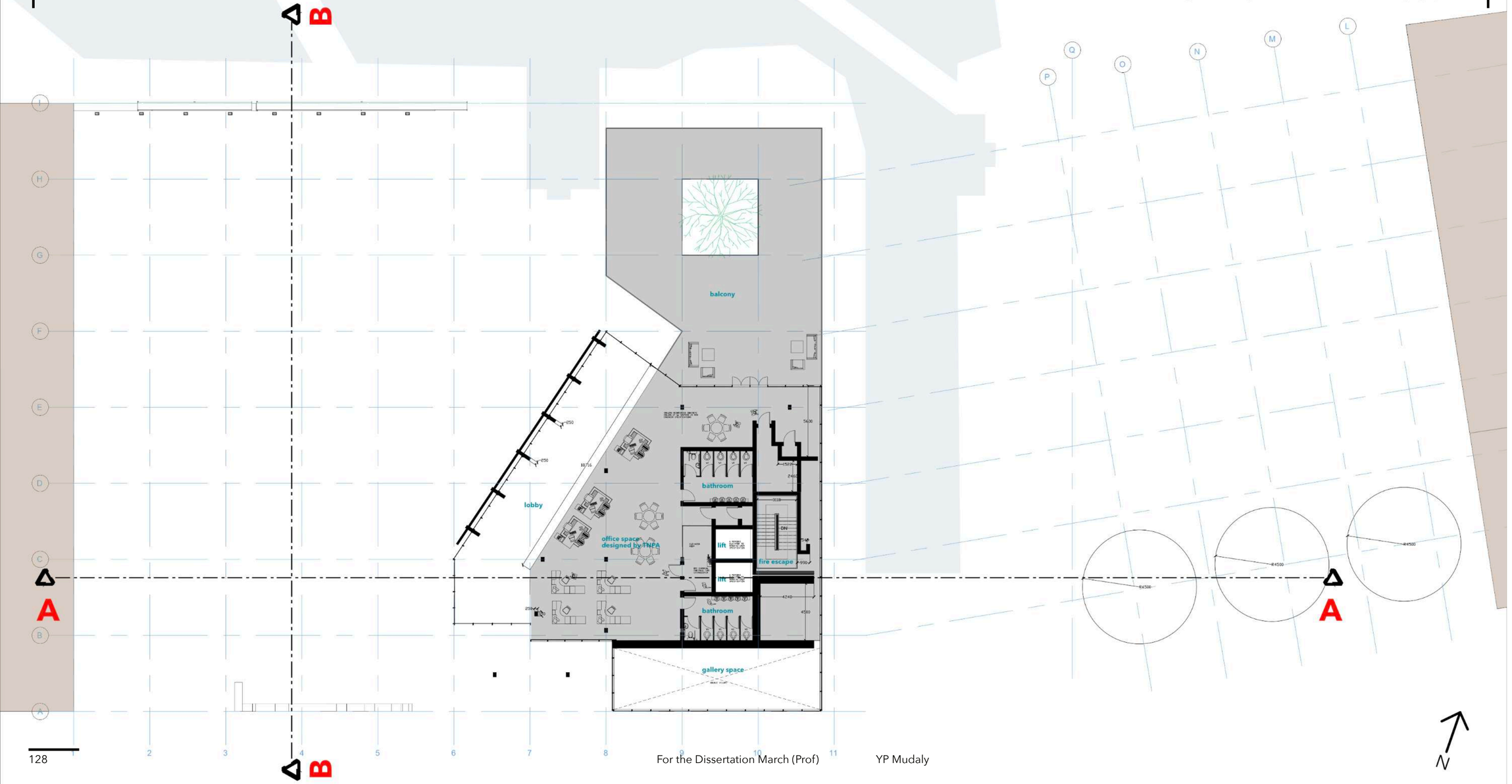
Design Development



For the Dissertation March (Prof) YP Mudaly

TNPA OFFICE PLAN 1:100 (NOT TO SCALE)

Design Development



For the Dissertation March (Prof) YP Mudaly

Design Development

7.12. Sections

Sections show how level mediations takes place in the main TNPA building which is built upon the grander heritage structure and forms a secure lobby on ground and how the L building contains two shared office spaces above with a market space underneath selling local produce and gives opportunity to small business owners. Centrally there is situated a courtyard with the rainwater collection system and between the two sites is an active canal which pushes towards the main road which houses the new MSC cruise terminal.

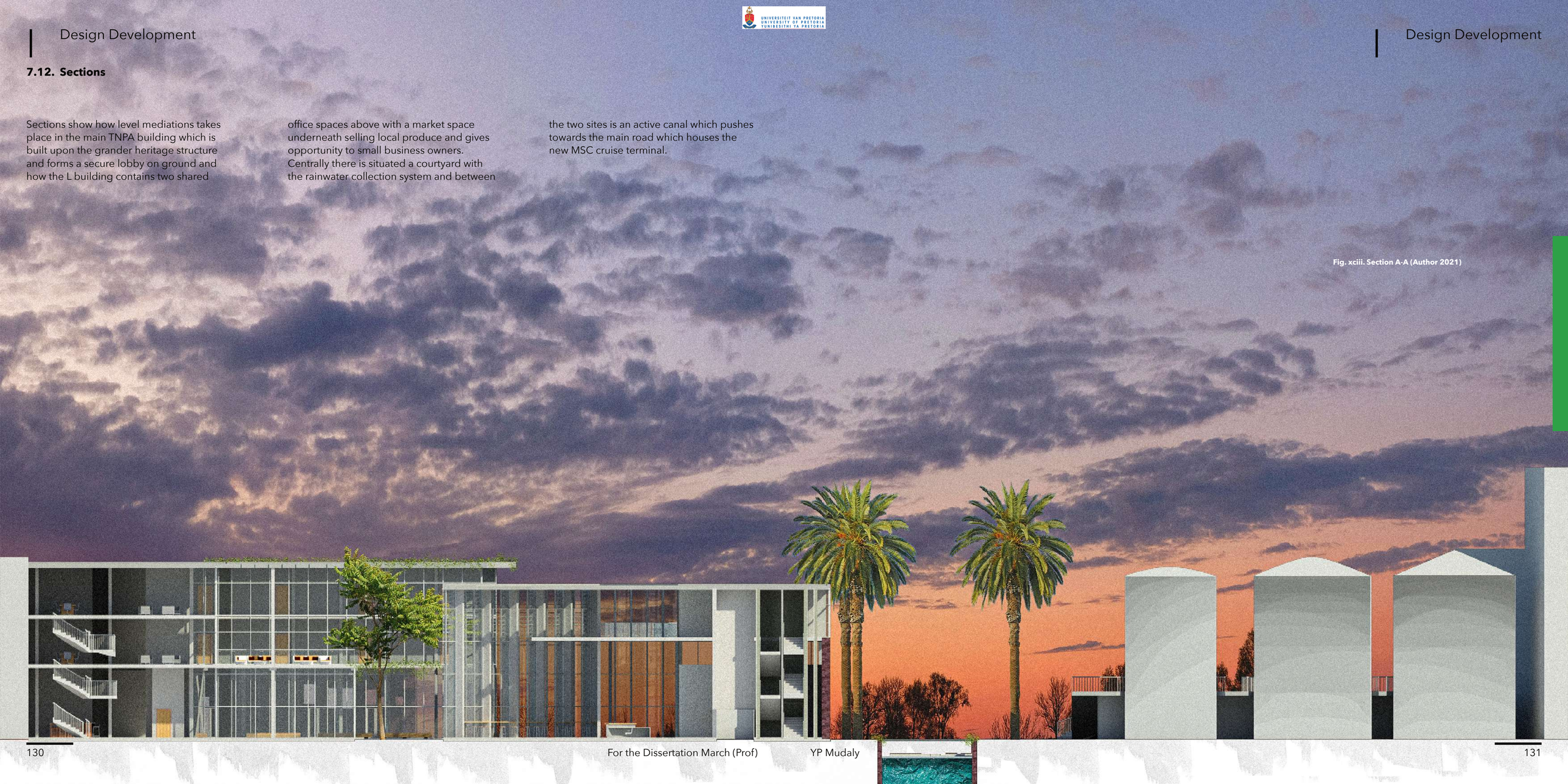
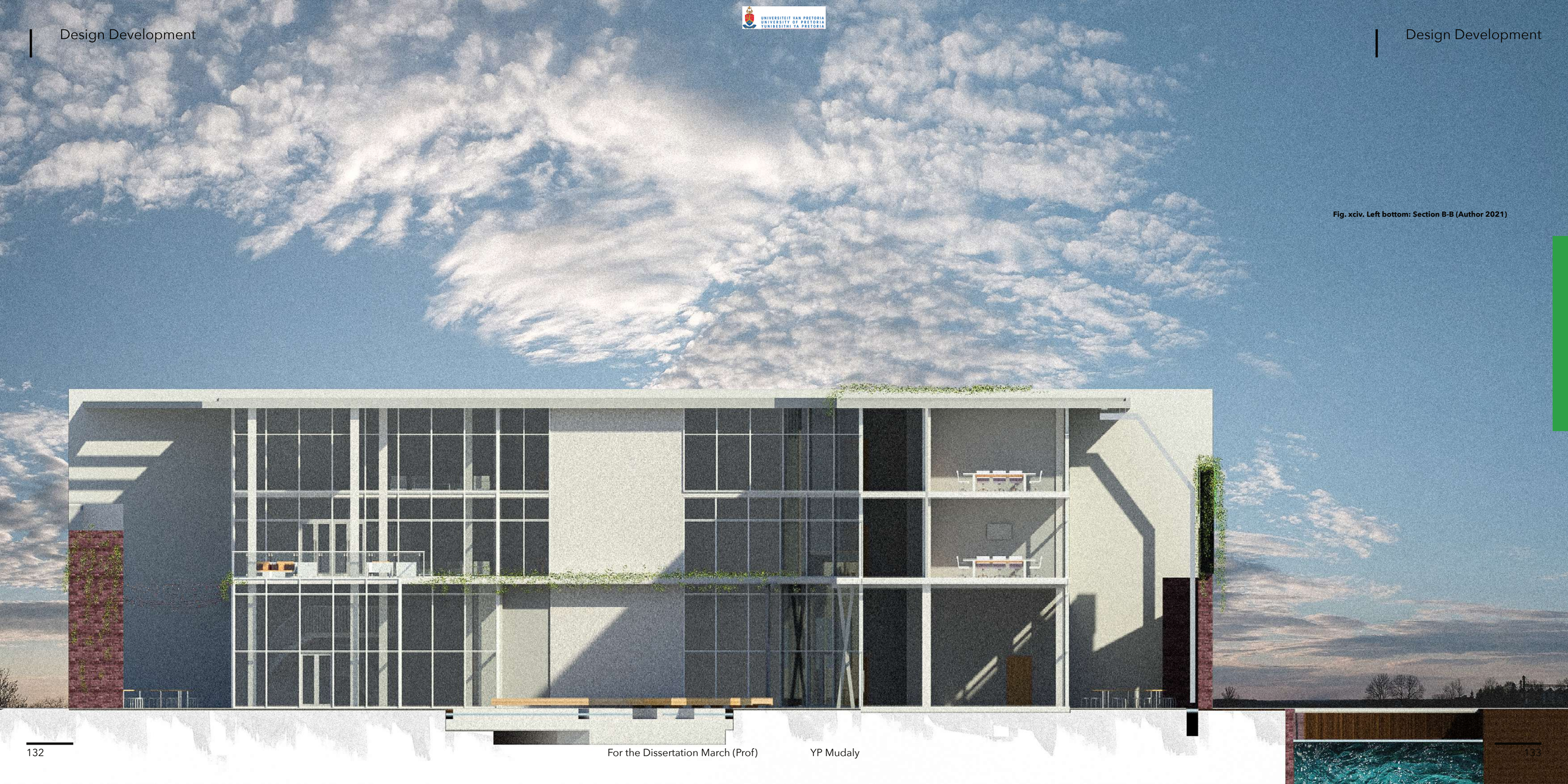


Fig. xciii. Section A-A (Author 2021)

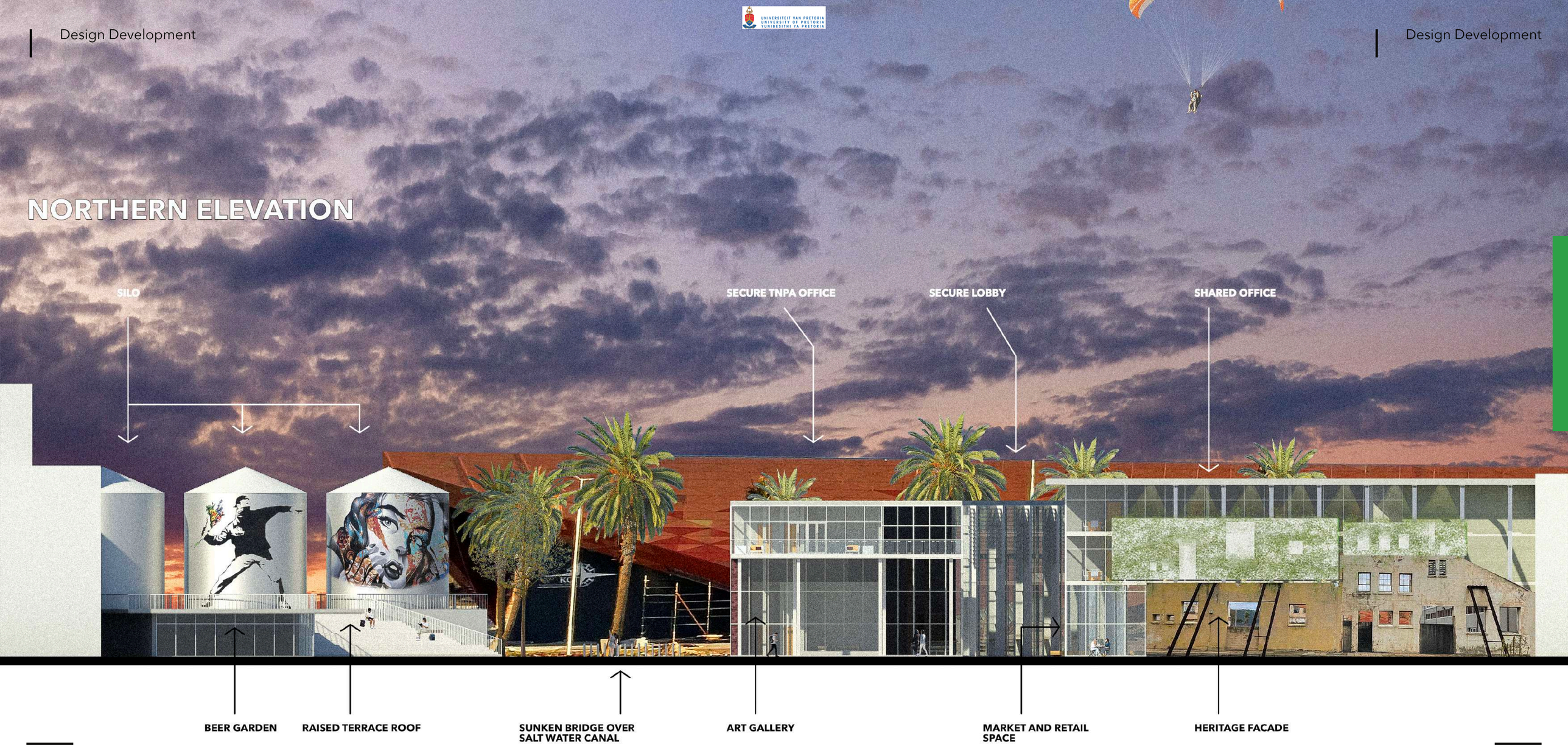
Design Development

Fig. xciv. Left bottom: Section B-B (Author 2021)



Design Development

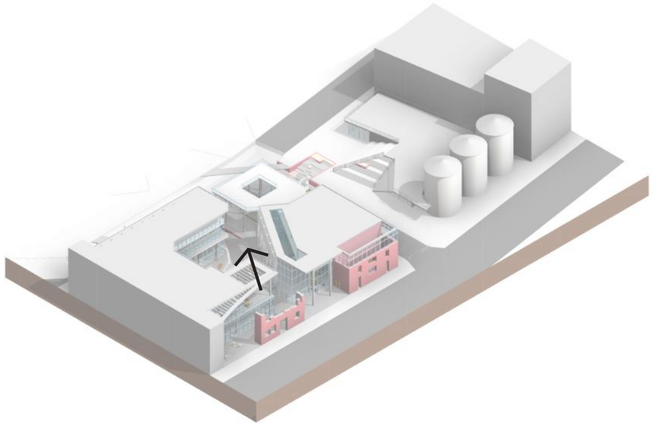
NORTHERN ELEVATION



SOUTHERN ELEVATION

7.13. Perspective 1

Taken from the balcony of the first level shared office the perspective shows the natural quality of space in the central courtyard meant to circulate and gather users. Market goers have the pleasure of using the courtyard as a place of rest whilst business owners may use it as a place of contemplation. Cobbled walkways scatter around the circulatory area and pull users in through visual stimulus and curiosity.



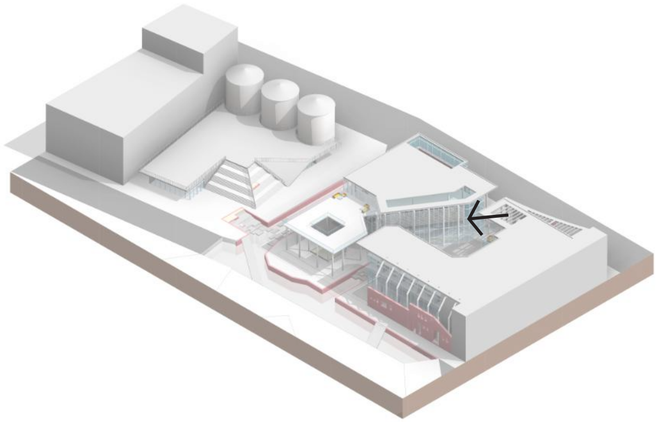


Fig. xcv. 3D Diagram of building for perspective (Author 2021)

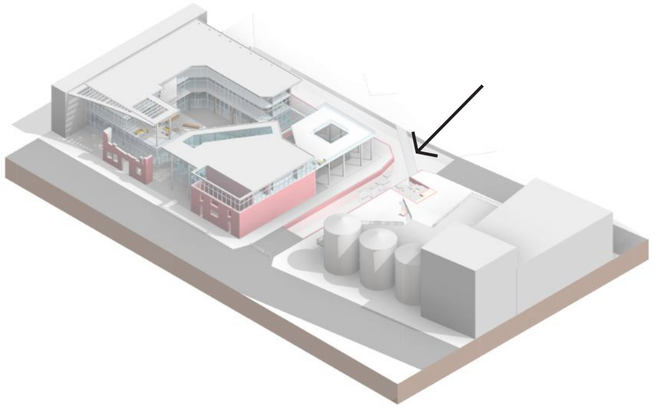
Fig. xcvi. Perspective 1 (Author 2021)

7.14. Perspective 2

This perspective exemplifies the success of controlled open space and pedestrian comfort. The site quality along the water edge breaks the hard concrete block typology prevalent in other parts of the site whilst being among softer materials being water and glass through its transparent quality.

Views of the new cruise terminal by MSC are shown and active users may walk up the terracing on the beer garden to view ships that will dock in the new transit access terminal whilst being immersed in a new facade language through the use of liquid bulk silos recycled from island view as shown on page 34 figure xviii.

Below the TNPA building is an art gallery where installations may be housed. Local artists are encouraged to paint on the silos directly across the call through different artistic mediums to continue the new landing space ideology.



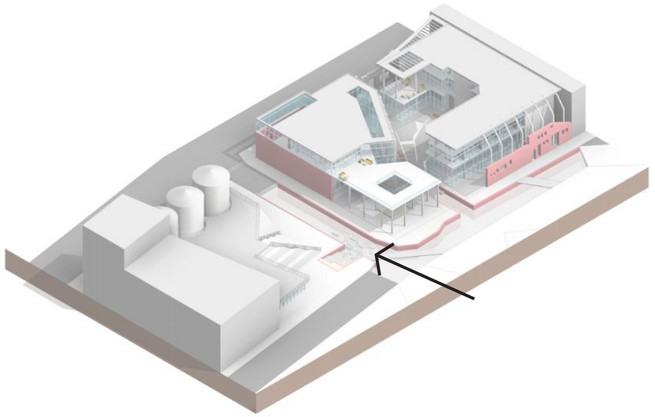


Fig. xcvii. 3D Diagram of building for perspective (Author 2021)

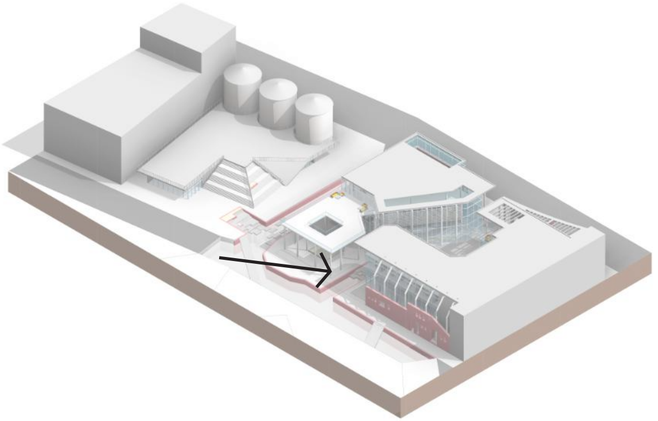
Fig. xcviii. Perspective 2 (Author 2021)

7.15. Perspective 3

Through the programme of gastronomy, the market space respects the old heritage facade by pushing the building away and creating a niche space which contains tables and chairs for coffee and rest. The Northern facade gutter detail as shown on page 158 figure cxvii creates an open covering area where planters are used to soften the space.

The canal edge pushes further into the building along the developed fresh water canal for the courtyard. This space is used as a gondola rest area where users float along the canal and move from site to site via the water body.

The perspective shows the threshold to the courtyard.



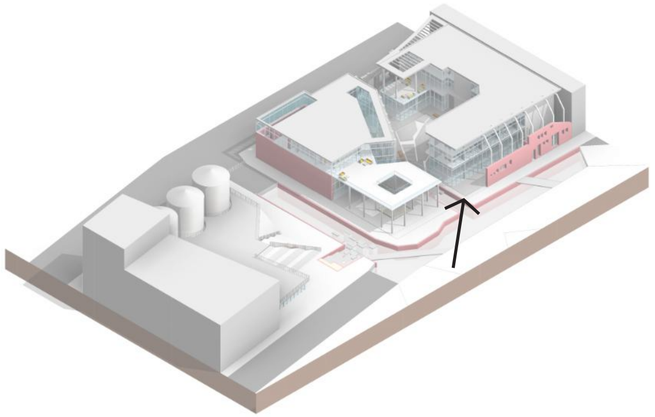


Fig. xcix. 3D Diagram of building for perspective (Author 2021)

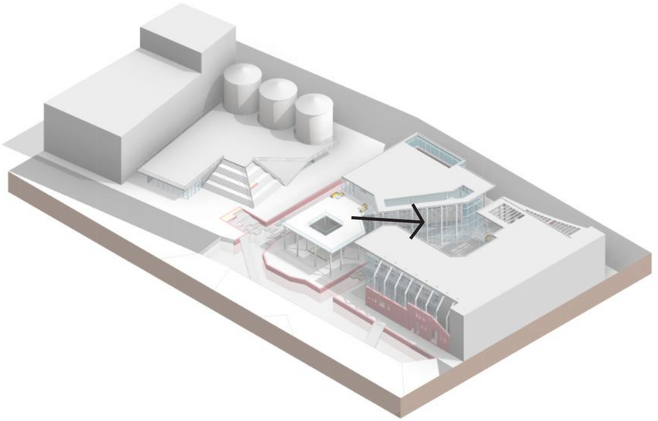
Fig. c. Perspective 3 (Author 2021)

7.16. Perspective 4

One of the main and most prominent features of the precinct is the sunken courtyard which takes references to the dock area of a ship yard where ships come to rest.

This activity now follows on for active users and promotes the idea of comfort and recreation by the market area which is below the shared office space as well as opposite the secure lobby for the Transnet National Port Authority.

Rainwater is collected into the system and pumped towards Silo 1 for treatment as shown on page 162 figure cxii.



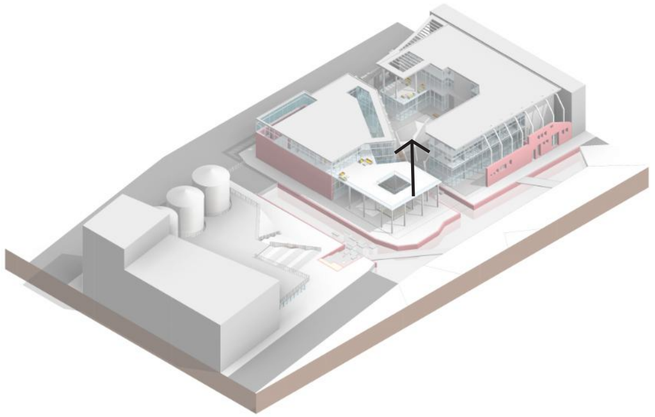


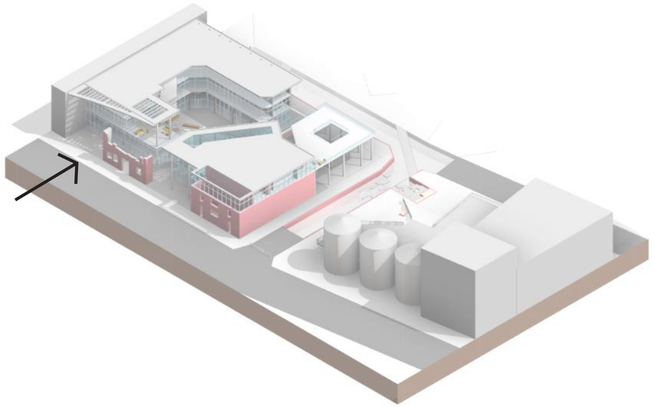
Fig. ci. 3D Diagram of building for perspective (Author 2021)

Fig. cii. Perspective 4 (Author 2021)

7.17. Perspective 5

Located on the main threshold of Mahatma Gandhi road, the entrance of the space dictates the flow of activity towards the market space as well as the central courtyard area of the precicnt. As a space of resbit, it is a welcome addition to use the existing facades as a familiar feature toa ccentuate the rich history and presence of the space.

This continuim of facade represents the everchanging presence of a new modernisation of port development in the new Durban Point Waterfront.



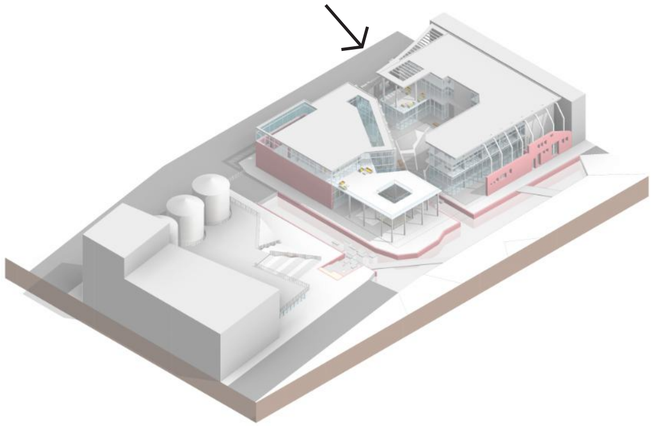
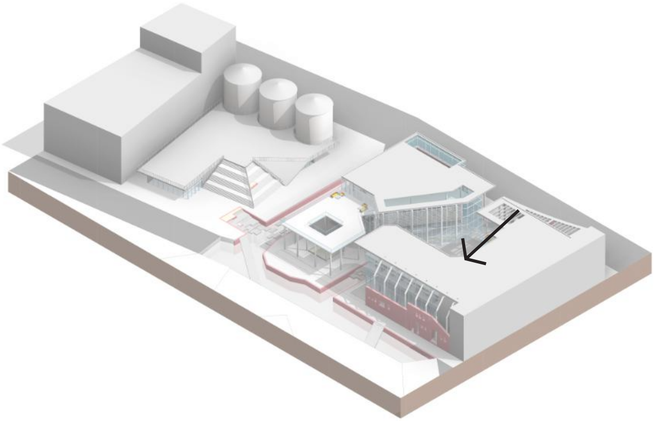


Fig. ciii. 3D Diagram of building for perspective (Author 2021)

Fig. civ. Perspective 5 (Author 2021)

7.18. Perspective 6

The fruit terminal exists on the fringe of T Jetty as well as near the Victoria Embankment. This created the opportunity to impliment a new produce market into the lower portion of the public space and bring in a new local identity of FMCG in the area.



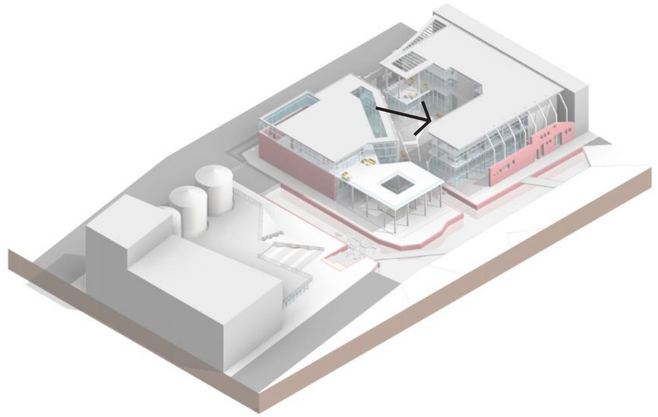


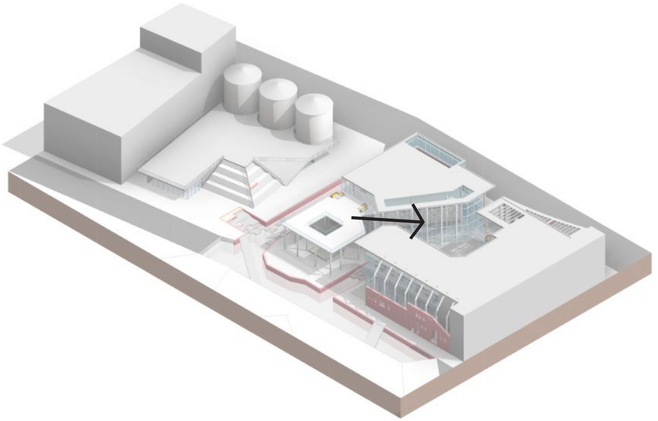
Fig. cv. 3D Diagram of building for perspective (Author 2021)

Fig. cvi. Perspective 4 (Author 2021)

7.19. Perspective 7

Main View from TNPA office balcony.

Views towards the new cruise terminal are a welcome addition to the ever changing space, locally intertwining synergies into one visible assembly.



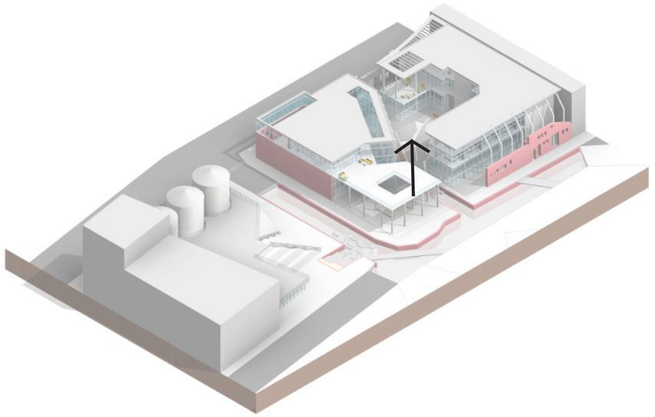
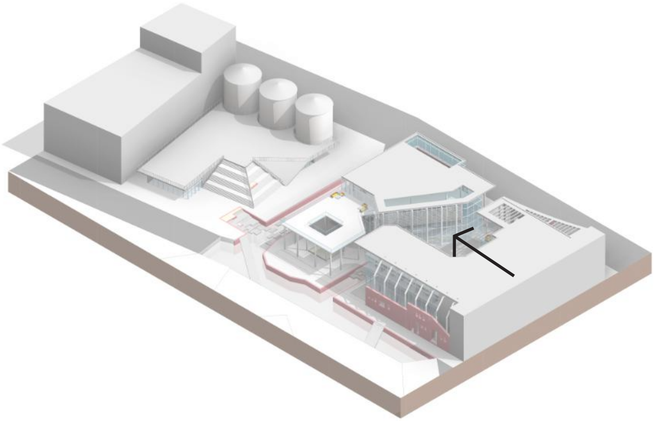


Fig. cvii. 3D Diagram of building for perspective (Author 2021)

Fig. cviii. Perspective 4 (Author 2021)

7.20. Perspective 8

The TNPA office lobby with views of the new cruise terminal at Durban Point create a welcome and healthy space for users, with natural lighting and an abundance of open space towards the central courtyard.



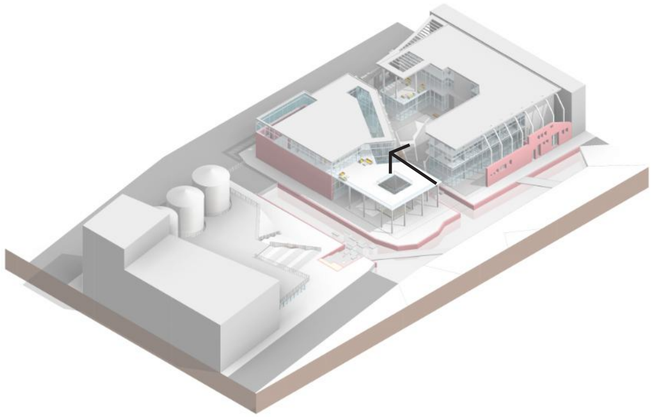


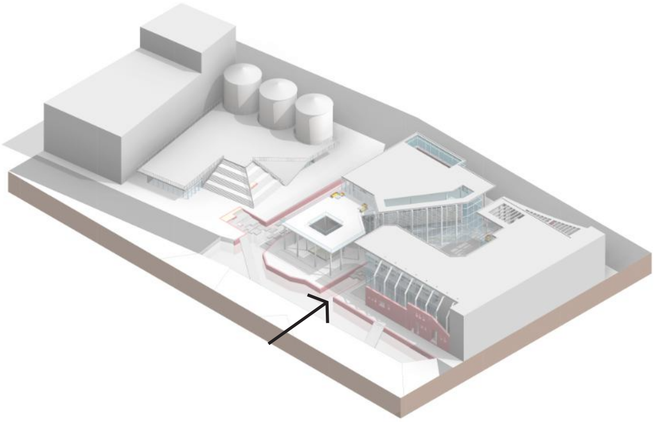
Fig. cix. 3D Diagram of building for perspective (Author 2021)

Fig. cx. Perspective 4 (Author 2021)

7.21. Perspective 9

The new canals act as a space of recreation, offering an abundance of water activities which exist primarily near the uShaka land plot. The idea here was to pull the canal towards the new precinct whilst accommodating for the recreational water edge which is used by actors of the site.

This new canal apart from collecting rainwater then accommodates more than just functional aspects of the site but also creates an abundant threshold to mix up the circulation of space. There are link bridges across the canal as well as steps which allow for rest and boarding of paddle boards or canoes.



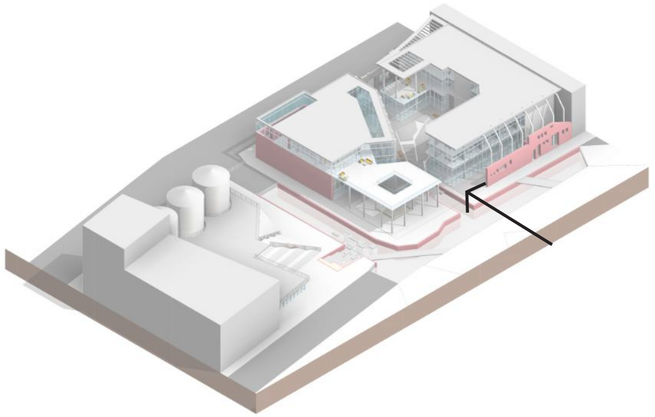


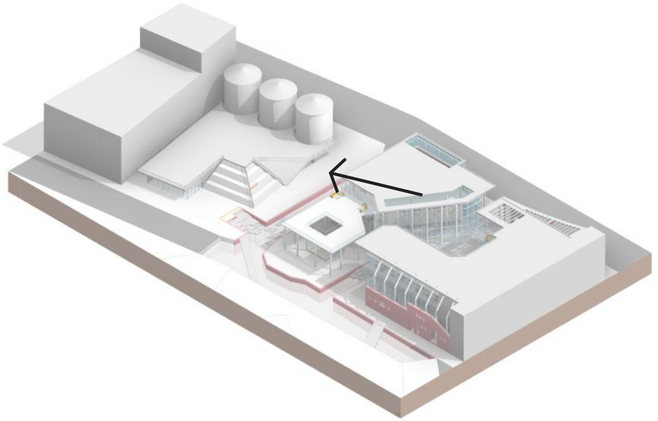
Fig. cxi. 3D Diagram of building for perspective (Author 2021)

Fig. cxii. Perspective 4 (Author 2021)

7.22. Perspective 10

As the island view terminal is demolished, the new silos presented an opportunity to add a new facade element to the site but required function. As there was an existing beer manufacturer on site, the expansion of the programme created a separate building which became landscaped in the precinct on the Eastern side of the site.

The beer house has a terraced roof which allows for actors to have beautiful views of the precinct.



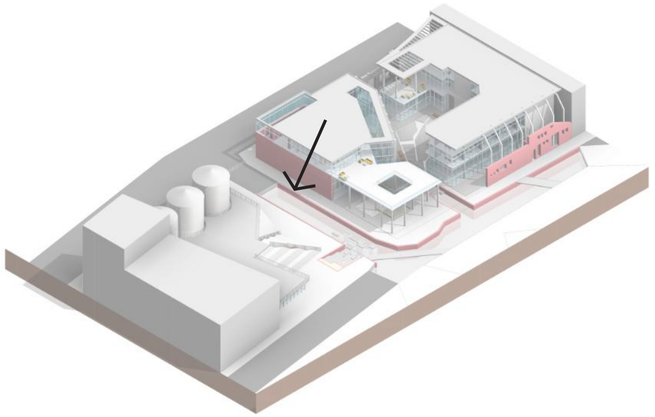
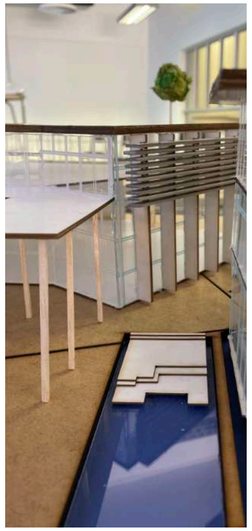
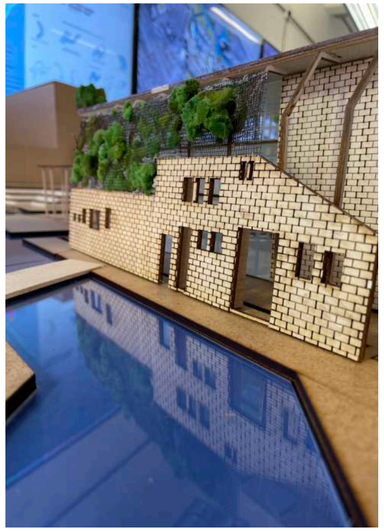
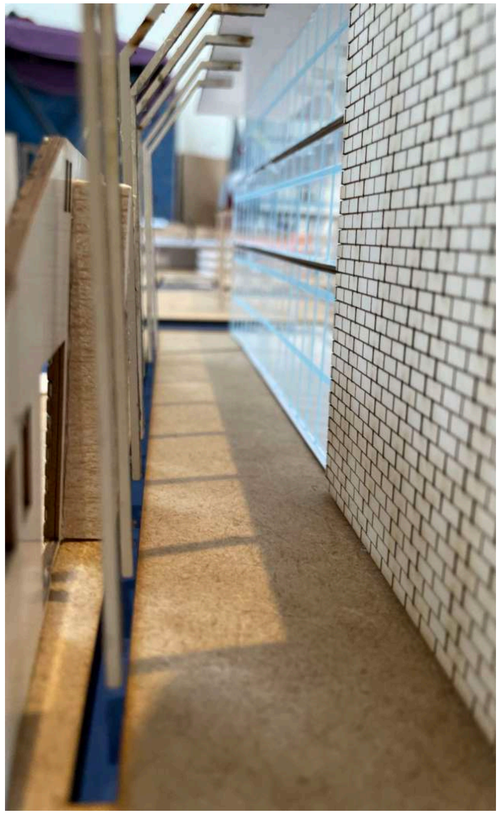


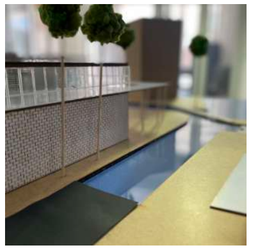
Fig. cxiii. 3D Diagram of building for perspective (Author 2021)

Fig. cxiv. Perspective 4 (Author 2021)

7.20. Final Model







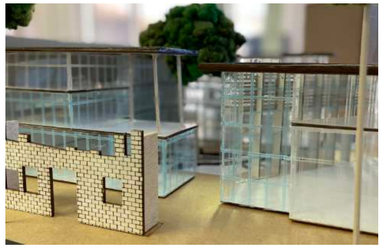


Fig. cxv. Images of final model and crit space (Author 2021)

“There are no systems in place that I am aware of. I am not sure that the “ design review panel” even exists anymore. Thus the architectural language is at risk. From a sustainability point- I echo the same sentiment. Perhaps you should talk to a set of Port principles around sustainability etc that this precinct can subscribe to.” (Allopi 2021)

08.

Technical Exploration

Detailing the system infrastructure, materiality and water servicing

8.1. Intention for techné and contribution to dissertation

Through the new urban framework, the scale of enquiry situates itself in the bigger picture through accessible scales of movement, city connections and arrival. Being respectful of existing ruins and not demolishing it was important, however integration of a new language of materiality with stylistic instances were drawn from existing spaces. The end goal is to amplify the buildings existing character and express its evolution in space and time.

8.2. Structures and systems within context

8.2.1. Window openings in repetition

The window openings of the existing ruin facades as well as the hotel on the southern and northern quadrant of the chosen site were strong heritage aspects which were carefully considered. The voids were analysed in order to calculate the size of the opening as well as the position of windows in terms of its height in elevation. For the intervention, the window openings are utilised to aid the elevation points of space as well as the design of the green facade for the northern elevation.

8.2.2. Steel components in heritage facade and cruise terminal

The steel component of the new cruise terminal informed the materiality of context as well as the structure of steel pergola system in the front and back of the North and South elevation.

8.2.3. Canal as existing urban infrastructure

The new rainwater canal in the courtyard is informed by the existing canal, bringing in a water edge within the site and acts as an active coolant within the humid Durban Climate

8.3. Contextual materiality palette

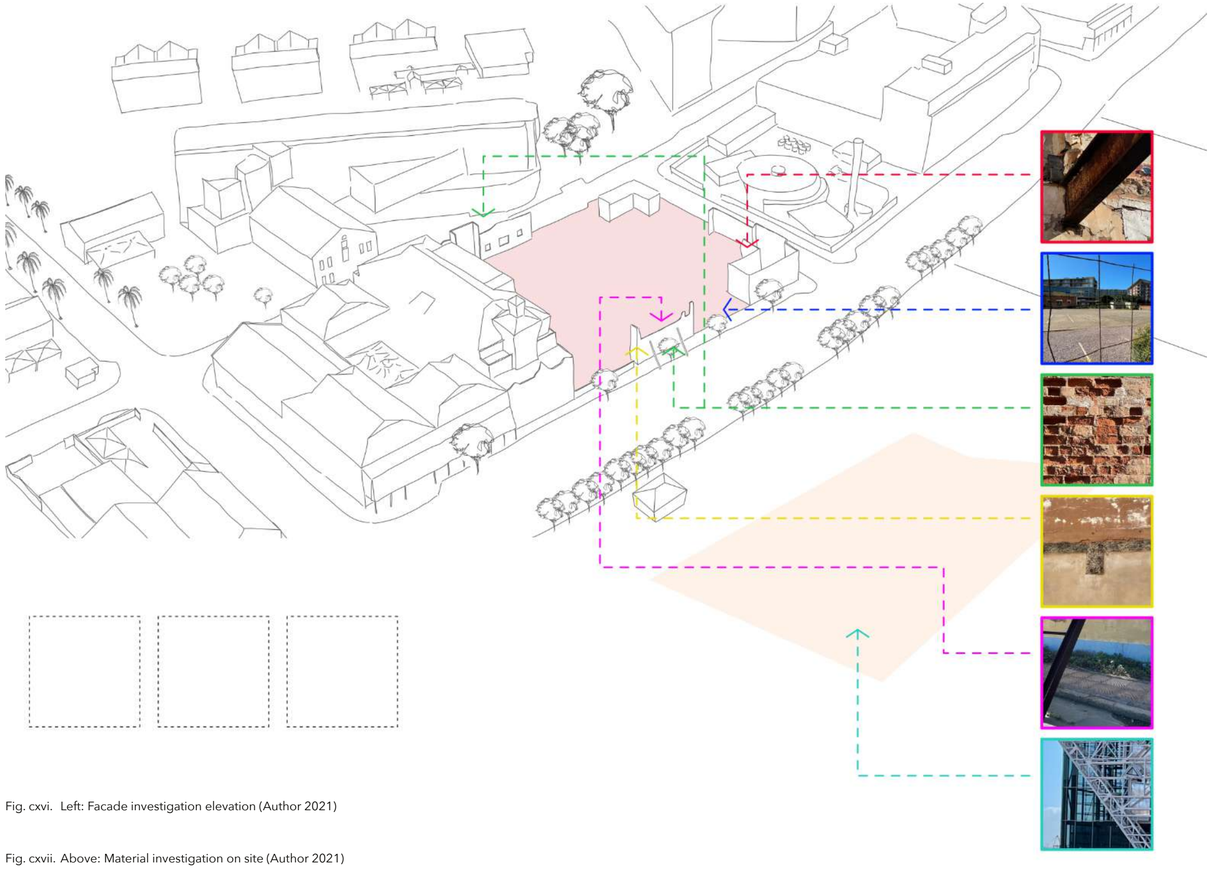


Fig. cxvi. Left: Facade investigation elevation (Author 2021)

Fig. cxvii. Above: Material investigation on site (Author 2021)

8.3.1. Materials explored

In keeping with the regenerative and reuse nature of the project to exemplify the palimpsest of space in time, the material strategy is devised from a combination of limited pallets which would add to the tectonic history of place as described by the 'historical materialism' by Henri (Lefebvre 1991). The choices are derived from the context and consolidated into the intervention strategy. The choices are deemed to encourage local labour construction through economic and ecological value systems to articulate the commercial programme in a changing landscape.

5 main materials were consolidated around the urban area and were deemed vital to the new language of architecture that was going to be developed: water, steel, clay, glass, and cementitious. Through the design and construction process, the materials formed a hierarchy of importance and responded to the existing infrastructure

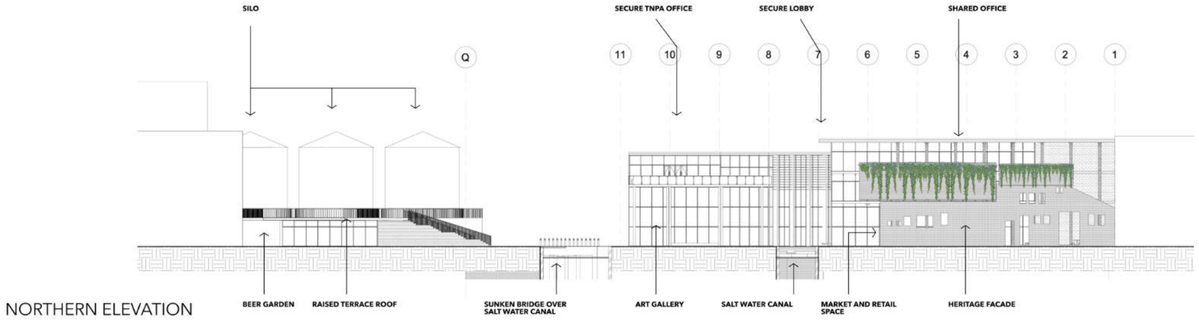
INTERVENTION MATERIALS

8.4. Main construction concept

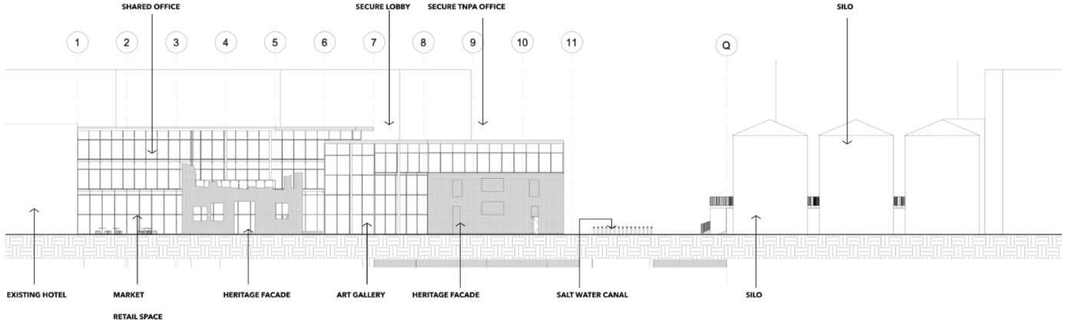
8.4.1. Build upon existing whilst respecting heritage

The intention was to fracture the nature of the ground plan then introducing very recognisable (facade-ical) elements in the elevation. this dichotomy between the old and the new balances the discourse in the detail creation and space making. Therefore, this backs the design intent to use the existing ruins (as seen in the essay 2) but reinvent it through new structure through a dialect of materialism where it has a tolerance of transformation. New functions and programme are introduced through celebrating the hospitality industry and creating a building which not only contains a range of retail offerings but institutions which facilitate operations of the working port and spaces in the city as well as facilities which show the adaptable nature of the framework such as an open air market near the existing hotel.

Fig. cxviii. Elevations (Author 2021)



NORTHERN ELEVATION



SOUTHERN ELEVATION

8.4.2. Building concept explained through material palette

Structural System:

The structural system was materialised through the concept of the existing port and mediating the harbour systems into an architectural construction typology whilst avoiding unnecessarily complex systems. The system is imagined as a levelled concrete structure mediated by steel structures and a glass facade representing the unique meaning and function of the harbour space. Throughout the design, structure and functional services - there is constant integration to define economic sustainability for the future port of Durban new transit orientation programme and gastronomic hub.

Primary Structure:

The primary structure is made up of levelled concrete slabs which are in dialogue with the heritage facades. It relates to current level conditions of the old heritage offices and the concept of mediating the ground to the sky through water and open space.

Secondary System:

Architecturally connecting to the new cruise terminal was important, so the structure adopted the nature of such space which was glazed and open.

Tertiary System:

Green Mesh facades existing on the Northern Quadrant of the heritage facade adds to the quality of space and is conceptualised as the envelope. The tertiary structure primarily informs how the building merges into its context, as it simultaneously articulates the existing facade systems. The structural members and services are integrated. The structural systems such as the northern gutter facade detail form part of the design and service and articulate the movement of water as resource, not just as an edge condition.

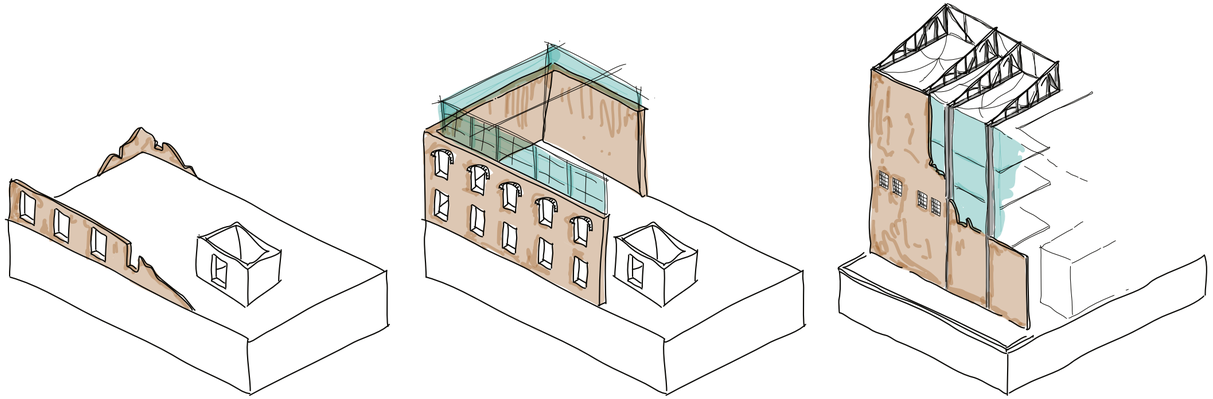


Fig. cxix. Material amalgamation diagram for technification (Author 2021)

8.4.3. Technological building concept

The overarching concept then takes reference to port operation and celebrates each chain link to create the parti

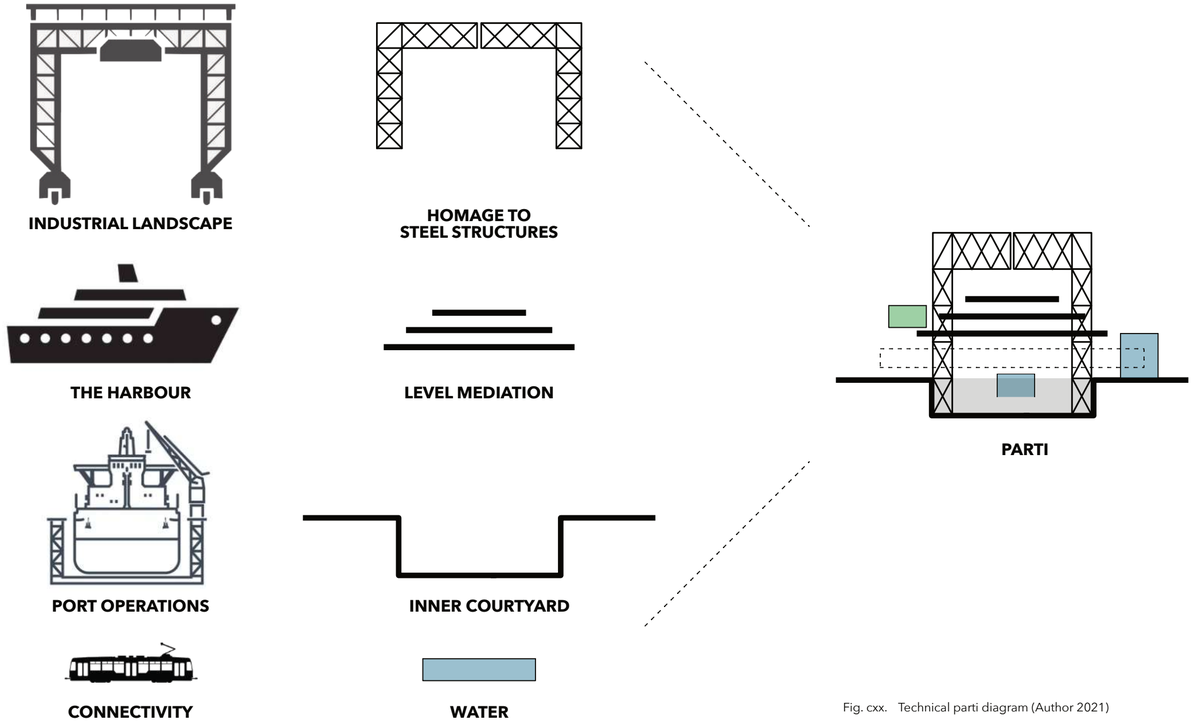


Fig. cxx. Technical parti diagram (Author 2021)

Facade precedent

Location:

Zurich

Switzerland

Architect:

Raderschallpartner

Value to Research:

Green mesh facade creation and steel construction

8.5. MFO Park: The North Zurich Parkscape

As a technical precedent dealing with structural steel as well as greenery the MFO Park was a prime example of successful material integration in a complex multi-tiered urban space which referenced the neighbourhoods heritage in an industrial typology.

The structure is made of an architectonic form which has two vegetation facades made of a steel perimeter matrix. This space as defined is extraordinary due to its permeable nature and circulatory patterns. The public association to space allows sundecks and access to upper decks which are populated by vines greenery that grow right on the structure (Urbannext 2021).

Fig. cxxi. Images from URBANNEXT. 2021. *MFO Park: The North Zurich Parkscape* [Online]. urbanNext. Available: https://urbannext.net/mfo-park/ [Accessed 3 September 2021].

Conclusions and relevance to Port of Durban

The symbiotic nature of the architecture reinforces the need to integrate more permeable space through the use of the existing heritage facade as catalyst for technological advancement. Dominated perhaps by too much foliage, the new Durban Point Waterfront precinct design would integrate less in a more subtle but unique way in its present enclave on the Northern fringe of the site. It speaks of time and structure cycles, by which the greenery grows and dies as time moves; consolidating the building as a living organism

8.5.5. Green mesh facade exploration

The one important aspect of the design is the ability to merge the new technology with the existing facade and this ideology is created when the green mesh facade merges with the existing heritage facade on the northern quadrant of the site.

The green mesh followed the articulation of the facade void openings where the windows used to be instead of being separate mesh panels as shown in below

Fig. cxxii. Left: Iteration 1 of Green facade (Author 2021)

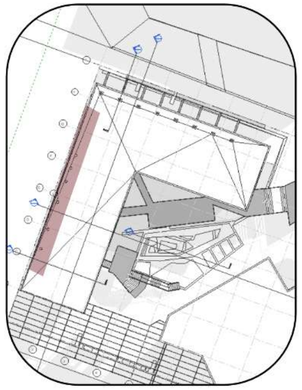
Fig. cxxiii. Right: Render of Green facade (Author 2021)

8.6. Technical Iterations

Three focus areas are highlighted for the technical iterations: the duct services wall in the main market/shared office space, the freshwater canal system in the court yard and the roof drainage system and green facade on the Northern Elevation.

8.6.1. Concept Water Duct Detail

The duct detail is identified in the section of the shared office space and runs from the ground floor to the upper level. It is hidden behind the western facade wall system and is accessible from all points across the wall.



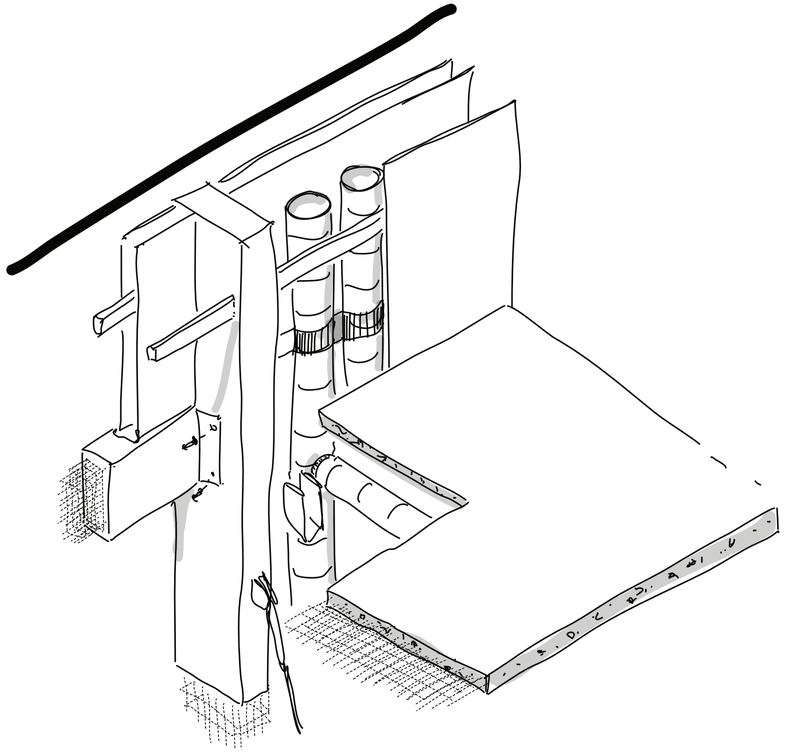
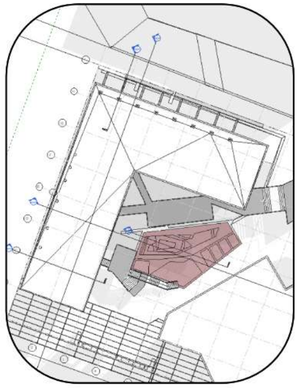


Fig. cxxiv. Concept of duct detail (Author 2021)

8.6.2. Fresh Water Canal Detail

The idea of the canal came from the overlay of the grander urban canal framework and bringing in that water edge into the site. The canal captures rainwater and becomes an active sculpture in the landscape which users are able to interact with as well as being a mechanism for active water harvesting on site.



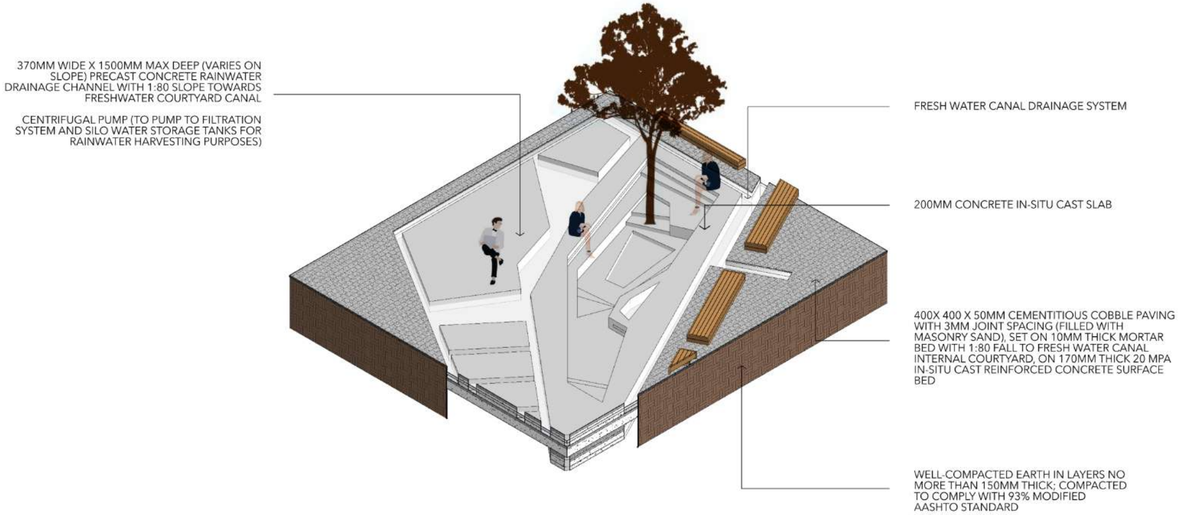


Fig. cxxv. Fresh water canal 3D detail in the courtyard (Author 2021)

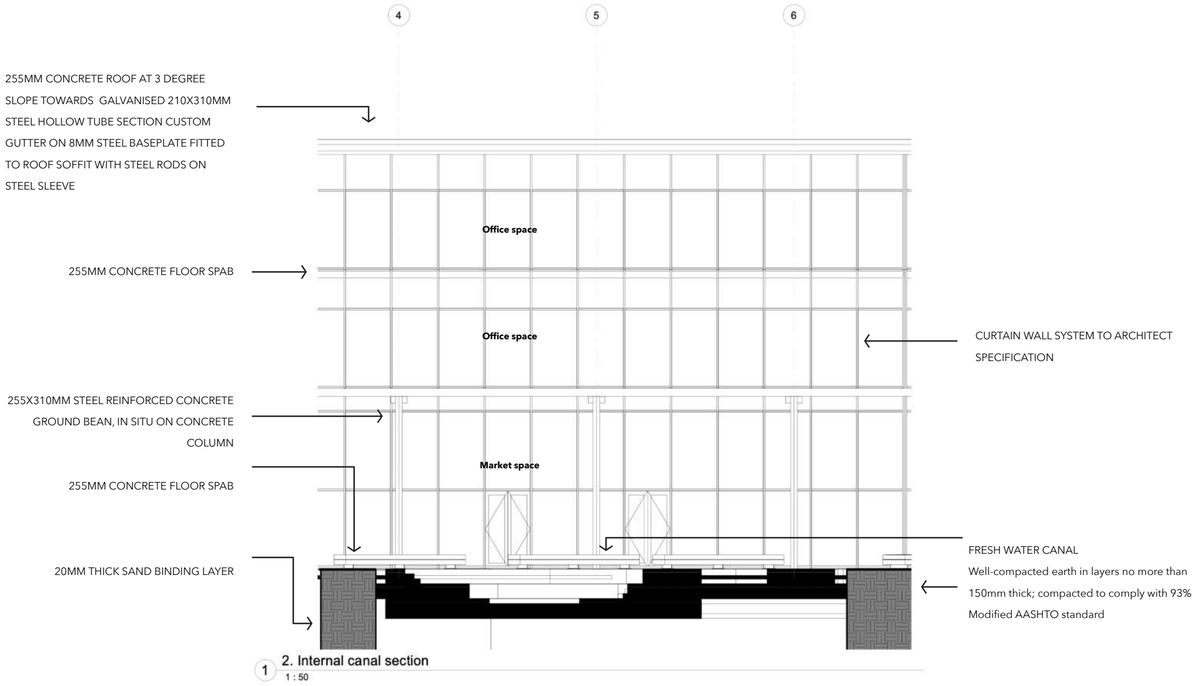


Fig. cxxvi. Fresh water canal section (Author 2021)

8.6.3. Northern facade detail

The main gutter detail on the Northern facade captures water from the roof scape and lets it drain into the canal system.

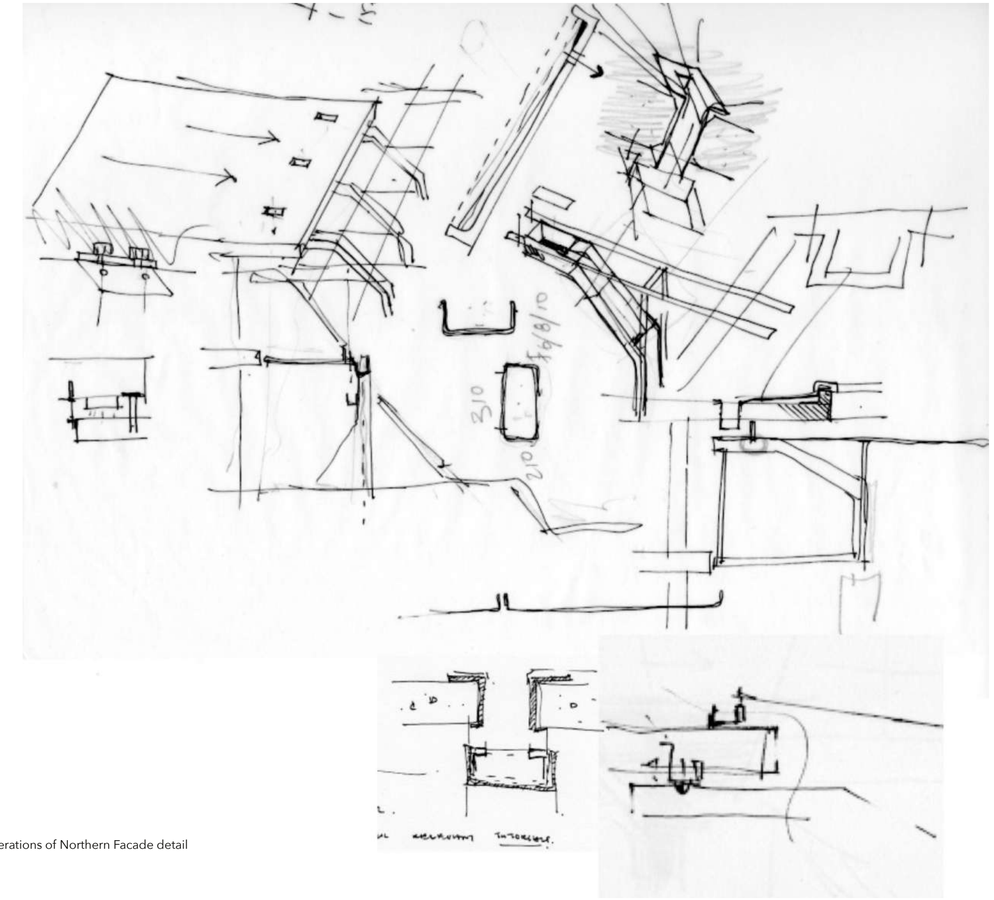


Fig. cxxvii. Iterations of Northern Facade detail (Author 2021)

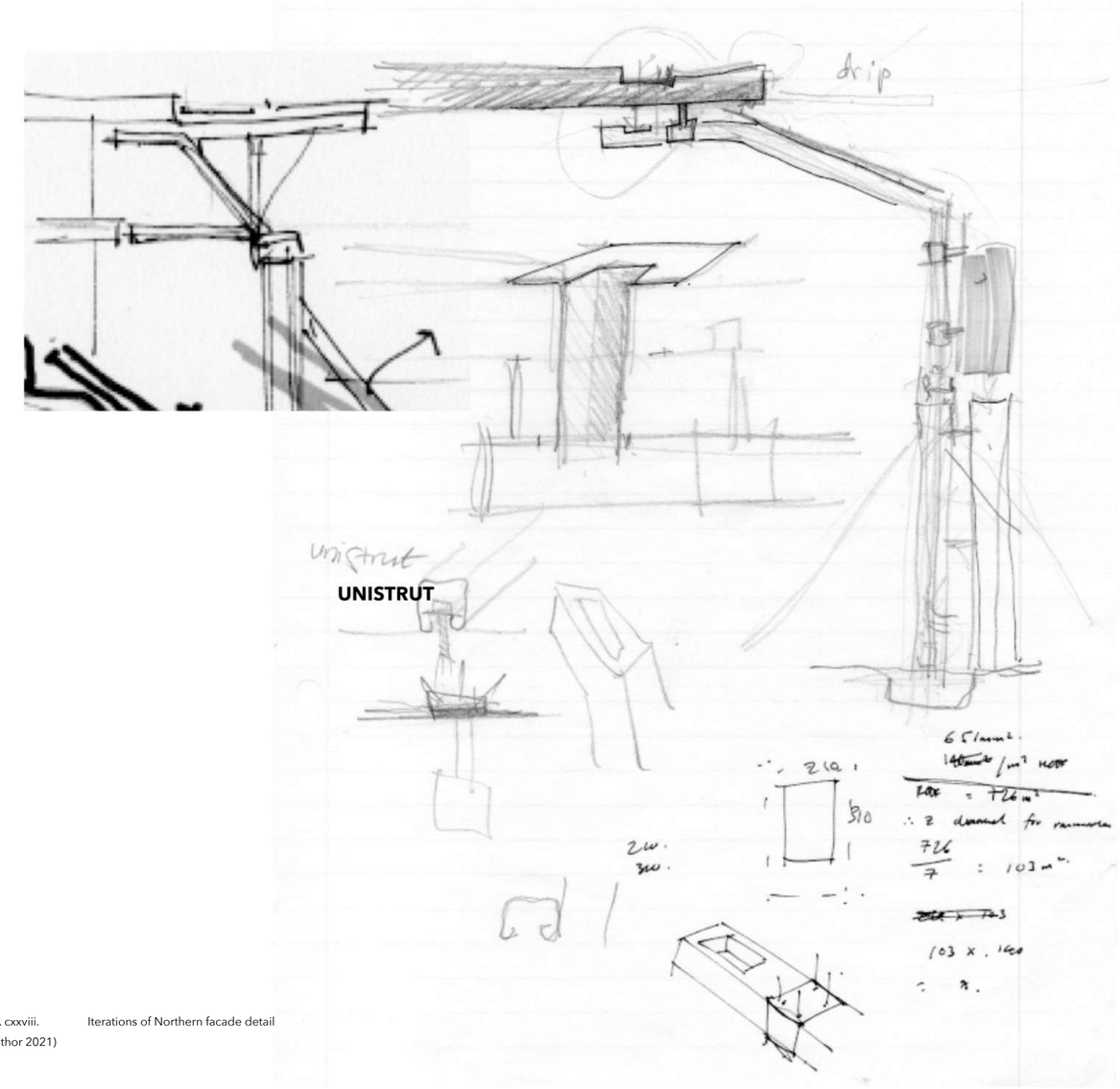


Fig. cxxviii. Iterations of Northern facade detail (Author 2021)

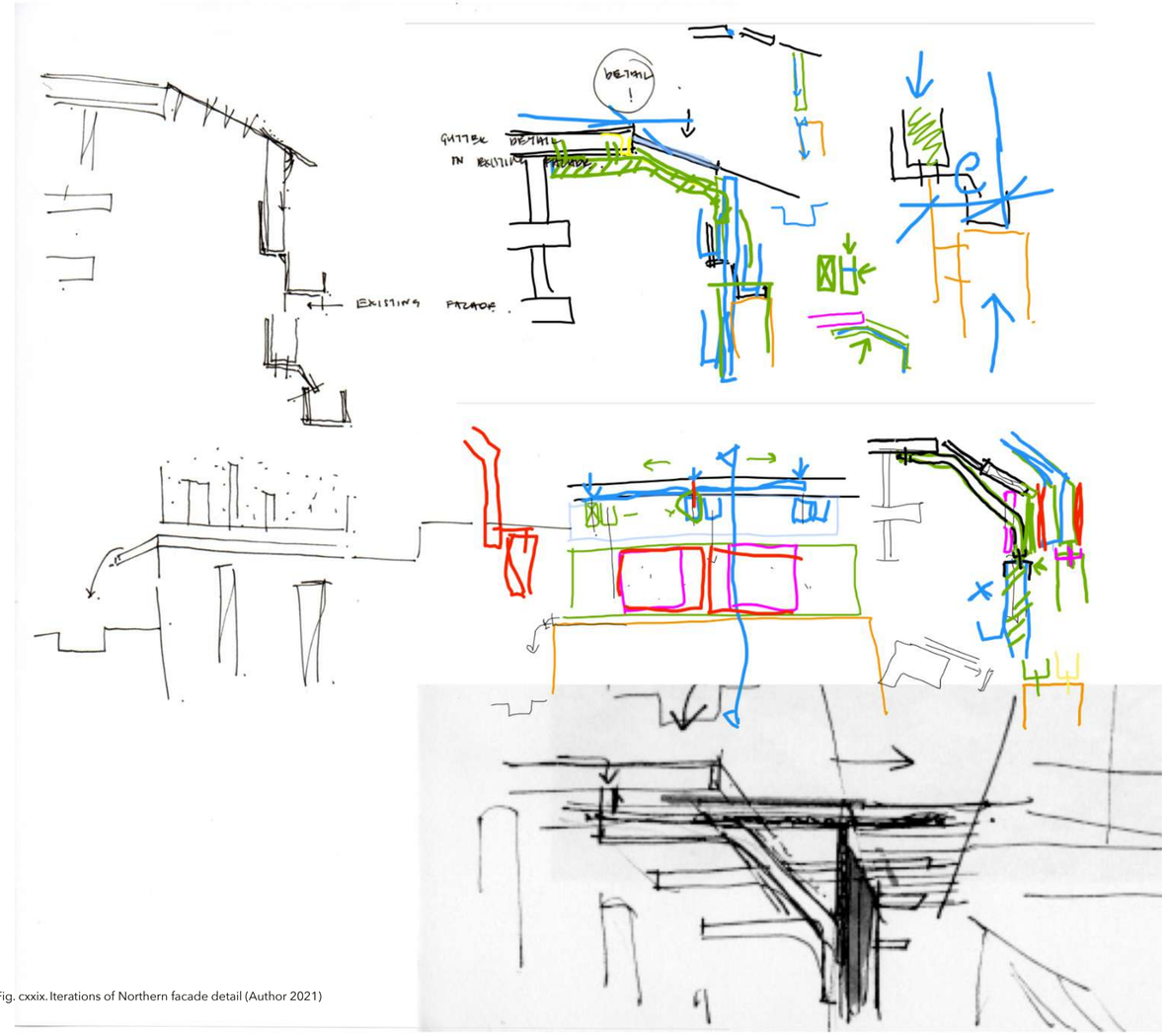


Fig. cxxix. Iterations of Northern facade detail (Author 2021)

8.6.4. Northern facade Detail

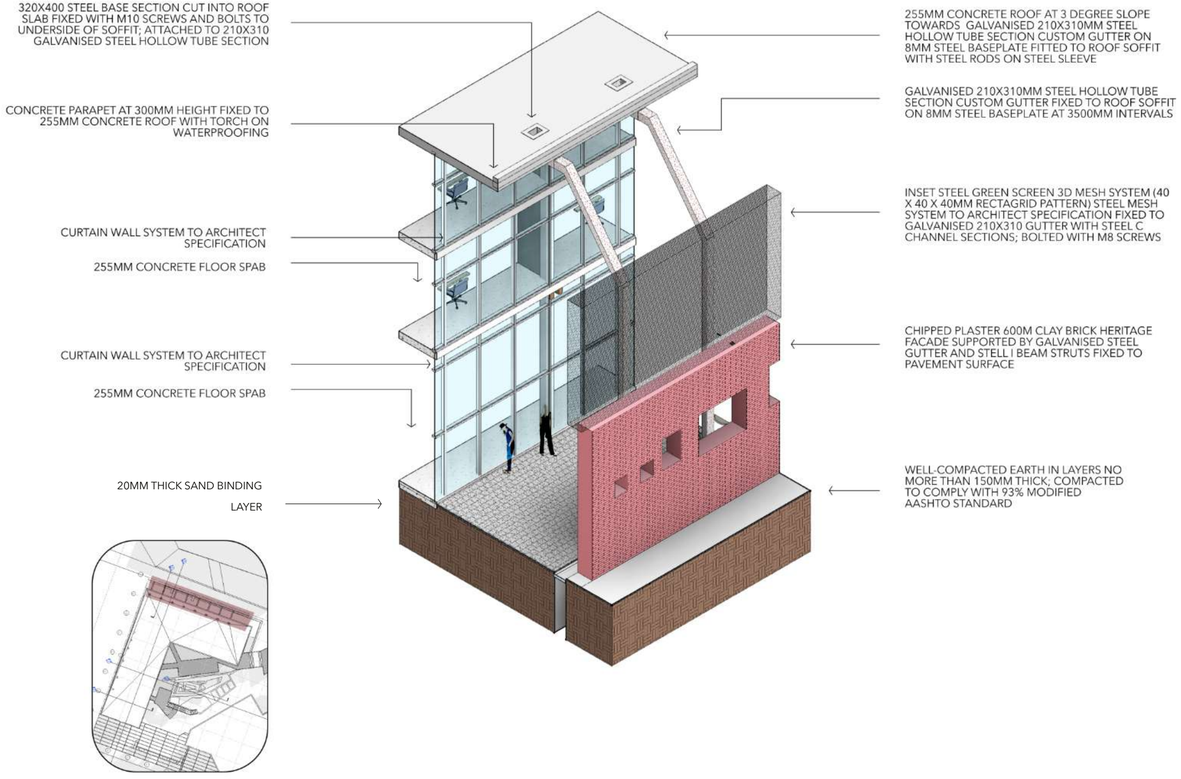


Fig. cxxx. Northern facade 3D detail (Author 2021)

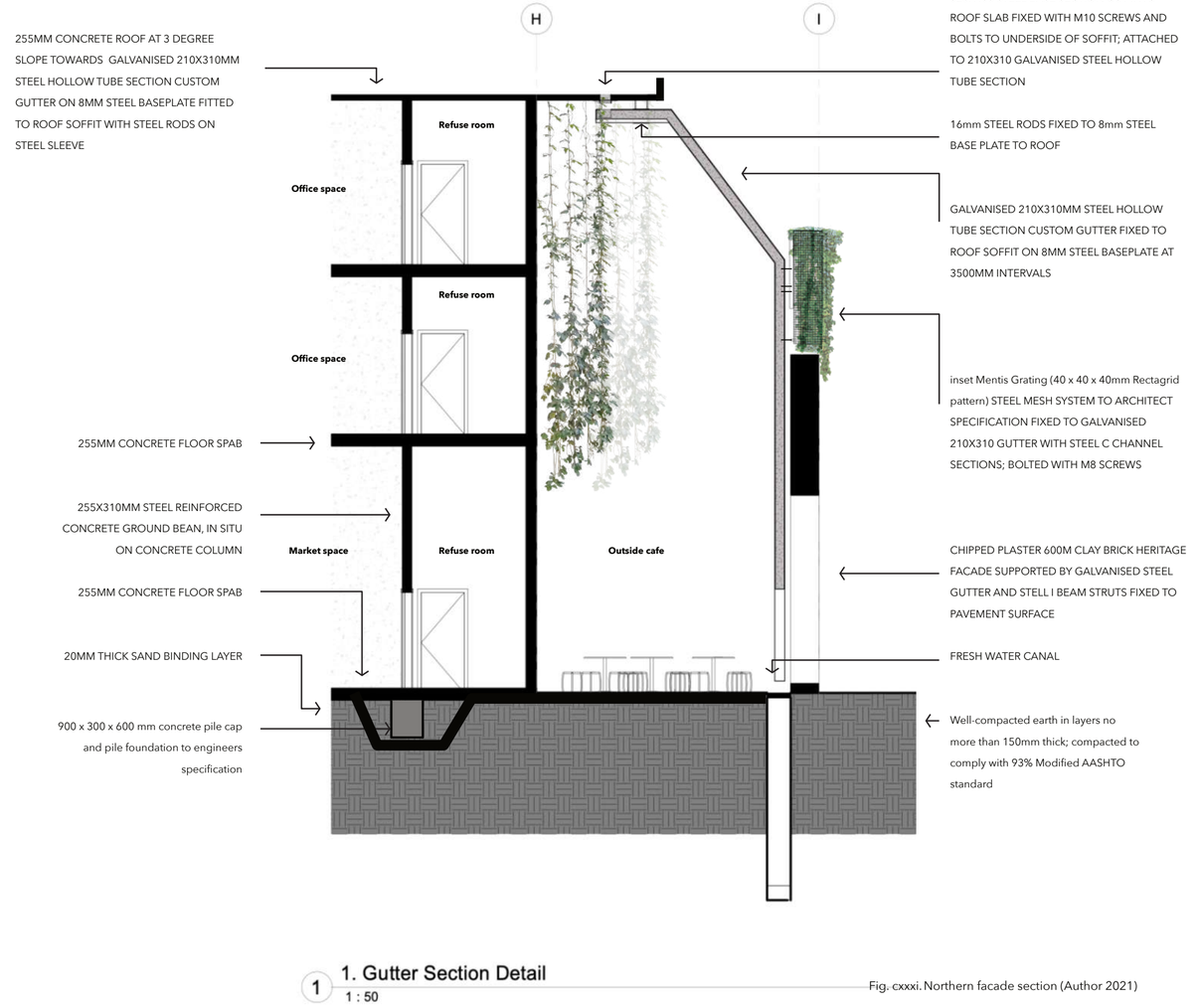
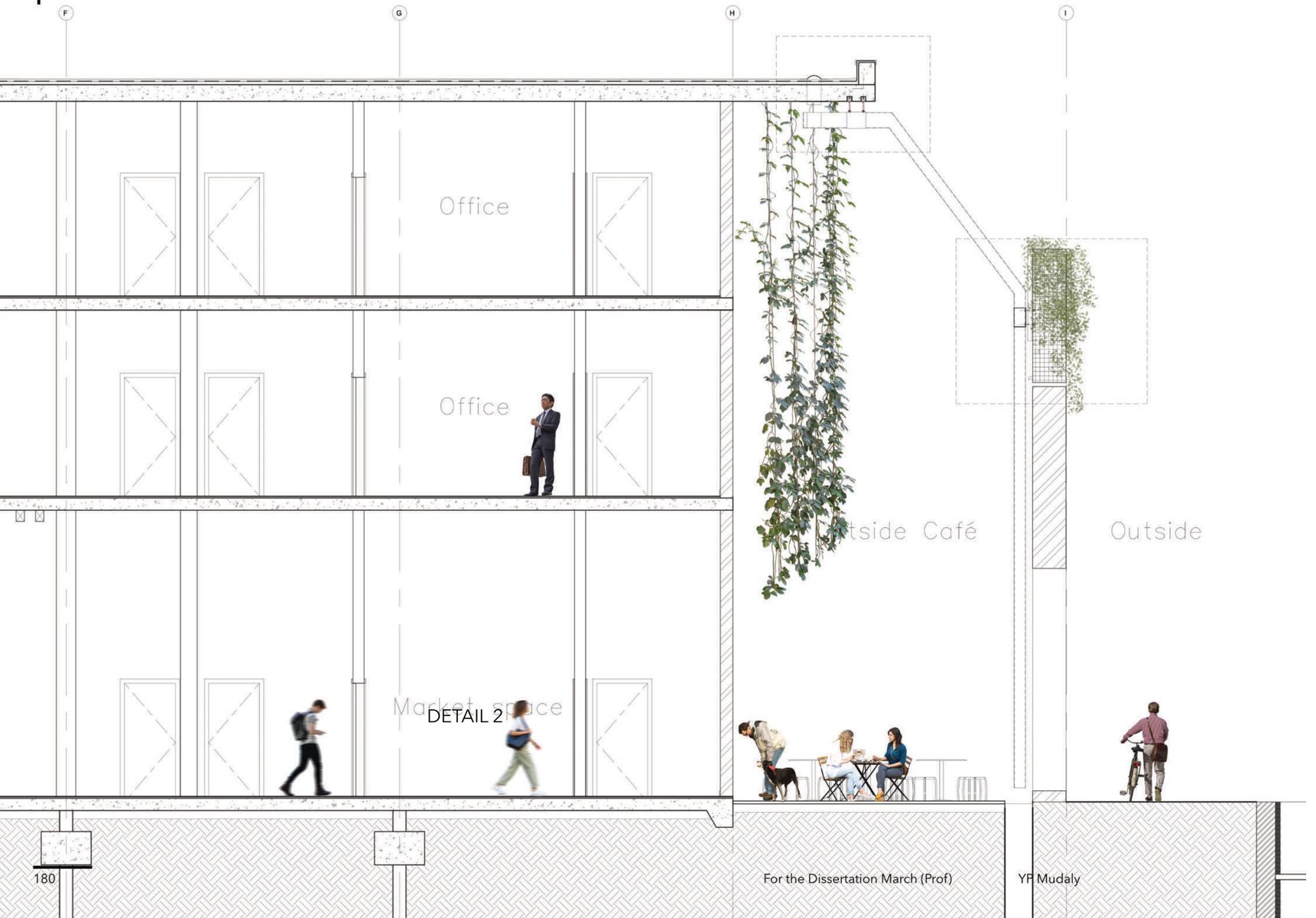
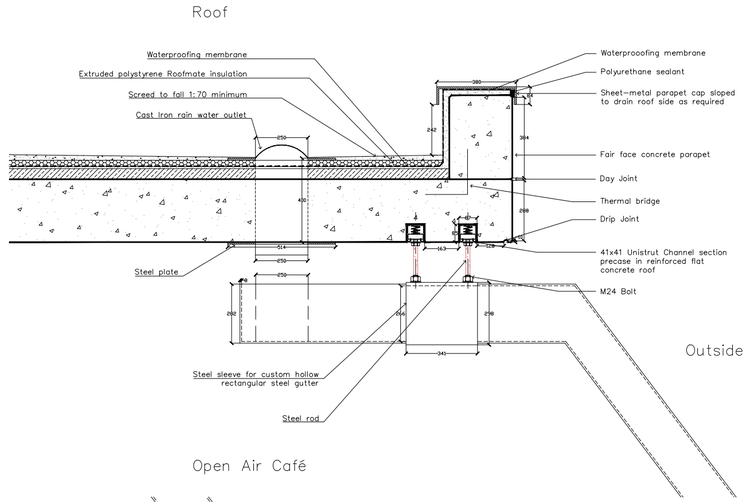


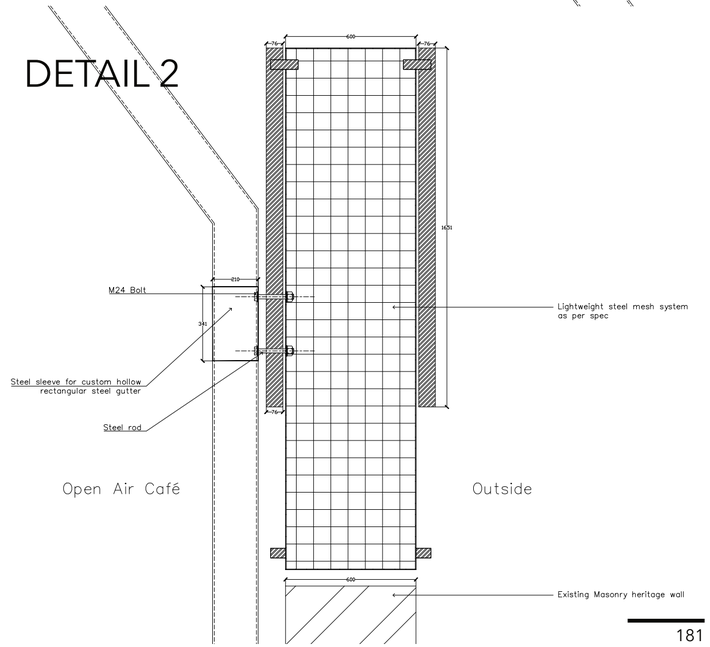
Fig. cxxxi. Northern facade section (Author 2021)



DETAIL 1



DETAIL 2



8.7. Rainwater harvesting

Water is most definitely the most important element in the design to connect the visitors to the genesis and emphasis of the port-city/ seaport identity with a defined water edge. It plays a key role in illustrating that new International style of port urban infrastructure and contributes to the projects production in development around the canal edge. In order to create a impactful design within the courtyard a fresh water canal that was designed as seen in figure 29 in the canal detail shows how the gutter transports the rain water into the canal for treatment which uses bio filters to purify the rainwater and the canal itself acts as evaporative cooling which is most suitable for the Durban climate.

The water yield would be from the roof, the courtyard and the canal system itself as seen in the figure 32 where the collection of runoff is caught to save cost and align with the sustainability factor of the project. Grey water provides an alternative catchment which will be recycled in the silo as a mechanistic system.

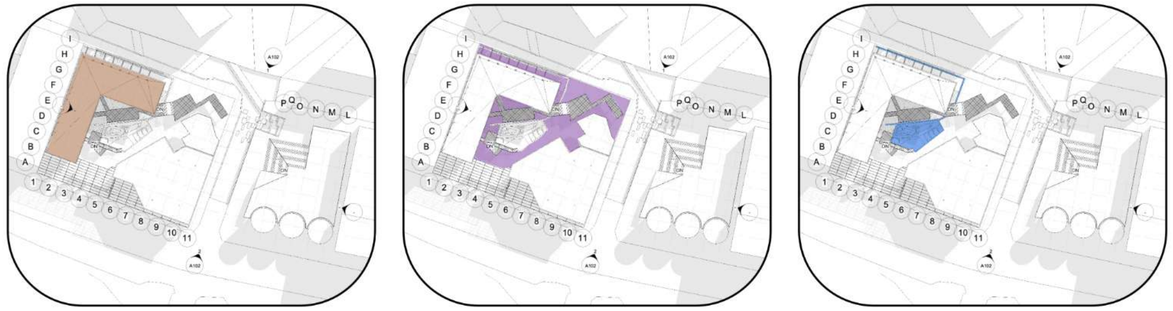


Fig. cxxxii. Rainwater harvesting area diagrams (Author 2021)

8.7.1. Rainwater harvesting diagram Northern facade

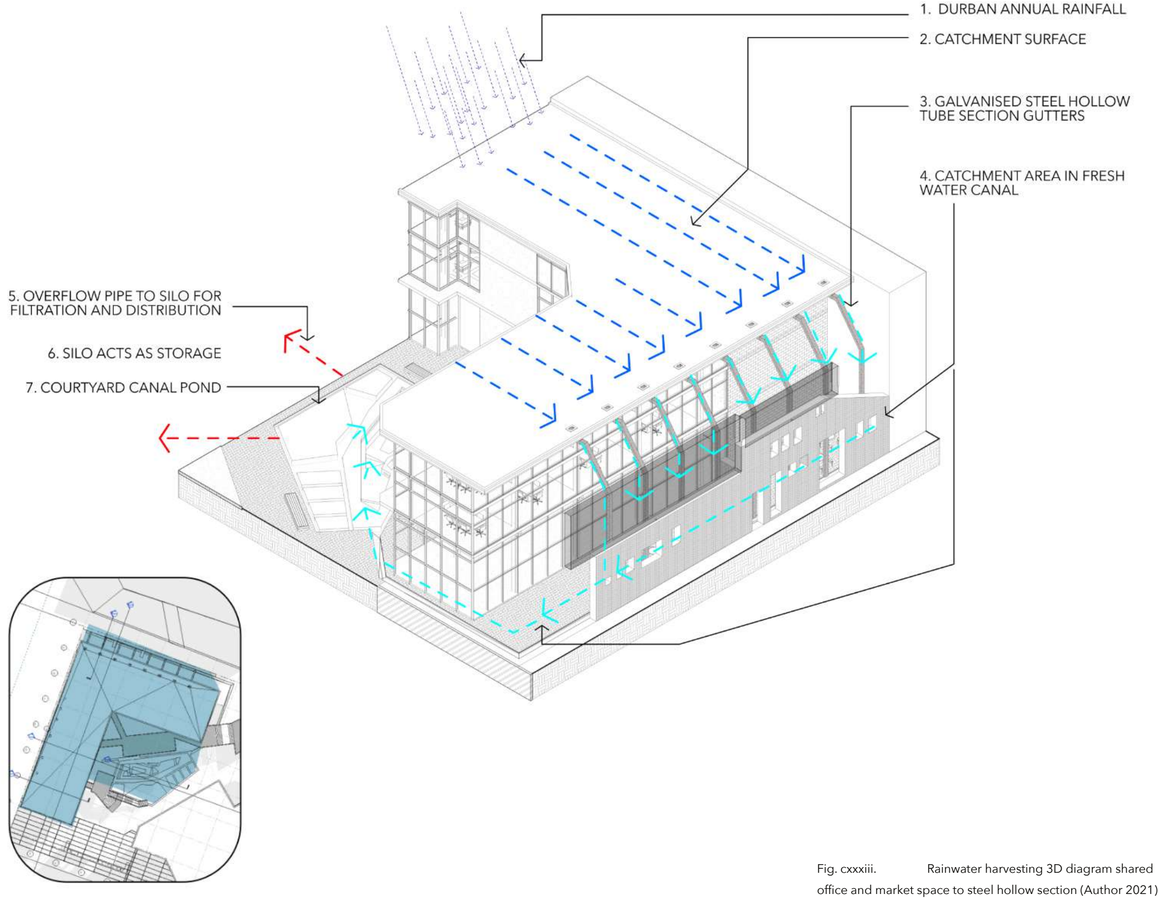


Fig. cxxxiii. Rainwater harvesting 3D diagram shared office and market space to steel hollow section (Author 2021)

8.7.2. Rainwater harvesting schematic

The newly designed Point Waterfront addition considers water as a natural system where seasonal precipitation was considered in the design as well as construction phase. eThekweni and the grander Durban area is a summer rainfall region which works well with the recreational water system in the precinct.

Water has been inclusive as a design intent, due to the incapacity for the Port of Durban to incorporate a known water edge to the city waterfront. The articulation of the architecture aims to capture water to irrigate and replenish the system whilst providing a visible water edge within the courtyard whilst being optimal enough to produce sufficient water demand levels annually.

The roof structure [**A**] was designed specifically atop the shared office and market space with precision cut custom rectangular steel hollow sections [**B**] with custom rectangular steel hollow sections as the gutter forming both structure and facilitating the procurement of water flow towards the fresh water canal [**C**] in the courtyard. It is naturally treated in a selected silo [**E**] as it runs off from the courtyard [**D**] to feed the entire system and the precinct area.

After filtration the water is suitable for human consumption and is used in the market space, beer manufacturing facility as well as irrigation for vegetation in and around the site.

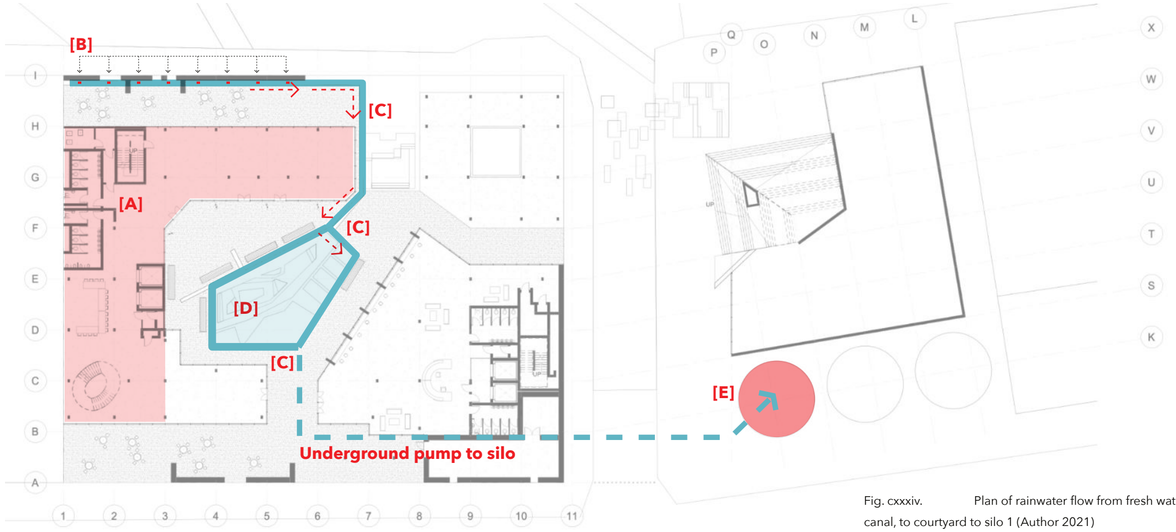


Fig. cxxxiv. Plan of rainwater flow from fresh water canal, to courtyard to silo 1 (Author 2021)

Fig. cxxxv. Water yield and demand calculations. (Anon. , Municipality 2003, Climatemps 2017)

Total water yield

Month	Average Rainfall (m)	Catchment Area (m²)	Catchment yield coefficient	Alternative Water Source (m3)	Total Water Yield (m3)
January	0,134	2028,9	1,1	12,0	311,06
February	0,113	2028,9	1,1	12,0	264,19
March	0,126	2028,9	1,1	12,0	293,21
April	0,073	2028,9	1,1	12,0	174,92
May	0,059	2028,9	1,1	12,0	143,68
June	0,028	2028,9	1,1	12,0	74,49
July	0,039	2028,9	1,1	12,0	99,04
August	0,062	2028,9	1,1	12,0	150,37
September	0,073	2028,9	1,1	12,0	174,92
October	0,009	2028,9	1,1	12,0	32,09
November	0,01	2028,9	1,1	12,0	34,32
December	0,102	2028,9	1,1	12,0	239,64
	0,828	**24346,80**	**13,20**	**144,00**	**1991,92**

Demand Per Person

Month	Persons	Demand (Drinking & hand-washing / person / day) (m3)	Total Demand
January	400	0,003	37,2
February	400	0,003	33,6
March	300	0,003	27,9
April	300	0,003	27
May	300	0,003	27,9
June	300	0,003	27
July	300	0,003	27,9
August	300	0,003	27,9
September	300	0,003	27
October	400	0,003	37,2
November	400	0,003	36
December	450	0,003	41,85
			378,45

Water Evaporation Demand

Month	Monthly Evaporation Rate	Open fresh water area	Evaporated water
January	0,15	150	22,5
February	0,15	150	22,5
March	0,15	150	22,5
April	0,15	150	22,5
May	0,15	150	22,5
June	0,15	150	22,5
July	0,15	150	22,5
August	0,15	150	22,5
September	0,15	150	22,5
October	0,15	150	22,5
November	0,15	150	22,5
December	0,15	150	22,5
			270,00

Total Demand

Month	Total Demand Per Month
January	59,7
February	56,1
March	50,4
April	49,5
May	50,4
June	49,5
July	50,4
August	50,4
September	49,5
October	59,7
November	58,5
December	64,35
	648,45

Monthly Balance for irrigation and other services

Month	Total Yield	Demand	Balance
January	311,06	59,7	251,35986
February	264,19	56,1	208,09227
March	293,21	50,4	242,80554
April	174,92	49,5	125,42067
May	143,68	50,4	93,27561
June	74,49	49,5	24,99012
July	99,04	50,4	48,63981
August	150,37	50,4	99,97098
September	174,92	49,5	125,42067
October	32,09	59,7	-27,61389
November	34,32	58,5	-24,1821
December	239,64	64,35	175,29258
			1343,472

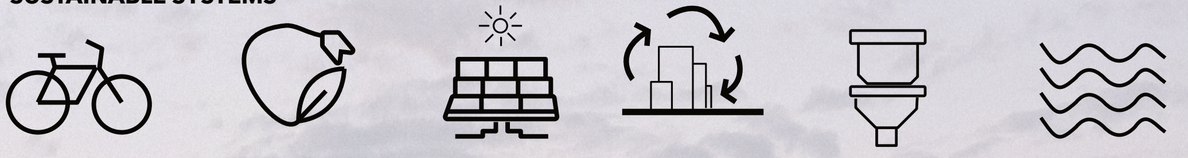
These two months will require equivalent balance from previous months to deal with surplus demand

Technical Exploration

8.8. Ventilation Strategy

The Precinct follows a strong tolerance of wind axis from the North Eastern quadrant of the site where the prevailing wind approaches from sea, therefore the precinct and urban quarter acknowledges wind as a natural daily system where air movement was considered. It is ventilated naturally in the central courtyard which forms a wind retainer in the space and is able to harvest this natural energy to cool the facades of the space in a humid tropical climate. The surface envelope made primarily of glazing, the roof and walls allow for quick thermal heat conductivity and a balance to cool or heat where needed was considered.

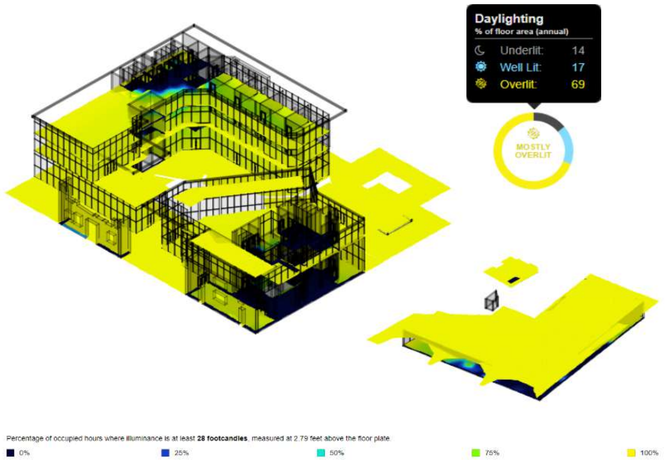
SUSTAINABLE SYSTEMS

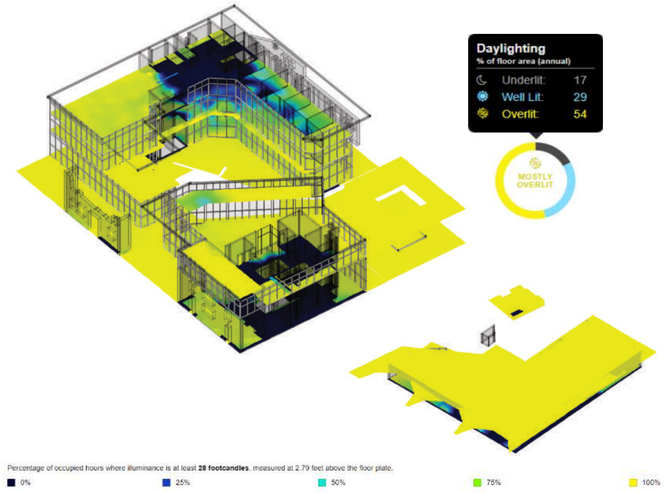


8.9. Lighting Strategy

Light is considered in the system where the use of natural daylight and artificial lighting cycles were considered and orchestrated on site. The tolerance of total glazing on all facades with horizontal louvres on the main TNPA secure office block harmful ultra-violent light which also allowing sufficient natural lighting inside. The module is constructed in such a way where the building heights do not interfere with the courtyard lighting through certain times in the day and lighting is therefore provided. Given the programme is largely commercialised and indoors, natural lighting would not be enough therefore artificial lighting supplies were considered according to space depth and electrical use tolerance.

8.10. Sefaira

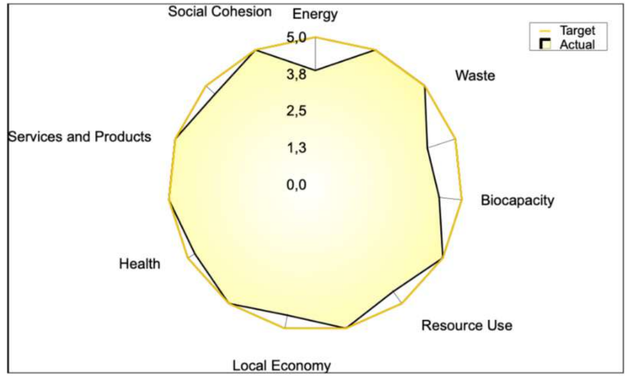




Achieved
4,7

8.11. SBAT Report

SB1	Project
	Point Precinct
SB2	Address
	30 Mahatma Gandhi Road, Point Waterfront, Durban, 4001
SB3	SBAT Graph



	Actual	Target
Energy	3,9	5,0
Water	5,0	5,0
Waste	5,0	5,0
Materials	4,0	5,0
Biocapacity	4,2	5,0
Transport	5,0	5,0
Resource Use	4,5	5,0
Management	5,0	5,0
Local Economy	4,5	5,0
Access	5,0	5,0
Health	4,7	5,0
Education	5,0	5,0
Services and Products	5,0	5,0
Inclusion	4,6	5,0
Social Cohesion	5,0	5,0

SB4	Environmental, Social and Economic Performance	Score
Environmental		4,4
Economic		4,8
Social		4,9
SBAT Rating		4,7

SB5	EF and HDI Factors	Score
EF Factor		4,5
HDI Factor		4,7

SB6	Targets	Percentage
Environmental		88
Economic		96
Social		97

Revitalised Intersections, VOL. 1

By YP Mudaly

09. Conclusion

Reflecting on the final dissertation

Conclusion

9.1. Introduction

According to Diedrich, Dahl and Babette who wrote about port-city theory in a volume of the Portus Journal (2020: 1); they contributed towards the dissertations normative position regarding port and harbour transformation. The authors scripted that port-cities are meant to be understood as "as complex human- environment systems" (2020: 1), meant to reflect the sustainable requirements for the 21st century city and create contemporary landscapes and unique urban enclaves in the city which add value to harbour industry. The dissertation focused on the Port of Durban and the adjacent Point Waterfront which, through dereliction and devolvement, has required an adaptation of the historic fabric in order to conserve and transform the area into a valuable long-standing environment benefiting both the Transnet National Port Authority and the city of Durban. The intention was to mediate the ownership of land parcels on Mahatma Gandhi Road and create an architecture which brought in users to a mixed use space which served port operations as well as considered recreational activity for waterfront users.

9.1.1. Reflection on Normative Position

Challenges facing the competitiveness of South Africas Eastern Ports shifted the traditional Durban Harbour handing of coal and hard commodities to the Richards Bay Port and the newly designed Southern Basin (Rodrigue, Cooper and Merk 2014, Barradas 2018), as such the new language of the Durban Port with the emergence of KZN shippings deal with MSC centred around a tourism hub and business district. The opportunity to uplift existing infrastructure and add value space would contribute to the old sailor town narrative of the Durban Port (Lee 2012).

This dissertation was generated as a quintessential port-city transformation scheme, questioning the notion of how ports are run in order to determine programmatic requirements for spatial insertion and identify the nature of the current landscape and operational spaces between the city and harbour boundaries. By occupying a site which was situated on the periphery of the city boundary and harbour boundary, the dissertations intention was to develop an approach to a successful transformative urban scheme which utilised theory from Henrl Lefebvre's (1991) 'La production de l'espace'. The anchor & proximity theory existing significant sites to enrich a grander area of space which, from this strategy, focused on bringing in the urban quality of space into the built form through programme or supported civic routes through circulation of site. This created an identity of a new metropolitan contemporary space derived from a tabula rasa pertaining to the condition of space in the Durban harbour and alchemy of user requirements to contribute to an urban and architectural place making in the newly designed Point Waterfront.

9.1.2. Reflection on Design Investigation

This dissertation was conditioned through two positions. First, the historical and current ownership of land parcels and management of facilities and infrastructure in the Point Waterfront district. The investigation lead to how the mismanagement and inefficiency of the port produced the current mismanagement and inefficiency and this was addressed to create a resident adaptation of the urban context which would result in the architecture. Secondly, the urban context was analysed through the adaptability of building space and the chosen site depended on the reuse potential of its form, layout and context and relation to programmes around it such as the uShaka marine world with the canal system. In order to grasp the requirements of space and contribute to the context of the city, investigations were guided by such anchor infrastructure and analysed through the common rituals and buildings around the chosen site. This research stream was done concurrently with writings concerning the current affairs of the port and its infrastructure capacity (Maharaj 2013) and precedent works regarding international port frameworks and their operational nature with such intersecting boundaries to the city.

9.1.3. Reflection on Design and Technological Intentions

The intention of the architectural design monumentalised the original building facades of the site and was inspired by the design approach of the precedent of the Chippendale Brewery Yard (Archdaily 2015). The new design approach was a sensitive approach to add the spatial logic of the existing space whilst allowing a new format in context which structures technology and new programme such as retail and office offerings.

At the end of the day, the main goal of the architecture is to combine all layers of continuity into a space which celebrates innovation and progression through a discourse of identity. This architecture then becomes resilient because the ruin doesn't only survive, but it adapts for new use, through the emergence of circulation and the spatial interaction with people and the landscape.

The technical approach emphasised the juxtaposition between the old facade and new materials/space by contrasting materiality and catering for new materials such as water in the scheme through the canal and drainage. The new materials introduced include steel and concrete structures, resting adjacent to the old parts by complementing old masonry walls whilst respecting the linear threshold of the ruins.

9.1.4. Fulfilment of research into architectural field

The body of the dissertation focused on themes of resilience, identity and governance which guided the design approach of incorporating different spaces to satisfy all end users and stakeholders. Port-cities have the capacity to not only be centres for economic and ergonomic success but also contexts which enrich threshold to and from city through sea networks and overseas trading routes. This identity shapes the way a city like Durban was founded (Transport 2021) and how its identity is changed through modern intervention and requirements.

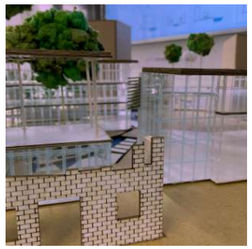
The urban study reviewed the capacity of the region and morph its decay and derelict nature to reflect abundance and virtuosity through adaptive space reuse which consolidated the resilience through change.

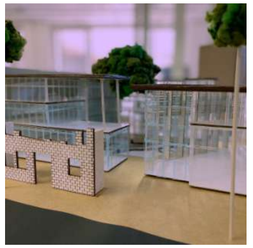
The dissertation fundamentally promotes co-operation of landowners and governing bodies to reconcile transformation on the urban to architectural scale through amplifying existing character of space and reconnecting urban remnants of the past to relocate regenerative potentials in context.

9.2. Final Presentation









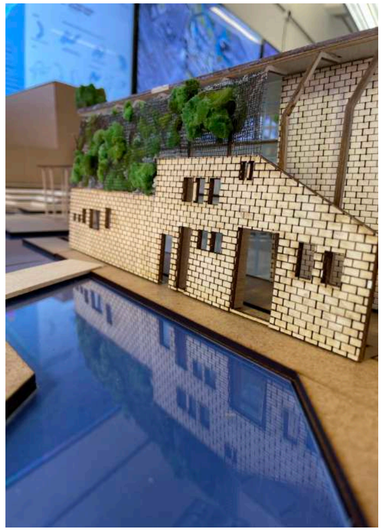



Fig. cxxxvi. Images of final crit (Author 2021)

Figure Captions

Ethics clearance letter

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Engineering, Built Environment and Information Technology

Fakulteit Ingenieurswese, Bou-omgewing en Inligtingtegnologie / Lefapha la Boetšenere, Tikologo ya Kago le Theknolotši ya Tshedimošo

9 June 2021

Reference number: EBIT/79/2021

Ms A van Aswegen
Department: Architecture
University of Pretoria
Pretoria
0083

Dear Ms A van Aswegen

FACULTY COMMITTEE FOR RESEARCH ETHICS AND INTEGRITY

Your recent application to the EBIT Research Ethics Committee refers.

Conditional approval is granted.

This means that the research project entitled "Masters Professional Mini-Dissertation in Architecture, Landscape Architecture and Interior Architecture (Group / Blanket)" is approved under the strict conditions indicated below. If these conditions are not met, approval is withdrawn automatically.

Conditions for approval
This application is approved based on the summaries provided.
Applications from each student (including application forms and all necessary supporting documents such as questionnaire/interview questions, permission letters, informed consent form, etc) will need to be checked internally by the course coordinator/ supervisor. A checklist will need to be signed off after the checking.
All of the above will need to be archived in the department and at the end of the course a flash disc / CD clearly marked with the course code and the protocol number of this application will be required to be provided to EBIT REC administrator.
No data to be collected without first obtaining permission letters. The permission letter from the organisation(s) must be signed by an authorized person and the name of the organisation(s) cannot be disclosed without consent.
Where students want to collect demographic the necessary motivation is in place.

This approval does not imply that the researcher, student or lecturer is relieved of any accountability in terms of the Code of Ethics for Scholarly Activities of the University of Pretoria, or the Policy and Procedures for Responsible Research of the University of Pretoria. These documents are available on the website of the EBIT Ethics Committee.

If action is taken beyond the approved application, approval is withdrawn automatically.

According to the regulations, any relevant problem arising from the study or research methodology as well as any amendments or changes, must be brought to the attention of the EBIT Research Ethics Office.

The Committee must be notified on completion of the project.

The Committee wishes you every success with the research project.

Prof K.-Y. Chan
Chair: Faculty Committee for Research Ethics and Integrity
FACULTY OF ENGINEERING, BUILT ENVIRONMENT AND INFORMATION TECHNOLOGY

Conclusion

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