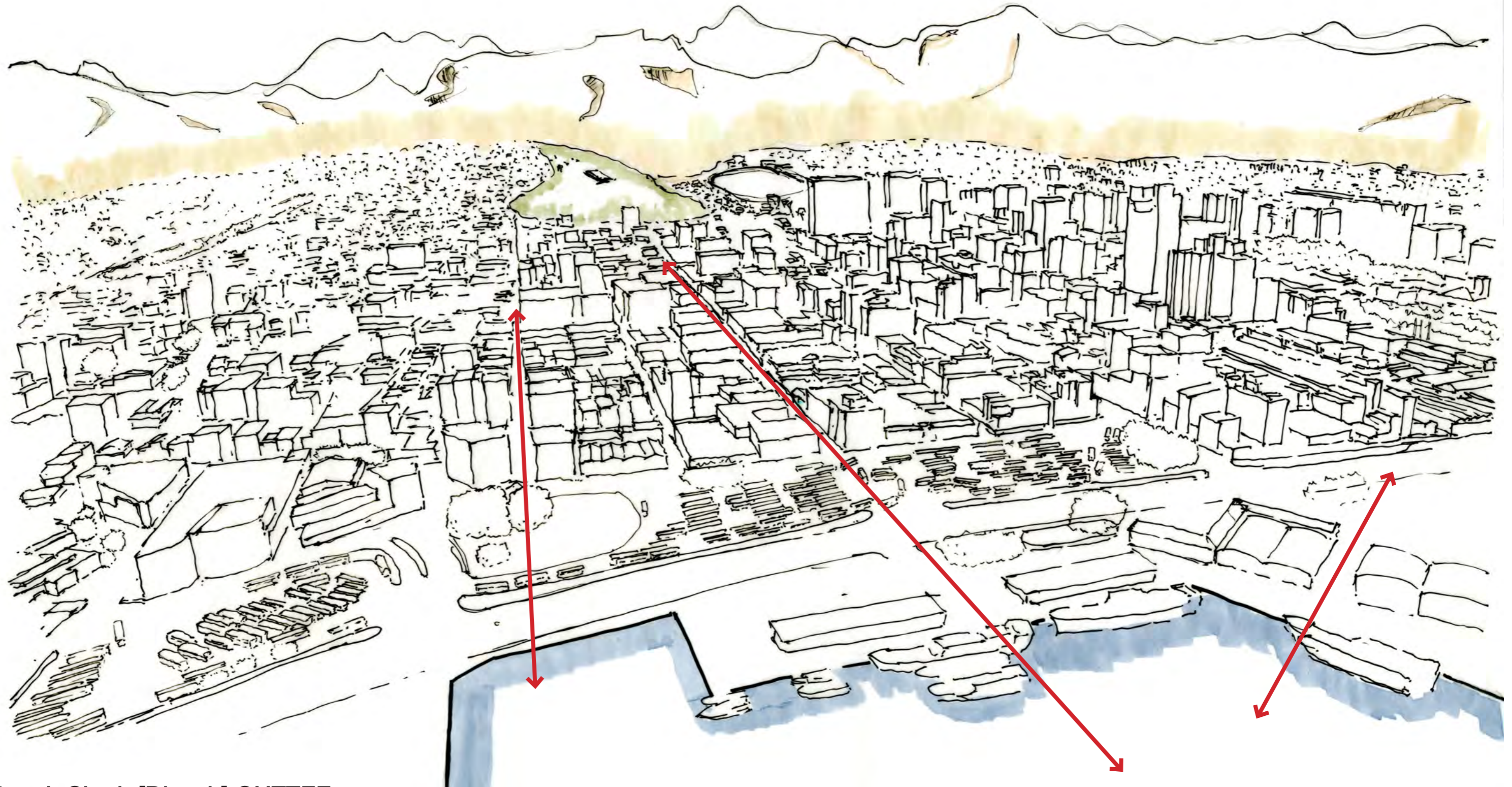


A people-oriented port city Urban Rejuvenation: PORT LOUIS



Ranvir Singh [Divesh] GUTTEE

Dissertation submitted as part fulfilment of the degree of
Masters of City Planning and Urban Design (MCPUD)

School of Architecture, Planning and Geomatics

University of Cape Town

November 2015

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Glossary of Terms

interface

noun

a point where two systems, subjects, organizations, etc. meet and interact:

the interface between accountancy and the law.

- chiefly Physics a surface forming a common boundary between two portions of matter or space, for example between two immiscible liquids: the surface tension of a liquid at its air/liquid interface. Oxford Dictionary

verb (used with object), interfaced, interfacing.

to bring into an interface.

to bring together; connect or mesh:

The management is interfacing several departments with an information service from overseas.

verb (used without object), interfaced, interfacing.

to be in an interface.

to function as an interface.

to meet or communicate directly; interact, coordinate, synchronize, or harmonize (often followed by with)

<http://dictionary.reference.com/>

Motorway

In general, 'Motorway' describes a mobility route for any form of motorised transport. For this dissertation, 'motorway' is used to describe a major highway or expressway.

T.O.D

T.O.D is an acronym for 'Transit-Oriented Development': Generally, this refers to a mixed-use area which incorporates commercial and residential activities and which is designed to maximise access to public transport, and encourage use of public transit options.

C.B.D

C.B.D is short-hand for 'Central Business District', the business and commercial centre of a city.

Objectives

This urban design thesis is a study of the urban issues and design principles pertinent to Port Cities.

'Man meets water': Our primordial psyche

Man has had a relationship with water since time immemorial. Moving freely from earth to water is an activity which comes naturally to the human being.

According to Eastern philosophy, Earth is the most important element. It comprises matter in a solid state, represents stability, physicality and gravity. Water is the second most significant element and represents fluidity, flexibility and adaptability (Ninjutsu.co.uk).

Man meets water, in other words, is the moving from one realm to the other.

In urban design terms, where 'Man meets water' is the 'in between' space - **the interface**. This is the area where two worlds come together - an area of interaction, interconnectedness and interrelationship.

The area of study is a precinct of Port Louis - *the interface* between land and sea, as shown in Figure 1.1.

The original urban quality of Port Louis has become degraded as a result of post-independence modernisation. The *interface* has been reshaped spatially and functionally. The original city of Port Louis was founded on the harbour, which was central to social, commercial and residential life. Today, the harbour is segregated from the city fabric.

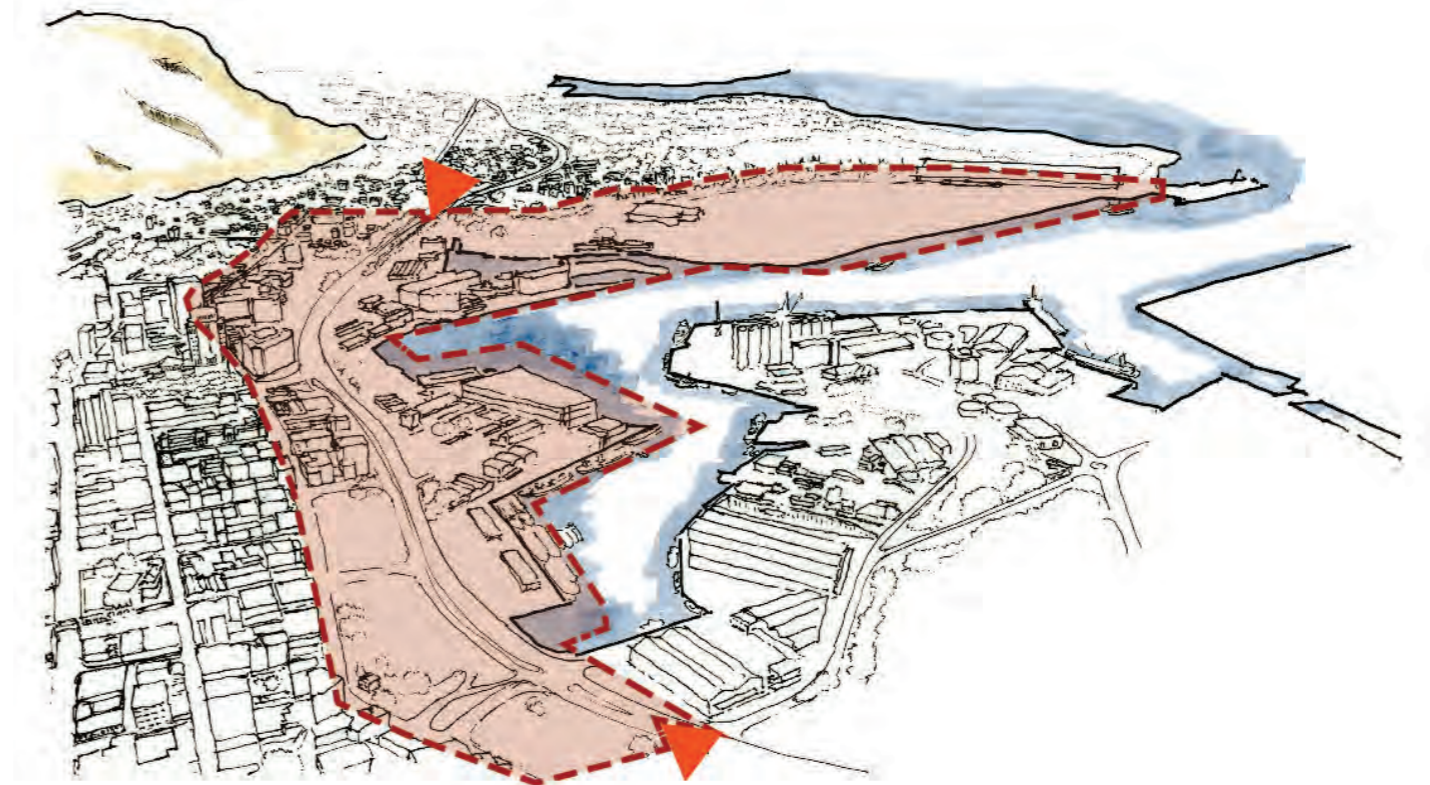


Figure 1.1 - Bird's Eye View of Port Louis from the North, showing *The Interface*: where Earth meets Water (Source: Author's sketch)

This thesis aims to explore the nature and design principles of places and spaces that lie within this land-water *interface* in order to formulate an urban design proposal wherein the land is reconnected to the water - an urban intervention for a people-oriented port city.

Limitations

This document forms part of an academic thesis for the MCPUD programme.

It is a hypothetical exploration and no contractual agreement with any organisation/party has been entered into.

While urban issues have been considered at an island/national, and at the greater Port Louis scale, the chosen area of study focusses on the zone between the shoreline and the city.

This study is not concerned with the design of individual buildings, but rather the types of buildings that frame the public realm. In other words, design-coding is only applied to the 'in-between' spaces, and the way in which buildings create these spaces: The micro-interface.

Coding is not specifically examined as part of this study, but its effect on the micro-climate is considered.

The proposed outcomes of this investigation, in no way, represent a solution to the wider urban issues of the entire city of Port Louis. Such an investigation would require more thorough design research and execution, which are beyond the capacity and scope of this study.

Principles

A number of principles that underpin the proposed Urban Design framework are outlined briefly below:

(1) **Man meets water:** (Re) connecting the city to the ocean through downgrading the urban motorway, as well as facilitating physical and functional connections between the city and the sea;

(2) **T.O.D:** Re defining and densifying transit nodes for improved connectivity, accessibility and overall quality of urban life. The transit node is also considered an interface - a place between departure and destination - and should accommodate mixed activities: social, commercial, leisure, entertainment and retail.

(3) **Pedestrian routes:** Improving pedestrian circulation experience between the city and the ocean, and, between transit nodes for generally improved urban quality.

(4) **New waterside (urban) development:** The new area to be developed on the *Les Salines* region must be sensitive: While this is a greenfield development, the intention is for the urban character of Port Louis to be extended to this area, promoting a sense of connectedness with the city.

(5) **The Interface** The area where two (physical) worlds meet, is an important urban and social space and is given due consideration: It is also to be a space where locals and tourists interact, engage and enjoy the city equitably.



Figure 1.2 - Aerial View of Port Louis showing The Interface. (Source: MoH&L)

2

INTRODUCTION

PORT LOUIS: A HUMANIST CITY

Port Louis is the economic and administrative capital city of Mauritius. Historically, the harbour was situated at Port Louis as this position was most navigable and defensible. Mauritius was located at a key position in the Indian Ocean, on the trade route from Europe (and South Africa) to India and Asia. Port Louis developed as a major port along this route. This city remains important not only as a port and as the seat for numerous administrative operations, but also as the economic, legal and civil capital of Mauritius. Therefore, decisions taken to shape the future of Port Louis are essentially decisions for Mauritius as a whole. The city still accommodates the only port on the island and as such has remained Mauritius' largest and most populous city.

Although Port Louis is rarely subjected to extremes of weather, the city is very hot and humid during summer months.

The layout of Port Louis follows the rectilinear grid set out by its early urban engineers and the scale of the city is both human and walkable. Buildings are generally responsive at ground level, meaning that the streets have active edges. The skyline is relatively modest, and one is never overwhelmed by the size of buildings; the public realm never feels overpowered by tall buildings. From an urban planning and design perspective, the historical core of Port Louis has a compact built form, and its scale is small enough to be walkable. Almost all blocks have active fronts with retail activities at the pedestrian level, and offices on upper levels.

The Port Louis central market is another major activity generator, which is mostly frequented by pedestrians who walk from the bus stations.

Port Louis has the potential to be a beautiful, connected, charming, safe and pedestrian-friendly waterfront city - humanist city.



Figure 2.1 - Bird's Eye View of Port Louis from the North overlooking the interface zone. (Source: Alamy, 2015)

However, Port Louis has become heavily car-oriented: Following discontinuation of the rail service, and the construction of the M1-M2 motorway through the city, Port Louis has experienced an exponential increase in vehicular traffic. As such, the city has lost its walkability and pedestrian appeal. It is now polluted, congested, noisy and pedestrian-unfriendly.

The harbour has been disconnected from the fabric of the city centre, and the waterfront was developed (1990's) as a primarily tourist zone, thus exacerbating the physical segregation of the city space.

Port Louis is not currently a humanist city. Port Louis needs an urban intervention. The inner city needs to be rejuvenated and revived. The interface between city and sea must be re-awakened.

Fortunately, the challenges faced by Port Louis are not unique. Indeed, many port cities around the world have encountered similar urban problems, and dealt with them successfully.

There is huge potential for Port Louis to become a pedestrian-friendly, historically rich, vibrant and charming humanist port city, and the aim of this study is to evaluate how this may be achieved.

Executive Summary

Port Louis has been selected as the topic of study as it is the capital and port city of Mauritius, and presents a particular set of urban planning and urban design challenges relating to mobility, accessibility, transit-friendly development and most importantly, inaccessibility to the ocean, separation, fragmentation, and sprawl.

Port Louis and its context has been analysed, taking into account planning proposals that are already in place, and being implemented (in particular the Outline Planning Scheme, 2015).

A number of significant urban issues were identified:

1. Port Louis is a port city, but the city and water are disconnected. The motorway running through Port Louis severs the urban fabric, and cuts the Waterfront area (including the Caudan Waterfront development) off from the rest of the city. The interface between water and city holds huge potential for creation of charming humanist spaces, but in Port Louis this potential remains unrealised.

2. Port Louis is a car-oriented city. The M1-M2 motorway which runs through Port Louis was constructed to facilitate vehicular movement between the North and South of the Island. Since its construction however, traffic congestion in and around Port Louis has become a major problem. The public transport system is also ineffective, and private vehicle use by commuters is increasing. Pedestrian movement in the city is unsafe, unpleasant and uncoordinated. The city lacks good quality public spaces, and street traders who do not have formalised space to work occupy pavements and walkways, leaving little space for safe pedestrian movement. The city currently does not function for the people.

3. Zoning and land use in the city is restrictive: Port Louis is primarily a commercial centre which means that there is disproportionately less space allocated to residential and leisure activity - the city is quiet and spiritless after-hours, but heavily congested during the week as commuters travel from other towns into the city to work.

4. The Waterfront, which was developed as a mixed-use tourist attraction is separated from the city, and hence functions as a more exclusive zone. Locals do not have the opportunity to enjoy this precinct because of physical and social barriers that divide Port Louis from the harbour.

A number of case studies of other cities where similar urban issues have been dealt with were examined. Certain themes emerged from this enquiry that have directed the urban rejuvenation proposal for Port Louis.

1. Foreshore Development and Waterfront Design Principles: Firstly, the intention will be to reconnect the waterfront and harbour area with the city - the land must be connected to the sea. This will only be achievable if the motorway cutting through Port Louis is downgraded and alternative routes (including the Ring Road currently under construction, and the Harbour Bridge proposed as part of the OPS) for vehicular traffic are finalised. The Waterfront area must be accessible to the city, and function as a mixed-use zone for all - visitors and residents.

2. Down-grading the urban freeway: The only way in which the potential inherent to the interface between land and ocean can be realised, is to downgrade the M1-M2 motorway. Creating a pedestrian-friendly zone will improve the urban quality and rejuvenate this part of

the city. Good quality public spaces, including green areas will elevate the urban condition and transform this area into a people-friendly zone.

3. Transit-Oriented Development: In addition to the completion of the Ring Road and Harbour Bridge projects which aim to divert traffic around the city, and conversion of the M1-M2 motorway into a boulevard, Port Louis will benefit from a Transit-Oriented Design (TOD) intervention centred around a bus-rapid transport system. Making Port Louis a pedestrian-friendly city with accessible, efficient public transport options will improve its character and overall appeal.

4. Urban street markets: Informal trade in Port Louis currently contributes to noise, disorder on the streets and detritus. Pedestrian movement is hampered because pavements are occupied by informal traders. Formalising urban informal trade through inclusion of urban street markets (connected by a network of high-quality public spaces) within the city fabric will improve the character of the city, and facilitate safe, pleasant pedestrian movement.

The ultimate goal is for Port Louis to respond to the needs of her people - to be a humanist city, a city for people, not for cars. The interface, that zone between the water and the fabric of the city should be the focal area, as its sensitive development will unlock the potential for Port Louis to become a humanist port city.



Figure 2.2 - Visual Interface: Being able to see the ocean (and its moods & activities) across the city. (Source: Alamy, 2015).



Figure 2.3 - Physical Interface: The physical relationship between Earth and Water: Where human meets water. (Source: Alamy, 2015)

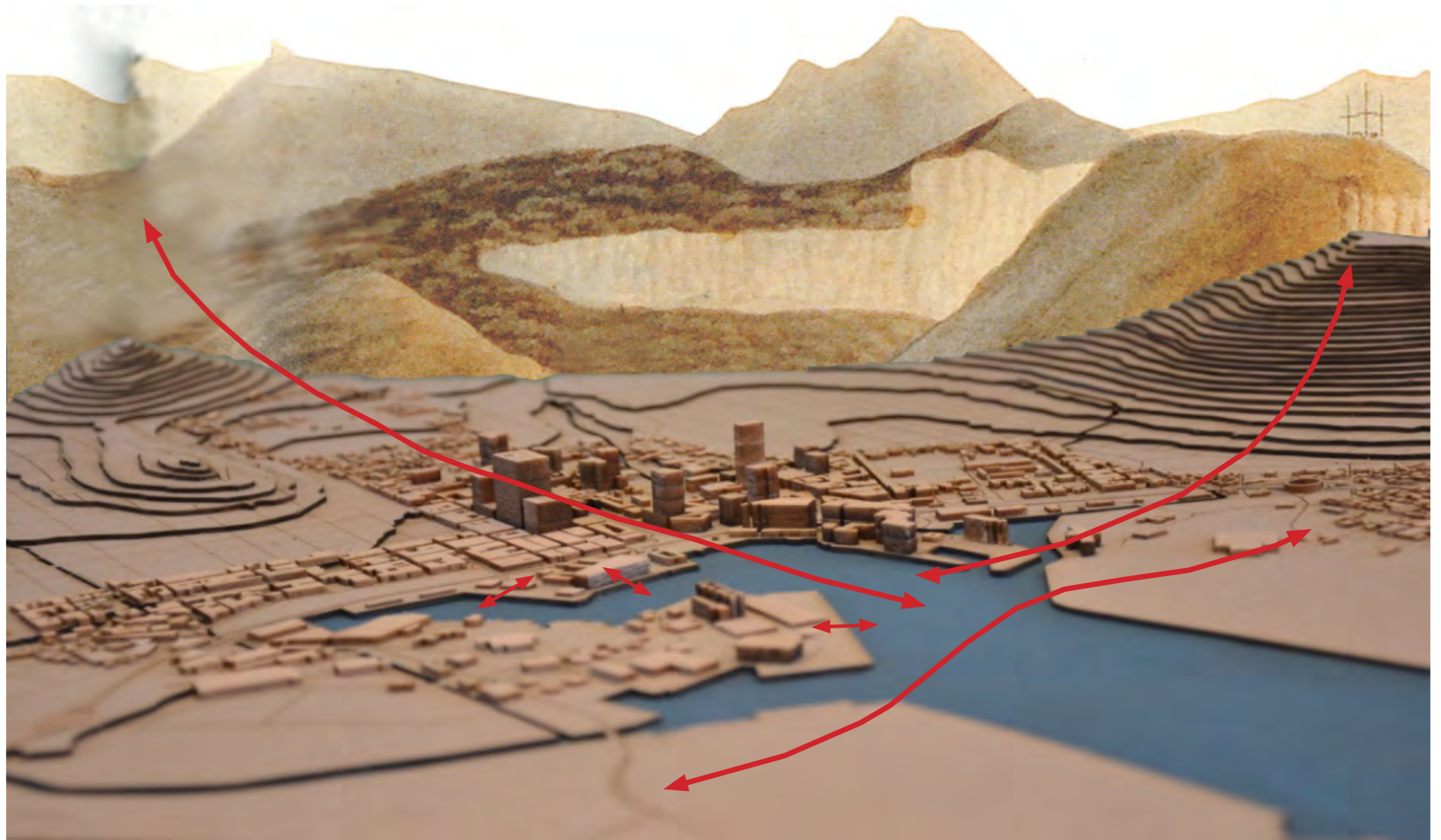


Figure 2.4 - Modelling the Physical Interface: As a port city, Port Louis fits between the mountain and the ocean. The topography is always a reminder of this relationship between land and sea.

Process

This urban development framework for Port Louis follows the planning proposal for Port Louis (2005) which was presented by ALD Associates, a collaboration between Prof Dave Dewar and Piet Louw and Jean François Adam. See Section 5 for further details.

Background Information:

Background information pertaining to the 2005 proposal was gathered through meetings with Prof Dewar and Mr Adam who provided insights on current challenges and opportunities for Port Louis. Additional material on possible urban rejuvenation in Port Louis was provided by Mr Gaëtan Siew, architect, as well as Mrs G Rosunee, Head Planner of the Planning Division at the Ministry of Housing and Land (MHL) in Mauritius, and Mr Santokhee, Head Planner at the Municipality of Port Louis.

Historical information was gathered from the National Archives in Mauritius and the National Library, and aerial and geographical data was assembled from the cartography section of the MHL.

Planning guidelines specific to Port Louis are detailed in an Outline Planning Scheme (OPS) booklet, which was purchased at the MHL. See section xx for details.

Design guidelines pertaining to the *Aapravasi Ghat* UNESCO World Heritage Site were requested from the *Aapravasi Ghat Trust Fund* (AGTF).

Stage 1: Urban Analysis

Firstly, the existing planning and development context was examined, including:

- Urban morphology (scale, grain and height),
- Heritage areas,
- Land use, land ownership and zoning schemes,
- Transport and movement routes,
- Public realm and open spaces

Stage 2: Research - Design Theory, Case Studies

Secondly, existing design theory and case studies applicable to this study were examined.

Stage 3: Strategic Response

Thirdly, analysis of opportunities and constraints pertinent to the city of Port Louis was undertaken. It became clear that the interface between the city and the harbour presented greatest opportunity for urban rejuvenation, specifically with respect to circulation, transport and urban quality. Hence, the waterfront precinct was selected as the study area. A rationale for the proposed urban intervention emerged from in-depth analysis of this area and how it connects to the rest of Port Louis.

Stage 4: Design Proposal

Finally, all information was collated and distilled in order to generate a demonstration of the 'Art of the possible': The design framework was produced in addition to precinct design drawings and building code drawings.

Background

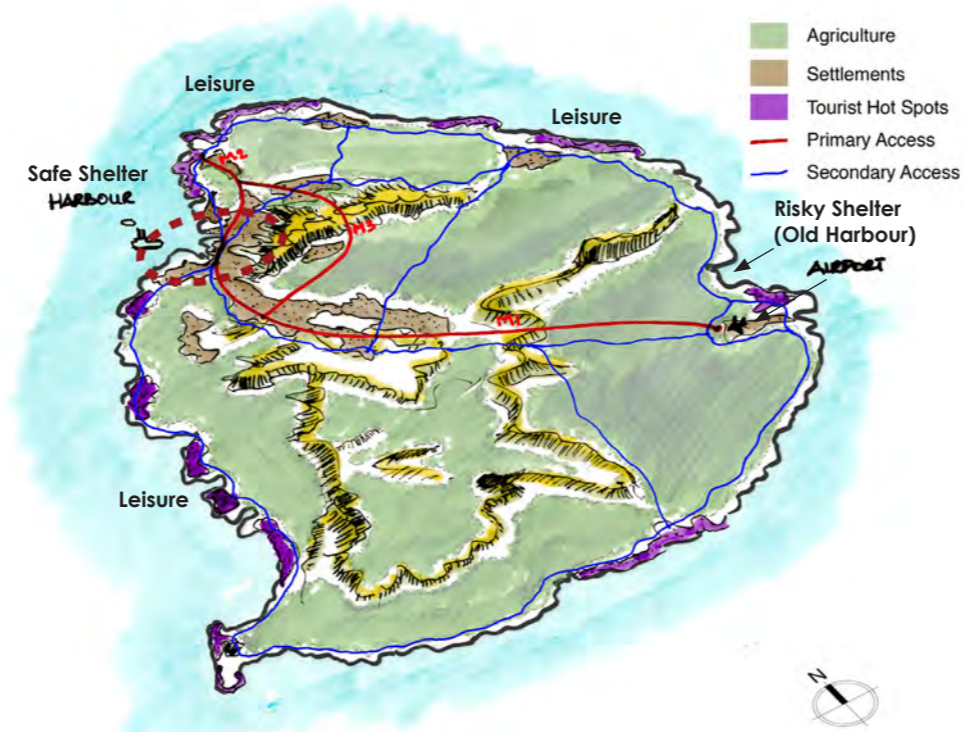


Figure 2.5 - Illustration of Mauritius showing its main features: Access, Tourism, Settlement & Agriculture. (Source: Author's sketch).

Port Louis is currently in dire need of redevelopment and inner-city investment and regeneration. Investment in Mauritius has primarily been driven by the Tourism industry with coastal development taking precedence over development of public urban spaces. Private development along the coast has detracted from public infrastructure planning for the capital city, which means that Port Louis has suffered urban decay.

Port Louis functions sub-optimally as a Capital City for a number of reasons:

Firstly, the CBD is active during working hours when businesses are open, but there is almost no after-hours activity as spaces are mono-functional, accommodating business activities alone. Secondly, the city is generally pedestrian-unfriendly with few attractive and functional public open spaces. Emphasis on investment in road infrastructure which encourages private vehicle use has led to serious traffic problems and inefficient movement systems resulting in heavy traffic congestion, poor connectivity to other parts of the island and an ineffective public transport system. The M1-M2 motorway, which bisects the city, has disconnected the Waterfront and harbour from the city centre, leading to urban disjunction and separation of work-related and leisure activities. Finally, urban regional development has been happening beyond the Port Louis area, on surrounding agricultural land. This is resulting in urban sprawl and disinvestment in the city centre.

This proposal comes at an opportune time as the Planning Division of the Ministry of Housing and Lands (MH&L) has put forward a plan for inner-city rejuvenation of Port Louis in the 2015 Outline Planning Scheme (OPS). The OPS highlights the need to reconnect the Ocean with the rest of the city, while rejuvenating the urban character of Port Louis, and diverting heavy traffic around rather than through the city.

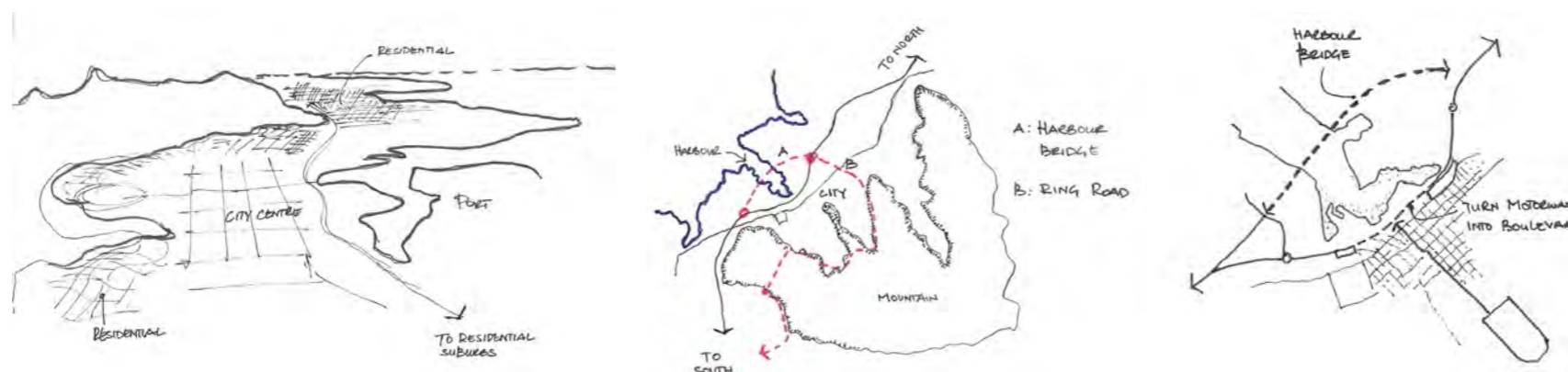


Figure 2.6 a, b, c - Pictograms showing urban sprawl (a), New Ring Road under construction (b) and future Harbour Bridge (c). (Source: Author's sketches)

The Government of Mauritius is also planning to expand the Harbour/Port to accommodate larger vessels including Cruise Liners. At this time, about 3000 ships dock at Port Louis Harbour annually, but more than 30 000 pass by (lexpress.mu 2015). There is great potential for expansion of the Harbour to encourage fishing, cargo and leisure vessels to drop anchor there.

The 2015 OPS includes design concepts brought forward by ALD Associates in a Redevelopment Framework for Port Louis, dated 2005. The main theme of this proposal revolves around turning the M1-M2 motorway into a pedestrian friendly space, thus easing access from the city-centre to the harbour.

The aim of this dissertation is to provide background theory and design information to support the strategic urban design intervention the author will propose for the MCPUD thesis, with the intention to catalyse urban renewal in Port Louis.

The goal is for Port Louis to become a city for its citizens—one which works for, and may be enjoyed by all. People should want to come to Port Louis to live and work, and for leisure. Port Louis must be connected to the rest of the island by functional and efficient movement systems, and the city itself must become more pedestrian-friendly. It is proposed that redevelopment of the Harbour area, with new facilities to accommodate cruise liners, will facilitate improved global connectivity for Port Louis and Mauritius as a whole.

Hence, the intention behind this urban design thesis is for Port Louis to enjoy social and economic benefits while creating urban spaces that are central to everyday activities of its citizens, while welcoming foreign visitors. This will rest on The Interface between city and water being transformed into a functional connected people-oriented space.



iskin.co.uk

Figure 2.7 - Circular Quay, Sydney: Cruise Ships entering and leaving the harbour. The harbour front becomes a major attraction space. The vision for Port Louis as a port city is similar - a city for its people. (Source: Allianceabroad.com, 2015)

ANALYSIS: UNDERSTANDING PORT LOUIS

Climate

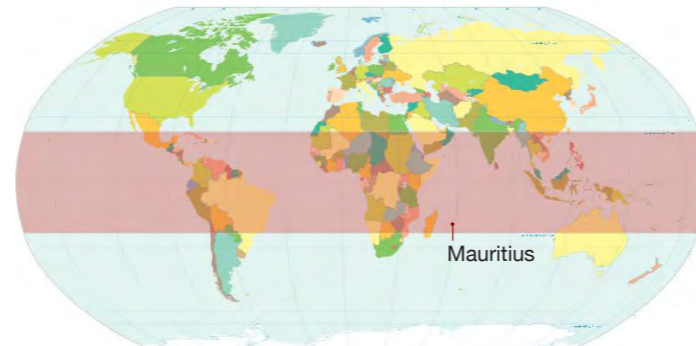


Figure 3.1 - Mauritius is located in the tropical belt (Pittalwala, 2015)

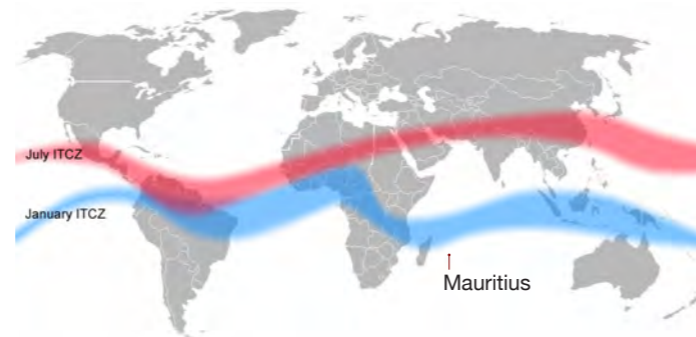


Figure 3.2 - Mauritius in relation to the Inter Tropical Convergence Zone (ITCZ). Source (Pittalwala, 2015)

Mauritius is situated near the southern edge of the tropical belt. The climate is mild with summer extending from November to April and winter from June to September. May and October are transitional months during which the weather is generally variable, but temperate.

Trade winds blow over Mauritius throughout the year, except for short periods in summer when tropical depressions near the island. The trades are strongest and most persistent in winter when anticyclones pass to the south of the island. In summer the trades are weaker (Unfccc.int, 2015).

Winter

Weather in Mauritius and the other Mascarene islands is heavily influenced by anticyclones which move towards the equator, and then eastwards along the southern high latitudes, during winter months. Anticyclones bring cold air to the region. They are areas of high pressure around which winds blow in an anticlockwise direction in the southern hemisphere.

Cold fronts (belts of active weather with cold air replacing warm tropical air) cross the latitudes of the Mascarenes at a frequency of approximately one per week, resulting in rainy and cooler weather with sudden decreases in air temperature (Unfccc.int, 2015).

Between anticyclones, cool and fine weather prevails when the wind is calm, however trade winds, blowing in winter months, are very strong and gusts reaching more than 70 km/h are recorded regularly (Unfccc.int, 2015).

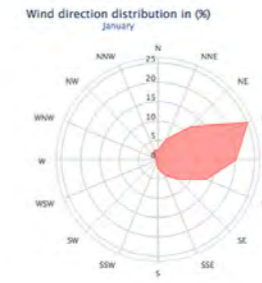


Figure 3.3(a) - Wind rose: January

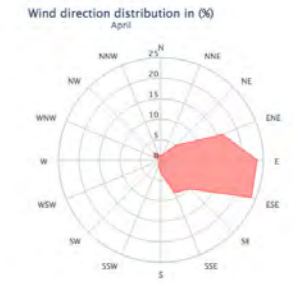


Figure 3.3(b) - Wind rose: April

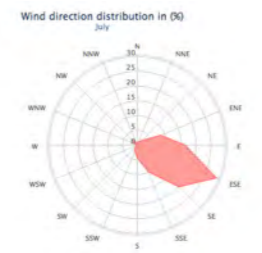


Figure 3.3(c) - Wind rose: July (Windfinder.com, 2015)

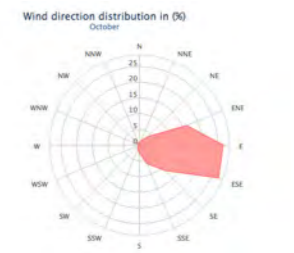


Figure 3.3(d) - Wind rose: October

Summer

During the warmer months, weather remains under the influence of systems coming from the east: The sub-tropical anticyclones move towards the pole and weaken, resulting in lighter trades over the region.

Low pressure areas and waves are frequently observed in the region and adverse weather conditions including wind and heavy rainfall occur when these systems move over Mauritius.

The Inter Tropical Convergence Zone (ITCZ) is a belt of thundery weather where air masses from both hemispheres meet. When these air masses collide over Mauritius, torrential summer rain is the result (Unfccc.int, 2015).

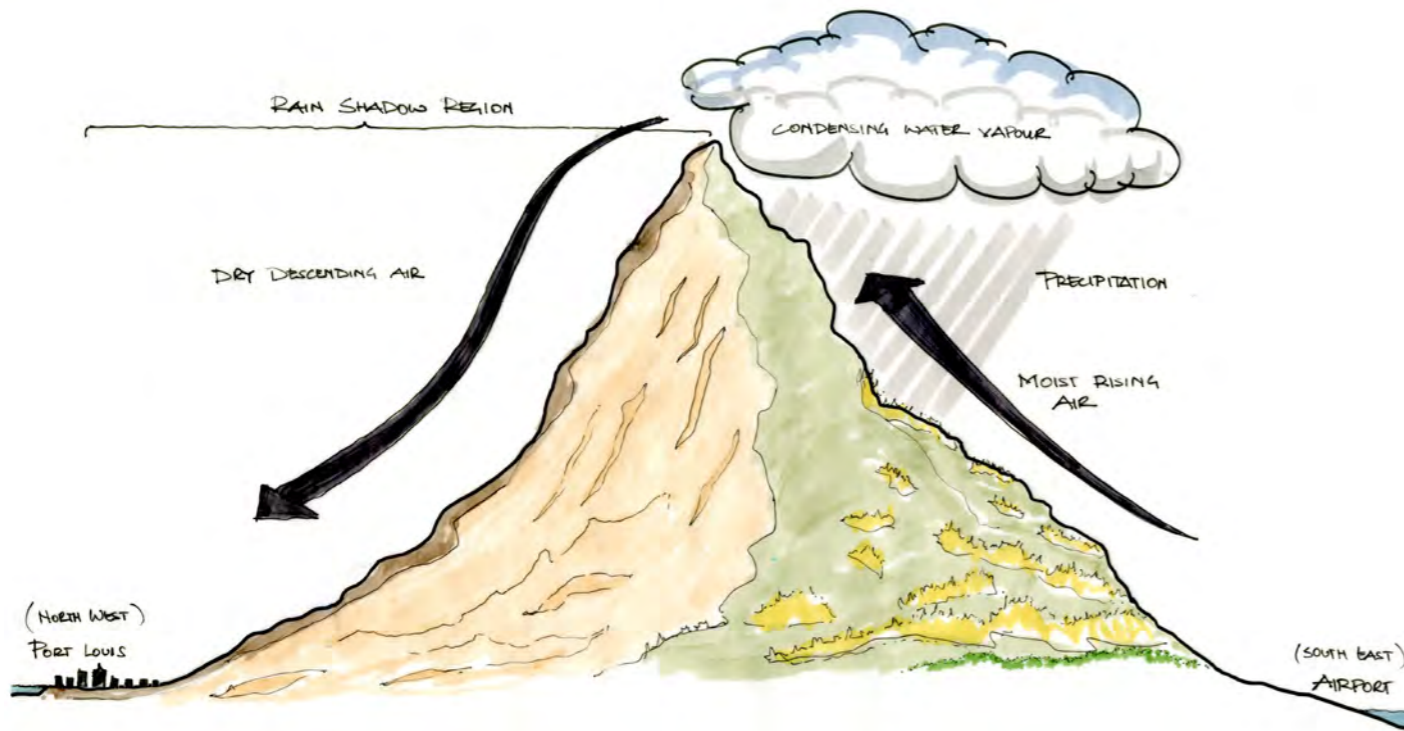


Figure 3.4 - An illustration of Orographic Rain affecting the South-East area of Mauritius. Port Louis (North-West) remains sheltered. (Source: Author's sketch)

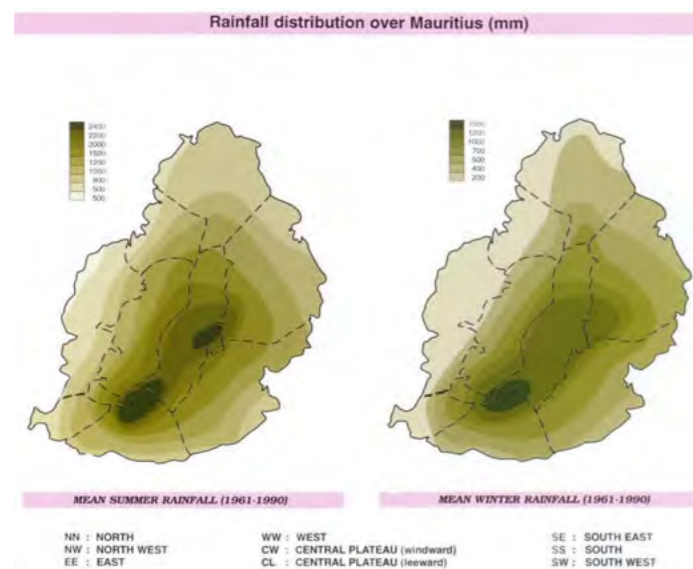


Figure 3.5 - Rainfall distribution over Mauritius (mm) show that the West and North-West regions are the most dry areas of the island (Source: Unfccc.int, 2015)

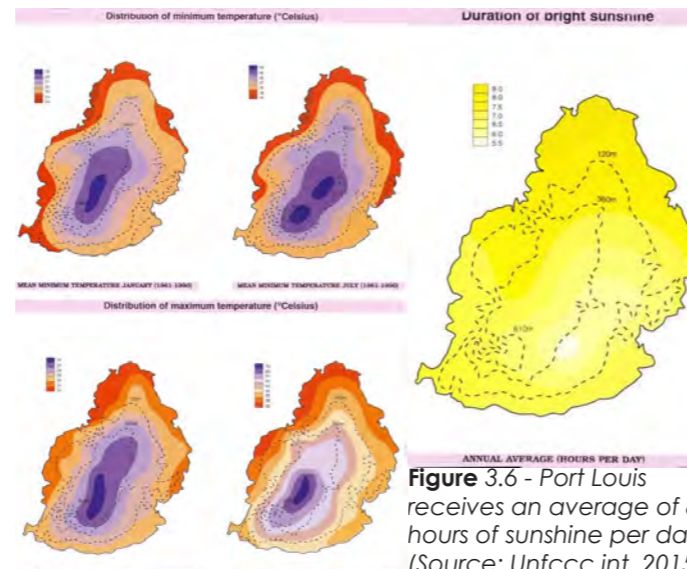


Figure 3.6 - The temperature in the West and North-West regions is high both during summer and winter. (Source: Unfccc.int, 2015)

Rain

South East trade winds are generally warm and humid. As the winds push up over the interior of the island, they cool and rise, resulting in orographic rain (Fig 3.4). Once this air blows past the high plateau over the west and north-west region, it warms and dries up. As a result of this process, the South East and central higher grounds are wetter than the West and North-West. Port Louis, is therefore generally calm, hot and humid.

Mauritius receives an annual average rainfall of 2100 mm with approximately 70% of this occurring during summer. Strong insolation, light winds and moist, unstable airmass are prerequisites for cloud development. Spectacular thunderstorms accompanied by heavy downpours are common in Summer (Unfccc.int, 2015).

Tropical systems including depressions, cyclones, and the ITCZ produce heavy rainfall usually lasting a number of days. This rain fills reservoirs and replenishes aquifers. Heavy thundershowers contribute less to water stores because of significant instantaneous runoff.

Cold fronts passing over Mauritius tend to bring appreciable amounts of rain (Unfccc.int, 2015).

Temperature

The mean maximum temperature of Port Louis is 31°C in December and January. Absolute maximum temperature recorded has been 37.5°C (Unfccc.int, 2015). The mean minimum temperature for the year is 19 °C (Fig 3.6).

Conclusion

An urban design proposal for Port Louis must provide for open spaces that allow for natural air flow to cool the public spaces. Buildings must not overwhelm these spaces, and building frontages must include overhanging canopies so as to protect pedestrians from the sun and occasional rainfall.

Furthermore, adequate landscaping must be included so as to protect pedestrian spaces from the sun and provide a cooling effect from the heat.

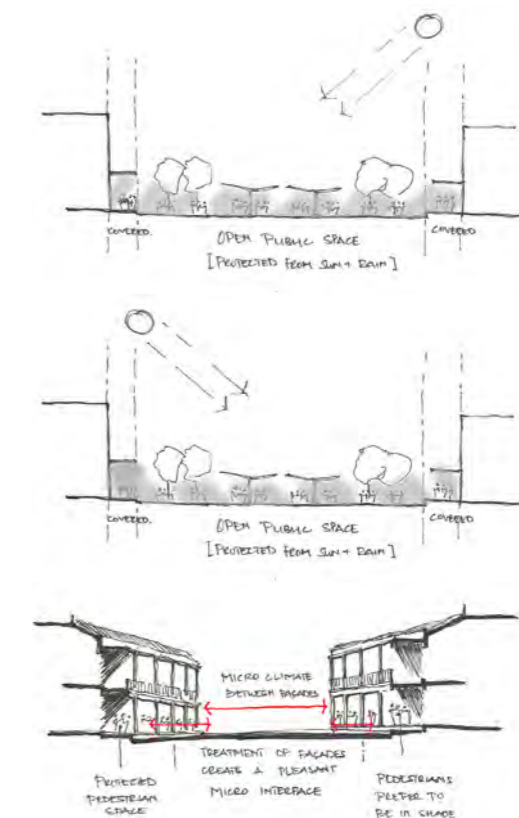


Figure 3.7 a, b, c - Micro climate: Climate in the Micro-Interface can be controlled by appropriate treatment of building façades, shading devices and trees. (Source: Author's sketches)

Beginnings and Growth



Figure 3.8 - Our connection to the water is illustrated here: Batteries laid out at the Interface to protect the harbour during colonial times. (Source: Burrin 2009: 12)

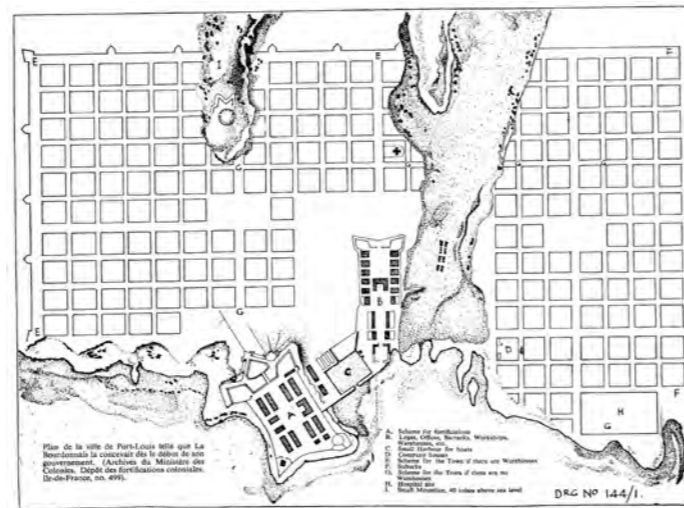


Figure 3.10 - 1736 Map (earliest preserved plan of Port Louis) showing the swampy gully dividing the town in two: initial development occurred on the shore, underlying its significance as the interface between land and water. (Source: White 1952: 7).

The Early Years

1510
Portuguese explorers discovered the Mascarene Islands in 1510 (Toussaint and Ward, 1973).

1598-1710
The Dutch landed on the south-east in 1598, and named the island Maurice (Mauritius) after the Stadhauder of the Netherlands at the time. At this stage, there were no local inhabitants. The Dutch left in 1710 (Toussaint and Ward, 1973).

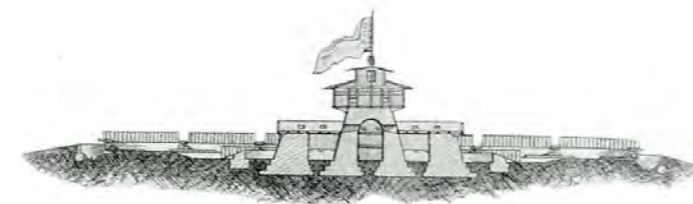


Figure 3.9 - Batteries defending the physical interface during colonial times. (Source: Burrin 2009: 13)

The French Era

1735
Five years later, a French vessel landed on Mauritius and the island was renamed Ile de France. They named the south-east harbour Port Bourbon, and the new harbour in the north-west was called Port Louis (Toussaint and Ward, 1973).

Seasonal cyclones posed a challenge to the new settlers and ships travelling via the island. An engineering study determined that Port Louis would be the safer of the two harbour sites, Port Louis became an official French settlement (Toussaint and Ward, 1973).

Mahé de Labourdonnais, the newly appointed governor-general of the Mascarene Islands, arrived in 1735 and he developed infrastructure on a challenging site:

He divided Port Louis in two sectors, and a swampy gully formed by the fresh-water streams emanating from the Pouce Mountain divided the two (Toussaint and Ward, 1973).

The primary residential district (Quartier du Rampart) was developed on the left of the gully and stretched to the foot of Signal Mountain. And the commercial centre was laid on the right of the gully, and extended to the Lataniers stream, and included the small hillock (Quartier de la Petite Montagne) (Toussaint and Ward, 1973).

HISTORICAL CONTEXT



Figure 3.11 - Physical Interface as a connection to the world. (Source: Burrin 2009: 12-13).

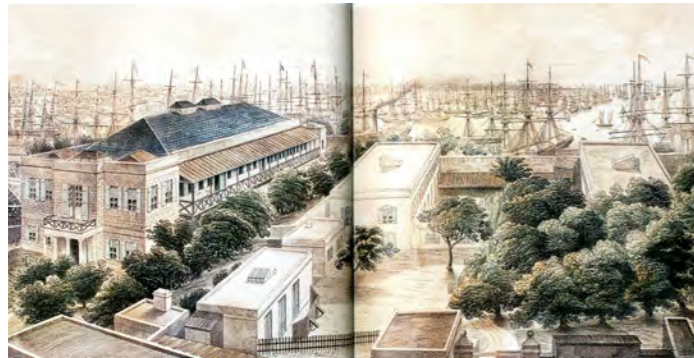


Figure 3.12 - Buildings of different epochs in the foreground, the harbour in the background. Masts and ships have always formed part of the architecture of the city .
(Source: Burrin 2009: 22-23)



Figure 3.13 - As the town grew, so did the significance of the harbour. (Source: Burrin 2009: 24-25).

Labourdonnais converted the primitive harbour into a workable and civilised port with a boat yard. He connected Port Louis to the interior of the island by roads in order to source and transport timber and other raw building materials. An aqueduct from the Grande-Rivière supplied drinking water, and Labourdonnais supervised construction of the hospital, warehouses, officers' quarters, government headquarters and other official buildings.

Additionally, Labourdonnais oversaw the construction of a fortified post and defence batteries at the Caudan, at the entrance to the harbour, facing the sea and along the length of Tonneliers Island. The swampy gully in the centre of town had been partially filled in and made into a garden, the now Jardins de la Compagnie (Company Gardens) (Toussaint and Ward, 1973).

1759

In 1759, Labourdonnais proposed an organised town layout for Port Louis and built proper barracks for the French soldiers, as well as a prison and storage warehouses for grain (Toussaint and Ward, 1973).

1767

The Crown took governance of Ile de France in 1767 and significant improvements to the order and infrastructure of Port Louis began to take place: Trees were planted, paths were paved, plots were fenced, roads were constructed and an official decree dictated that all new homes were to be constructed using stone.

Naval engineer Tromelin upgraded the harbour and developed Port Louis into a sophisticated naval base. This required not only clearing the wrecks of numerous ships and dredging the navigable channel of accumulated silt, but also diverting two streams that had been filling the harbour with mud (Toussaint and Ward, 1973).

As the town expanded, there was need for improved infrastructure – amongst other development, an aqueduct (now the Pailles canal) was constructed to supply water.

In 1810, the British overpowered the French and claimed Ile de France, and Port Louis was about to experience a new dynamism of urbanisation.



Figure 3.14 a (top), b (bottom), c (right) - Greenery was always an important feature during the French colonial era.
(Source: Burrin 2009: pp43,46,23)

The British Era

1810

The new Governor, Sir Robert Farquhar, divided Port Louis into four districts or administrative sections and set about restoring a number of public buildings, and rebuilding streets. He also ordered that the Port be reopened to foreign vessels (Toussaint and Ward, 1973).

1812

An Englishman named Colonel Draper introduced horseracing in 1812 and turned the Champs de Mars parade ground into a racecourse (Toussaint and Ward, 1973).

1816

A devastating fire destroyed approximately one fifth of the built fabric of Port Louis in 1816. The population of Port Louis at that time was 24 839, and these people had to be accommodated in a smaller area while the town was being rebuilt (Toussaint and Ward, 1973).

1820's

Port Louis faced intense difficulty due to the plague, and natural calamities caused the destruction of the built infrastructure of the town. In the following years, Port Louis was in a lamentable state despite efforts to rebuild the city. Many inhabitants left and most public buildings were in a state of disrepair, and there was no road linking Port Louis to the districts, which were only accessible by horseback or sea (Toussaint and Ward, 1973).

1825

After the cyclones of 1825, street lighting was improved, taxes were levied on animals and vehicles to fund road repairs, proper pavements were laid out, the market was relocated to its present position at Rue de la Reine, allowing the Company's Garden to function as a public park (Toussaint and Ward, 1973).

Water supply continued to be a problem for Port Louis, especially for the Eastern part of town. At the time, only one canal (the Dayot canal) supplied five fountains and a number of public and private buildings in the West part of town. The Bathurst canal underwent construction from 1820 to 1827. Despite this, water supply remained poor and construction of two additional canals commenced in 1849 (Toussaint and Ward, 1973).

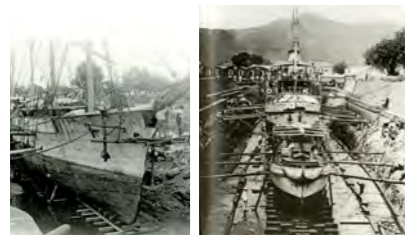
1851

Port Louis was once again opened to foreign vessels and in the following decade, the population of the town expanded significantly (from 49 909 in 1851 to 74 128 in 1861), due in large part to the arrival of immigrant labourers and tradesmen from Asia and India. Sugar was a major export product for Mauritius and the industry was developing rapidly in the late nineteenth century. It became imperative for different parts of the island to be connected to the capital.

Until 1850, the only road fit for passenger vehicles connected Port Louis to the town of Mahébourg but this road contributed little to movement of agricultural crops. Construction on a railway system began in 1862 and the Northern line between Port Louis and Flacq via Pamplemousses was opened in 1864 while the Midland line connecting Port Louis to Plaines Wilhems and Mahébourg was opened in 1865 (Toussaint and Ward, 1973).



Figure 3.15 - View of harbour in 1859. (Source: Burrin 2009: 26-27)



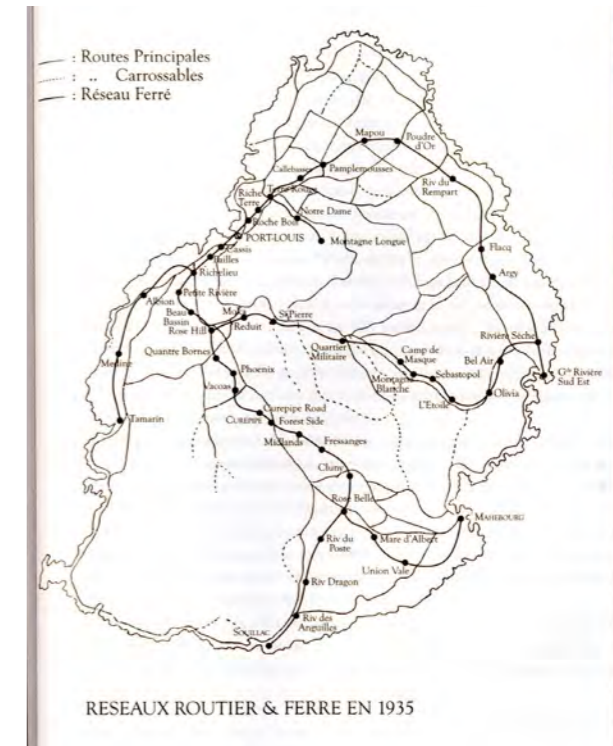
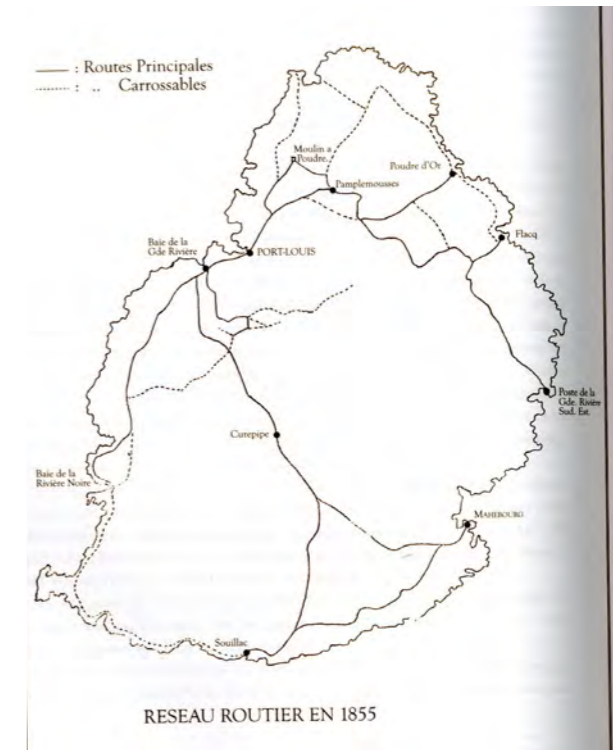
Figures 3.16 a, b - Boats were constructed and repaired in Port Louis. (Source: Burrin 2009: pp28, 31).



Figures 3.17 a, b - The British were more geared towards infrastructure development, including building a modern sea port. Port Louis became an important interface at a global scene. (Source: Burrin 2009: 30)



Figure 3.18 - Many important personalities visited the island during the British rule. People gathered by the harbour to welcome them. (Source: Burrin 2009: 29).



Figures 3.19 a, b - 1855 (a): The British connected Port Louis to the rest of the island by road. 1935 (b): Railway was introduced, which ran parallel to the existing road. (Source: Toussaint 2013: 390-391)

The Malaria epidemic of 1866-1868 resulted in a rapid decline in the population of the capital – many inhabitants moved to higher grounds in the 'Plaines Wilhems' district and the new towns of Beau Bassin, Rose Hill, Curepipe and Quatre Bornes were developed as purely residential settlements

1835
Slavery was abolished in 1835, and the British needed an alternative source of labour. Indian indentured labourers were imported as contractual workers. Port Louis undoubtedly played an important part in this system – the depot where labourers landed was also the area where they were distributed amongst sugar estates.

Indian Immigration ceased in 1909. According to the 1921 Census, the total population of the island was 376 485, and 52 307 resided in Port Louis (Toussaint and Ward, 1973).

Port Louis had been developed as a port for sailing ships. With the opening of the Suez Canal, and the shift in technology whereby steamships predominated, Port Louis harbour became less active towards the end of the nineteenth century. The Great War brought with it a further decline in shipping traffic to Port Louis (Toussaint and Ward, 1973).

Over the following decades, very little development took place in Port Louis and the town suffered under a sanitation crisis. Water supply was inadequate, and the water available was being wasted. The drainage and waste management systems were overwhelmed. A committee was established to improve water supply and drainage systems. Rapid progress was made after the Second World War, which coincided with a period of rapid economic growth. The result was exponential population expansion, which once again, placed infrastructure under significant pressure (Toussaint and Ward, 1973).



Figures 3.21 a,b Bridge across Pouce Stream (a) and aqueduct Dayot (b). (Source: Burrin 2009: 33).

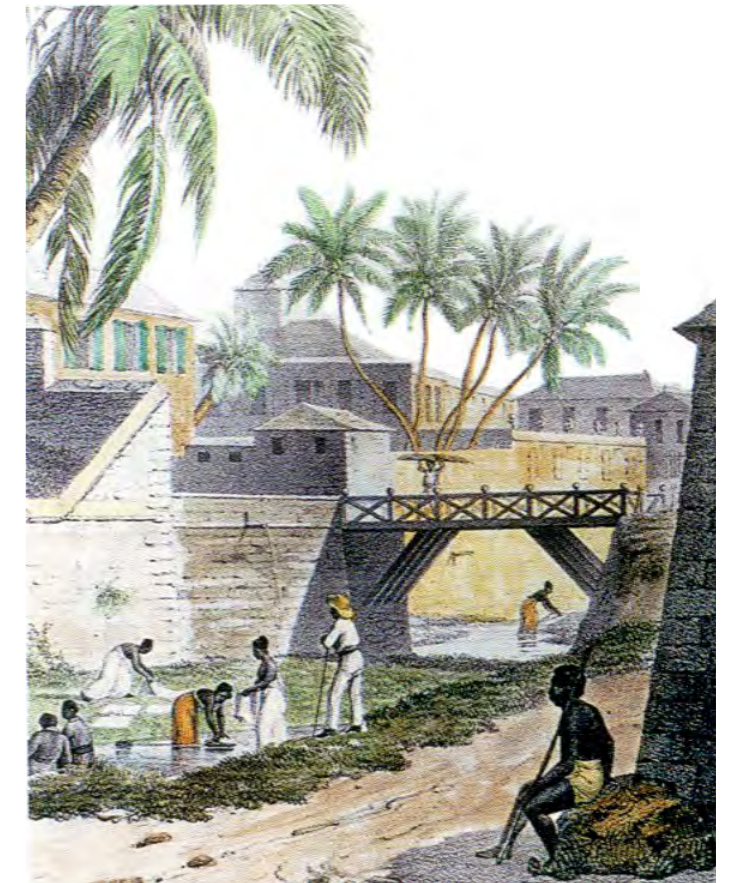


Figure 3.22 - Etienne Bridge across the Pouce Stream. (Source: Burrin 2009: 35).



Figure 3.20 - Physical Interface: Horse-racing was introduced in 1812, and the Champs de Mars parade ground was turned into a racecourse. (Source: Burrin 2009: 48-49).

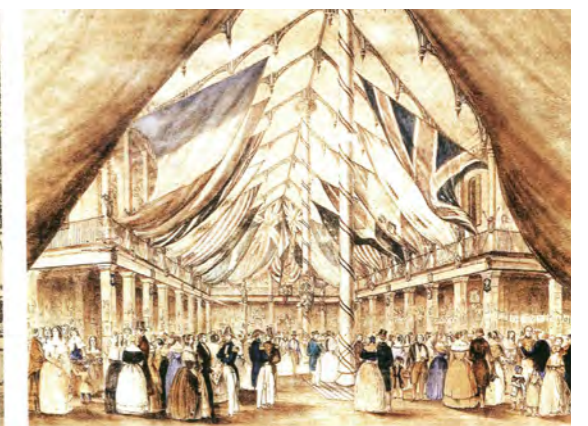


Figure 3.23 a, b - The Government House in 1916 (a). The Malartic Market within the compounds in 1846 (b) shows how this space was used for events and functions. (Source: Burrin 2009: 38-39).

Urban Morphology

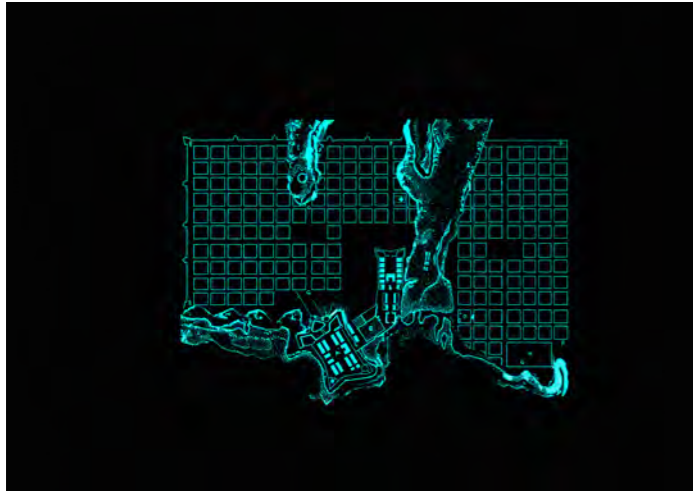


Figure 3.24(a) - 1736 Plan of Port Louis. Earliest preserved plan showing Labourdonnais' original scheme for the town. He established a fortified harbour. (Source: White 1952: 7).



Figure 3.24(b) - 1759 Plan of Port Louis. This plan shows the extents of the early harbour scheme. (Source: White 1952: 9).

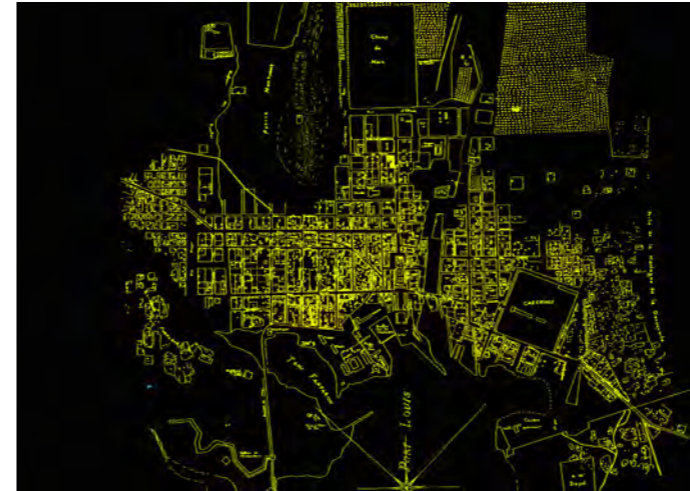


Figure 3.24(c) - 1780 Plan of Port Louis, showing buildings as well as general plan of sites and roads. The tremendous growth of the town is obvious in this map. (Source: White 1952: 10).



Figure 3.24(d) - 1800 Plan of Port Louis, showing the canalisation scheme with streams on either side of the Company's garden. (Source: White 1952: 12).

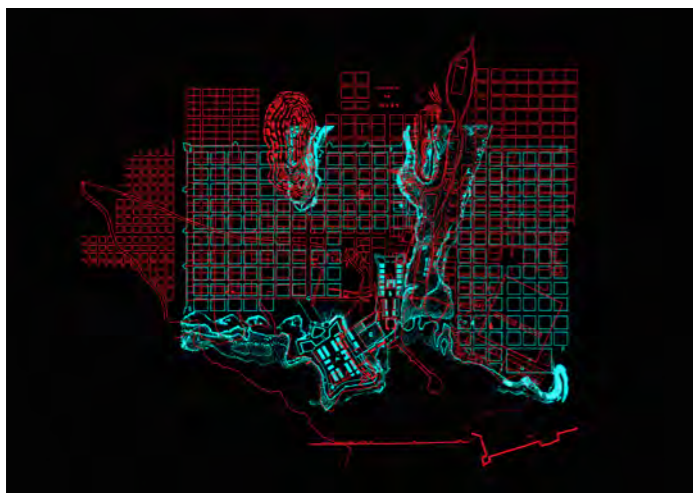


Figure 3.25(a) - Comparative study: Merging 1736 & 1759. (Source: White 1952: pp7, 9).

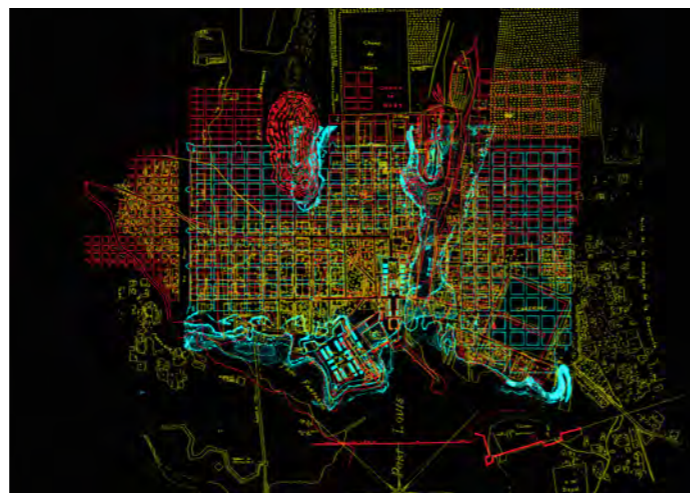


Figure 3.25(b) - Comparative study: Merging 1736, 1759 & 1780. (Source: White 1952: pp7, 9).

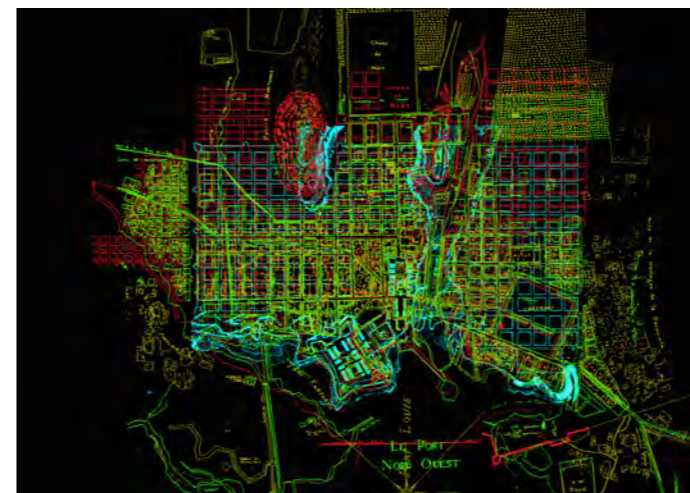


Figure 3.25(c) - Comparative study: Merging 1736, 1759, 1780 & 1800. (Source: White 1952: pp7, 9).

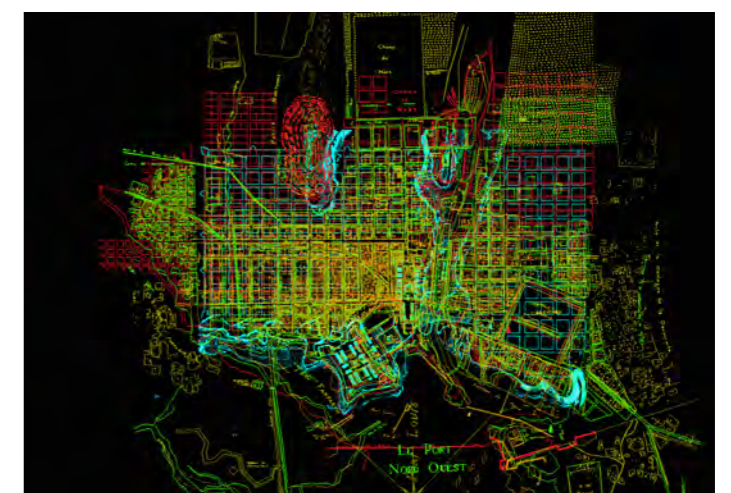


Figure 3.25(d) - Comparative study: Merging 1736, 1759, 1780, 1800 & 1816. (Source: White 1952: pp7, 9).



Figure 3.25(e) - 1816 Plan of Port Louis showing extent of devastation by fire. (Source: White 1952: 13).

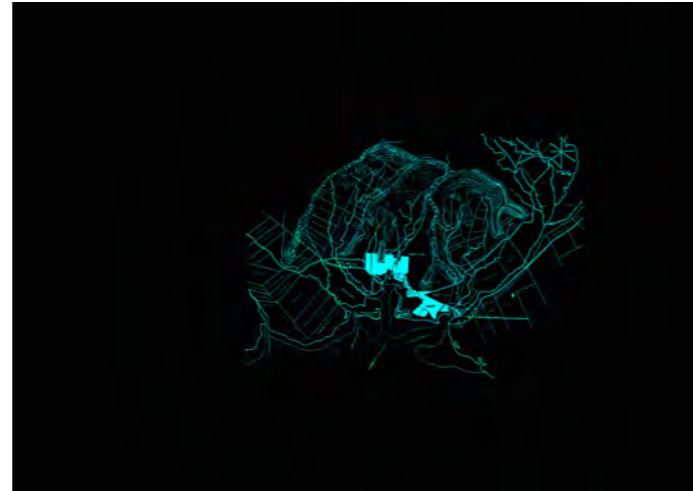


Figure 3.26(a) - 1841 District plan of Port Louis showing established town. (Source: White 1952: 15).

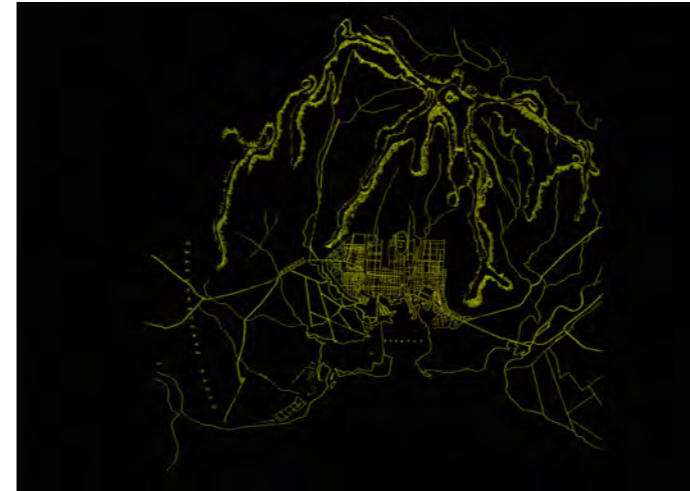


Figure 3.26(b) - 1858 District plan of Port Louis showing growth of the town. (Source: White 1952: 16).



Figure 3.26(c) - 1900 District plan of Port Louis showing development of infrastructure. (Source: White 1952: 16).

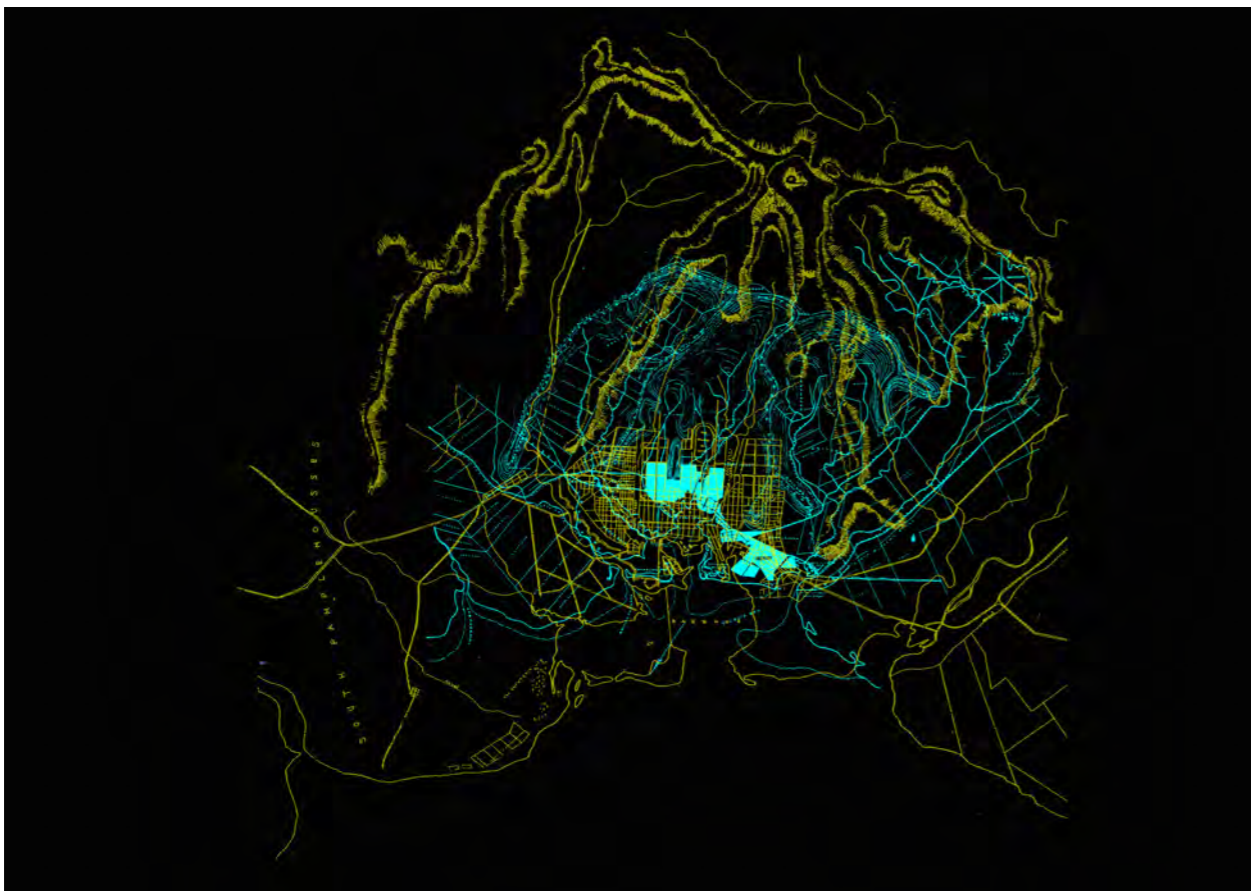


Figure 3.27(a) - Comparative study: Merging district plans 1841 & 1858. (Source: White 1952: pp7, 9).

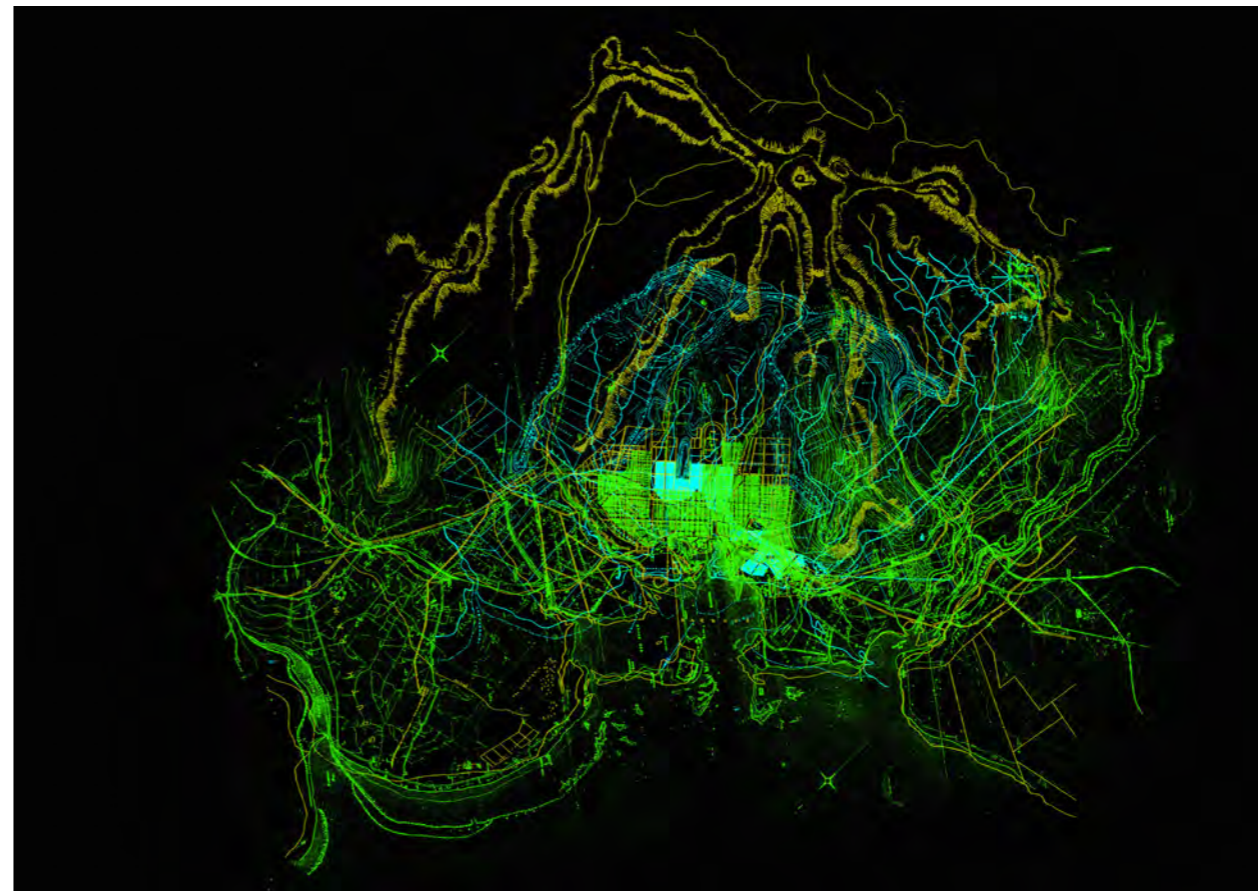


Figure 3.27(b) - Comparative study: Merging district plans 1841, 1858 & 1900. (Source: White 1952: pp7, 9).



Figure 3.28 - The Municipal Theatre, one of the oldest theatres in the southern hemisphere, is a celebration space of note. (Source: Burrin 2009: 56)



Figure 3.29 - In 1935, the boulevard was used as a celebration space to mark the 200 year anniversary of the foundation of Port Louis. (Source: Burrin 2009: 45).



Figure 3.30 - St Louis Cathedral - a ceremonious space with water pond. (Source: Burrin 2009: 42).

The Age of the Automobile

1900's

The first motor vehicles were introduced to Mauritius in 1903 and this mode of transport surpassed animal-drawn carriages after the First World War. A bus service between Port Louis and Curepipe was established in 1927 and since then, the number of private vehicles and buses increased dramatically. The passenger service on the railway was poorly patronised and was discontinued in 1956, and completely abolished in 1964.



Figure 3.31 - With the introduction of motor vehicles in the 1900's, the character of Port Louis changed drastically. (Source: Burrin 2009: 79).

1953: Thornton-White Master Plan

Professor Thornton-White was called upon to assist with solving challenges of traffic congestion, overcrowding and poor sanitation in Port Louis. His Master Plan of 1953 proposed separation of activities – commercial and industrial activities were to be accommodated in large buildings in the town centre, with residential areas on the outskirts of the town. His proposal included building upwards to meet the increased demand for housing rather than building more houses on individual plots. Thornton-White identified the inadequate road system as the cause for unacceptable traffic congestion. His solution was to construct a two-lane motorway between Port Louis and the upper part of Plaines-Wilhems via Moka, and this certainly eased traffic flow between the Capital and the centre of the Island (Toussaint and Ward, 1973).

Thornton-White was also tasked with formulating a proposal for improvement of the harbour. The economy of the island depended on efficient exportation of sugar and importation of grain, textiles and other goods, all of which were transported by sea. He suggested widening of the entry channel and clearing sediment along the Chaussée Tromelin to improve accessibility for larger vessels, in addition to the construction of two new Quays which would improve overall efficiency (Toussaint and Ward, 1973).

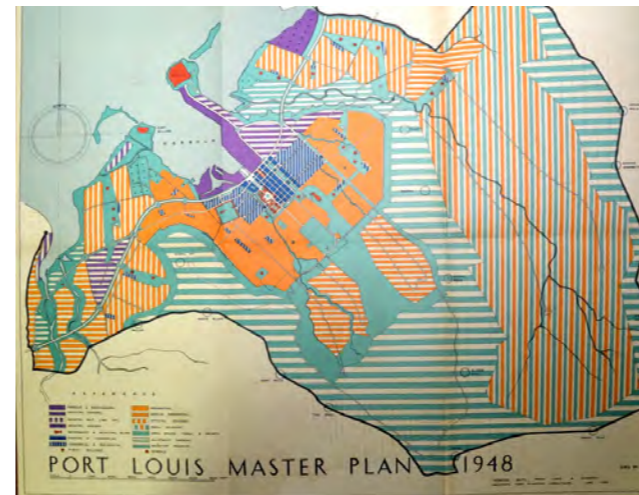


Figure 3.32 - 1948 Master Plan by Thornton White was heavily based on zoning: Commercial in the city centre and residential in the outskirts. The M1-M2 motorway was built following this Master Plan. (Source: White 1952: 60).

Modern Port Louis: Post-Independence

Mauritius attained independence in 1968, and the new regime took its seat at the Government House in Port Louis. Thornton-White's Master Plan continued to form the basis for development of Port Louis, and the city grew as an economic and administrative capital, while nearby towns expanded to meet the demands for residential space.

The rectilinear street grid layout has persisted in the centre of Port Louis. Extension of the street grid towards the mountains and Champ de Mars racecourse also followed an ordered grid pattern, however streets on sloping land tend to be more winding and erratically arranged. The railway, which ran through Port Louis between towns in the North and South of the island, has directed construction of the M1-M2 motorway (OPS page 6).



Figure 3.33 - Independence Day: 12 March 1968, was celebrated at the Champs de Mars racecourse ground. Anniversary celebrations for this day have often been held at this location. (Source: Burrin 2009: 50).

Conclusion

Whilst the French placed more emphasis on development within the Port Louis area, the British had a more engineered approach, developing infrastructure and agriculture in particular. Their priority was rather on 'connectivity': linking Port Louis to the rest of the island by road, motorway and railway, and to the rest of the world through a modern harbour. The post-independence government continued this development trend based on the structure laid out by the British.

Throughout the history of Port Louis, it has been clear that certain elements have been pivotal in influencing the layout. The **harbour, mountain, waterways, streams and aqueducts, green public spaces and paved pedestrian paths** are aspects that make up the quintessential character of Port Louis as a colonial French city.



Figure 3.34 - Commercial buildings with rich architectural language: colonnade and canopy defining the public space and providing shelter. (Source: Burrin 2009: 76).



Figure 3.35 - Year 1909: Retail buildings with overhanging canopy provides shade to the pedestrian. The scale is human friendly and balcony on the first floor encourages 'eyes on the street' making the passer-by feel safe. (Source: Burrin 2009: 74).



Figure 3.36 a(top), b(top right),c (right), d(left)
Streets: the in-between spaces and micro-interface, where people meet, greet, interact and trade.
Masts of ships in the backdrop formed part of the architecture of the city-space (a). (Source: Burrin 2009: pp4, 64-65, 66, 71).



Figure 3.37 - Year 1892: Shopping street. Micro-Interface between buildings: the way these façades respond to each other, makes the space in-between a comfortable realm for the public. (Source: Burrin 2009: 74).



Figure 3.38: Typical historical Port Louis Streetscape (Source: Burrin 2009: 71).

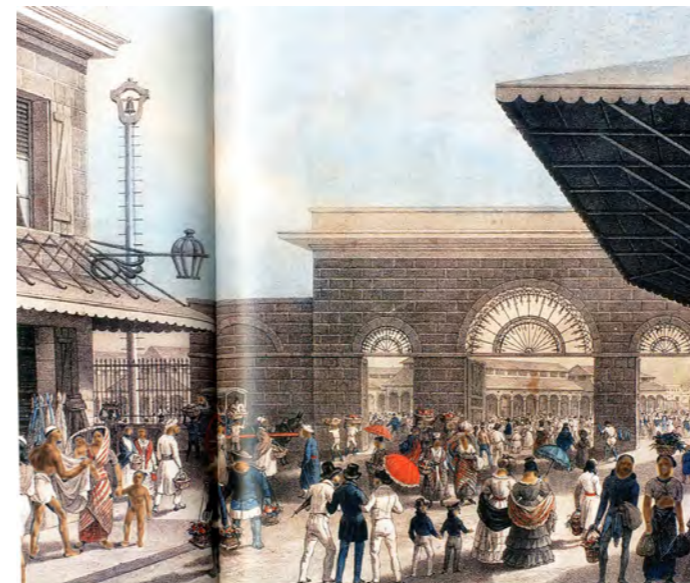


Figure 3.39 - Year 1909: The building typology: 2-storey building, stone façade with canopy and balcony on 1st floor: the quintessential character of Port Louis. (Source: Burrin 2009: 75).



Figure 3.40(a). (Source: Burrin 2009: 70)



Figure 3.40(b). (Source: Burrin 2009: 68-69)

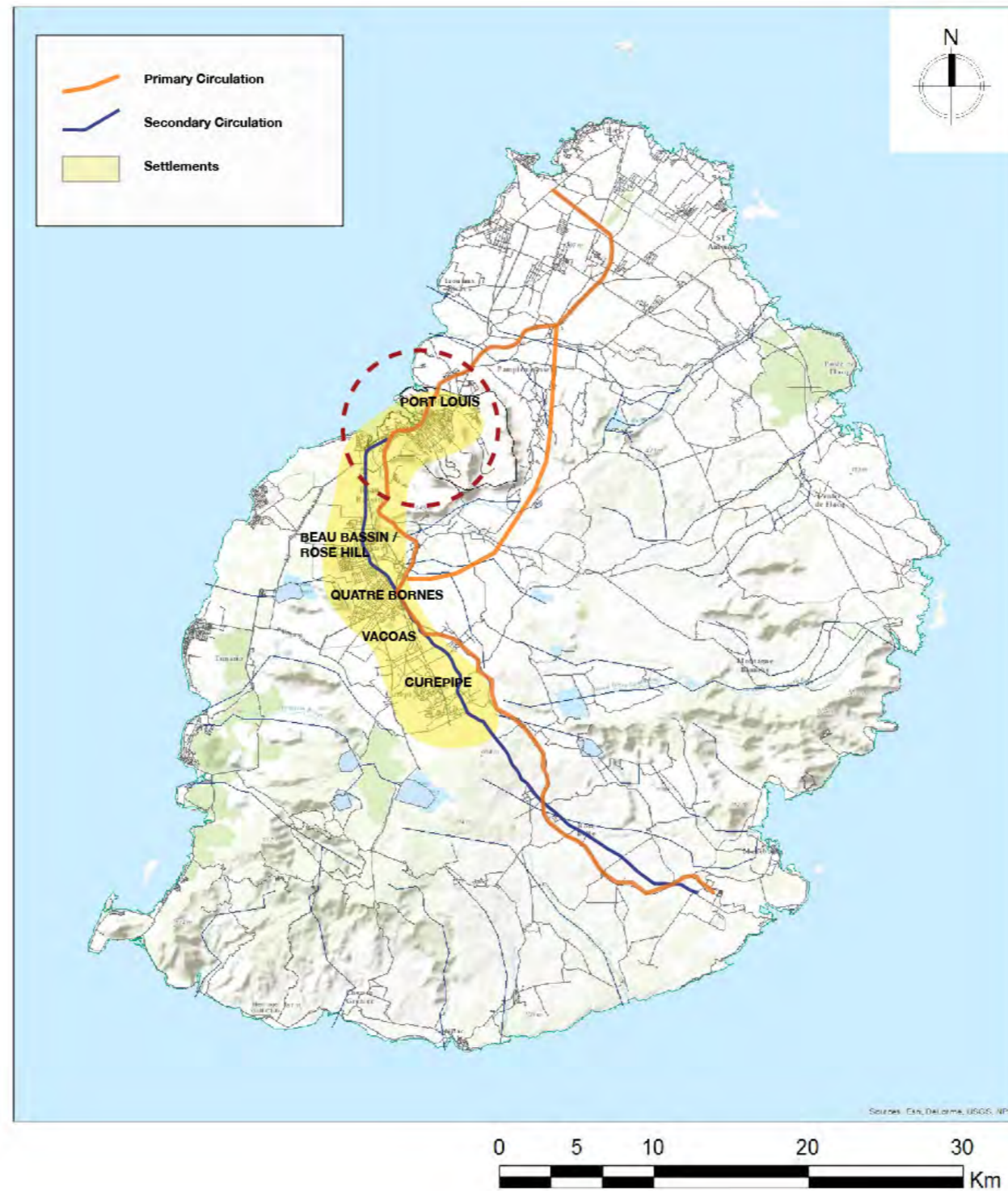


Figure 3.40(c). (Source: Burrin 2009: 77)



Figure 3.40(d). Buildings are used as protection and shelter in the public realm as well. They never overpower the people. (Source: Burrin 2009: 75).

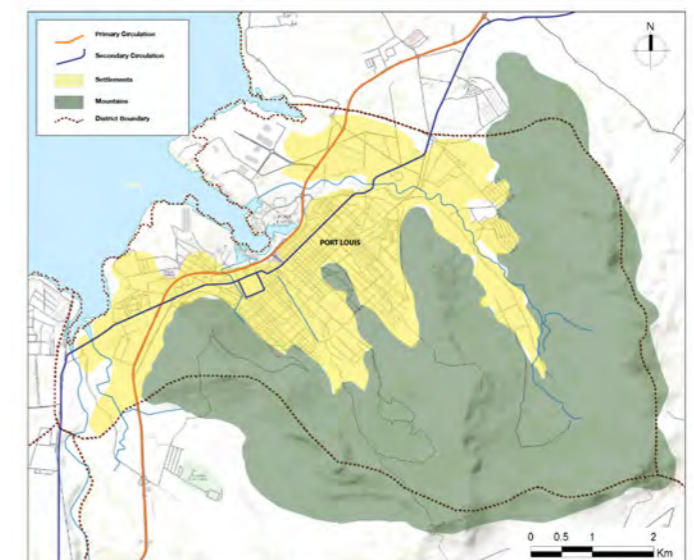
CONTEXTUAL ANALYSIS



The city of Port Louis is part of an urban corridor linking the northern district of Pamplemousses and central district of Plaines-Wilhems. This corridor links the 5 municipal areas on the island. Other than Port Louis, the 4 other municipal areas are situated in the Plaines-Wilhems district, these are: Beau-Bassin/Rose Hill, Quatre Bornes, Vacoas/Phoenix and Curepipe. This area is the most densely populated on the island and accommodates a significant proportion of all economic activity (OPS, page 5).

Historically, the Port Louis Municipal City Council Area (PLMCCA) was defined by the surrounding mountains (Quoin Bluff, Le Pouce, Creve Coeur and Long Mountain) to the South and East. Recently, the municipal area was extended to include Pailles, Vallee des Pretres, Pointe aux Sables, La Tour Koenig and Petit Verger. The Northern boundary is defined by the Terre Rouge River and Roche Bois. The total extent of the PLMCCA is 4 621 ha, of which some 86% is densely built-up (OPS page 6).

Sub-Regional Map



Port Louis in relation to the global context

Port Louis is situated along the sea route between Africa and Asia. Historically, Port Louis was an important port for Dutch, French and English ships en route to India and Asia. Today, the harbour adjoins the city and the port comprises three terminals (with a total of 11 quays) which have the capacity to accommodate large container ships, cargo ships and fishing ships. A cruise ship terminal was officially opened in 2010 and was designed to welcome the largest cruise liners in the world. There is certainly potential to increase the numbers of tourists and excursionists arriving at Port Louis by sea. Furthermore, berthing facilities are provided for at Caudan Waterfront, and are primarily used by private boat owners (https://en.wikipedia.org/wiki/Port_Louis and OPS page 11).



Port Louis in relation to the Island

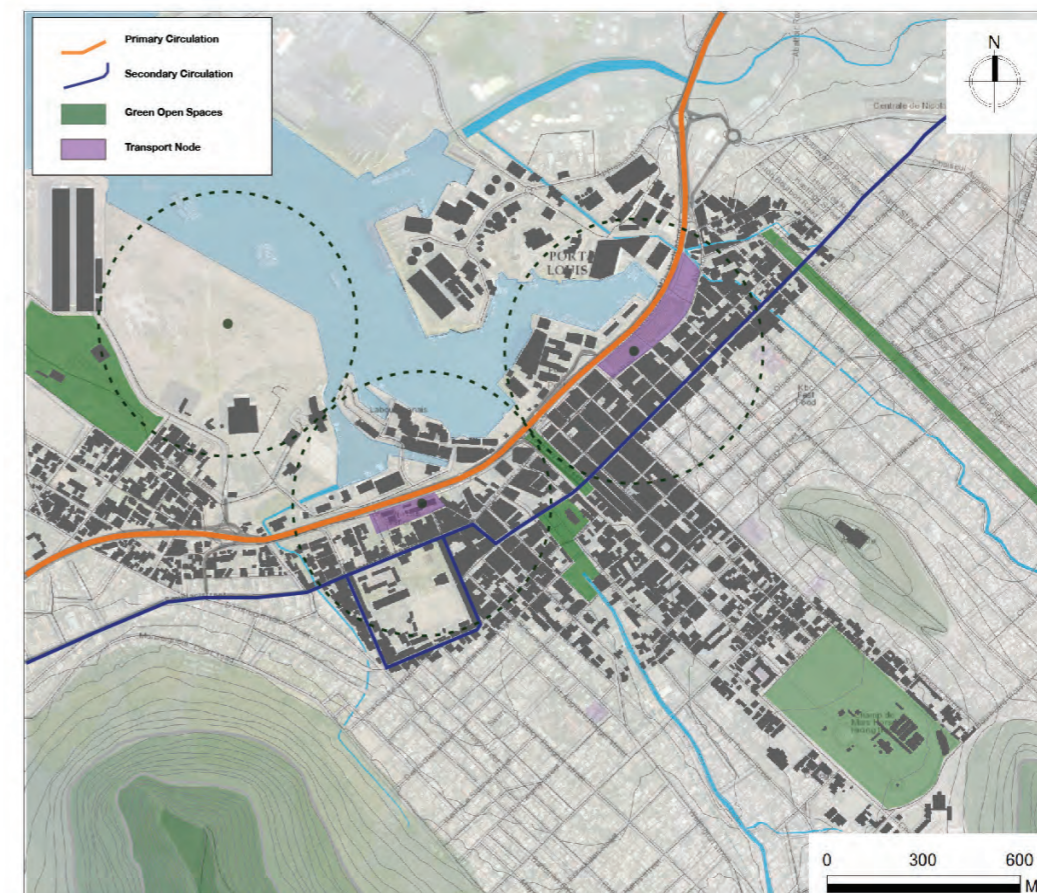
Port Louis is the most populous city in Mauritius and functions as the economic, political and cultural centre. The city lies in both the Port Louis and Black River districts. Port Louis was developed to be the administrative capital of Mauritius. It is also the commercial and retail centre of the island with several markets and a multitude of shops. Civic and government headquarters are based in Port Louis, and numerous public facilities as well as religious and heritage buildings are situated in the capital city.



Figures 3.41 a, b (left), c (above)
Port Louis in the global scene (a, b), and island scale (c).
(Source: Author's sketches).

Port Louis has historically been situated on the only vehicular transport route between North and South, and as such has a prominent geographic significance for the island. It is served by two major bus stations: Victoria station serves buses from Plaines Wilhems, the East and South of the island, while Immigration Square (Gare du Nord) is used by buses travelling from Pamplemousses and Rivière du Rempart in the North. Additionally, Port Louis houses the only harbour on the island, and all sea vessels must be cleared by the port authorities at Port Louis before docking anywhere else on the coastline (https://en.wikipedia.org/wiki/Port_Louis).

Hence, Port Louis is a city for the island as a whole and any infrastructural or functional development plan will have repercussions not only for the city, but the island as a whole.



Local Context Map

The Caudan Waterfront

Developing waterfront projects started as a trend in North America in the 1960s, and this soon caught on in Europe and Australia, later spreading to Asian, African and South American cities (Bell and Jayne, 2006).

The Caudan Waterfront project follows this pattern of development with the aim of diversifying the economy. It was a Public-Private Partnership which was initiated in the mid-1990's, and was designed in collaboration with the developers and designers of the V&A Waterfront in Cape Town. It is built upon an old port area and expands over 42,000 square metres. The scheme follows a similar global design formula as many other waterfronts, which include: maritime heritage, diverse shopping outlets, eating and leisure, office spaces and pseudo-public spaces (Bell and Jayne, 2006).



Figure 3.42 - Le Caudan Quay in 1916. (Source: Burrin 2009: 78).



Figure 3.43 - Le Caudan Waterfront in 1996. (Source: Burrin 2009: 78).

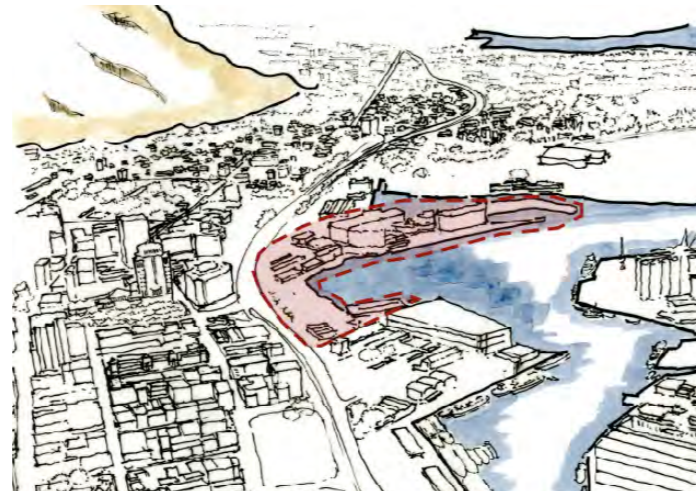


Figure 3.44 - Bird's Eye view showing location of the Caudan Waterfront (Source: Author's sketch).

The Aapravasi Ghat

The name *Aapravasi Ghat* (Immigration Depot) has been in use since 1987. This is the place where Indian indentured labourers alighted and were distributed amongst sugar estates. UNESCO declared the quay and reception area at Aapravasi Ghat a World Heritage site in 2006.

The Aapravasi Ghat Trust Fund (AGTF) has developed the Planning Policy Guideline (PPG 6) as a tool for preserving heritage buildings within the UNESCO World Heritage buffer zone. The PPG 6 booklet contains architectural heritage regulations, urban design guidelines as well as coding for future development and buildings to be refurbished. Sensitive preservation of this heritage site should be a priority for any redevelopment on or near this site.



Figure 3.45 - The Immigration Depot - the first interface to the land they would call home. (Source: Burrin 2009: 62).



Figure 3.46 - The Immigration Depot in 1869 - workers would be distributed amongst sugar estates at this location. This was a world between 'past home' and 'future home' - a new interface space. (Source: Burrin 2009: 62).

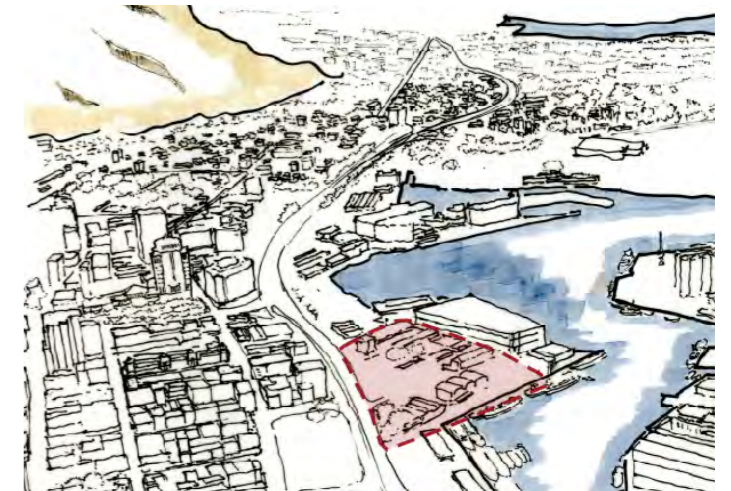
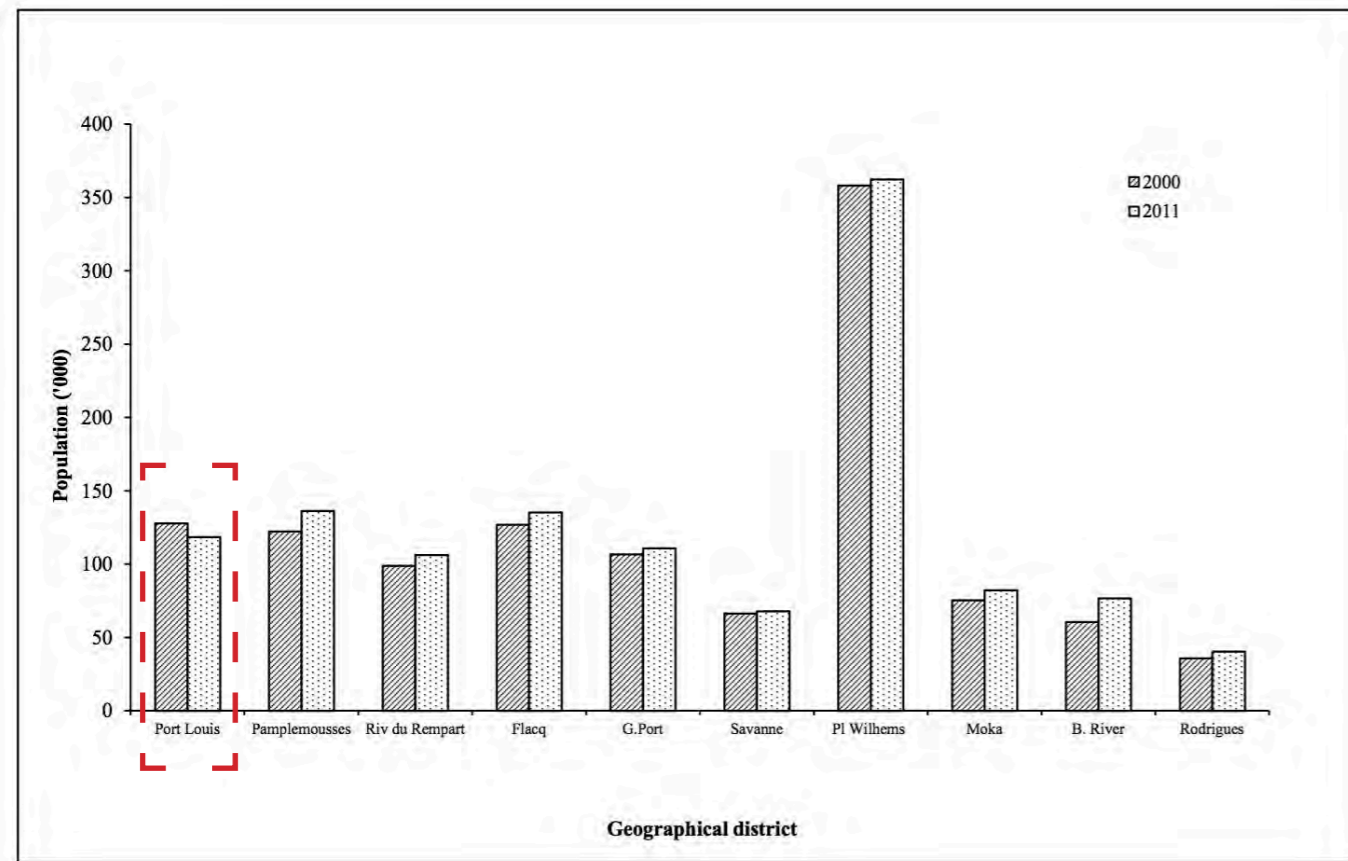


Figure 3.47 - Bird's Eye view showing location of the Aapravasi Ghat. (Source: Author's sketch).



Figure 3.48 - The UNESCO World Heritage site buffer zone 1 & 2. (Source: Aapravasighat.org, 2015).

Demographics of Port Louis



(Digest of Demographic Statistics, 2014)

Figure 3.49

While Port Louis is the Capital city of Mauritius, its total resident population is relatively low compared to other districts. This is because of the large mountainous area to the East which is undeveloped, and also because Port Louis does not offer as much residential opportunity within the city boundaries (OPS page 8). Commercial floorspace predominates in Port Louis. Significant new developments (including Jin Fei, Neo Town and Uptown as well as the proposed port expansion) will likely reinforce this (MHL, 2015). (Digest of Demographic Statistics, 2014)



Figure 3.50 - Illustration showing districts of Mauritius. (Source: Author's sketch).

Geographical district	Area (km ²)	1 st July 2013				1 st July 2014			
		Both sexes	Male	Female	Density P/km ²	Both sexes	Male	Female	Density P/km ²
Port Louis	42.7	120,748	59,977	60,771	2,828	120,376	59,809	60,567	2,819
Pamplemousses	178.7	138,575	68,811	69,764	775	139,234	69,098	70,136	779
Riviere du Rempart	147.6	107,699	53,407	54,292	730	107,928	53,526	54,402	731
Flacq	297.9	137,922	68,608	69,314	463	138,349	68,823	69,526	464
Grand Port	260.3	112,776	56,158	56,618	433	112,869	56,185	56,684	434
Savanne	244.8	68,760	34,058	34,702	281	68,713	34,053	34,660	281
Plaines Wilhems	203.3	369,170	180,713	188,457	1,816	369,066	180,685	188,381	1,815
Moka	230.5	82,890	41,216	41,674	360	83,059	41,304	41,755	360
Black River	259.0	78,801	39,545	39,256	304	79,671	39,990	39,681	308
Island of Mauritius	1,864.8	1,217,341	602,493	614,848	653	1,219,265	603,473	615,792	654
Island of Rodrigues	104.0	41,312	20,368	20,944	397	41,669	20,529	21,140	401
Republic of Mauritius	1,968.8	1,258,653	622,861	635,792	639	1,260,934	624,002	636,932	640

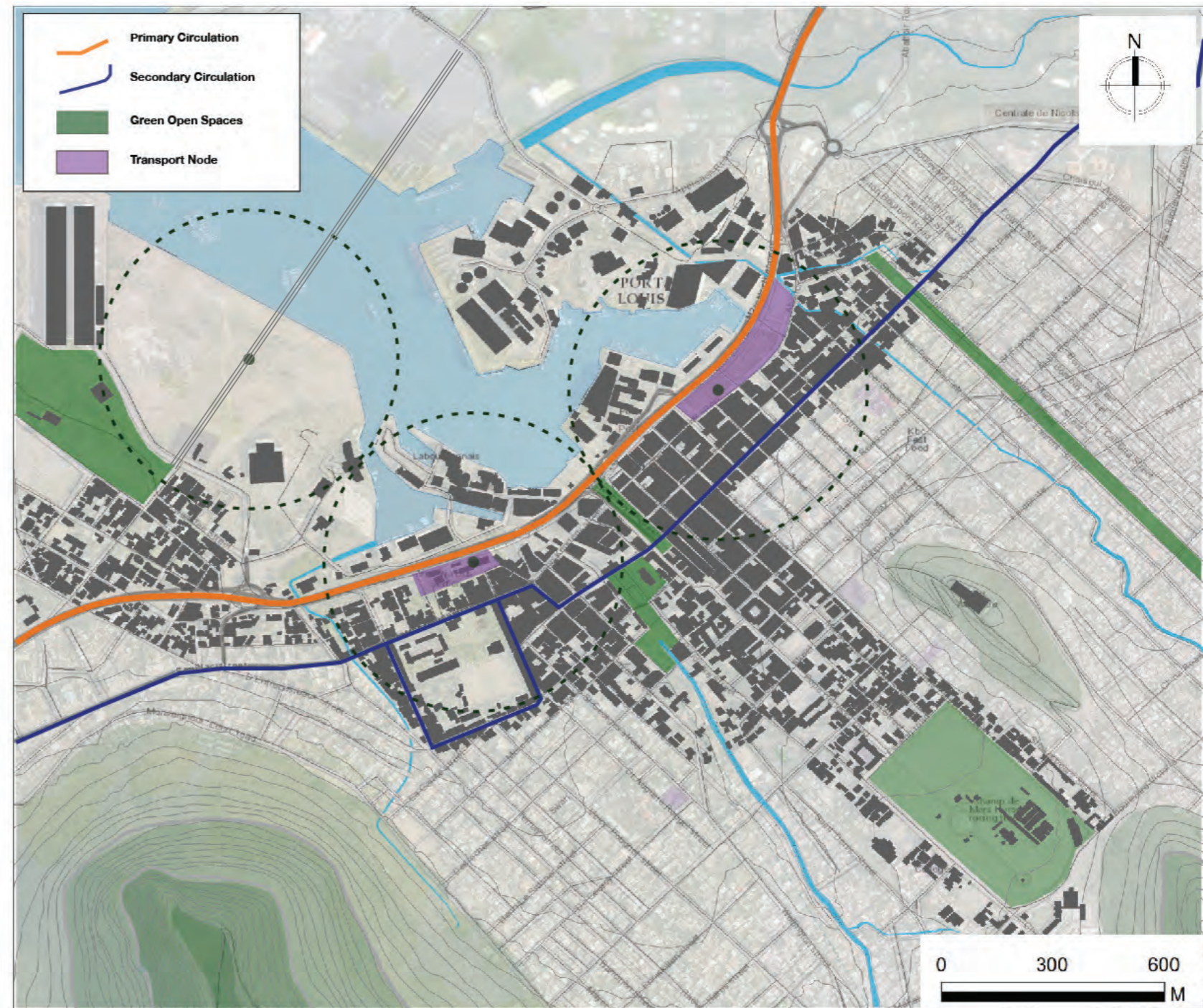
Figure 3.51

The population density of the Port Louis district is however the highest for the island at 2819 individuals per km². (Digest of Demographic statistics, 2014)

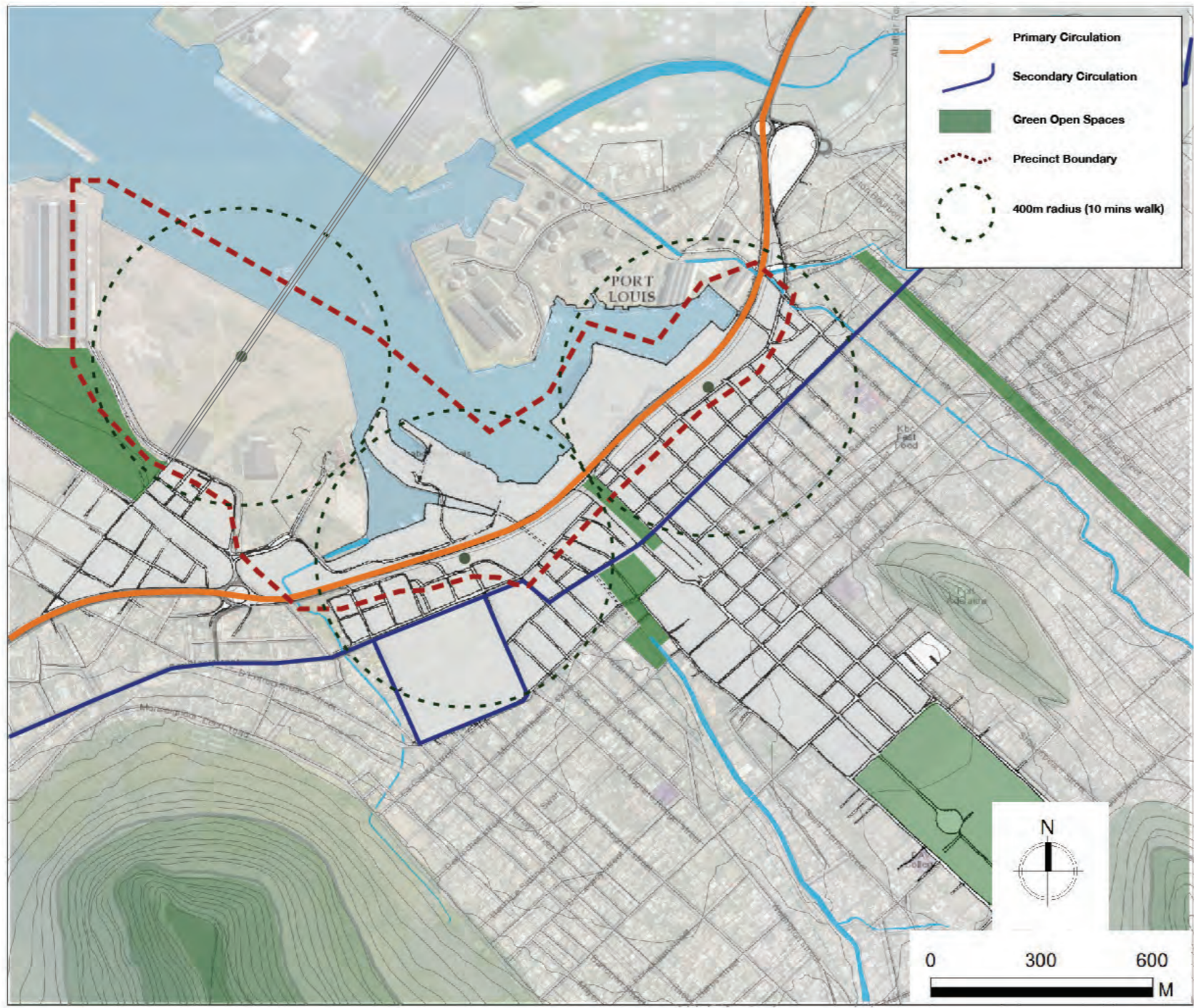
Local Context

The city of Port Louis is situated between the mountain and the sea. This port city is seen as an 'interface': a space which is in constant interaction between the two worlds.

The future harbour bridge project to be implemented by the government supports the argument of the interface as a pedestrian friendly space, with activities centred around people.



SPATIAL ANALYSIS



Site Context Map showing Natural elements

Green spaces and natural streams have been part of this interface between land and sea. The central stream (Le Pouce Stream) divides the city centre in 2, and the northern stream (La Paix Stream) and the southern stream (Creole Stream) initially edged the city fabric.

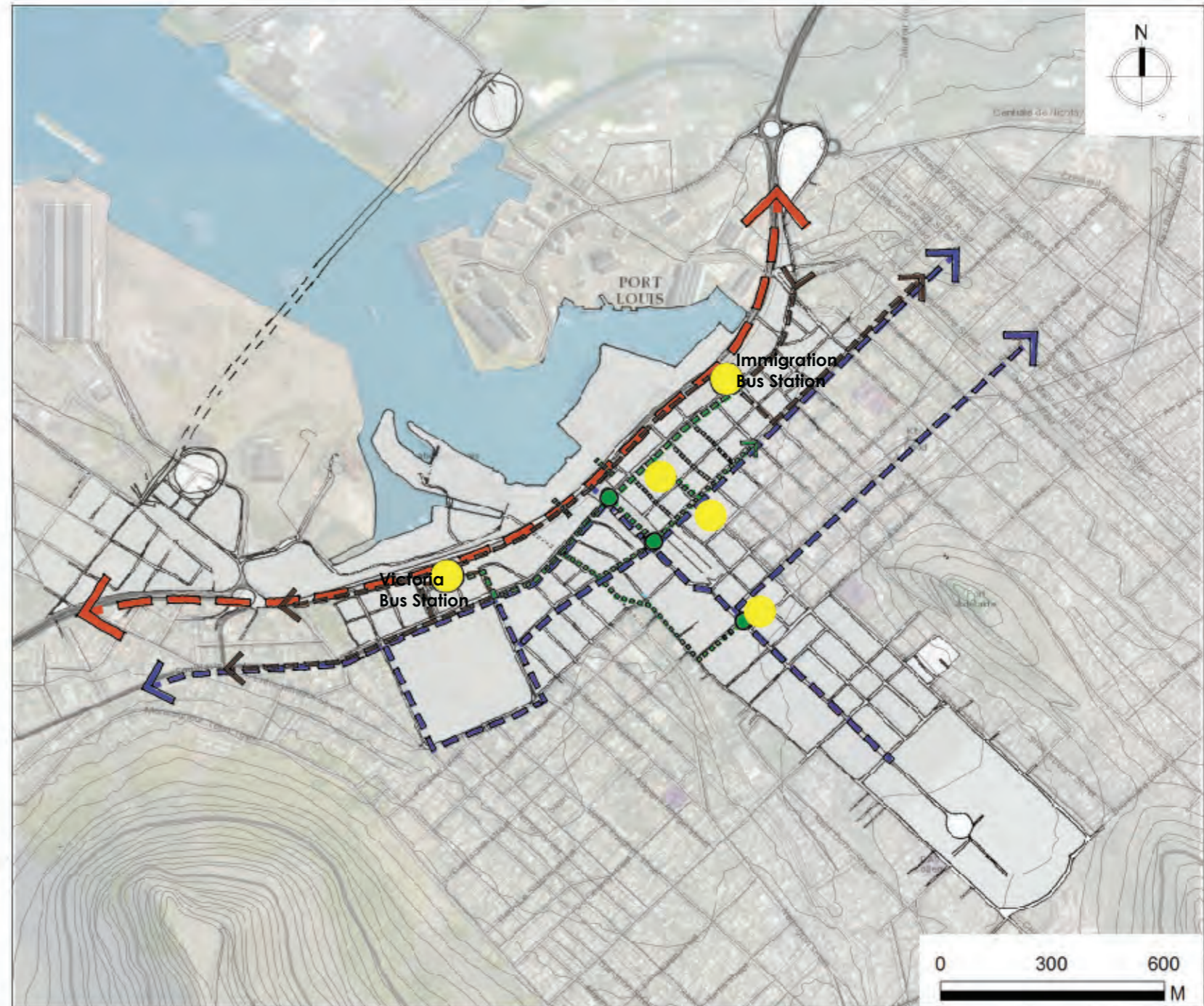
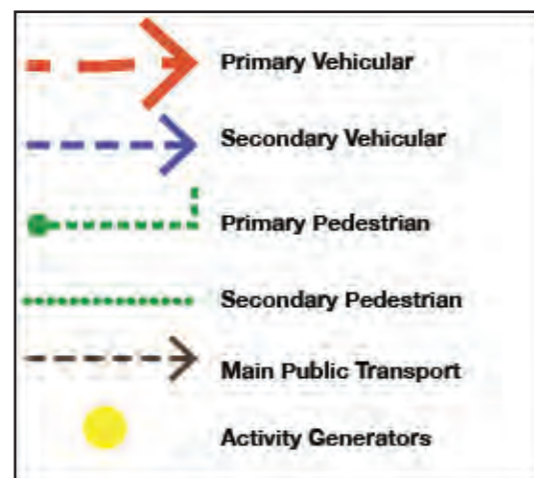
There is a great need to include green and water as features within the interface in order to transform this space into an appealing and pedestrian-friendly environment.

Map showing Movement Systems

The dominant movement pattern in Port Louis lies on the North-South axis as there are more prominent movement routes in this plane. There is only one main movement corridor between the mountain and the ocean.

There exists a strong pedestrian route between the 2 bus stations (Immigration Square and Victoria Station). This is because people travelling from the north of the island to the south, and vice versa, have to travel to either station, and walk to the other. There are some bus lines which provide a non-stop trip, and there is also a shuttle service. But commuters prefer walking, instead of paying for the service and spending more time in traffic jam.

In order for the interrelationship between land and sea to be enhanced, movement patterns must be created linking these two worlds.



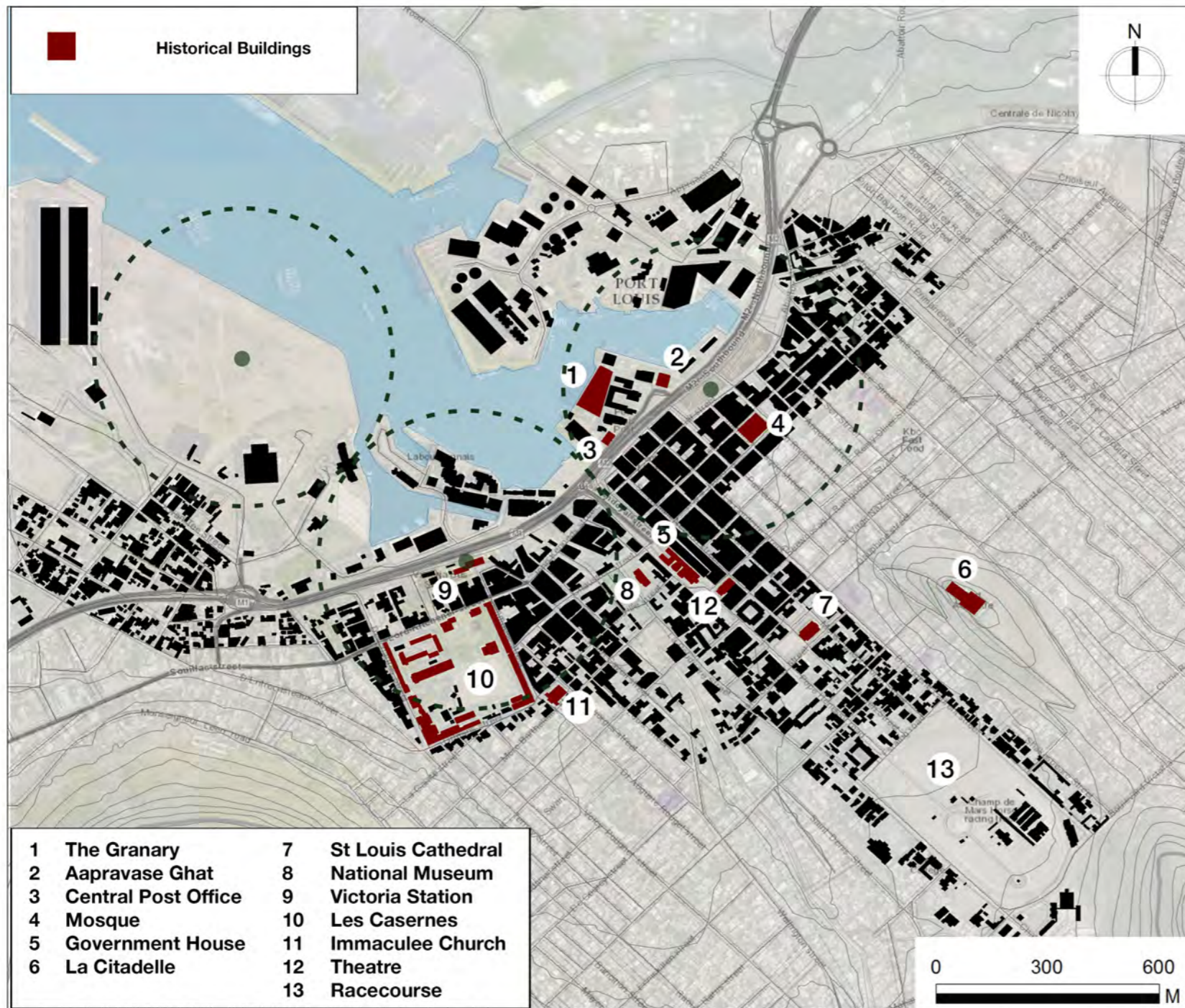


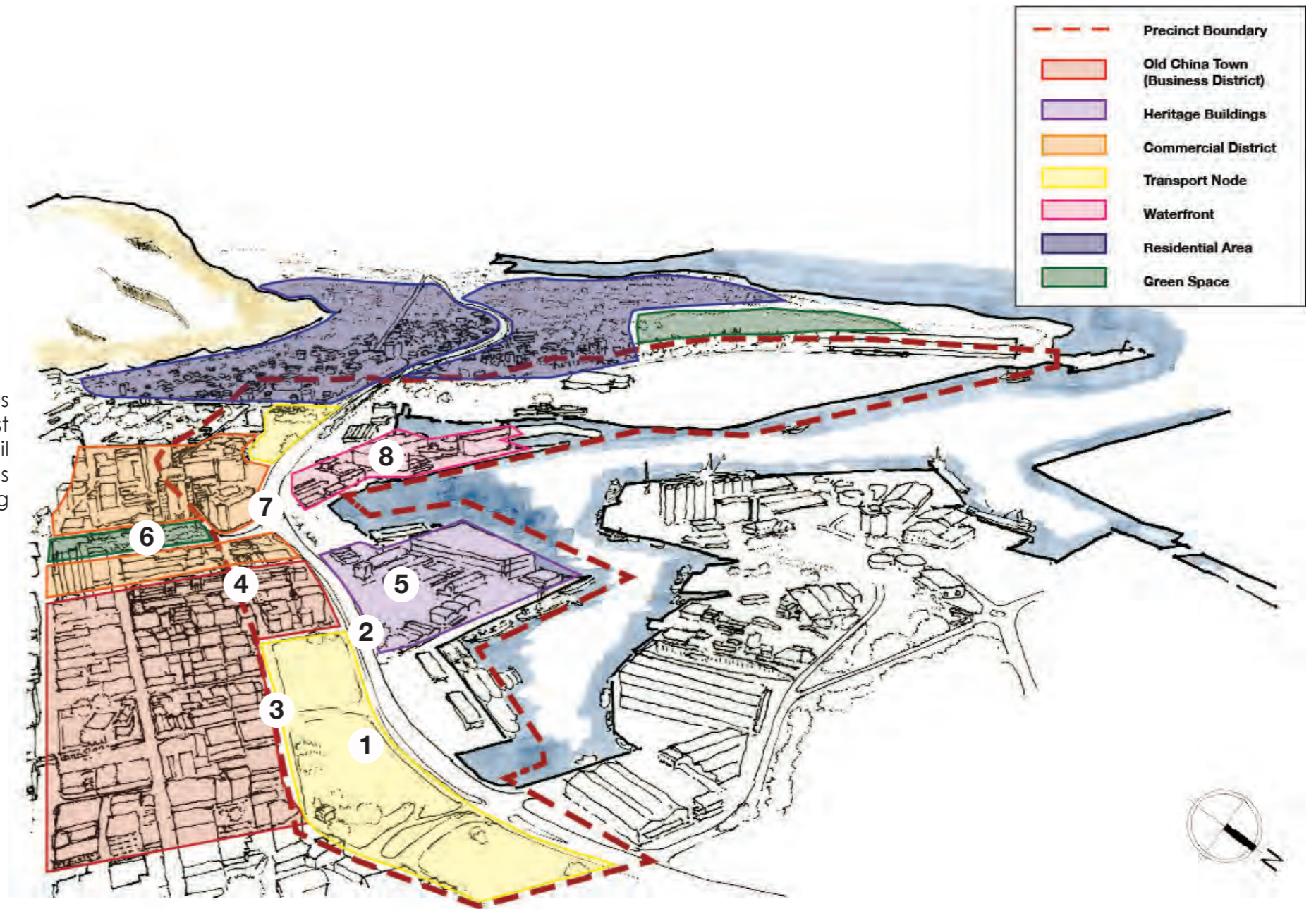
Figure Ground Map

The figure-ground map of Port Louis shows that highest density is present in the central area of Port Louis. Density supports walkability due to its compact built form and encourages social interaction, shopping, trade and numerous other pedestrian-oriented activities.

There is potential for this existing density to be applied throughout the interface in order to make Port Louis a more humanist city.

Bird's Eye View Showing Character Areas

Currently Port Louis accommodates numerous character-areas. Numerous opportunities exist within each area for various services and retail activities to take place. Port Louis therefore has the potential to be a diverse, vibrant and exciting port city for locals and tourists.



ZONE	LOCATION	QUALITY OF URBAN SPACE	REASON	+ve / -ve
1	Immigration Bus Station	Very Poor	Fumes / Noise / Danger	-ve
2	Motorway @ Bus Station	Very Poor	Aggressive space / Physical danger	-ve
3	Bus Station Edge	Average	Shopping / Eating	+ve
4	Market Street	Average	Shopping / Interacting	+ve
5	Heritage Zone	Poor	Buffer Zone: Heavy development Restrictions	-ve & +ve
6	Labourdonnais Square	Good	Green Space / Sheltered from heat Heavy Through traffic	+ve -ve
7	Motorway @ Waterfront	Average	View of waterfront is visually appealing Heavy traffic and barriers hindering movement to harbour	+ve -ve
8	Waterfront	Very Good	Shopping / Pleasant environment / Mixed leisure activities Disconnected from city; Heavily controlled environment - not 'open' to all activities (informality)	+ve -ve -ve

The table above describes the quality of urban spaces which exist within the interface.
As a port city, Port Louis is in desperate need for people-oriented and people-friendly urban spaces.



1
Figure 3.52 - Immigration Square Bus Station.
(Source: Author's collection).



2
Figure 3.53 - Motorway between bus station and harbour.
(Source: Author's collection).



3
Figure 3.54 - Shopping & Trading at the edge of the bus station.
(Source: Author's collection)



4
Figure 3.55 - Informal Trading at pedestrian route linking the 2 bus stations.
(Source: Author's collection)



5
Figure 3.56 - Aapravasi Ghat UNESCO World Heritage Site.
(Source: worldheritagesite.org, 2015)



6
Figure 3.57 - Labourdonnais Square: Green space surrounded by mobility routes.
(Source: Author's collection)



7
Figure 3.58 - Motorway at waterfront.
(Source: Author's collection).



8
Figure 3.59 - The Caudan Waterfront is perceived to be an exclusive zone for tourists.
(Source: taxfreeshopping.mu, 2015).

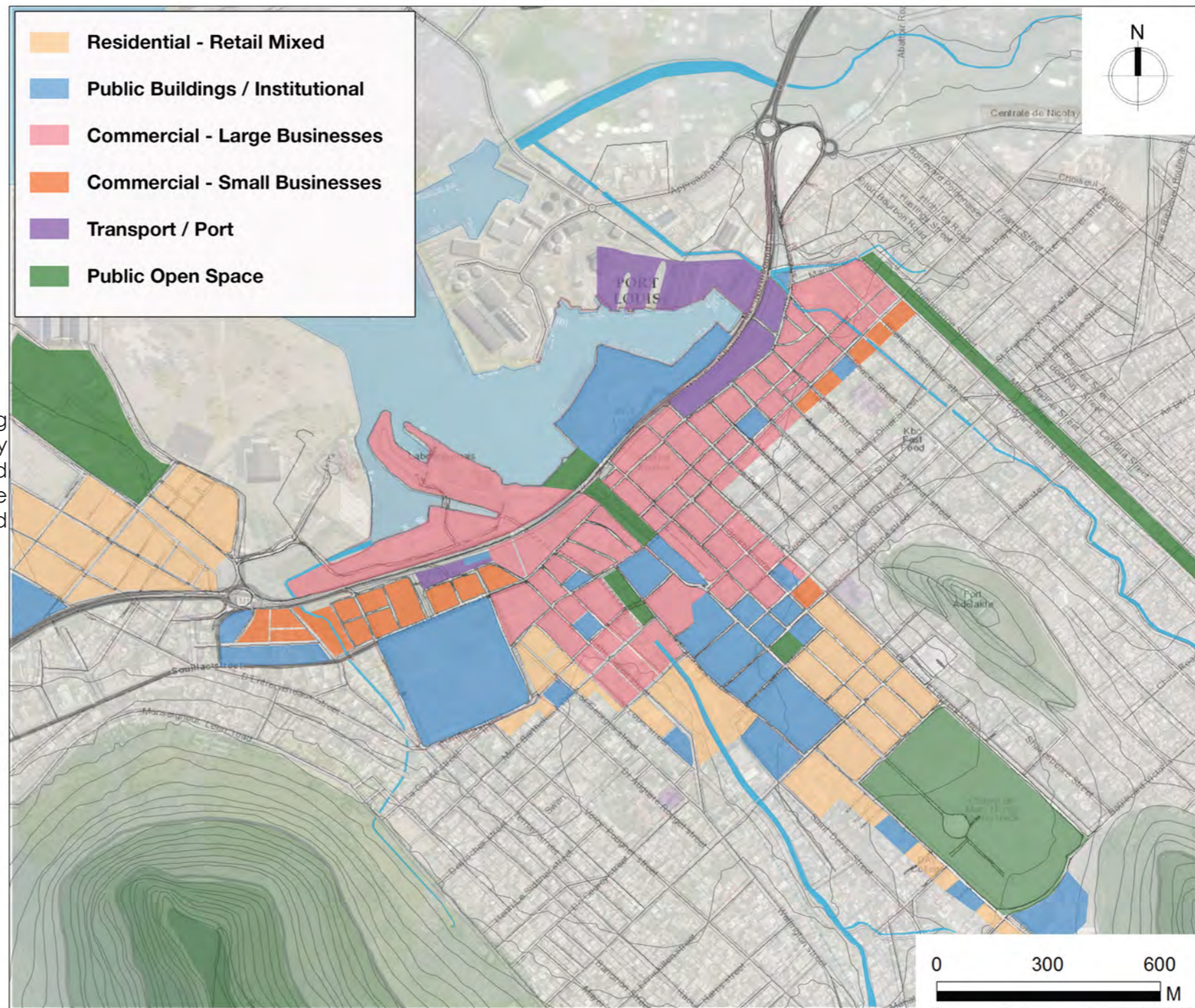


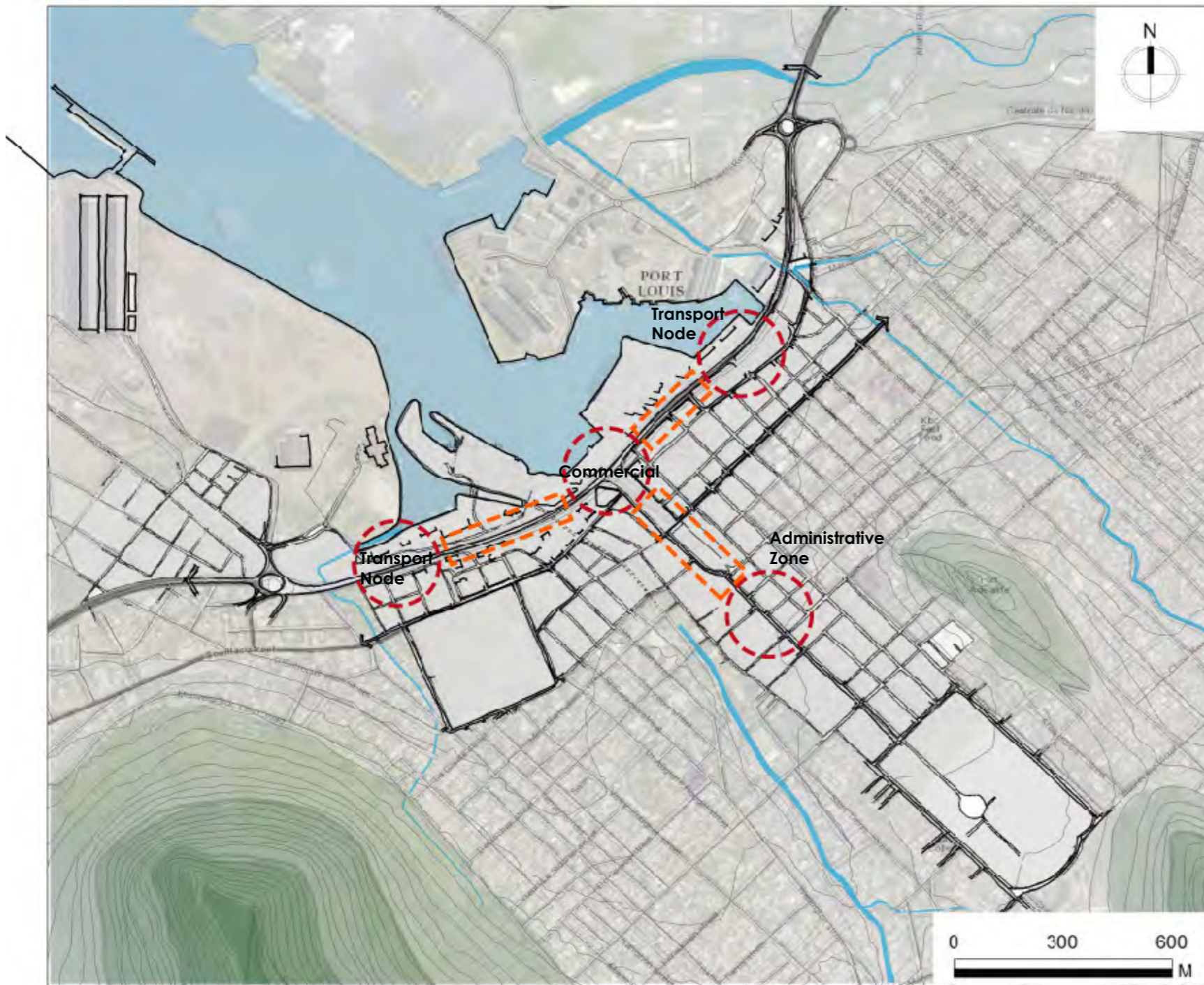
**Map showing
Axis and Views**

Visual impact (created by the presence of both mountain and ocean around Port Louis) is an important factor for any urban intervention in the city. Emphasis on the visual axis between mountain and ocean gives the city its identity as a port city and ensures the success of the 'Interface'.

Map showing Land Use

Land use in Port Louis is based on traditional zoning practices which encourage mono-functionality and segregation of activities. There is a need for mixed-use development, particularly in the Interface zone, where diversity of activity and people must be supported.





**Map showing
Nodes & Corridors**

There are four main nodes in Port Louis (two transport nodes, one administrative node and one major commercial node). These are arranged in such a way that movement is primarily along the water, with only a single corridor in the mountain-ocean axis.

There is potential for creation of corridors of development which support more movement between the ocean and the city - there must be more corridors within the Interface zone that support the inter-relationship between mountain and ocean, in order for Port Louis to function as a port city.

4

PROBLEM STATEMENT

While Port Louis is a 'port city', it is in fact 'a city with a port'. Port Louis makes no provision for the possible - the interface between city and water. The city is currently dysfunctional and lacks humanist characteristics.

The aim of this study is to analyse the current shortcomings inherent to the city of Port Louis while identifying opportunities which exist that, if harnessed, could transform the Capital of Mauritius into a worthy port city for the people: To imagine the possibility of a people-oriented interface and possible methods of achieving that in Port Louis.

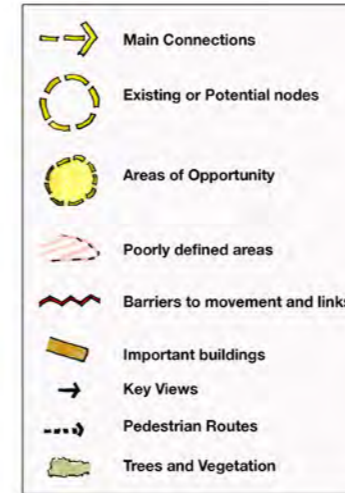
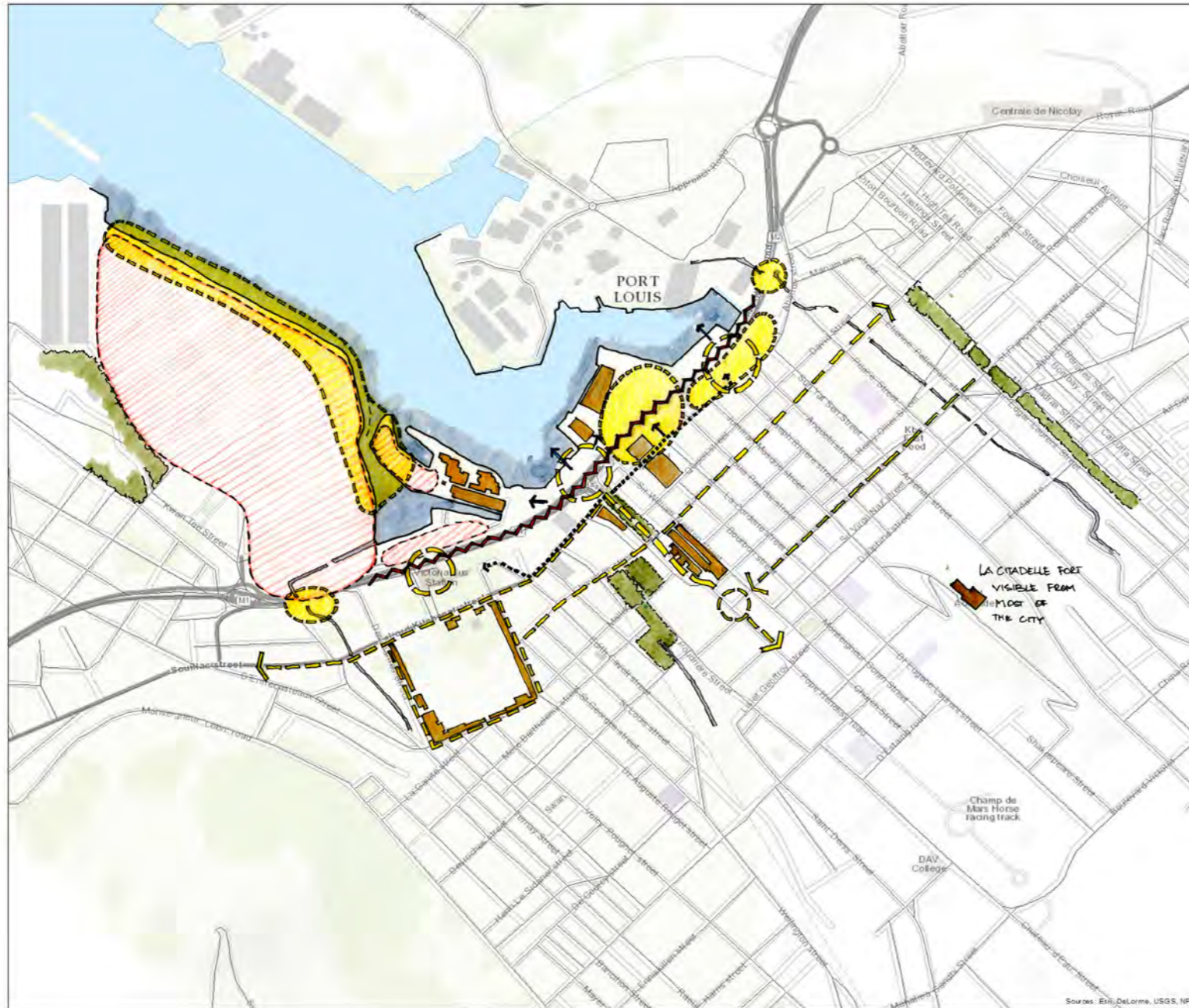
Motorway

The M1-M2 motorway was constructed in 1960, following the recommendations of Professor Thornton White in his 'Masterplan for Port Louis' report, dated 1953. Thornton-White did not believe that congestion in Port Louis was due to an excessive number of automobiles, but rather to a dysfunctional road system. He therefore proposed construction of a two-lane motorway to ease traffic flow. This motorway, despite easing access from the city centre to the other parts of the island, has bisected the urban fabric of Port Louis and disconnected the waterfront area from the city centre.

There is currently excessive reliance on the north-south motorway, and the roundabouts contribute significantly to congestion, and have to be manned by police during peak traffic times to encourage smooth traffic flow (Menon 2004). As most on-ramps and off-ramps are short and narrow, congestion on the motorway rapidly spills over into connecting streets and vice-versa (Menon 2004).

The main access routes to Port Louis are (Congestion pricing, page 12):

- The M1-M2 Motorway
- Abercrombie Road
- A1
- Central Flacq Road



Contextual Appraisal

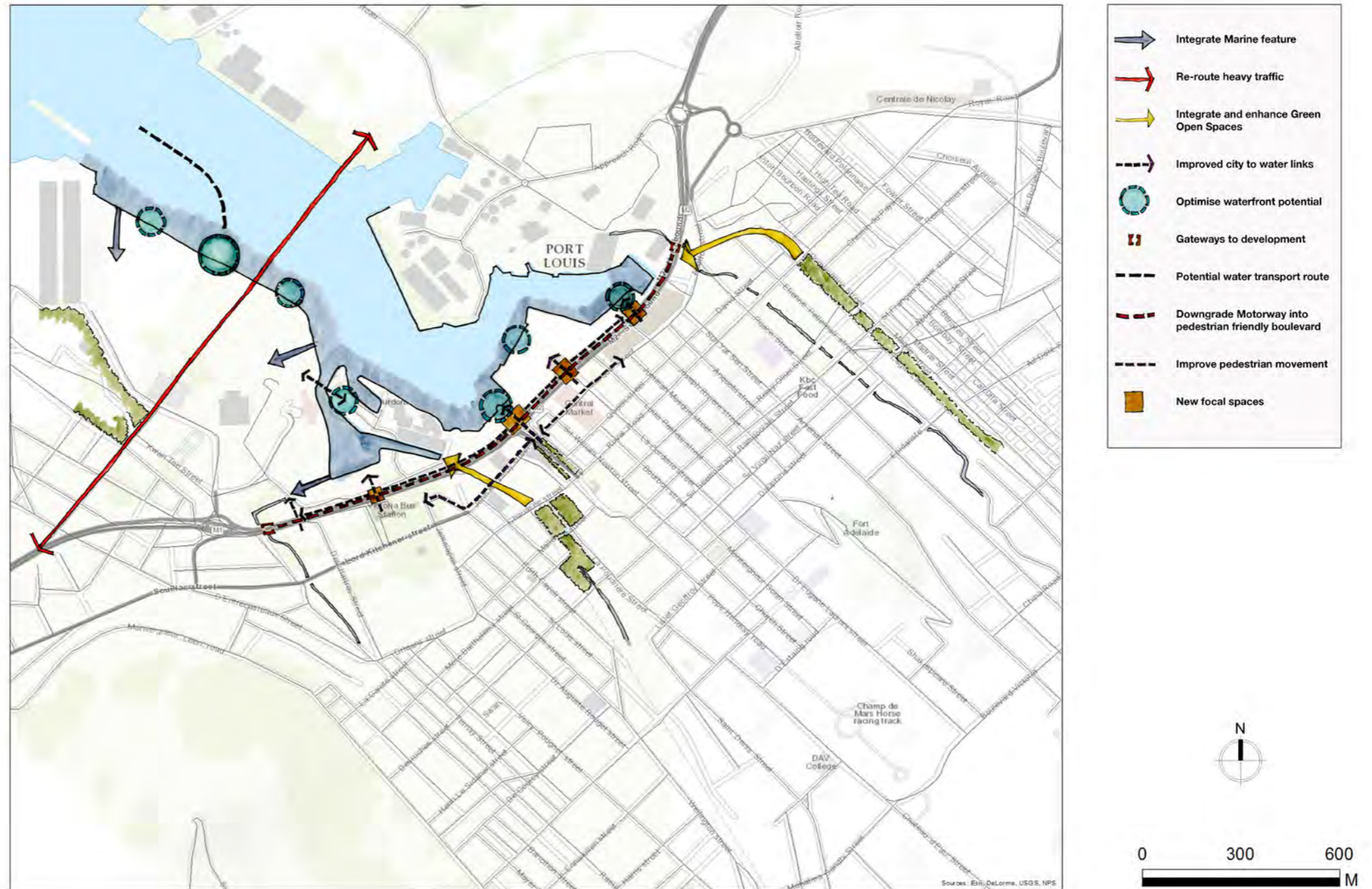
The contextual appraisal map illustrates a number of issues which currently restrict humanist activity within the Interface zone:

1. The Motorway which forms a physical barrier between city and sea
2. Large areas of valuable urban land dedicated to transit nodes where buses are stationed during the day
3. Limited green and open public spaces, which are not connected to each other
4. Areas around streams and canals are not people-friendly
5. The Waterfront is isolated and separated from the city. It is perceived to be an exclusive area for tourists
6. A large poorly defined area to the West of the Harbour is currently vacant and under-utilised

Opportunities & Constraints

There is significant potential for development of the Interface through the following strategies:

1. Convert the Motorway into a pedestrian-friendly Boulevard with 'micro-interface' development linking land and water, and connecting to green spaces.
2. Define the Interface zone with gateway spaces positioned at the streams on the Northern and Southern sides of the Motorway.
3. Divert heavy traffic over the Harbour Bridge, (and via the Ring Road).
4. Enhance waters-edge potential through inclusion of multiple activity centres that draw people to the ocean.
5. Inclusion of a water transport route to meet the Interface from the sea.
6. Integrate marine features with the land.
7. Transit nodes within the precinct to cater for drop-offs only. Buses to be stationed outside the city boundaries.



Transport

Road is the only form of land transport in Mauritius (Menon 2004). Port Louis is extremely congested, particularly during peak hours because of huge numbers of vehicles entering and leaving the city during these times of the day. Privately owned cars and goods vehicles contribute most significantly to the congestion (Menon 2004). It is estimated that the cost of congestion (in terms of wasted time, fuel and loss of productivity) amounts to over 1.2 billion rupees (around 33.8 million US\$ annually). An average motorist can spend as much as 600 hours in traffic per year (Menon 2004).

Most streets in Port Louis are orientated in a rectangular grid pattern and there is little potential for large-scale road improvement within the boundaries of the city. Many streets are narrow and parking is limited (approximately 8000 parking bays in the city) (Menon 2004).

Despite this, many people prefer using private cars for transportation for a number of reasons: Firstly, the public transport system is inefficient, unreliable and inadequate for the number of commuters (MH&L 2015). Secondly, there has continuously been heavy investment in mobility routes which encourages the use of private transport and thirdly, new (imported) cars have become more accessible to the growing working class due to liberalisation of tariffs and taxes on these automobiles (Bell and Jayne, 2006). The bus service in Mauritius is currently inadequate. Although there are some 900 bus stations across

the island, buses infrequently travel to the more rural areas. In Port Louis, buses operate from 05h30 to 20h00, and there is a late service between Port Louis and Curepipe until 23h00. Bus transport is fairly inefficient as buses stop frequently and a trip from Port Louis to the airport (approximately 35km) could take up to 80 minutes (<http://www.mauritius-buses.com>).

While bus stations and allocated bus bays exist, buses often do not stop there but rather stop

in the vehicle lane in which they are travelling because it is difficult to get back into the main traffic stream after stopping in a bus bay. This naturally results in compromised passenger safety, increased accident risk, and more traffic congestion (Menon 2004). Commuters complain that buses are poorly maintained, slow, uncomfortable, overcrowded and poorly driven and regularly break down (Menon 2004).

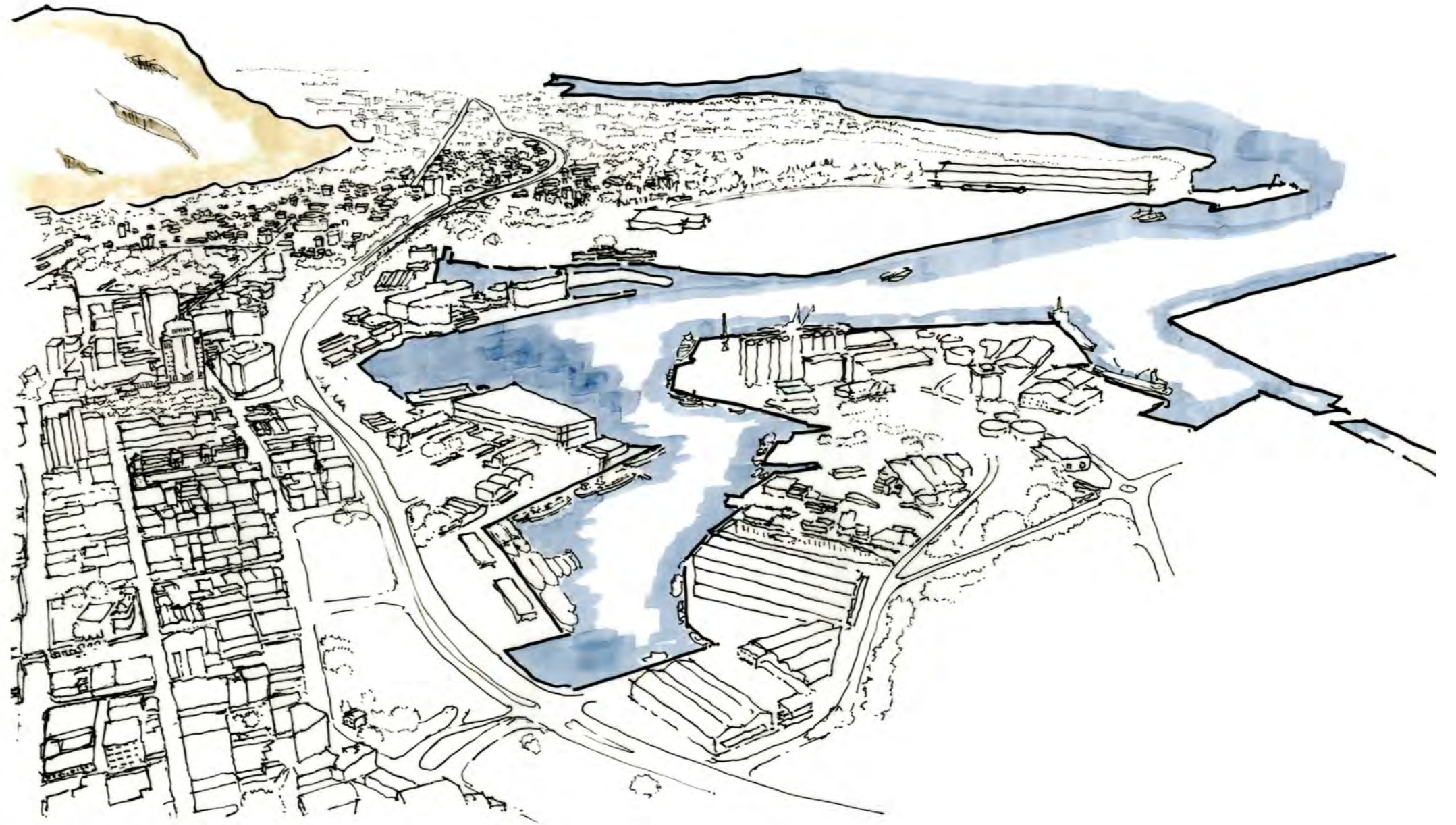
The degree of congestion in Port Louis has a significant negative environmental impact on the city. Heavy traffic, particularly with large numbers of trucks, freight vehicles and buses contributes not only to congestion on the roads, but also to noise and pollution. High numbers of larger vehicles travelling within the city reduce the walkability within the city because pedestrian-tolerance is reduced. Perceived and actual physical danger to pedestrians increases with larger vehicles on the roads. In Port Louis this is a serious negative imposition, particularly on The Interface, where pedestrian activity should be safe, comfortable and pleasant.

Period	Inbound	Outbound	Through traffic
0700-1700HRS	66775	61169	26130
0700-1000	25776 (39%)*	15865 (26%)*	8326 (32%)*
1400-1700	19216 (29%)*	21260 (35%)*	8095 (31%)*

Table showing traffic composition in Port Louis during peak hours, Survey dated 2004. (Menon 2004: 13)

Type of vehicles	Morning inbound (0700-1000HRS)	Evening outbound (1400-1700HRS)
Car	51%	47%
Bus	9%	5%
Van/pickup	25%	28%
Lorry	2%	5%
Motorcycle	13%	15%

Table showing traffic volumes in Port Louis at different times of the day
Figures in brackets indicate percentage relative to the total daytime (07h00-17h00) value
 (Menon 2004: 12)



Site Images from Author's Collection



Land Use & Zoning as an Urban Issue



Port Louis follows the typical Western trend of land use and zoning in that the CBD is designed primarily for commercial activities. In addition, large commercial blocks are replacing residential properties that existed and there are very few apartment blocks in the city centre. According to the 2011 Census, Port Louis caters for 19% of all jobs in Mauritius, but only 10% of residents (MH&L 2015). As a result, the city centre appears deserted and lifeless after-hours and over weekends. During the week, commuters have to make their way from neighbouring or more distant towns to work in Port Louis, which contributes to traffic congestion (MH&L 2015).

The Caudan Waterfront

The waterfront area has been a major addition to the urban fabric of Port Louis. Modelled after the V&A Waterfront in Cape Town (Bell and Jayne, 2006), this development comprises spaces for retail, office and leisure activities. This was a significant (private) investment, which necessitated land reclamation. The proposed urban development to the North-West of the city centre also calls for similar investment. Consequently, less attention has been and is being given to the city centre in terms of urban rejuvenation.



Pedestrian Unfriendly

The city-centre is unfriendly and unsafe to pedestrians, largely due to street traders who appropriate available open spaces. Most pedestrian spaces lack greenery and are harsh and uncomfortable thus making the pedestrian experience quite unpleasant (MH&L 2015). There are insufficient footpaths within the city fabric, and existing pedestrian routes are poorly maintained and generally quite pedestrian-unfriendly. While motorists and pedestrians tend to observe traffic lights and Zebra crossings, the locations of these often contribute to traffic congestion (Menon 2004).



5

URBAN DESIGN THEMES, CURRENT THEORY, DESIGN PRINCIPLES & CASE STUDIES

Introduction

Port Louis, like any other city should strive to be a humanist city - a city for its people. This chapter seeks to identify factors that facilitate the making of a humanist city.

Themes relating to the urban issues facing Port Louis were identified, and case studies of cities where similar issues have been addressed were appraised. The intention was to ascertain specific intervention points that may be applied in Port Louis to create the right kind of urban environment for the 'interface'. The identified issues and case studies are:

(1) Foreshore Development & Waterfront Design Principles

- Case Study:
1. Barcelona, Spain
 2. San Francisco, USA
 3. Melbourne, Australia
 4. Marseilles, France
 5. Stockholm, Sweden
 6. Cape Town, South Africa

(2) Downgrading the Urban Freeway

- Case Study:
1. Boston, Massachusetts, USA
 2. Seattle, Washington, USA
 3. Portland, Oregon, USA
 4. San Francisco, Ca, USA
 5. Seoul, Korea

(3) T.O.D & Transit Oriented Development

- Case Study:
1. Brazil
 2. Rosslyn-Ballston Corridor, Washington DC, USA

(4) Urban [street] markets

- Case Study:
1. Singapore
 2. Bangkok, Thailand

(5) Figure-Ground, Linkage & Place Theory

(6) Form-Based Coding

Precedents and case studies were examined in order to understand what a humanist city is, and how Port Louis could become one.

Theme 1: Foreshore Development & Waterfront Design Principles

Port-city relations have become an issue in many cities around the world (Hoyle, Pinder and Husain, 1988). Evolving maritime technology has precipitated a change in how port cities function: Historically, harbours and ports were actively integrated into the fabric of the towns they served, but modern seaports act as gateways rather than central urban hubs with port functions spatially separated from those of the city (Hoyle, Pinder and Husain, 1988). The 'retreat from the Waterfront' is a well-recognised trend that has presented challenges but also urban design opportunities (Hoyle, Pinder and Husain, 1988).

Indeed, Port Louis has witnessed such an evolution. The harbour was initially the focal point of the settlement, but now it is separated from the city. This happened for port functions like container storage and cargo-handling to take place in a manner suited to current technological and ecological systems.

Many port-cities have acknowledged the great potential for redevelopment of waterfront precincts. The Caudan Waterfront in Port Louis is such an attempt at improving the character of the harbour area. Unfortunately, it has been designed with tourists as its predominant target audience. Hence, it is not integrated into the framework of the city, and does not function for local residents of Port Louis or Mauritius as a whole.

A number of case studies illustrate principles of waterfront redevelopment that benefit the port, city and residents, which may be considered as part of an integrative urban intervention for the Waterfront area in Port Louis. It is clear in all examples that the greatest success is achieved through a design approach that integrates the waterfront area with the fabric of the city - the interface between water and city is of over-riding importance.

Case Studies for Theme 1

Case Study 1: Barcelona, Spain

Prior to the urban changes necessitated by the 1992 Olympic Games, the city fabric of Barcelona was separated from the harbour by the B-10 highway. The harbour area, Port Vell, was derelict, characterised by run-down abandoned warehouses, railroad yards, old factories and refuse dumps (Yeh, 2015).

When Barcelona won the bid to host the Olympic Games, the city embraced the opportunity to redevelop her Waterfront area (Yeh, 2015).

Port Vell, the interface between the city and the sea is integrated elegantly into the urban fabric of the city and facilitates an open relationship between central Barcelona and the ocean (Yeh, 2015).

The highway was concealed underground and La Rambla, the most famous **pedestrian street** in the city was **connected to the Waterfront** by an area of urban rejuvenation that incorporated parks and walkable neighbourhoods. Rambla de Mar, a pedestrian bridge was erected to connect La Rambla with the pier. **Once pedestrian access to the harbour was established, development followed spontaneously** and this interface area now hosts numerous public spaces, shopping centres, an iMax theatre complex and an aquarium (Yeh, 2015).



Figure 5.1 - Las Ramblas is an important axis in linking Barcelona to the waterfront. Source: (Barcelona4foreigners.blogspot.co.za, 2015)



Figure 5.2 - Pedestrian Bridge at the Barcelona Waterfront. (Source: Yeh, 2015).



Figure 5.3 - Barcelona has the characteristics of a successful port city. (Source: Yeh, 2015).



Figure 5.4 - The Barcelona Waterfront as an interface. (Source: Yeh, 2015).

Case Study 2: San Francisco, USA

The city of San Francisco faced a situation whereby the historical Port area had become separated from the rest of the city, visually, functionally and physically as a result of a number of physical and social barriers (including the Embarcadero Highway). The Waterfront Plan, which directed development of the Waterfront area, outlined a number of strategies to facilitate reuniting the City with the Waterfront:

1. **Sensitive Urban Design** for the Waterfront: It was paramount that any development respect the historic context and buildings of the precinct.
2. **Accessibility:** Accessibility to the Bay area was enhanced by improving integrated transport facilities, and connecting a network of quality open spaces, parks, walkways and plazas. Visual and physical accessibility was enhanced.
3. An **evolving Waterfront** for the past and future: Enhancements to the historic character of the Waterfront were made while creating opportunities for future development that would encourage **locals (as well as tourists)** to enjoy the Waterfront as part of their daily lives.
4. **Diversity:** It was recognised that port areas should accommodate an array of different activities – maritime, civic, commercial, entertainment, recreational, retail, and even residential – to encourage activity during the day and night.

(The Port of San Francisco, 2004)

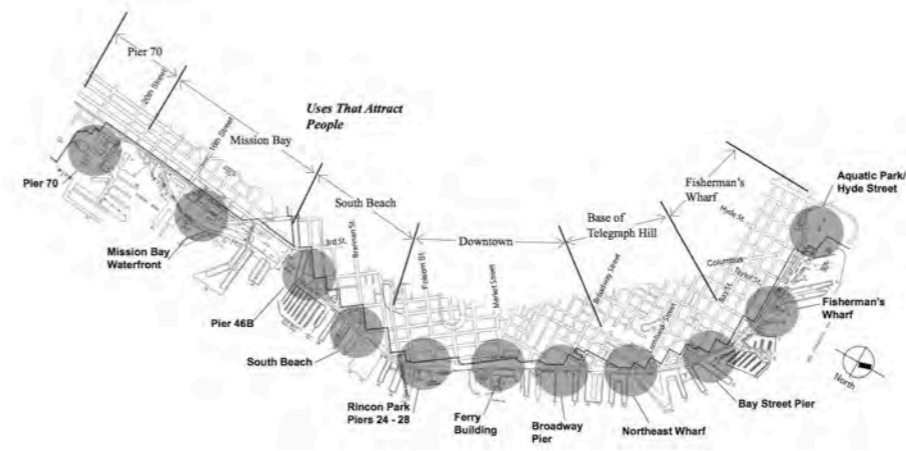


Figure 5.5 San Francisco's connection areas with the ocean (Source: The Port of San Francisco, 2004).

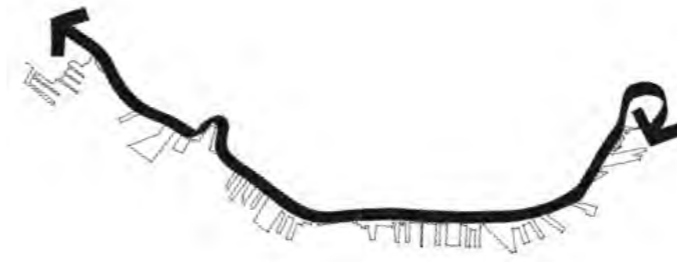


Figure 5.5(a)



Figure 5.5(b)

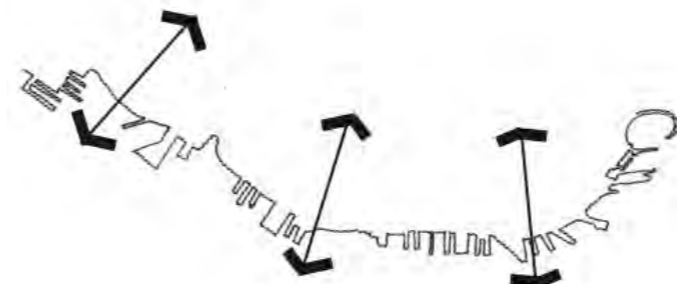


Figure 5.6(c) Continuity, Sequence, Connection are main elements in improving San Francisco's waterfront interface. (Source: The Port of San Francisco, 2004).

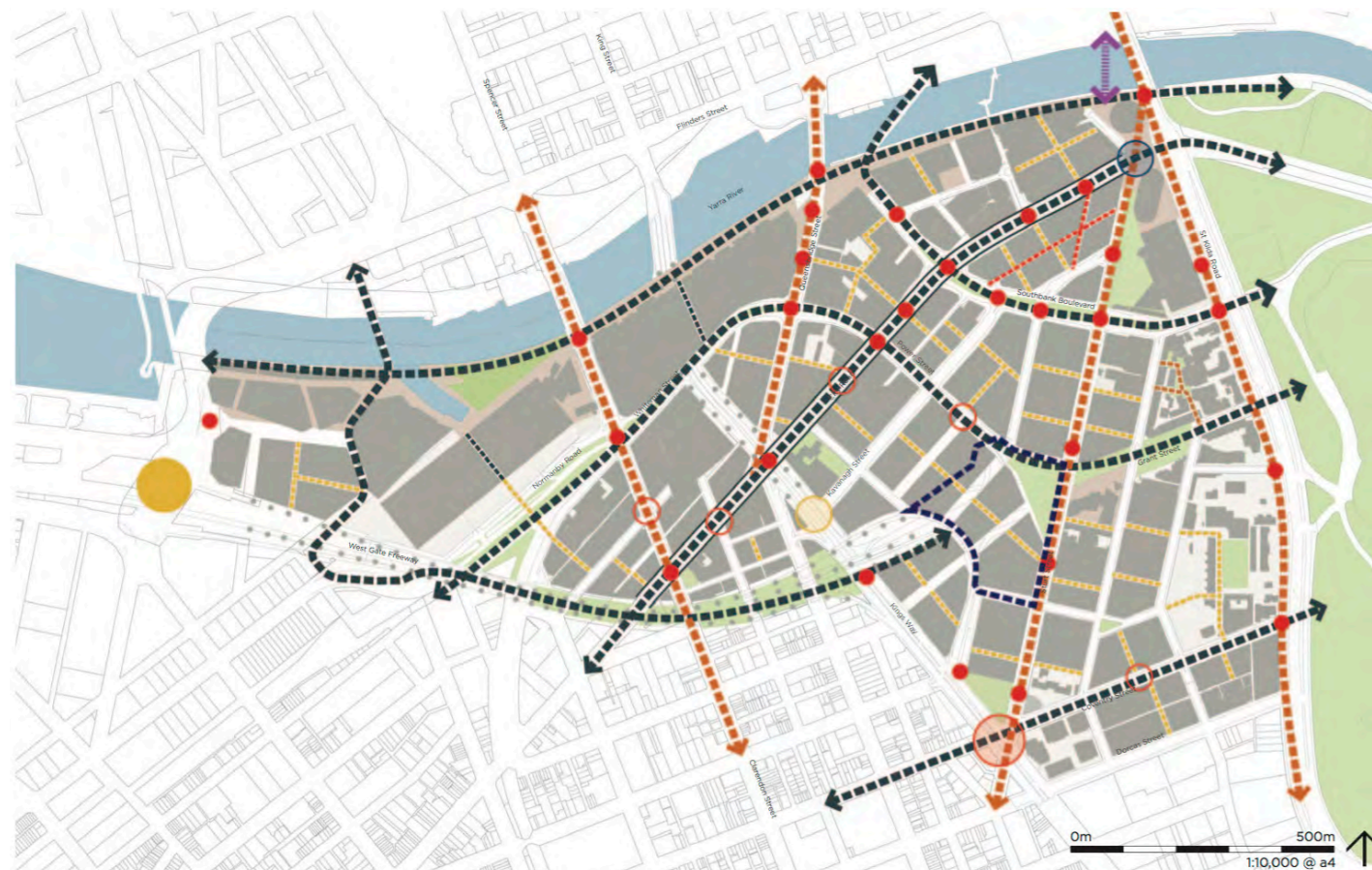


Figure 5.7 - Melbourne Southbank structure plan (2010) showing improved pedestrian access to riverfront area. (Source: Southbank Structure Plan 2010: A 30-year vision for Southbank, 2010)

Case Study 3: Melbourne, Australia

Melbourne is praised for being one of the world's most liveable cities (Dovey, 2005). The city is situated along the Yarra River, a few kilometres inland from Port Phillip Bay (Dovey, 2005). The city has historically been divided by the river: During the late nineteenth century, the rectilinear city grid was on the northern side of the river, while the area on the southern side was less rigidly arranged and accommodated predominantly cultural and leisure activities, like a theatre, fun-parks and the circus (Dovey, 2005).

By the mid-twentieth century, the Southbank area became home to factories and industry as well as large parking lots, deteriorating the urban quality of the riverscape (Dovey, 2005) – the railways and unattractive industrial architecture were reflected in the polluted river water (Dovey, 2005). In 1982, it was acknowledged that the Yarra River needed revival, and the Minister for Planning and Environment at the time proposed a vision for development of the Southbank as an urban river (Dovey, 2005).

The Southbank vision was based on a number of principles:

1. The downtown and river precincts should function in a complimentary manner in order for **locals and tourists** to frequent both areas. Specifically, the Southbank area should capitalise on its Arts Centre to attract visitors.
2. Residential, commercial and retail spaces should co-exist with **mixed massing** and functionality to introduce urban and **social diversity**.
3. **Accessibility** should be a priority so that the public can enjoy a vibrant urban waterfront experience.
4. The government would direct progress through provision of development guidelines and public infrastructure (like a pedestrian bridge connecting the city to the train station and a substantial promenade along the south bank) and would partner with private sector developers for mutual benefit (Dovey, 2005).
5. At least 50% of all activity happening at ground floor level was to be retail to ensure an **active edge** on the waterfront (Dovey, 2005)

By 1992, when the Southbank project reached completion, Melbourne had transformed. The river had been revived and locals and visitors began to experience the city in a completely different way – the waterfront area was a sunny, lively place and provided a new vista of the Melbourne skyline across the river (Dovey, 2005).

Case study 4: Cape Town, South Africa

The Victoria & Alfred (V&A) Waterfront project began in 1988 when 123 hectares of underutilised harbour installations were earmarked for redevelopment. The mandate was to revitalise the historic docklands around the Victoria and Alfred basins to accommodate residential, retail and leisure activities targeting tourists and locals alike while facilitating the continued operations of the working harbour (Birkby, 1998).

The V&A Waterfront has been an impressive addition to the recent evolution of Cape Town's foreshore and is one of the city's major tourist attractions (Birkby, 1998).

Importantly, this development has been planned as an **integrated** addition to the city centre. Landscape architects involved in the design of The Waterfront were also instrumental in two urban projects (Greening the City and The 1985 Pedestrian Plan for the CBD), and a pedestrian continuum was envisioned to run from Parliament and the Company Gardens via St Georges Mall to Thibault Square and from there, across the Foreshore to the Pierhead, thus connecting The Waterfront to the centre of the city (Birkby, 1998). The Waterfront is not purely a shopping mall – it comprises **numerous urban spaces**: quays, lanes, pavements, and other walkways connect old and new buildings and link fluidly with the 'semi-private' street-like interior of the Victoria Wharf (Birkby, 1998).

Furthermore, **public transport** (namely an initial half-hourly bus service from the city centre/station via the Waterfront to Sea Point which was later expanded to include formal 'Waterfront' taxis running between large hotels, the Waterfront and the airport, and more recently the informal minibus taxi service ubiquitous in all major South African cities) was integrated into the traffic control strategy for the development (Birkby, 1998).



Figure 5.8 - The V&A Waterfront has a series urban spaces which are geared towards human comfort and appeal (Central City Development Strategy, 2015)



Figure 5.9 (a & b) - The V&A Waterfront was designed to be an integrated addition to the city centre (Central City Development Strategy, 2015)



Figure 5.10 - Images depicting the Waterfront precinct in Marseilles (Diedrich, 2015)

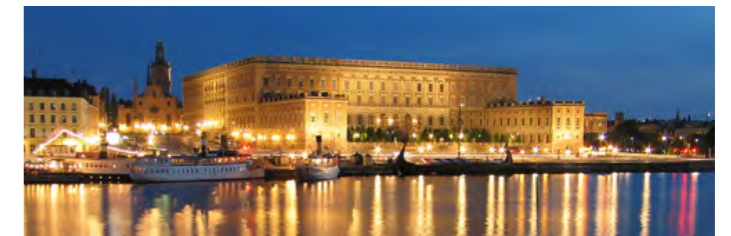
Case Study 5: Marseilles, France

Some believe that the rejuvenation of seaside cities and towns like Marseilles is detracting from their historical identities and charms – characterised by the smells, grime and coarseness of the harbour. However, development of pleasant public spaces, desirable accommodation, options for leisure and cultural activities, and efficient public transport systems has resulted in an urban revival. Marseilles won the 'European Capital of Culture' title in 2013 (Jeffries, 2015).

(Diedrich, 2015)

Case Study 6: Stockholm, Sweden

Stockholm is situated where the Malaren Lake meets the Baltic sea and incorporates 14 islands. The city has a vast and walkable network of water-side parks, recreational areas and attractions that make for a pleasant and enriching urban experience (Themisanthropesjournal.blogspot.co.za, 2015).



Principles for application in Port Louis: Foreshore and Waterfront Development

1. Establish pedestrian accessibility to the Waterfront
2. Pedestrian-friendly streets
3. Historically sensitive urban design that respects heritage
4. Mixed-use development accommodating diverse activities for locals and tourists
5. Active urban edge
6. Harbour area to accommodate numerous urban spaces for integration into city
7. Functional, efficient and accessible public transport
8. High-quality public spaces to encourage social diversity

Theme 2: Downgrading the Urban Freeway

Introduction: Argument for downgrading the M1-M2 Motorway

Since construction of the M1-M2 motorway in the 1960's which connected Port Louis to other parts of the island, there has been a significant and exponential increase in private motor car ownership. The current road infrastructure is burdened with a high traffic load, and is heavily congested, inefficient and often unsafe for commuting (Port Louis Outline Planning Scheme, 2015).

"Now that motorcars have become universal, many people take for granted that pedestrian movement will disappear and that the railroad system will in time be abandoned; in fact, many of the proponents of highway building talk as if that day were already here, or not, they have every intent of making it dawn quickly." (Mumford, 1963).

Urban freeways often cut through the heart of cities and create a fragmented urban fabric. Innovative alternatives are being explored in many cities globally, with the aim to **integrate the urban tissue**, as well as discourage use of cars within the city centres. In order to encourage **walkability** in the inner cities, parts of freeways are being turned into **boulevards**, which accommodate both motor vehicles and **activities associated with pedestrian movement** (DiMento and Ellis, 2013).

For this to happen in Port Louis, we must look at movement, particularly at the interface, as an integral and central part of any urban rejuvenation intervention.

Case Studies for Theme 2

A number of case studies follow which illustrate how **down-grading urban freeways impact positively on urban quality**, and often does not result in greater traffic congestion. It must be acknowledged that removal of inner-city highways is not a stand-alone urban solution, but should be used as a design concept which should be integrated with other interventions such as upgrading public transport systems, and enhancing pedestrian circulation routes (Mumford, 1963).

In Port Louis, tremendous potential exists for the creation of a quality interface between city and sea. Therefore, downgrading the M1-M2 highway must be considered: For man to meet water, there should be no physical barrier.

Case Study 1: Boston, Massachusetts, USA

The Central Artery (I-93), a 6-lane highway running through Boston was replaced by an eight- to ten-lane **underground freeway**. The project included construction of two new bridges across the Charles River, and **facilitated reconnection between downtown Boston and the Waterfront**. Subsequently, traffic congestion has been reduced and accessibility within the city has improved. Not only is the urban environment more pleasant, but approximately 300 acres of land was released as a result of the urban intervention which has allowed for desirable economic growth in one of America's oldest cities (DiMento and Ellis, 2013).



Figure 5.11 (a, b, c, d & e) - In addition to improving mobility in downtown Boston, the Project reconnected neighbourhoods that had been severed by the old elevated highway, and improved the quality of life in the city through incorporation of pedestrian-oriented green spaces. The Greenway is a new tree-lined boulevard in Boston's downtown corridor which comprises several miles of new and refurbished sidewalks. The Central Artery/Tunnel Project has created more than 45 parks and major public plazas, making downtown Boston a more humanist and pedestrian-friendly zone. (Source: Massdot.state.ma.us, 2015).



Figure 5.12 a (top) & b (above)- Alaskan Way Viaduct, Seattle: By tucking the freeway in an underground tunnel, local neighbourhoods are better connected to the waterfront
(Source: Walker, 2015)



Figure 5.13 a (top) & b (above)- By building an underground tunnel for the freeway, it is possible to create a walkable waterfront precinct.
(Source: Jaffe, 2015).



Figure 5.14 a & b - Public spaces and walkways are created for local residents to enjoy.
(Source: Jaffe, 2015).

Case Study 2: Seattle, Washington, USA

The Alaskan Way Viaduct is a section of Highway 99 which runs the length of Seattle's downtown, along the Waterfront. In a similar manner to the M1/M2 motorway in Port Louis, it effectively separates Seattle's Waterfront area from the urban fabric of the city (<http://grist.org/cities/seattles-unbelievable-transportation-megaproject-fustercluck/>). The city officials in Seattle acknowledged the disadvantages of this arrangement and three solutions were proposed:

- (1) Replace the Viaduct with a new elevated freeway **elsewhere** in the city;
- (2) Convert it into a **walkable waterfront** area with a four-lane street, and upgrade surrounding thoroughfares to accommodate traffic overflow;
- (3) Replace the section of the Viaduct separating the Waterfront area from Seattle's downtown with an **underground tunnel**.

The latter proposal was accepted but has proven a suboptimal solution due to engineering challenges and the financial implication for the city. However, the city is making progress with respect to **urban rejuvenation in the waterfront/ Elliott Bay area** as parking lots have been converted into parks and **pedestrian-friendly leisure areas**. James Corner (an urbanist credited with the vision for New York's High Line Park) has proposed a number of interventions for Seattle, some of which are already being implemented: He recommends that Elliott Bay should be viewed as a potentially **continuous chain of public spaces**, including recreational facilities and venues for cultural activities to take place, which may be reconnected with downtown Seattle through a new pedestrian-friendly street grid (Jaffe, 2015).

Case Study 3: Portland, Oregon, USA

The city of Portland, Oregon was one of the first cities in the United States to embark on an urban intervention involving **highway demolition**. The six-lane Harbour Drive Freeway (Route 99W) was constructed in 1942 and ran for approximately 3 miles along the Willamette River to connect Lake Oswego, an industrial area and areas south of downtown Portland. Harbour Drive was closed in 1974 after a decision was taken to beautify the area around the waterfront. It was replaced by a **37-acre park**. The urban character and quality of downtown Portland improved significantly and no adverse impacts were noted with respect to traffic congestion on streets in the neighbourhood (DiMento and Ellis, 2013). In addition to the several parks that were created, other aging buildings were also removed to allow for **additional public space, and the revitalized river** also helped to spur development in the now very popular industrial areas just to the west of the banks (Walker, 2015).

Case Study 4: Seoul, Korea

An elevated highway was constructed above a river in Seoul to alleviate severe traffic congestion in the city. The result was a harsh and unattractive cityscape.

Mayor Lee (who has subsequently been elected president of Korea) was instrumental in having the elevated highway removed, and restoring the river to its former state with numerous urban riverside parks along its course (Visions2200.com, 2015)

This area of Seoul is now more vibrant, alive and active. The **interface between land and water** has been transformed into a more pleasant urban environment, where people want to be.

Case Study 5: San Francisco, California, USA

Following the partial demolition of a section of the Central Freeway as a result of the 1989 earthquake in San Francisco, residents and officials in the city began to consider alternatives to having an inner-city highway. Traffic congestion, pollution and noise levels in the area decreased significantly during the time when the highway was closed to traffic. In 1999, the proposal to retrofit the highway was rejected, and instead, the decision was taken to construct the Octavia Boulevard. On the northern end of the boulevard is Hayes Street commercial corridor and an urban park. Four centre lanes are dedicated to through-traffic, while there are two local side-lanes for those visiting or living in the area. Parking is provided through on-street parking lanes, and landscaped dividers contribute beauty and charm to the streetscape. The removal of the highway released a large area of land for urban development, and has facilitated substantial improvements to the overall urban character of that part of the city (DiMento and Ellis, 2013).

It was envisioned that the Embarcadero Freeway would connect the Golden Gate Bridge and the Bay Bridge, thereby enhancing traffic flow across San Francisco. However, only a section measuring 1.2 miles was built before it was realised that valuable urban land was being underused.

The highway was completely demolished and instead a **waterfront boulevard** including a new tramway was constructed. Freeway demolition **enabled development in new neighbourhoods** (South Beach and Rincon Hill), freed up space for the setting up of urban housing units as well as commercial buildings and supported **connection between the city and the waterfront** (DiMento and Ellis, 2013).



Figure 5.15 a(above) & b(below) - Harbour drive freeway was replaced by a long stretch of open space along a long portion of the riverfront, facilitating access to the river. (Source: Walker, 2015).



Figure 5.16 a(above) & b(below) - The freeway was converted into a boulevard which includes miles of public space, walking and bike paths and new transit routes. (Source: Walker, 2015).



Figure 5.17 a & b - The elevated freeway was removed and the river was transformed into a green stretch of parks and pedestrian spaces. (Source: Visions2200.com, 2015).

Principles for application in Port Louis: Down-grading the Urban Freeway

1. Down-grade large motorway to facilitate connectivity between different parts of the city
2. Incorporate pedestrian-friendly boulevards
3. Re-route heavy traffic flow around the city or underground
4. Network of connected public spaces
5. Focus on the interface between land and water: Integration of Waterfront with the rest of the city
6. High-quality public spaces for recreation and leisure

Theme 3: Transit-Oriented & Transit Friendly Development

In order to achieve a humanist city, we must focus on designing transit-friendly streets through Transit-Oriented Development (TOD). By placing greater importance on the role that public transportation plays in our inner city streets, we can encourage and improve 'liveability' in our urban areas (Transit Cooperative Research Board, 1998).

Transit-Oriented Development (TOD) as a practice essentially **combines relatively intensive land-uses and activities with public transport**. TOD aims to create **vibrant, mixed-use communities** that are **walkable and centred around transport nodes**. Concentrating development along transit corridors means that living, working and playing may be integrated (Making of Cities, 2014).

Transit-friendly streets should be **integral** to TOD. These are streets designed to support an efficient, convenient and safe public transport system. Motor cars are accommodated but given lower priority.

Transit-friendly streets

Exhibit a clear priority for public transport services and transit vehicles operations, with dedicated, convenient, accessible transit stops;

Are designed to reduce conflicts between vehicles through speed reduction and specified uncomplicated routes;

Are pedestrian-orientated with adequate safe high-quality circulation space, thoughtfully placed pedestrian crossings, and appropriate amenities for convenience and comfort (TCRP Report 33).

Ease congestion, fewer car accidents, increased public transport

Benefits of TOD and transit-friendly streets include (Newurbanism.org, 2015):

Improved liveability;

Improved mobility and accessibility;

Decreased reliance on motorised transport resulting in less congestion, fewer car accidents, increased public transport use, decreased household spending on transport;

Healthier citizens due to increased physical activity;

More affordable accommodation and housing;

More stable property values;

Economic benefits for local business;

Reduced negative environmental impacts;

More compact urban development and reduced urban sprawl;

Less stress

The focus of TOD is the development process, place-making and planning for provision of facilities which allow for mixed-use activities to occur (Jacobson and Forsyth, 2008). Such interventions should be planned in collaboration with the communities they will impact, as part of larger liveability-enhancing strategies (TCRP Report 33). The street is a fundamental public space in all urban contexts with a multipurpose role. If designed to accommodate and balance the needs of all who make use of it, the street contributes significantly to the quality and liveability of a place by enhancing the comfort, convenience and safety of transport-users, pedestrians, bicyclists, and motorists (TCRP Report 33).

Transit is itself an interface, a place between departure and destination, and offers opportunities for enhanced urban experience. In Port Louis, (at both the interface between the city and the ocean, and that between the city and the rest of the island) transit-oriented development holds great promise to improve the function and overall character of the city.

Case Studies for Theme 3

Case Study 1: Brazil

Urban development in Brazil has historically been characterised by sprawl and disconnection, with people living great distances from the city centre, and subsequently having to rely heavily on motorised transport. The result has been unsustainable environmental impacts, unacceptable individual financial expense, and isolation of lower-income groups from work opportunities and social benefits (Zottis, 2015).

Transit-oriented development, characterised by being '**compact, coordinated and connected**' has proven an effective means of making communities in Brazil more sustainable, efficient and equitable (Zottis, 2015).

A number of principles of TOD have been described and implemented in a number of cities in Brazil. These are briefly outlined below:

1. **Quality Public Transport:** High-quality efficient, affordable and convenient public transport is key to successful urban development as it allows a large number of people access to the city.

2. **Active transport:** A shift away from motorised transport (especially the private car) to more active transport means like walking and cycling not only is more environmentally friendly, but also promotes community health and facilitates social interaction.

3. **Car use management:** Policies relating to urban car use and parking should discourage inner-city car use as far as possible to promote more human-orientated urban environments.

4. **Mixed-use neighbourhoods with efficient buildings:** Inner-city densification with a diversity of uses improves the social and economic quality of cities. Additionally, buildings should be designed with sustainability in mind – reduced energy and water demands benefit the city and economy in the long-term.

5. **Vibrant ground floors, Neighbourhood Centres and Quality Public Spaces:** Cities with quality public spaces that are **safe, connected** to the transport network and facilitate **human-centred activity promote social interaction and inner-city living**, as well as providing equitable access to facilities for residents and visitors.

Active ground floors are essential to quality neighbourhoods. Public spaces that are safe for pedestrians and cyclists promote social interaction.

6. **Collective Identity:** Community participation helps to build inclusive neighbourhoods that are safe, equitable and harmonious.

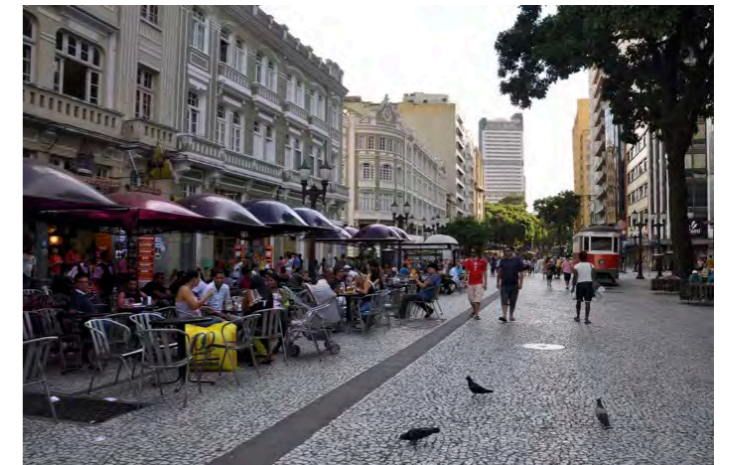


Figure 5.18 a, b & c - Examples of TOD in Brazil. (Zottis, 2015).

Case Study 2: Rosslyn-Ballston Corridor, Washington DC, USA

The Rosslyn-Ballston Corridor provides an interesting juxtaposition of two urban strategies. Nine metro stations were placed along a corridor in Arlington County. The first five stations were placed close together and underground. 'Bullseye zoning' directed development around each of these stations: **Highest density directly adjacent to the station** which then tapered to medium density and then to lower density in order to blend with the surrounding historical suburban neighbourhood (Making of Cities, 2014).

The urban design around the last four stations towards the end of the line was simpler, with stations placed above ground in the centre of the highway.

Thirty years after this corridor was first initiated, the urban quality differs drastically between the first five and last four stations: Development around the first five stations has evolved into a **mixed-use, compact, walkable urban quality** that is pleasant and efficient. The latter four stations are surrounded by unattractive parking lots (Newurbanism.org, 2015).

Of the 40 000 passengers making use of the five urban stations, 73% arrive on foot. This means that they do not need a car, bus or parking space, which saves money, physical space, pollution and fuel. Approximately 29 000 people board daily at the four suburban stations and 58% arrive at the station by car (Newurbanism.org, 2015).

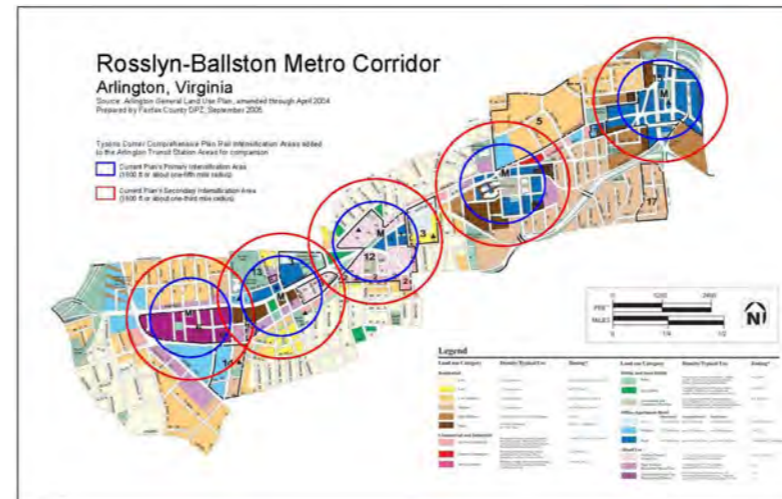


Figure 5.19 a & b - Map and bird's eye view showing the Rosslyn-Ballston Corridor densification around T.O.D. (Vatransit.com, 2015).

Principles for application in Port Louis: Transit-oriented and Transit-friendly Development

1. Combine areas with high-activity with public transport opportunities
2. Transit nodes should be integrated with transit-friendly streets
3. Walkability around public transport centres is vital
4. Quality public transport options that are efficient and safe
5. Highest density of urban development should centre around public transport
6. Accommodate active transport like cycling
7. Car use management as part of development strategy: Limit accessibility of motor vehicles to inner city
8. Quality public spaces around public transport nodes

Theme 4: Urban [Street] Market

In order to make the streets of Port Louis pleasant for pedestrians, one will have to tackle the issue of street vendors. Informal traders have appropriated most pedestrian spaces in the city centre, thus rendering walkability dangerous and unpleasant. The main issue is a lack of space to accommodate street trading. It is highly unlikely (and indeed undesirable) that street vending in Port Louis will be discontinued.

Street vendors exist wherever there is pedestrian movement and contribute significantly to the informal economy of the island. In many countries, informal trade has an important role to play in alleviating poverty and reducing unemployment (Dewar and Watson, 1990).

In many countries the provision of markets is considered as being fundamental to urban commercial and residential infrastructure (Dewar and Watson, 1990).

In Port Louis, an approach must be undertaken whereby the **informal sector is encouraged and assisted within urban movement areas.**

From the perspective of planning policy, it would be ill-advised to separate the formal commercial economy from the informal trading sector. Both economies are subject to similar stimulatory and depressive influences, and have related economic requirements. Informal traders need the infrastructure of the formal economy to support their enterprises, while the formal economy benefits from supplying the informal sector with goods and services. In a city like Port Louis, **provision of quality spaces for informal trade** will benefit not only the traders and their customers, but the economy as a whole. There is significant potential for the inclusion of urban market spaces in Port Louis to improve the vitality of the city (Dewar and Watson, 1990).

The most successful street markets are often not restricted to a single location, but rather consist of a **series of connected locations which follow pedestrian flow, and are integrated into the urban fabric** (Dewar and Watson, 1990). This is particularly relevant in interface areas, where people move in large numbers between specific locations.

Importantly, street markets must **not be disruptive to pedestrian or traffic movement**, and should **uplift the urban character** rather than downgrade it (Dewar and Watson, 1990). Currently the case in Port Louis is such that a lack of proper engagement from the city has resulted in street vending being the cause of chaos, pollution, noise and congestion.



Figure 5.20 - Street market in Singapore. (Source: Best-singapore-guide.com, 2015).



Figure 5.21 - Street market in Singapore. (Source: Putrichikitas.wordpress.com, 2015).



Figure 5.22 - Street market in Singapore. (Source: Petersen, 2015).

Case Studies for Theme 4



Figure 5.23 - Street market in Singapore.
(Asiaoceania.org, 2015)

Case Study 1: Singapore

Singapore is famous for its street markets. **Streets which act as thoroughfares during the day are closed to traffic at night** and transformed into dynamic and vibrant pedestrian shopping areas (Dewar and Watson, 1990).



Figure 5.24 - Street market in Bangkok.
(bangkok.com, 2015)

Case Study 2: Bangkok, Thailand

Bangkok has over 260 areas designated for street vending and hawking. Many **streets are closed to traffic in the evenings and over weekends** to allow for safe and comfortable pedestrian movement amongst temporary market stalls. On wider roads, barriers are erected on the edge of lanes closest to the pavement to accommodate stalls along the length of the street (Dewar and Watson, 1990).

Principles for application in Port Louis: Urban (Street) Markets

1. Informal trade should be accommodated and encouraged in the city
2. Series of connected spaces that accommodate informal trade in a more formal manner often works best
3. Informal trade accommodated along pedestrian flow benefits traders and customers
4. Market spaces should not disrupt pedestrian or traffic flow
5. Street trade areas should uplift the urban character
6. Street markets are often successful in evenings and over weekends when offices are closed and streets can be closed to traffic

Figure Ground Theory, Linkage Theory & Place Theory

Figure-ground, Linkage and Place are three theories which are widely accepted and utilized in urban spatial design: . Even though they are three separate and differing theories, they are inherently tied to each other (Trancik, 1986).

Figure-ground theory stems from a graphic tool used to illustrate the **relationship between solid mass** (figure) and open voids (ground). Using figure-ground theory helps us understand the structural element of urban spaces, as well as the hierarchy of these spaces (Trancik, 1986).

Linkage theory is derived from **'lines'** connecting these urban spaces to each other. These lines are essentially representing the movement system between the different urban spaces: streets, pedestrian ways, linear open spaces or other linking elements (Trancik, 1986).

Place theory is based on those **human elements** which make an urban space **inviting** and **comfortable** for activities to take place. These components are derived from human needs, cultural, historical and natural contexts. In other words, it is this part of urban design that adds a sense of place and belonging to an urban space (Trancik, 1986).

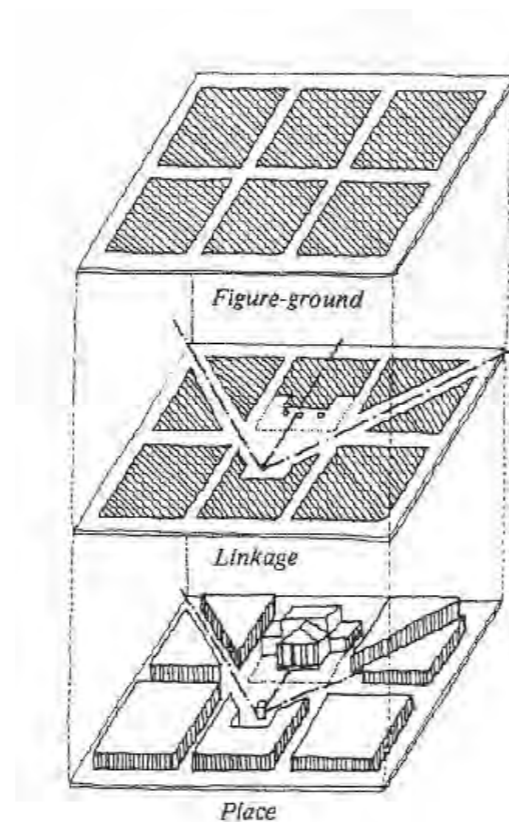


Figure 5.25 - Graphical depiction of Figure-ground, Linkage and Place Theory in Urban Analysis (Trancik 1986)

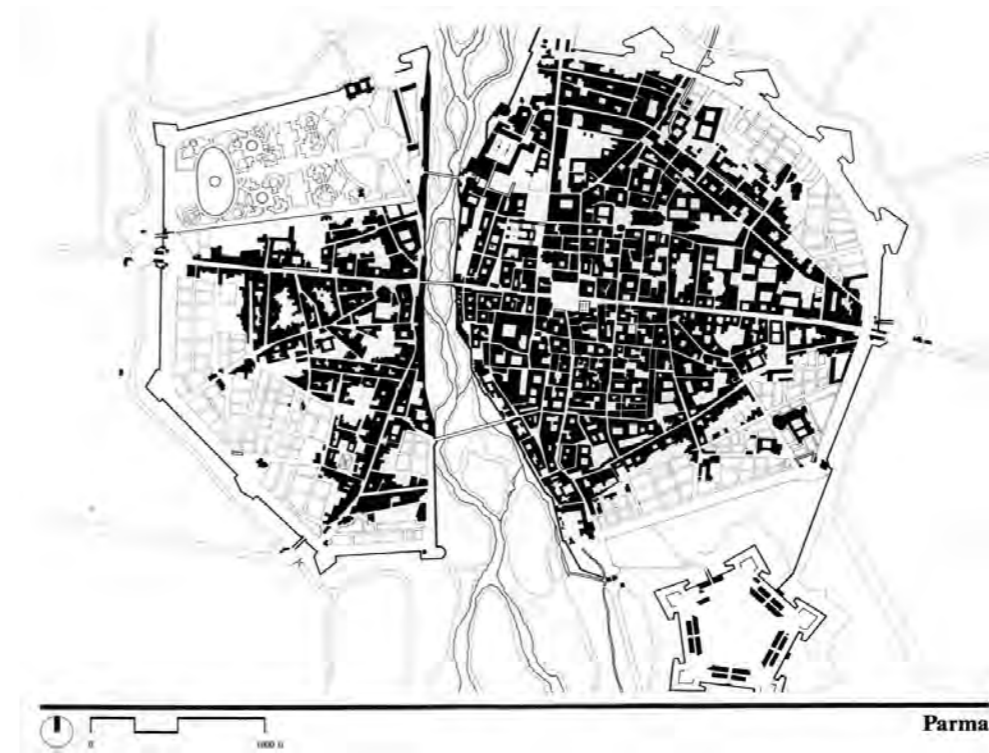


Figure 5.26 - Figure-ground map of Parma, Italy showing urban density(Quora.com, 2015)

Application in Port Louis:

1. Figure-Ground Theory: Refer to page 31. The Figure-Ground map shows areas of high density (city centre with commercial buildings and intensive business) and areas of low density (residential buildings in the outer regions). The currently un-developed harbour area must ideally have a similarly high density as the city centre.
2. Linkage Theory: The Map showing Axis and Views on page 35 illustrates the important visual axes between mountain and sea, which must be considered and used to enhance the *interface*. This axis naturally dictates movement and flow, and this should be emphasised through development of movement systems.
3. Place Theory: Port Louis has a rich cultural, historical and architectural heritage. Places and Spaces within Port Louis (refer to images in History Section) present us the inherited texture (coding) and architectural language which should sensitively be preserved and enhanced.

Form-Based Coding

Form-based coding emerged from the New Urbanist movement in the 1980s and is being employed as an essential urban design approach instead of the traditional zoning method. This design tool establishes a set of design principles and guidelines that remains largely unchanged throughout all future implementations of the concept (Sharp, 2004).

Experts argue that conventional codes, derived from zoning of uses, create a physical landscape that restricts optimal human movement, use, and enjoyment. Consequently, a coding system to better regulate physical elements that shape how we experience the urban environment has been developed: Form-Based Coding (FBC).

While zoning in the traditional sense separates urban areas according to use, form-based coding focuses primarily on urban form as the driver for development – the aim is to achieve a proper urban form (Why Form-Based code?, n.d.). Form-based coding recognises the importance of individual buildings, the streetscape and open spaces in shaping the public realm and creating a predictable and functional urban environment (Why Form-Based code?, n.d.).

While form-based coding is prescriptive with respect to building form requisites, it allows flexibility in use and evolution of space with time. The Form-Based Code Institute presents eight “Advantages to Form-Based Codes” (Boyer, 2010):

- (1) More public participation
- (2) Greater predictability
- (3) Smaller scale of development
- (4) More diversity
- (5) Greater compatibility
- (6) Easier use & interpretation
- (7) Easier enforcement & administration
- (8) Higher quality public realm

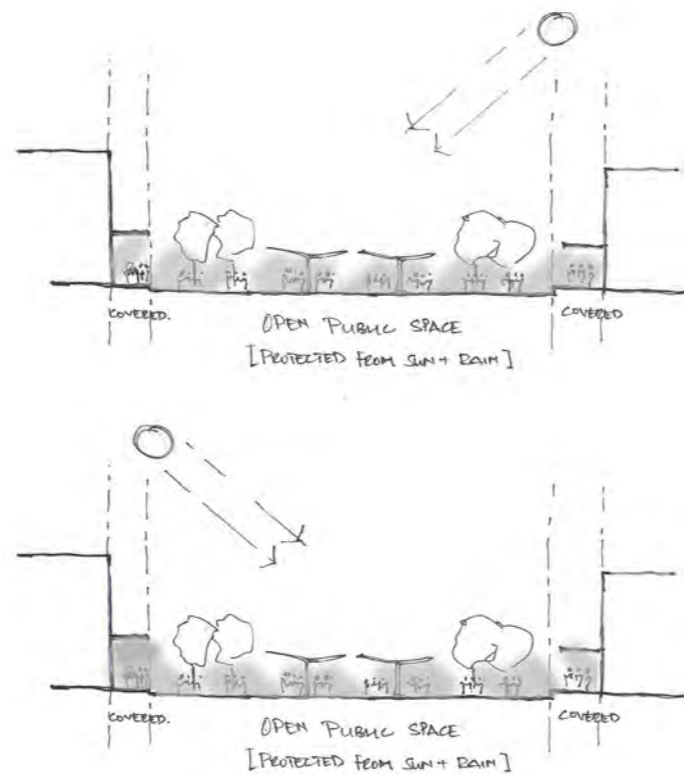


Figure 5.26 a & b - Micro climate:
The Micro-climate can be controlled by appropriate treatment of building façades: colonnades and overhangs protect people from sun and rain.
(Source: Author's sketches)

A detailed description of the implementation of a form-based coding system in Port Louis is beyond the scope of this proposed intervention. FBC would thus be the subject matter of another study.

In this investigation, the proposed coding is rather about preserving the architectural language inherited from the past. This creates the micro-climate for possibilities of *interface*.



Figure 5.27 - Commercial buildings with rich architectural language: colonnade and canopy defining the public space and providing shelter. (Source: Burrin 2009: 76).

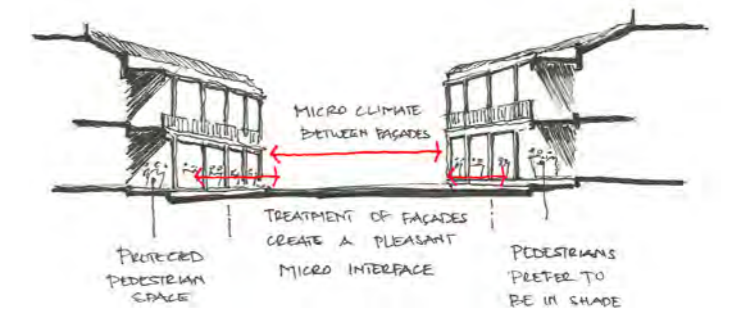


Figure 5.28 - Micro climate:
Climate in the Micro-Interface can be controlled by appropriate treatment of building façades: colonnades and overhangs protect people from sun and rain.
(Source: Author's sketches)

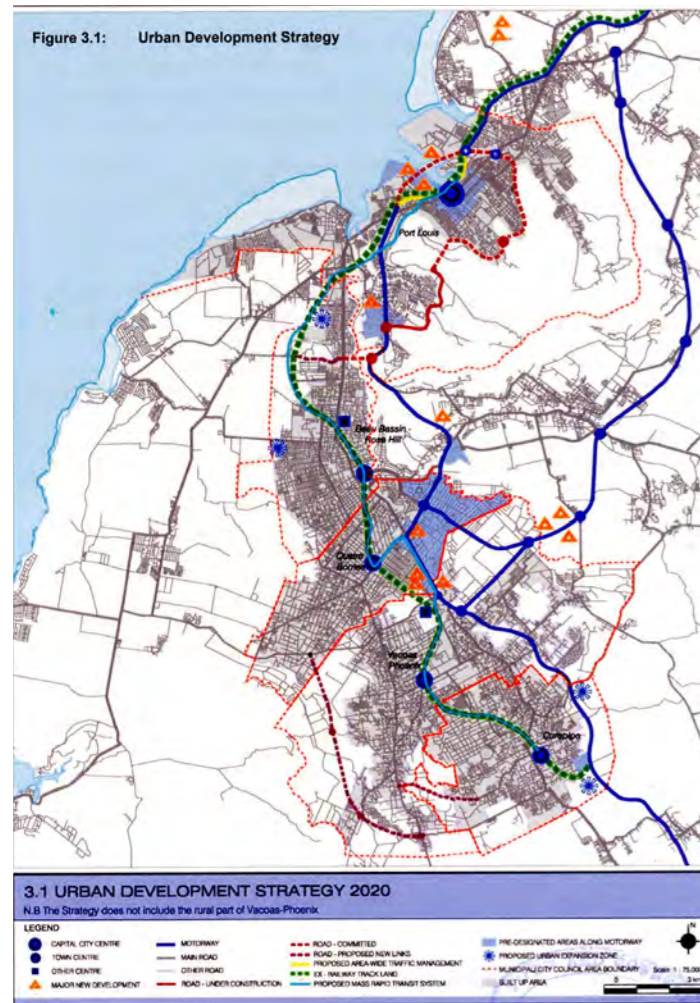
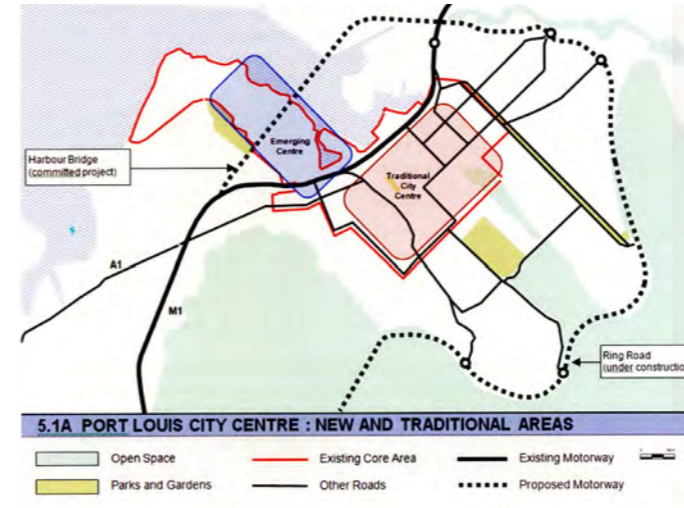
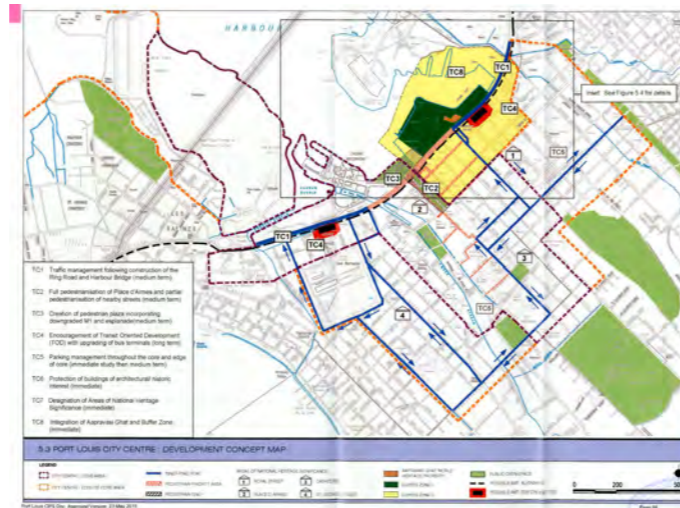


Figure 5.29 a, b, c & d: Urban Development and Planning strategy for Port Louis as per the OPS 2015 document. (Source: MoL&H, 2015)



Port Louis Outline Planning Scheme (OPS)

The Planning Division of the Ministry for Housing and Lands has prepared an Outline Planning Scheme (OPS) for the Municipal City Council Area of Port Louis. This planning proposal was approved in April 2015, and was directed by a number of issues which are in essence congruent with the issues mentioned in a previous chapter:

1. The M1-M2 motorway dividing the city from the waterfront
2. Traffic congestion and inadequate public transport services
3. Sub-optimal zoning and land-use
4. The Waterfront as a separate exclusive development removed from the city
5. Pedestrian-unfriendliness and poor urban quality

The OPS recommends that once the Harbour Bridge and Ring Road are complete, the M1 motorway should be downgraded to the status of a local road, with safe demarcated crossings for pedestrians. The disconnect between the waterfront area and the city will thus be mitigated.

Additionally, the OPS suggests that zoning regulations be altered to encourage more mixed-use spaces within the city centre, and that pedestrians be given higher priority within movement systems. Urban quality should be improved through pedestrian-friendly shopping areas.

Finally, the OPS recognises the value of historic buildings and the urban character of Port Louis and advises that the heritage of historic buildings and streetscapes be preserved where possible.

2005 Proposed framework by Adam-Louw-Dewar (ALD) Associates

In 2005, ALD Associates conducted an urban study of Port Louis with the intention of formulating a proposal for urban development of the City. They identified a number of challenges consistent with issues still pertinent today:

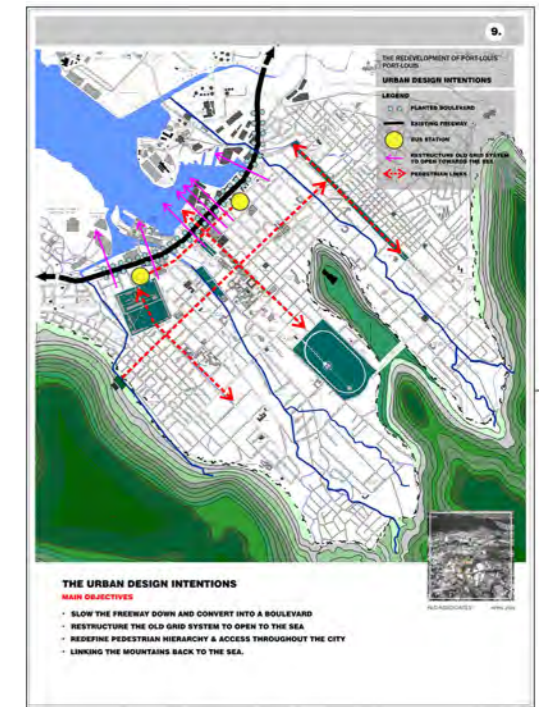
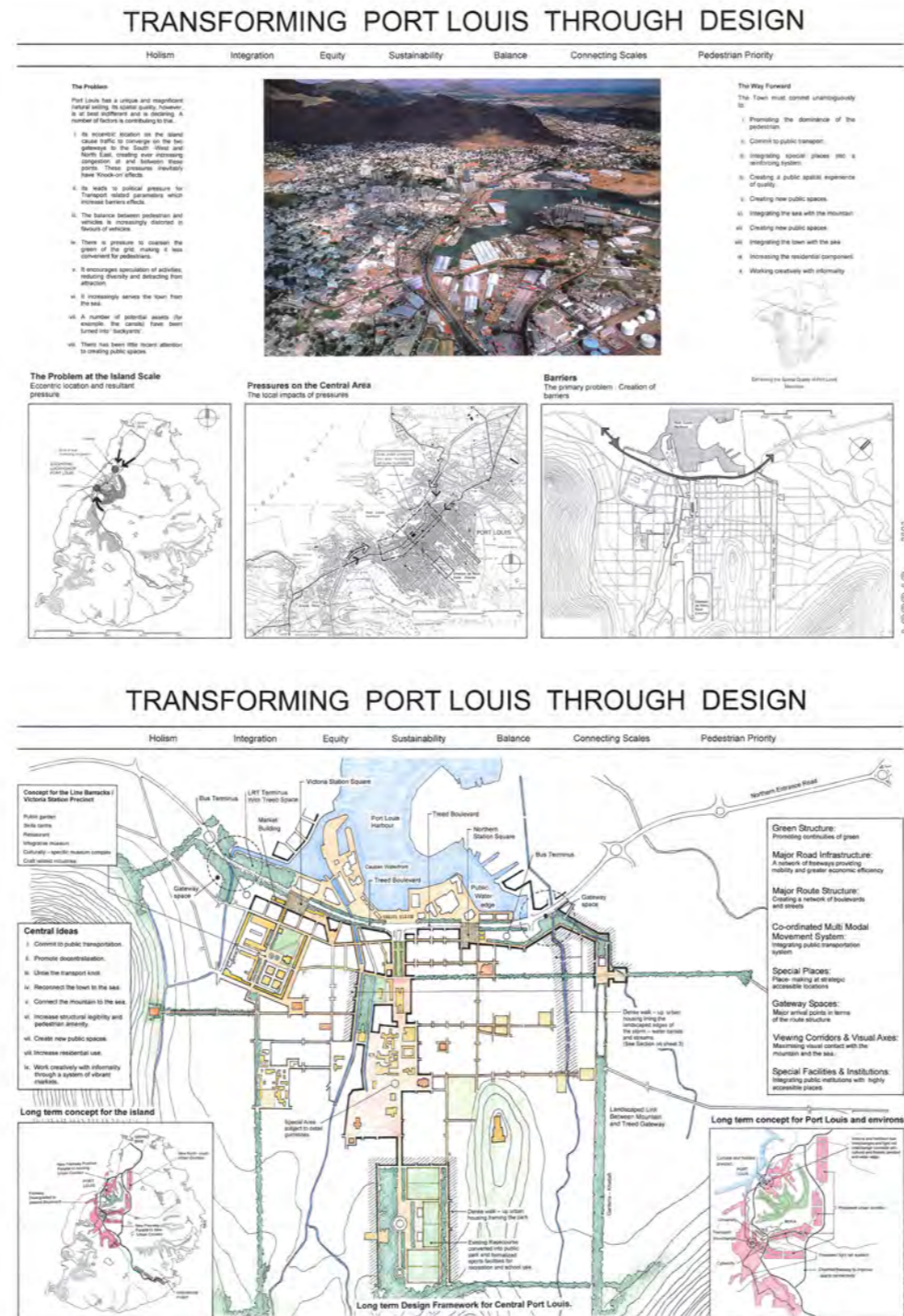
1. Physical and functional barriers severing the harbour from the rest of the city .
2. Preference being given to vehicles, rather than pedestrians.
3. Disregard for the need for public spaces within the city

ALD Associates proposed a number of urban interventions to improve Port Louis which included:

1. A new freeway which completely bypasses the city - this has been constructed and its presence has reduced traffic congestion as there is an alternative route from North to South.
2. A ring road around the periphery of Port Louis, this has been included in the more recent OPS, and is currently under construction.
3. Conversion of the M1-M2 motorway into a boulevard.
4. Restructuring the grid system, giving priority to pedestrian movement.
5. Creating links between the mountains, the city and the sea.

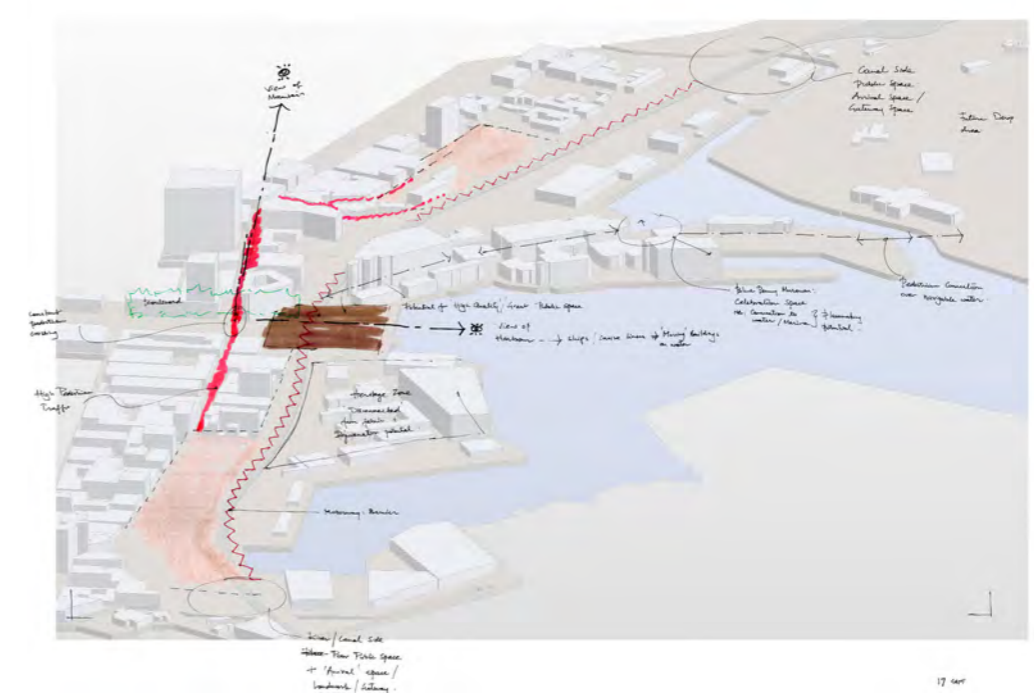
The urban design proposal which follows is in accord with the proposals outlined by both ALD Associates and The OPS. The focus however is more on creating a pleasant, functional and humanist interface between city and sea.

Figure 5.30:
Design Strategy as per ALD 2005 proposal.
(Source: ALD, 2005)



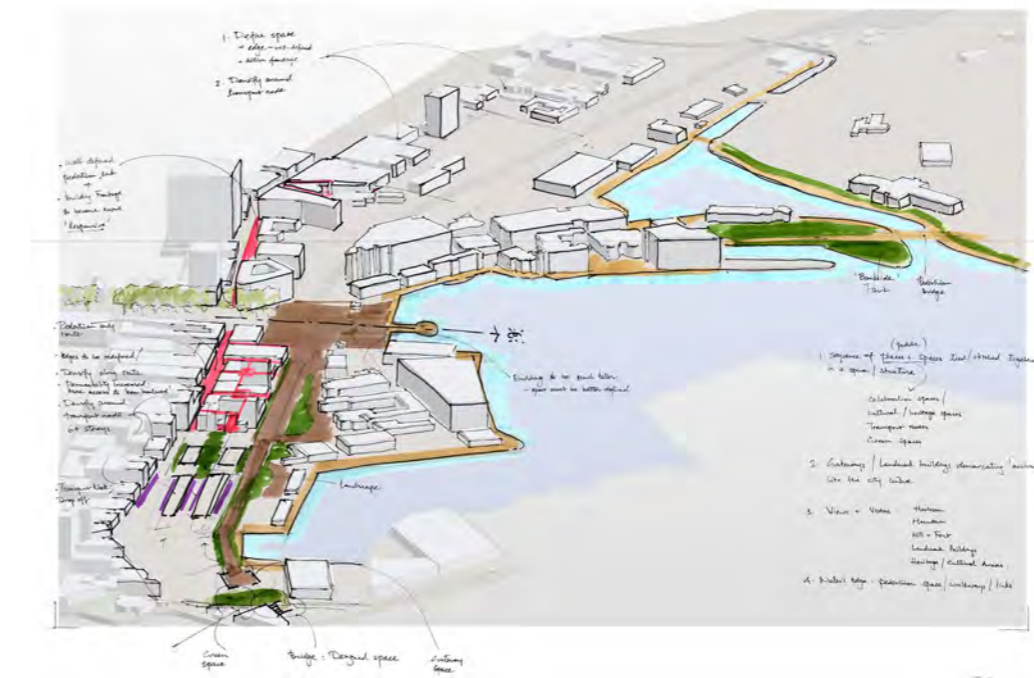
6

The Status Quo



THE FRAMEWORK

The Strategic Response



The Proposed Framework



The proposed urban framework for Port Louis focuses on the interface between the ocean and the city centre. It is predicated on the completion of the Ring Road and the Harbour Bridge, projects planned for Port Louis in order for heavy traffic which currently passes through the city to be diverted around the urban centre. The existence of alternative traffic routes will allow for the M1-M2 motorway to be downgraded to a pedestrian-friendly boulevard with an integral network of public spaces that reconnect the city to the waterfront and harbour area. The waterfront area should be integrated into the city in order for it to function for a wider audience. Ideally, high-density mixed-use development that incorporates safe, pleasant and accessible pedestrian routes should take place in this waterfront area. Transit-oriented design which centres on a bus rapid transport system is proposed to not only improve the currently dysfunctional public transport system, but also to make the city more pedestrian-friendly with less vehicular traffic and congestion. Furthermore, urban markets, specifically designed for informal traders along pedestrian routes will reduce the present chaotic, haphazard and disorganised arrangement whereby traders occupy pavements and obstruct pedestrian movement.

Port Louis was once a charming people-oriented port city. It is believed that the changes proposed, if implemented in a sensitive manner that allows her historic character (imbued by her humanist scale, heritage buildings and attractive streetscapes) to be preserved, will bring back some of the allure, beauty and character of Port Louis during her hay day.

1. Gateway Space

Includes new bridge over the stream and denotes entrance into precinct: in-between space acts as an interface;

2. T.O.D

Existing bus terminus converted into a drop-off T.O.D, with high-density, mixed use activities - T.O.D becomes an interface in itself;

3. Immigration Square Heritage Zone

Motorway down-graded into a pedestrian priority boulevard. The Heritage Square is part of the interface as a 'through-space';

Existing buildings adapted to improve permeability and access to the harbour and make the interface possible;

Space in-between buildings as a micro-interface:

Building façades create a micro-climate for possibilities of interaction to occur. Pedestrian street linking to market is upgraded to accommodate street markets.

4. Main Square

City meets water: a physical interface

Viewpoint overlooking the harbour: a visual interface

5. Caudan Waterfront

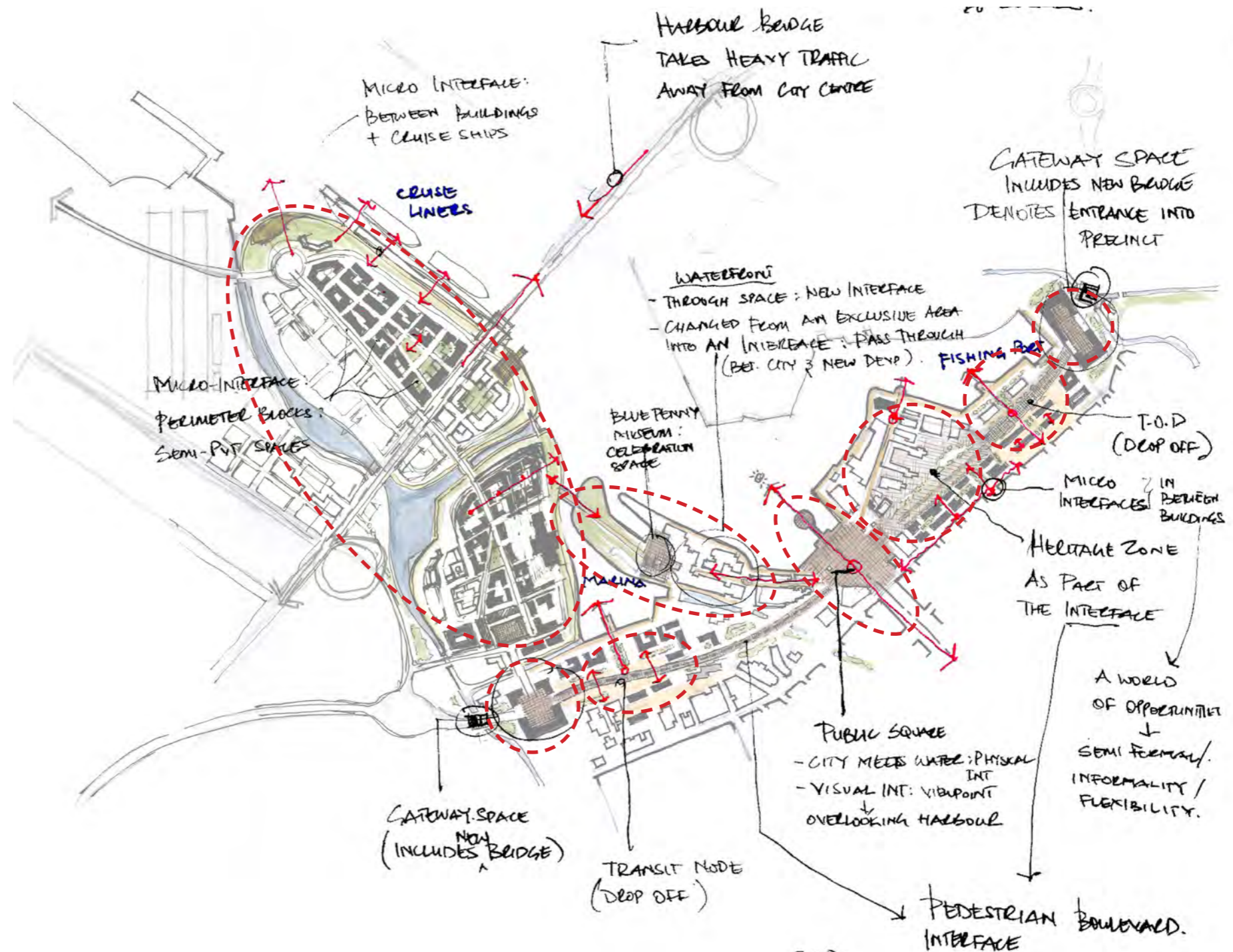
Existing waterfront becomes a through space - part of the promenade as one moves from old city centre to new development; The waterfront space is transformed from a perceived exclusive area to an inclusive interface zone;

6. New Waterfront with Cruise Ship Terminal

A new urban space, with the building language similar to that in the old city centre.

Tourists alight from cruise liners and step into this space - this zone becomes the interface for tourists and locals to meet, interact, trade etc. This area is also the in-between space between Port-Louis, Mauritius, and the rest of the world, hence, interface at the global scale.

The promenade path between buildings and cruise ships docked at harbour: visually and physically pleasing interface space.



The Proposed Precinct Design



1. Gateway Space

'In-between space':

The 'through' interface announcing arrival in Port Louis as one drives over new bridge into the gateway space;

2. T.O.D

-Mix-use buildings and densification around node encourage interaction and activity in a new 'interface space'

-Public space physically and visually linked to water encourages connectivity;

3. Immigration Square Heritage Zone

Motorway converted to a pedestrian priority boulevard. The Heritage Square is part of the interface as a 'through' space;

Existing buildings adapted to improve permeability and access to the harbour and make the interface between water and city possible;

Space in-between buildings as a micro-interface: Building façades create a micro-climate for possibilities of interaction to occur

4. Main Square

City meets water: a physical interface

Viewpoint overlooking the harbour: a visual interface

Pedestrian only space: accommodating activities for a humanist city

Pier - Pavilion as Celebration space, activities such as:

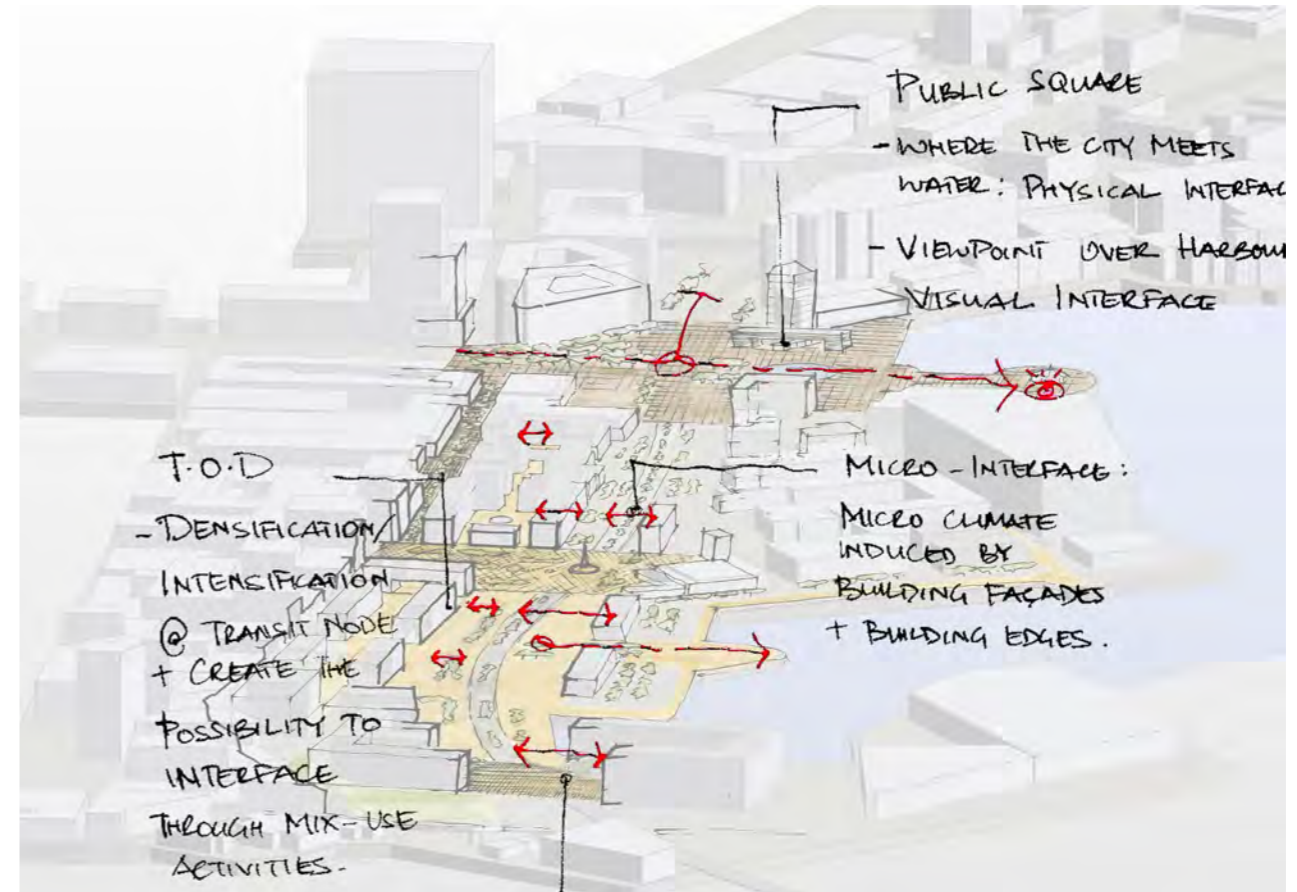
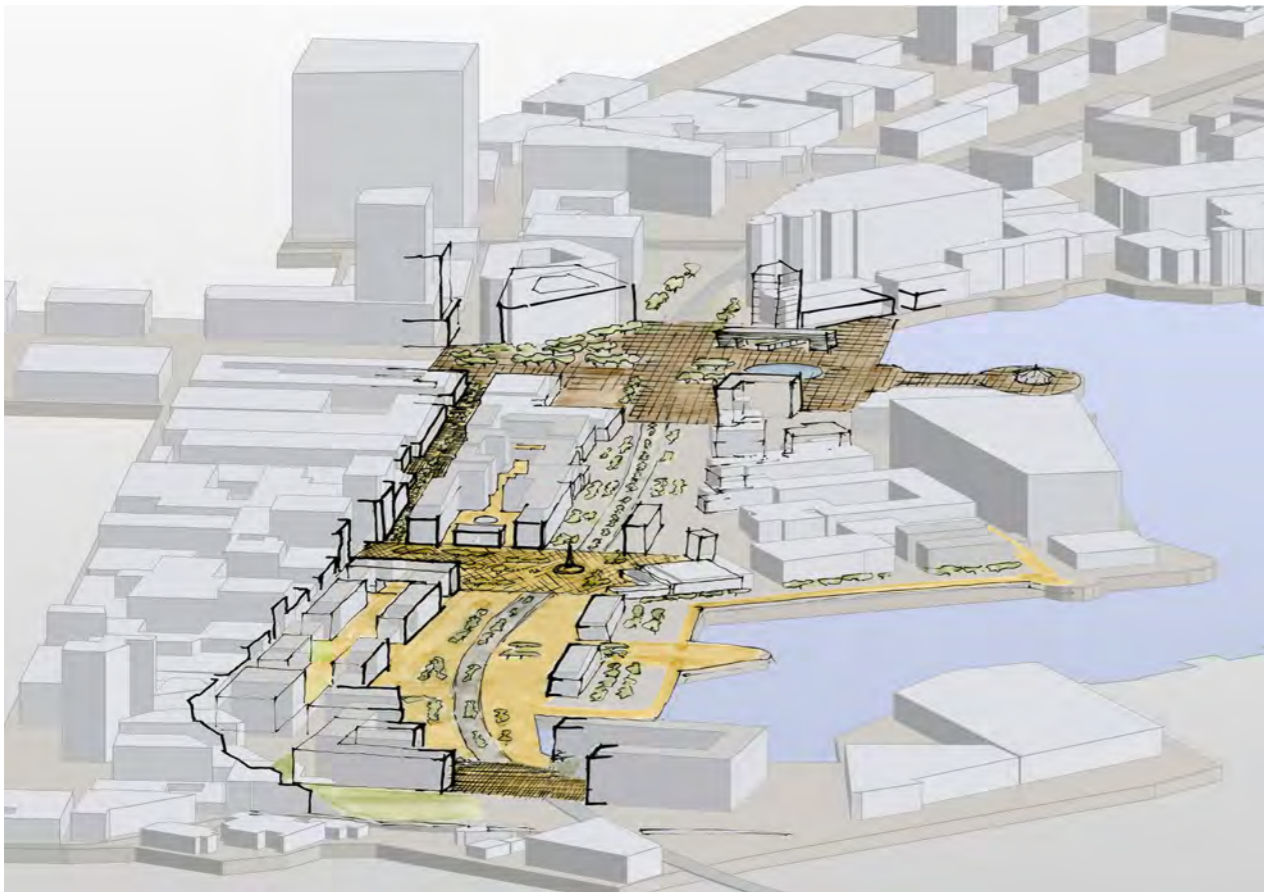
Dining / dancing / music / enjoying night view of Port Louis skyline & harbour (interface alive at night)

5. The Granary

Convert old Granary building (currently used as a car park) to an office building with mix-use on ground floor & public courtyard. The courtyard becomes a micro-interface between the building and the harbour.



View from North



GATEWAY INTO PERLUNG
• DENOTES 'INTERFACE'.
• THROUGH SPACE

7

STREET CONDITION AND CONCLUSION

Street Condition Guidelines

The guidelines proposed for street conditions are based on the architectural heritage of the city of Port Louis.

The intention is to rekindle the character and atmosphere that used to exist in the streets of Port Louis in its hay day - before the introduction of high rise buildings.

Ample reference has been made in Chapters 2 & 3 about street conditions, micro-climate and micro-interface which exist within the public realm due to an appropriate treatment of building façades.

Hence, any proposed future development should maintain elements such as colonnades and canopies, and balcony on the first floor.

Higher storeys are to be set-back, and the design, where possible, must put forward the concept of perimeter blocks rather than high rise buildings.

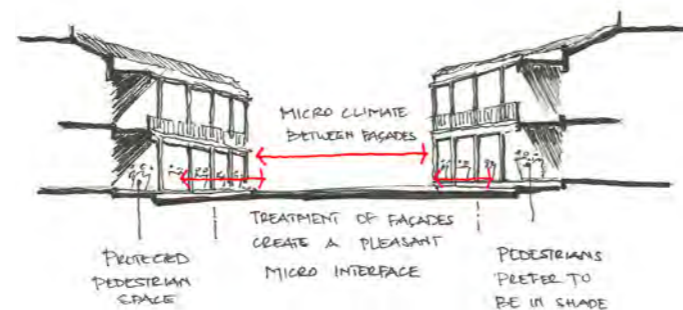


Figure 7.1 - Micro climate:
Climate in the Micro-Interface can be controlled by appropriate treatment of building façades, shading devices and trees. (Source: Author's sketches)

Concluding Remarks: Strategy for Implementation

Port Louis can only benefit from an urban intervention after completion of the Harbour Bridge and Ring Road, which will allow heavy traffic to be diverted around the city. This will facilitate converting of the M1-M2 motorway into a boulevard, which will in turn enable reconnection of the Waterfront to the city centre. Thereafter, it is envisioned that pedestrian-oriented changes including transit-oriented design in the city fabric will follow as a natural consequence.

Governmental and institutional support will of course be imperative to implementation of this and indeed any large-scale urban intervention. The authorities will need to take the lead, use existing tools and frameworks initially, and invent new tools of intervention as progress is made.

While the design proposals outlined in this study are intended as a structure on which to base specific interventions, it is acknowledged that urban change is a process of innovation and experimentation that involves making mistakes, learning from those mistakes and adapting as the context evolves. There is no 'end' or 'final' solution proposed here. Rather, a strategy derived from analysis of current challenges and opportunities is offered. Flexibility will be required for this urban development project, as unpredictable conditions are likely to be uncovered, and will necessitate actions that can only be determined at a later stage.

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CLIMATE

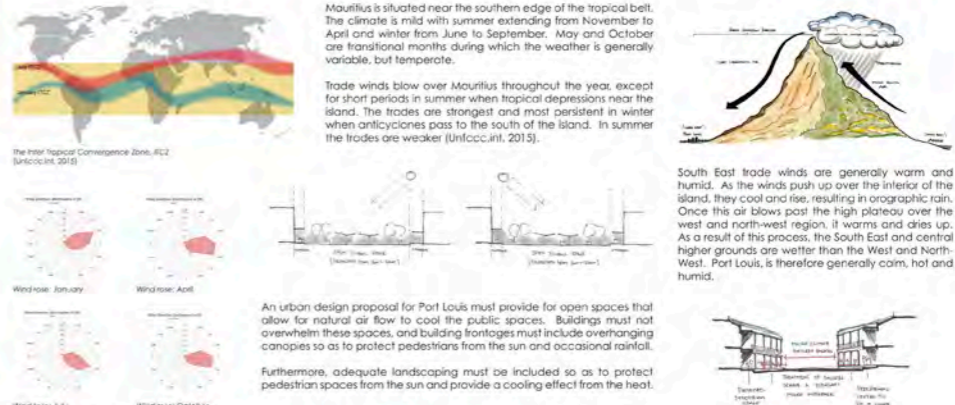
Mauritius is situated near the southern edge of the tropical belt. The climate is mild with summer extending from November to April and winter from June to September. May and October are transitional months during which the weather is generally variable, but temperate.

Trade winds blow over Mauritius throughout the year, except for short periods in summer when tropical depressions near the island. The trades are strongest and most persistent in winter when anticyclones pass to the south of the island. In summer the trades are weaker (Unifacc.intl, 2013).


South East trade winds are generally warm and humid. As the winds push up over the interior of the island, they cool and rise, resulting in orographic rain. Once the air blows past the high plateau over the west and north-west region, it warms and dries up. As a result of this process, the South East and central higher grounds are wetter than the West and North-West. Port Louis, is therefore generally calm, hot and humid.

An urban design proposal for Port Louis must provide for open spaces that allow for natural air flow to cool the public spaces. Buildings must not overwhelm these spaces, and building frontages must include overhanging canopies so as to protect pedestrians from the sun and occasional rainfall.

Furthermore, adequate landscaping must be included so as to protect pedestrian spaces from the sun and provide a cooling effect from the heat.



INTRODUCTION



This urban design thesis is a study of the urban issues and design principles pertinent to Port Cities, and applying it to the city of Port Louis, Mauritius.

'Man meets water': Our primordial psyche

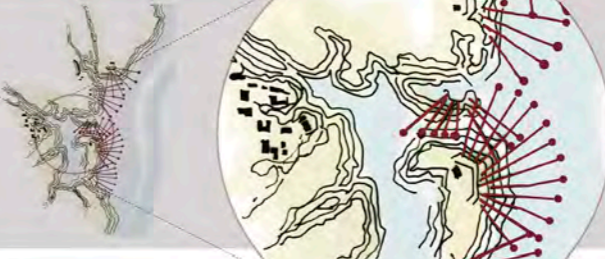
Man has had a relationship with water since time immemorial. Moving freely from earth to water is an activity which comes naturally to the human being.

Eastern philosophies regard Earth as the most important element. It comprises matter in a solid state, represents stability, physicality and gravity. Water is the second most significant element and represents fluidity, flexibility and adaptability (Nirajutsu.co.uk).

Man meets water, in other words, is the moving from one realm to the other.

In urban design terms, where 'Man meets water' is the 'in between' space - **the interface**. This is the area where two worlds come together - an area of interaction, interconnectedness and interrelationship.

ANALYSIS



Port Louis is the economic and administrative capital city of Mauritius. Historically, the harbour was situated at Port Louis as this position was most navigable and defensible. Mauritius was located at a key position in the Indian Ocean, on the trade route from Europe (and South Africa) to India and Asia. Port Louis developed as a major port along the route. This city remains important not only as a port and as the seat for numerous administrative operations, but also as the economic, legal and civil capital of Mauritius. Therefore, decisions taken to shape the future of Port Louis are essentially decisions for Mauritius as a whole. The city still accommodates the only port on the island and as such has remained Mauritius' largest and most populous city.

The layout of Port Louis follows the rectilinear grid set out by its early urban engineers and the scale of the city is both human and walkable. Buildings are generally responsive at ground level, meaning that the streets have active edges.

HISTORICAL CONTEXT



The area of study is a precinct of Port Louis - the interface between land and sea.

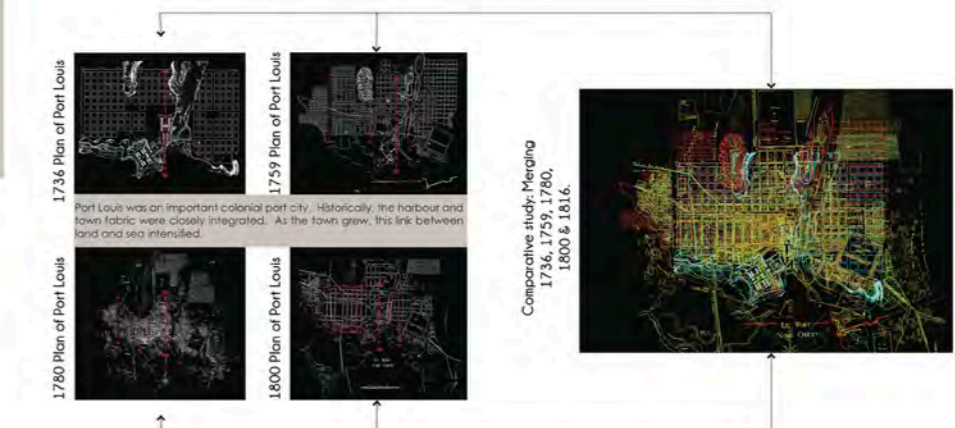
The original urban quality of Port Louis has become degraded as a result of post-independence modernisation. The interface has been reshaped spatially and functionally. The original city of Port Louis was founded on the harbour, which was central to social, commercial and residential life. Today, the harbour is segregated from the city fabric.

This thesis aims to explore the nature and design principles of places and spaces that lie within this land-water interface in order to formulate an urban design proposal wherein the land is reconnected to the water - an urban intervention for a **people-oriented port city**.



Historical Imagery

Throughout the history of Port Louis, it has been clear that certain elements have been pivotal in influencing the layout. The harbour, mountain, waterways, streams and aqueducts, green public spaces and paved pedestrian paths are aspects that make up the quintessential character of Port Louis as a colonial French city. (Images: Bunin, 2009)



1736 Plan of Port Louis

1759 Plan of Port Louis

1780 Plan of Port Louis

1800 Plan of Port Louis

Composite study: Merging 1736, 1759, 1780, 1800 & 1816.

Port Louis was an important colonial port city. Historically, the harbour and town fabric were closely integrated. As the town grew, this link between land and sea intensified.

Port Louis has the potential to be a beautiful, connected, charming, safe and pedestrian-friendly waterfront city - a humanist city!



LOCAL CONTEXT

The city of Port Louis is situated between the mountain and the sea. The port city is seen as an 'interface': a space which is in constant interaction between the two worlds. The future harbour bridge project to be implemented by the government supports the argument of the interface as a pedestrian friendly space, with activities centred around people.

SITE CONTEXT Map showing Natural elements

Green spaces and natural streams have been part of this interface between land and sea. The central stream (Le Pouce Stream) divides the city centre in 2, and the northern stream (La Poir Stream) and the southern stream (Creole Stream) initially edged the city fabric. There is a great need to include green and water as features within the interface in order to make this space into an appealing and pedestrian friendly environment.



MOVEMENT Systems

Dominant movement pattern lies on the North-South axis. There is only one main movement corridor between the mountain and the ocean. A strong pedestrian route between the 2 bus stations (Immigration Square and Victoria Station), in order for the interrelationship between land and sea to be enhanced, movement patterns must be created linking these two worlds.

FIGURE GROUND Map

Highest density is present in the central area of Port Louis. Density supports walkability due to its compact built form and encourages social interaction, shopping, trade and numerous other pedestrian-oriented activities. There is potential for this existing density to be applied throughout the interface in order to make Port Louis a more humanist city.

AXIS & VIEWS

Visual impact (created by the presence of both mountain and ocean around Port Louis) is an important factor for any urban intervention in the city. Emphasis on the visual axis between mountain and ocean gives the city its identity as a port city and ensures the success of the 'interface'.

LAND USE

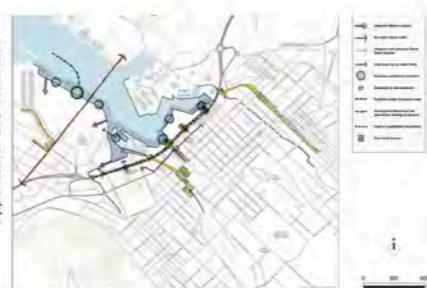
Land use in Port Louis is based on traditional zoning practices which encourage mono-functionality and segregation of activities. There is a need for mixed-use development, particularly in the interface zone, where diversity of activity and people must be supported.

NODES & CORRIDORS

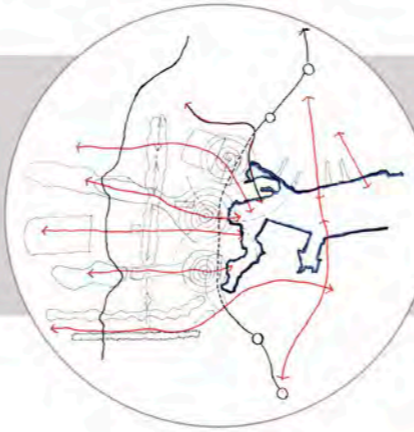
There are four main nodes: (two transport nodes, one administrative node and one major commercial node). These are arranged in such a way that movement is primarily along the water, with only a single corridor in the mountain-ocean axis. There is potential for creation of corridors of development which support more movement between the ocean and the city - there must be more corridors within the interface zone that support the inter-relationship between mountain and ocean, in order for Port Louis to function as a port city.



Issues limiting humanist activity within the interface zone are:
 1. The Motorway which forms a physical barrier between city and sea
 2. Large areas of valuable urban land dedicated to transit nodes where buses are stationed during the day
 3. Limited green and open public spaces, which are not connected to each other
 4. Areas around streams and canals are not people-friendly
 5. The Waterfront is isolated and separated from the city. It is perceived to be an exclusive area for tourists
 6. A large poorly defined area to the West of the Harbour is currently vacant and under-utilised



Opportunities for development of the interface through the following strategies:
 1. Convert the Motorway into a pedestrian-friendly Boulevard with 'micro-interface' development linking land and water, and connecting to green spaces.
 2. Define the interface zone with gateway spaces positioned at the streams on the Northern and Southern sides of the Motorway.
 3. Divert heavy traffic over the Harbour Bridge, (and via the Ring Road).
 4. Enhance water-edge potential through inclusion of multiple activity centres that draw people to the ocean.
 5. Inclusion of a water transport route to meet the interface from the sea.
 6. Integrate marine features with the land.
 7. Transit nodes within the precinct to cater for drop-offs only. Buses to be stationed outside the city boundaries.



While Port Louis is a 'port city', it is in fact 'a city with a port'. Port Louis makes no provision for the possible - **the interface between city and water**. The city is currently dysfunctional and lacks humanist characteristics.

- M1-M2 Motorway** - runs through the urban fabric and cuts link between city and sea
- Transport** - Heavy dependence on cars and ineffective public transport system
- Land Use** - Primarily commercial city-centre with little residential buildings. The city becomes deserted after hours, and heavily congested during week days.
- Coastal Waterfront** - perceived as a tourist-exclusive zone. Physical and social barriers cut its recreational and shopping area from the city.
- Pedestrian Unfriendly** - pedestrian movement is unsafe, unpleasant and uncoordinated. The city lacks good quality public spaces, and street traders who do not have formalised space to work occupy pavements and walkways, leaving little space for safe pedestrian movement.



Currently Port Louis accommodates numerous character-areas. Numerous opportunities exist within each area for various services and retail activities to take place. Port Louis therefore has the potential to be a diverse, vibrant and exciting port city for locals and tourists.

San Francisco

Foreshore & Waterfront Development

1. Establish pedestrian accessibility to the Waterfront
2. Pedestrian-friendly streets
3. Historically sensitive urban design that respects heritage
4. Mixed-use development accommodating diverse activities for locals and tourists
5. Active urban edge
6. Harbour area to accommodate numerous urban spaces for integration into city
7. Functional, efficient and accessible public transport
8. High-quality public spaces to encourage social diversity

In San Francisco, the port area had become separated from the rest of the city, visually, functionally and physically. Continuity, Sequence, Connection are main elements in improving San Francisco's waterfront interface.

Downgrading the Urban Freeway

1. Down-grade large motorway to facilitate connectivity between different parts of the city
2. Incorporate pedestrian-friendly boulevards
3. Re-route heavy traffic flow around the city or underground
4. Network of connected public spaces
5. Focus on the interface between land and water, integration of Waterfront with the rest of the city
6. High-quality public spaces for recreation and leisure

Alaskan Way Viaduct, Seattle: By tucking the freeway in an underground tunnel, local neighbourhoods are better connected to the waterfront.

T.O.D & Transit Friendly Streets

1. Combine areas with high-activity with public transport opportunities
2. Transit nodes should be integrated with transit-friendly streets
3. Walkability around public transport centres is vital
4. Quality public transport options that are efficient and safe
5. Highest density of urban development should centre around public transport
6. Accommodate active transport like cycling
7. Car use management as part of development strategy. Limit accessibility of motor vehicles to inner city
8. Quality public spaces around public transport nodes

Roslyn-Ballston Corridor

The Roslyn-Ballston corridor demonstrates application of the principles of T.O.D. Development around the first five stations has evolved into a **mixed-use, compact, walkable urban quality** that is pleasant and efficient. This is because highest density surrounds each station.

Urban (Street) Markets

1. Informal trade should be accommodated and encouraged in the city
2. Series of connected spaces that accommodate informal trade in a more formal manner after work best
3. Informal trade accommodated along pedestrian flow benefits traders and customers
4. Market spaces should not disrupt pedestrian or traffic flow
5. Street trade areas should uplift the urban character
6. Street markets are often successful in evenings and over weekends when offices are closed and streets can be closed to traffic

Singapore

Singapore is famous for its street markets. Streets which act as thoroughfares during the day are closed to traffic at night and transformed into dynamic and vibrant pedestrian shopping areas.

TESTING: Design Proposal Strategic Plan

PUBLIC PARK
Open public space of recreation, the interface between land and sea

CRUISE SHIP TERMINAL
Interface between Port Louis and the world. Interface to a global order. Tourist and local meet, interact, trade etc. The promenade path between buildings and new ship docks of harbour, usually and physically passing a public space.

HARBOUR BRIDGE (FUTURE PROJECT)
Supports the concept of connecting old and new, historical, vibrant heavy traffic, show town city centre

MARITIME MUSEUM
Active history of harbour. A ship museum gallery and open shop

CONVENTION CENTRE
International conference and business meetings venue. Interface between foreign and local businesses

ENTERTAINMENT & LEISURE

PUBLIC PARK (LANDMARK)

BLUE PENNY MUSEUM
The site, Blue Penny stamp museum, surrounded by a waterfront space with new waterfront structure

WATERFRONT
Building waterfront becomes a 'through' space or interface between the old city centre and the newly developed area

OLD GRANARY
Converted to a design hub with studios and workshop spaces

FISH MARKET

FISHING HARBOUR

GATEWAY 1 (CIVIC NODE)
The 'through' interface pronouncing arrival in Port Louis as one drives over new bridge into the gateway space

TRANSIT NODE 1
Visual setting and identification around node encourage interaction and activity in a new 'interface space'. Public space, physically and visually linked to water encourages connectivity, interconnectivity, bus, train, taxi, motorcycle / water taxi

IMMIGRATION SQUARE (HERITAGE NODE)
Historically converted to a pedestrian priority boulevard, the Heritage Square is part of the interface as a 'through' space. Existing buildings retained to historic connectivity and access to the harbour and make the interface between water and city possible. Space in-between buildings as a major terrace. Building facades create a micro-climate for possibility of interaction to occur

LABOURDONNAIS SQUARE (LEISURE)
City meets water: a physical interface viewpoint overlooking the harbour, a visual interface. Pedestrian-use space, accommodating activities for a human city. Position of Celebration space, activities such as dining / standing / music / engaging night view of Port Louis city view & harbour interface drive at night

GATEWAY 2 (CIVIC NODE)
Transition to compact, defined by public / civic buildings

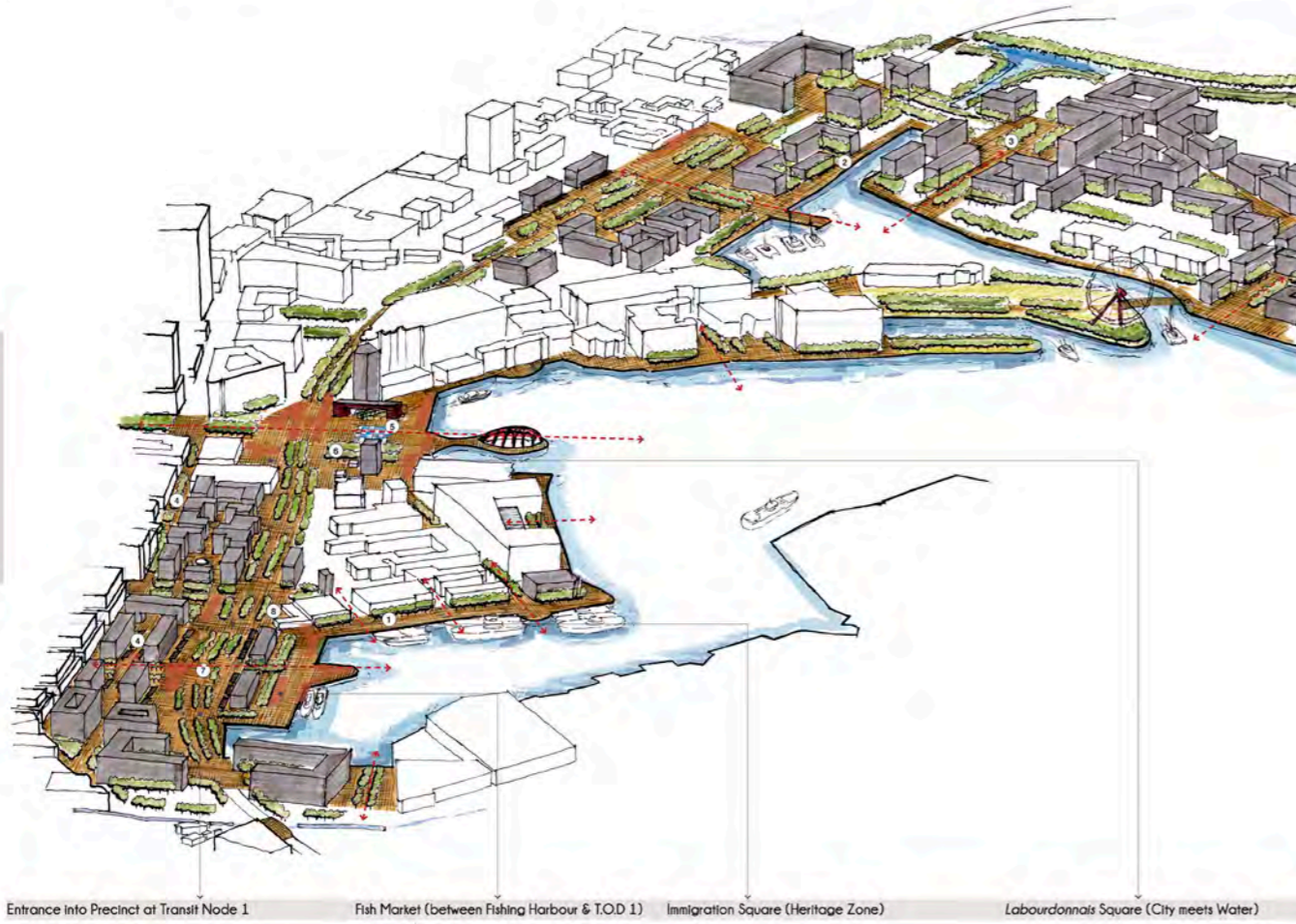
TRANSIT NODE 2
Interconnected node with bus, tram, taxi, metro, Carriage / horse taxi

MARINA
Facilities for foreigners visiting, localised to private yacht and water-taxi stop-off

Beer Around a street table
Rendez vous Point amongst trends
Tourist meet locals
Locals: Informal tourist guides

Axonometric

TESTING: Design Proposal



Interacting / shopping / waiting etc
Bus drop-off
Tramway (Image 7)
Walking (Image 7)
Water-Tail



Sitting / Dining / seafood restaurants
Buying fresh seafood
Reading / interacting
Viewing



Bus Drop-Off
Cycling
Scooter
Single-lane for cars
Tramway
Occupy public spaces (Image 8)



Light traffic - mostly public transport and NMT (slow moving experience)
Through building information office & Gallery
Play (Images 1)
Seating (Image 4)

Mood Board for a People-Oriented Port Louis



1, 2, 3. Man meets water: The interface between land and sea provides opportunities for human scale places and spaces, and diverse activities to occur within.

4. Urban (Street) Markets: The micro-public spaces in-between buildings provide the environment for shopping / trading.

5. Labourdonnais Square: Man meets water - this meeting point is given a new dimension, with vertical flow. This becomes a new kind of 'transit' space.

6. Labourdonnais Square: Seating under trees (not Palm)

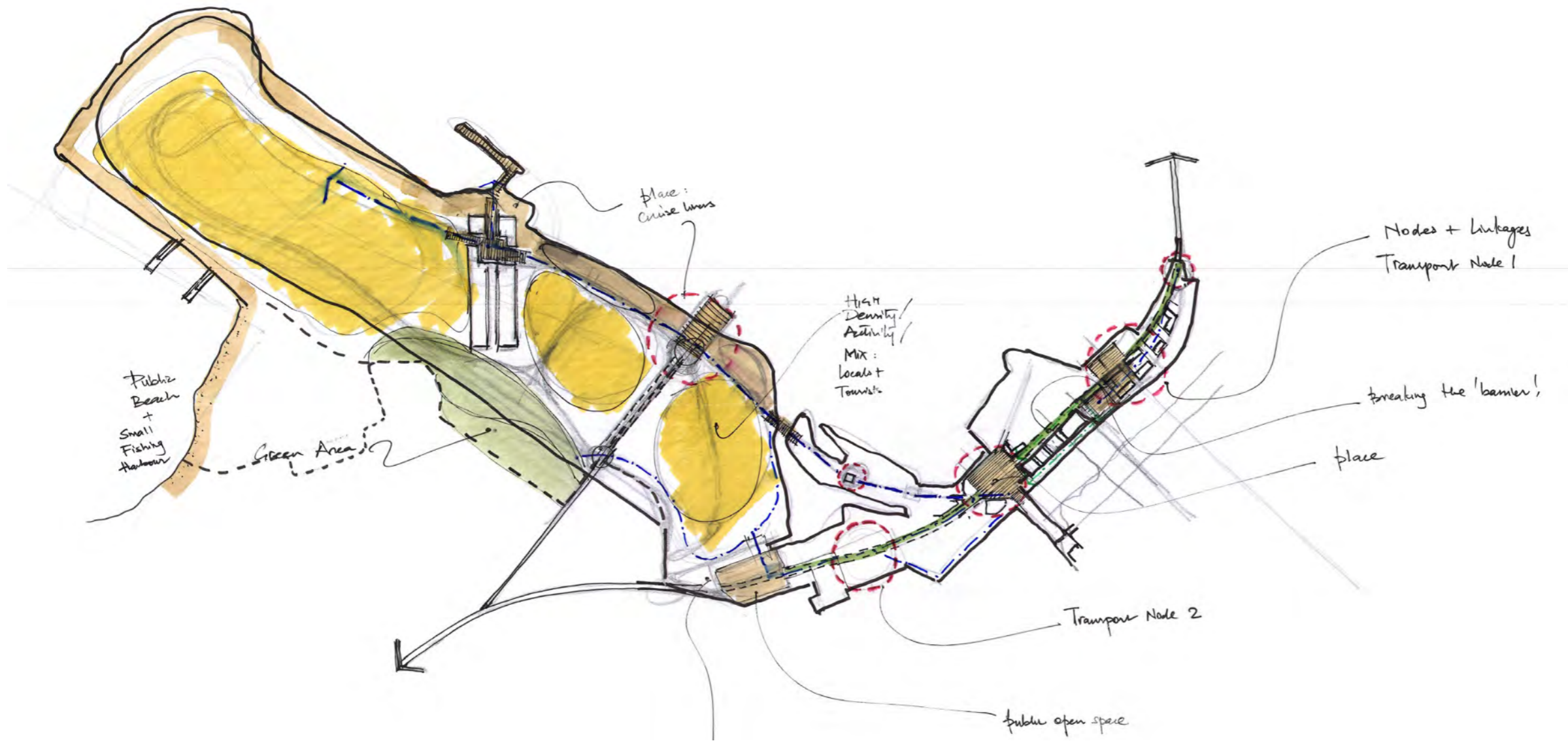
7. Boulevard: Pedestrian line between C.G.D. & Fishing Harbour

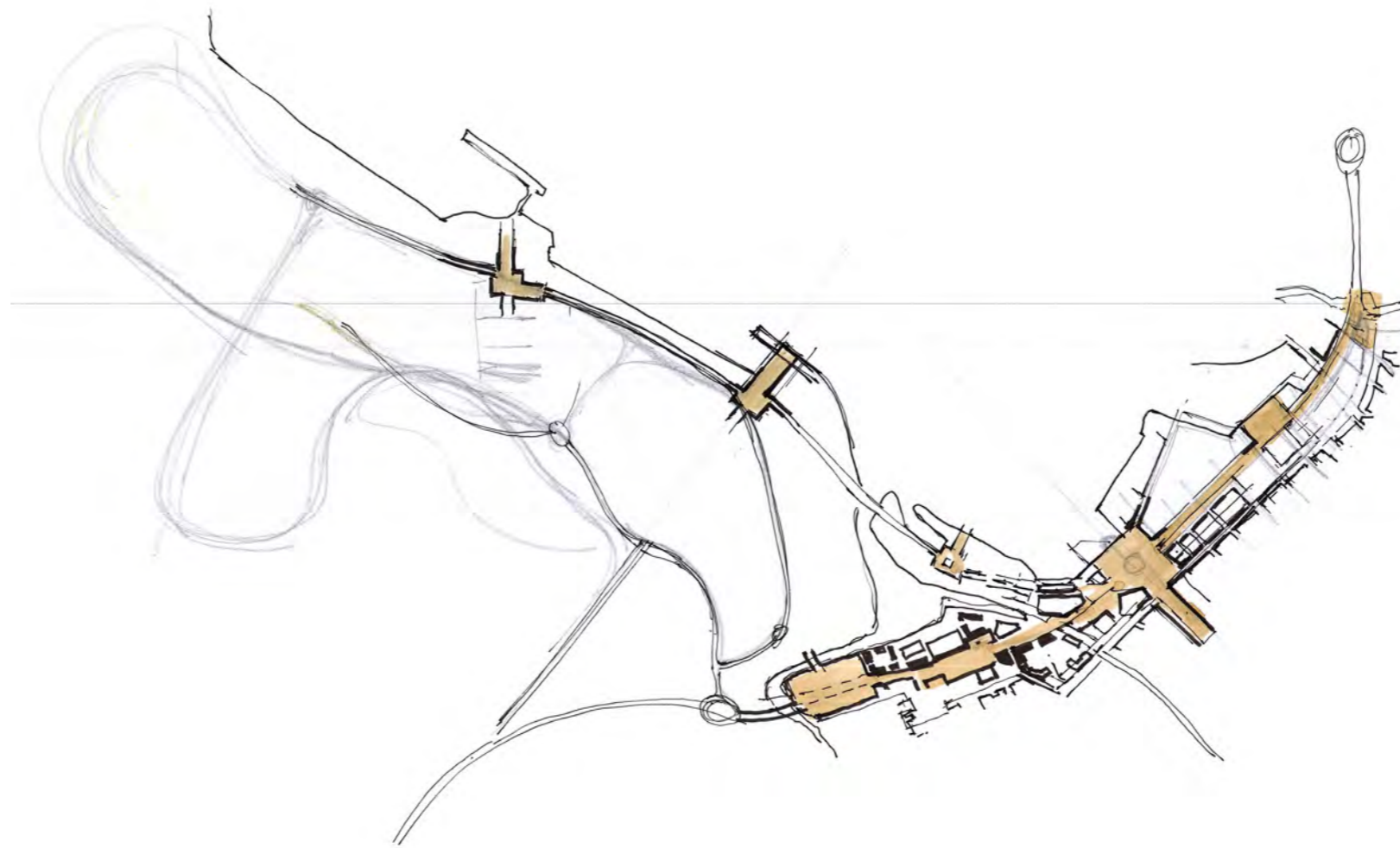
8. Immigration Square: Dune Parcels for seating and history text engraved

[Images: Ghil and Gernae, 2010]

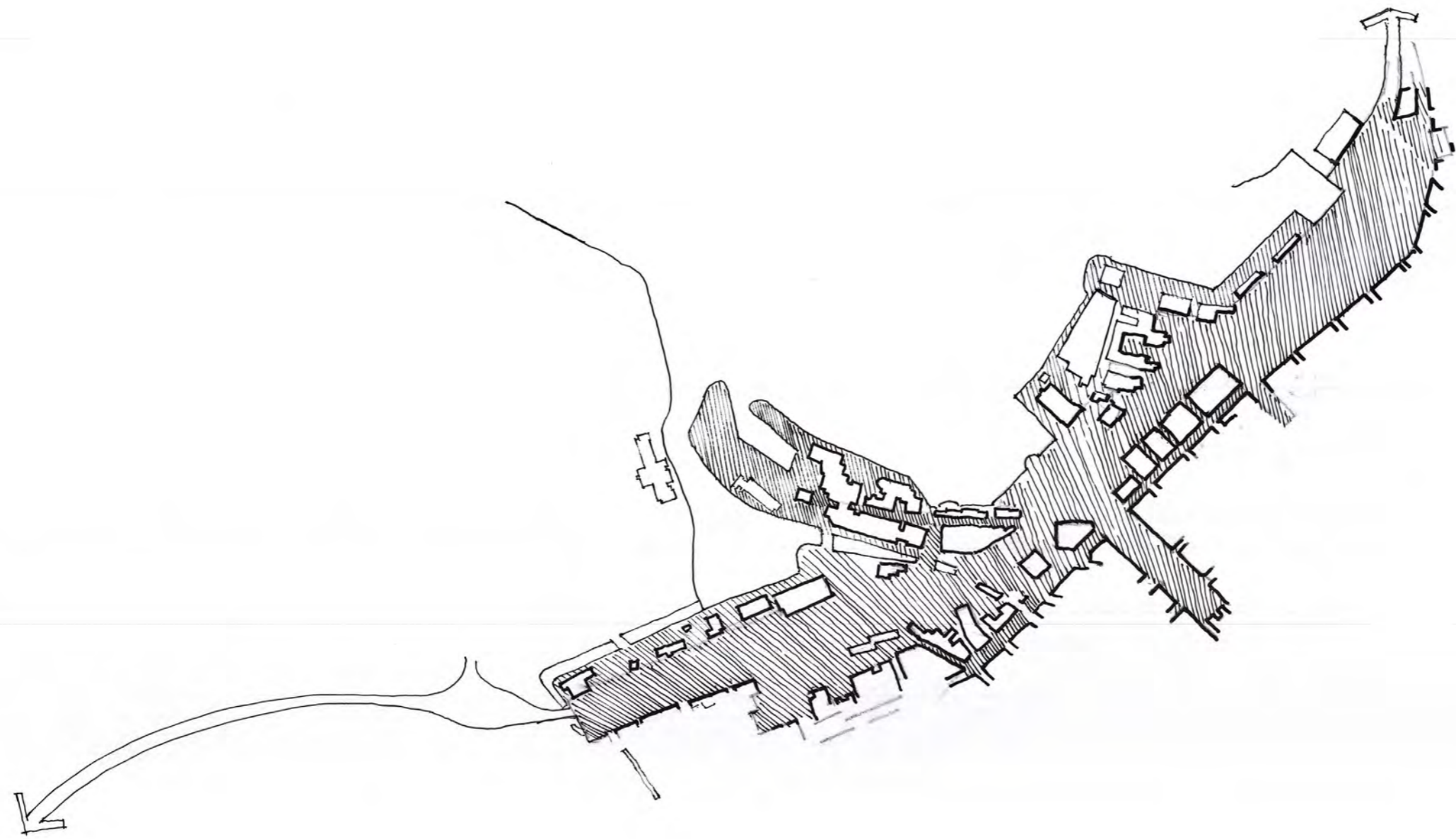
**APPENDIX:
PROCESS
DRAWINGS**

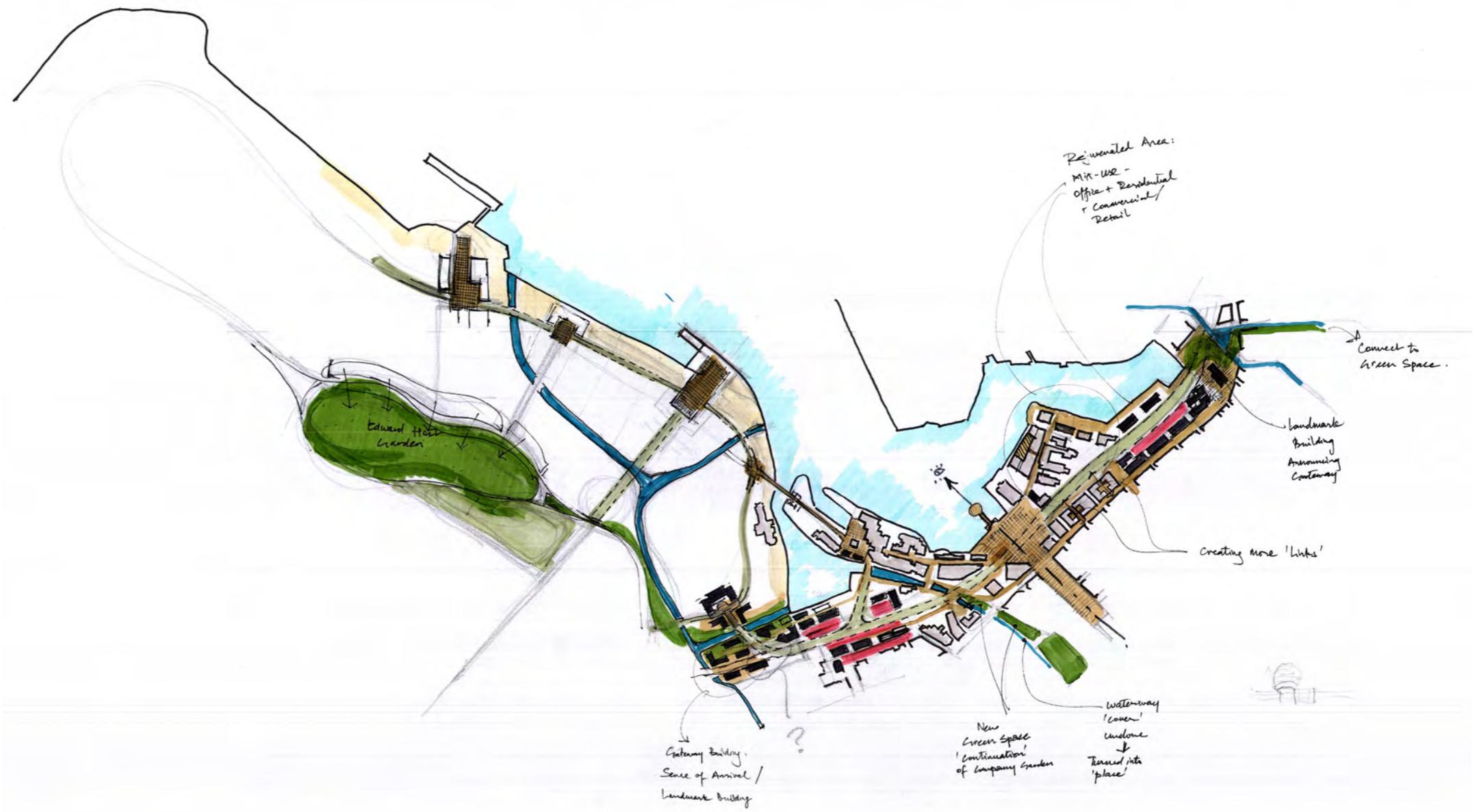






- Idea of a City by the water
- Not a 'bubble' (exclusive)
- Sydney | Melbourne
- All city activities carried through to the shore line:
 - market space
 - shopping
 - offices
 - Residential (mixed)
 - Public transport







COURSE CODE: ARC 5050Z

COVER SHEET

STUDENT NAME: RANVIR SINGH [DIVESH] GUTTEE
STUDENT NUMBER: GITRAN001
SUPERVISOR: DR. HENRI COMRIE

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2. I have used the Harvard convention for citation and referencing. Each contribution to and quotation in, this ~~essay/report/project/paper/dissertation~~ ^{thesis} from the work(s) of other people has been attributed, and has been cited and referenced.
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