

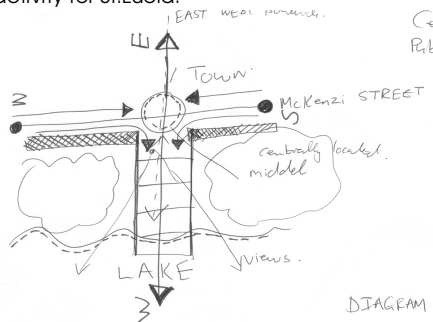
8 DETAIL DESIGN

8.1 PROPOSED PUBLIC OPEN SPACE TO CONNECT TOWN AND LAKE

Please refer to Figure 83, for the location of the Public Open Space Project within the proposed St. Lucia development framework.

The Public Open Space Project is a catalyst project in breaking down the physical and socio-economic barriers between Lake St. Lucia and St. Lucia town.

The proposed Public Open Space Project is located in the middle of McKenzie Street where the envisioned East-West Boulevard will intersect. Please refer to point 5.6.3.2 and Figures 96. This is an important site within the urban fabric of St. Lucia town both from an infrastructural, economic and social point of view. The proposed St. Lucia Development Framework recognizes this and advises to develop this site as the heart of activity for St. Lucia.



96 Diagram explaining the centrality of the site

8.2 CONCEPTS

8.2.1 Principal concept

The initial concept of reconnecting the town and the lake, in order to relieve socio-economic pressures, as stated in point 2.1, is pulled through to detail design level.

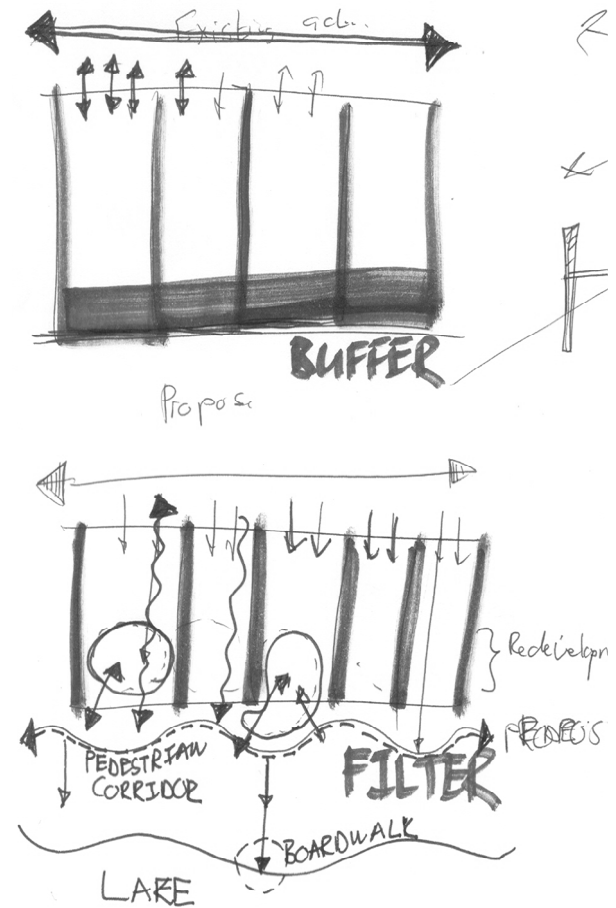
Please refer to the plan, Figure 112, and the section, Figure 113 illustrating the design concept.

The concept of the Public Open Space Project was to create a visual and physical connection between the lake and McKenzie Street. This implied a design intervention that would break through the buffer zone, formed by both the wall of hotels and private property, denying public access, and the dredger spoil vegetation, blocking views of the lake.

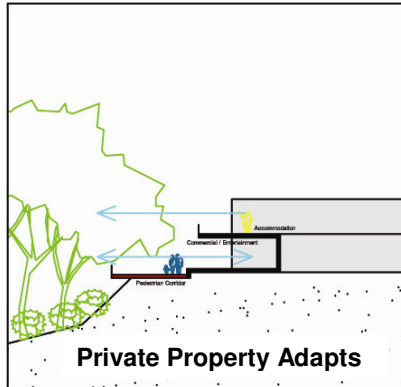
The concept manifested in a series of outdoor platforms connected with ramps to provide unhindered access to the lake while providing commercial edges to pull the economic activities down toward the waters edge. By doing this one is able to utilize the eco-tourism potential presented by the lake and relieve socio-economic pressures.

8.2.2 Catalyst concept

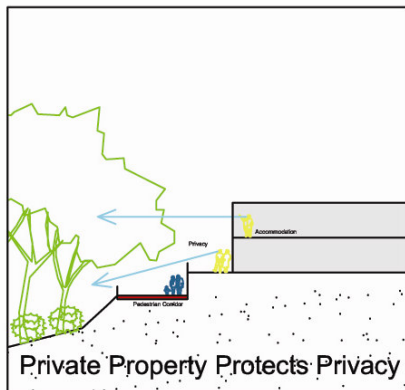
The Public Open Space Project is a catalyst project within the proposed St. Lucia Development Framework and strives not only to develop new businesses but to give the already established businesses the opportunity to benefit economically by embracing the suggested changes. This is done by proposing a pedestrian boulevard running parallel to McKenzie Street on the western side of the buffer property. The private establishments are encouraged to redevelop themselves over time. Giving them the opportunity to expand and develop commercial eco-tourism activities that can link to the lake and Public Open Space Project. Please refer to Figures 97, 98 and 99, illustrating the pedestrian boulevard's relationship, regarding privacy and views, towards the existing resorts and hotels.



97 Diagram explaining the catalytic nature of the proposed Public Open Space Project in changing the existing buffer into a filter.



98 Diagram explaining the relationship between the proposed pedestrian corridor and private property that wished to adapt and redevelop

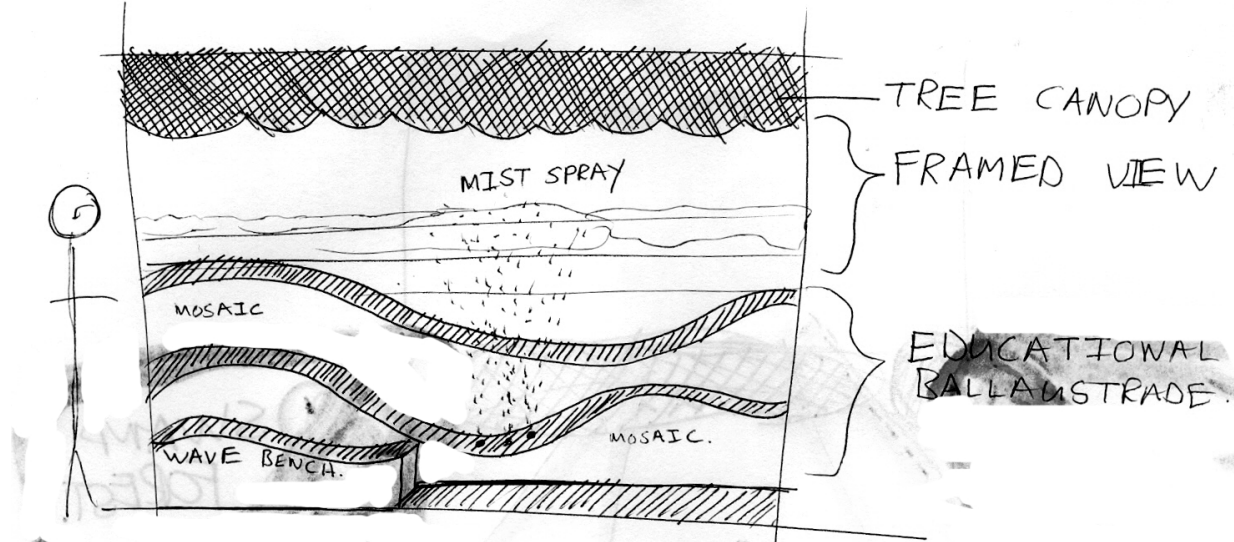


99 Diagram explaining the relationship between the proposed pedestrian corridor and private property wishing to protect their privacy and not redevelop.

8.2.3 Narrative concept

Except for the functional aspect touched on in the above paragraphs the Public Open Space Project's concept must also include a narrative component, refer to Figure 100. This Narrative must entertain and educate visitors while providing the visitor with a unique spatial experience. The design of the Public Open Space Project draws its narrative from the unique natural processes and combinations of habitats present in the surrounding landscape.

The Greater St.Lucia Wetland Park is made up of five distinct ecosystems, each with its own characteristic features: the marine ecosystem, the dune forest, the lake, the fresh water swamps and the grasslands. Each ecosystem functions relatively independently, yet on a large scale they are all interlinked. Each of the five ecosystems warrants conserving in its own right, but the fact that they all occur in one area makes St.Lucia a world class destination. The visitor needs to be made aware of this diversity and sample the experience of each ecosystem in some way through the architectural design of the project.



100 Vignette showing functional elements like a bench and balustrade telling a landscape story about oceans, dunes and forests

It can't be stressed enough that the narrative does not imply trying to recreate or mimic nature. It implies an abstract interpretation or reaction to the distinct ecosystems that inspiration is drawn from.

In the case of this specific design where two of the five habitats, namely the lake and swamp forest, are present on the site, it could imply only to create simple viewing platforms, that does not compete with the natural beauty in any way, allowing the visitor to interact with that environment be it only through sight, sound and smell.

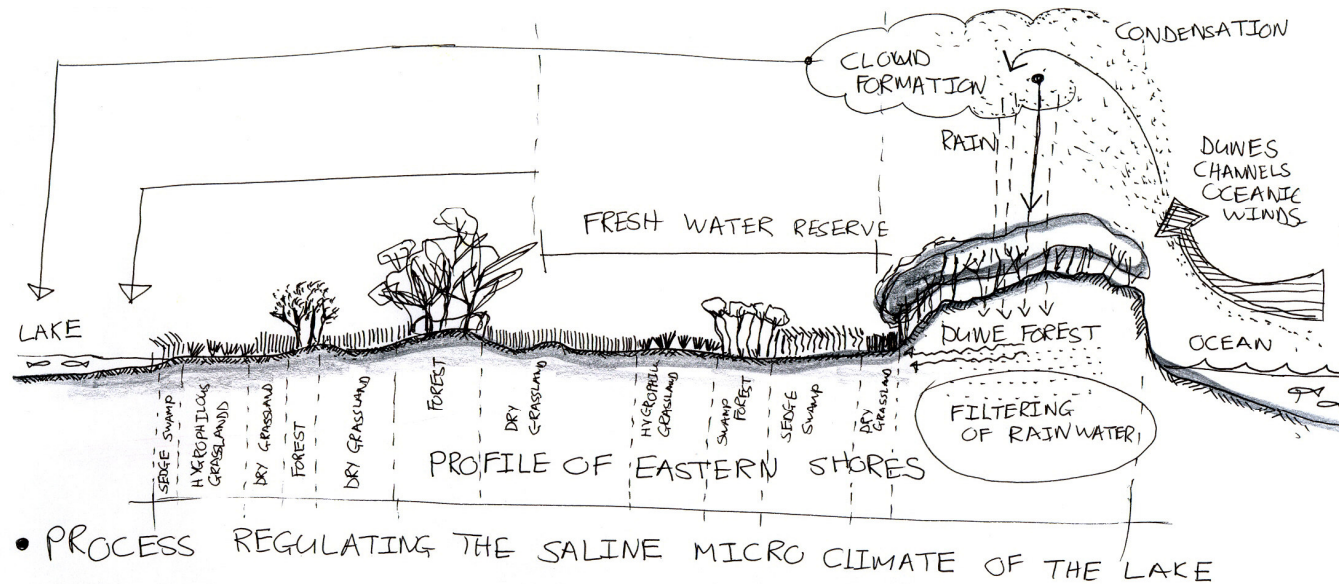
The other habitats like the ocean and dune forests that are not present on site could be architecturally interpreted in a stronger manner.

Please refer to Figure 101 explaining the role that dune forests play in maintaining the fresh water balance of the lake. Now compare Figure 100 with Figure 102, which shows the functional considerations of the first platform bordering McKenzie Street.

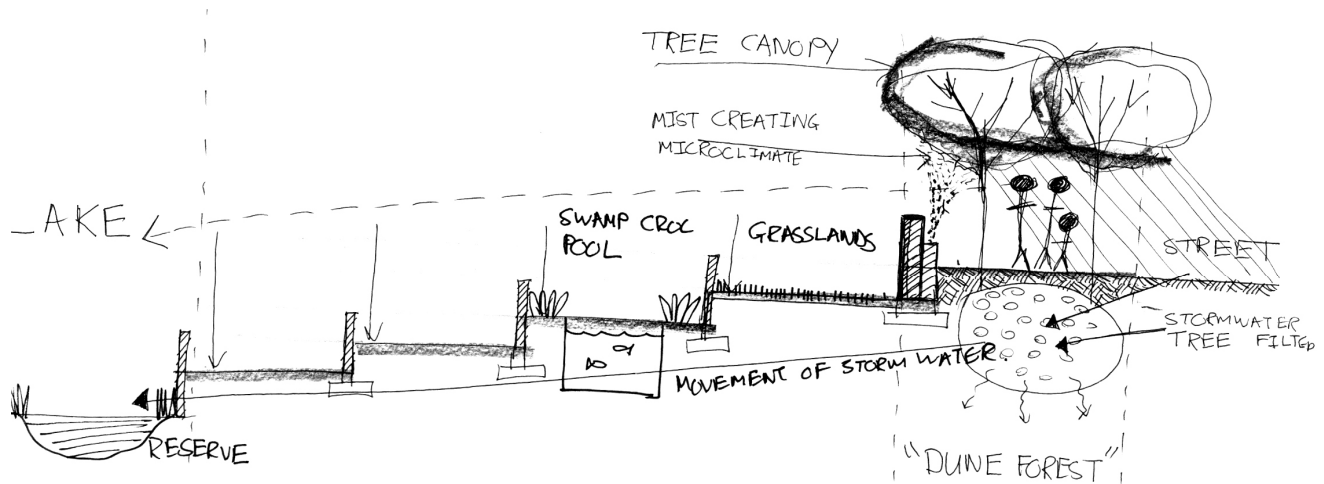
Please acknowledge the following information about the first platform as illustrated in Figure 101:

- The platform is the highest point in The Public Open Space Project.
- A good view of the lake is obtained from the platform.
- The platform is the only platform where a dense tree canopy can be placed without ignoring the principal concept and blocking the view of the lake.
- The platform is the entrance to the site and the termination point of the proposed East-West Boulevard, implying that a comfortable micro climate be created there for visitors.
- Functional element like a balustrade, benches and a drinking fountain are required in the space.

When the functional requirements of the first platform are creatively combined with the above mentioned narrative a strong spatial experience is generated, and in so doing place is created opposed to space.



101 Diagram explaining the role dune forests play in maintaining the fresh water balance of the lake



102 Diagram illustrating the functional considerations of the first platform and how the functional elements are manipulated to accommodate a narrative

8.3 Functional considerations

The design of the platforms took into account that it requires to be robust and simple, both to withstand the harsh climate, endure the wear and tear of being a public space and to ensure that local labor could be used in the construction thereof.

8.3.1 Visual connection with the lake

As explained throughout this document establishing a visual connection with the lake is of foremost importance. As explained in point 8.2.1, the concept of connecting the town and lake was interpreted as a series of outdoor platforms and ramps, negotiating the slope and providing unhindered physical and visual access to the lake.

The first platform bordering McKenzie Street is the highest point in the design and obtaining a good view of the lake is not difficult, once the view obstructing dredger spoil vegetation is removed.

This also implies a design constraint in that trees and buildings can only be placed at the edges of the design.

The same visual constraint is placed on all other design elements. Please refer to point 8.3.5, dealing with functional elements like balustrades and how they are designed to ensure the best possible visual connection from the platform to the lake.

To obtain views from the last platform was more problematic. If the last platform was placed at ground level the remaining area between the platform and lake would have to be completely bare of tall marsh grasses, shrubs and trees to allow for views. It followed that the platform be elevated. Please refer to point 8.3.2 and point 8.3.8 highlighting the advantages of the platform being elevated for services and safety respectively.

Please refer to point 8.4, dealing with the height of planting and views.

8.3.2 SLOPES AND PLATFORMS

The site has a varying slope dropping down 16,5 meters from McKenzie Street to low tide water level. As explained the concept of connecting the town and lake was interpreted as a series of outdoor platforms and ramps, negotiating the slope and providing unhindered physical and visual access to the lake.

Ramps with a slope of 1:12 would be the main circulation element connecting consecutive platforms and extending the proposed East-West Boulevard through the public open space towards the lake.

The first platform bordering McKenzie Street was envisioned as an extension of the streetscape. The platform had to be level with the proposed pedestrian crossing and thus had a fixed height, implying that ground filling would be necessary.

The last platform as explained in point 8.3.1 needed to be elevated to a yet undetermined height. After considering where to locate services and parking and how to balance cut and fill groundworks, it became clear that elevating the platform by 3 meters would be ideal. It would allow for a basement level that could house parking and the bulk of the services, refer to point 8.3.4.

Please refer to point 8.3.8, for reason involving safety, motivating why the platforms need to be elevated.

The height of each consecutive platform had to be dropped by 1 meter to connect the first and last platforms. Also by doing this the height of the basement level fluctuates and increases from 3 to 5 meters. This allows a truck loading bays to be relocated to the basement. Freeing up space on the first platform and ensuring a seamless extension of the streetscape.

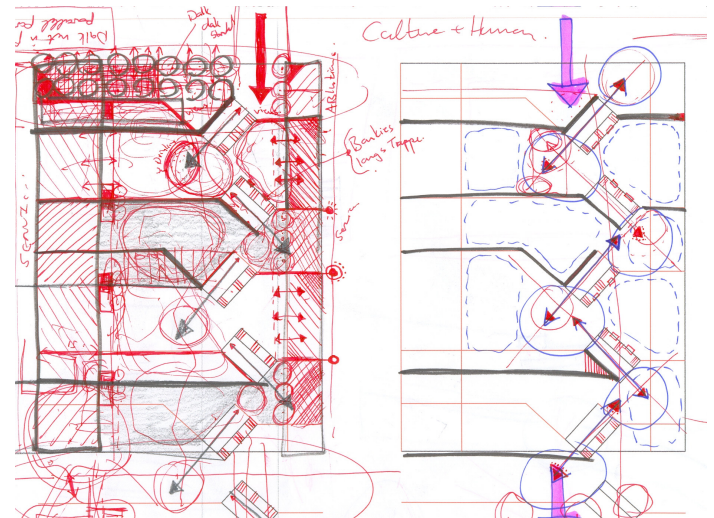
The proposed design balances cut and fill groundworks: with half of the design being on compacted fill and the other half a 'roof garden' with an excavated basement.

8.3.3 Ramps

Ramps with a slope of 1:12 would be the main circulation element connecting consecutive platforms. The ramps would each be 12 meters long to connect to the next platform.

The ramps would also provide service access for vehicles and would be constructed to engineer's specifications. Removable bollards at the entrance of the site would allow vehicle access to the first platform.

Please refer to figure 103, showing that the ramps are placed in a zigzag pattern, slowing down pedestrian movement while orientating visitors to alternating sides of the commercial edges and ensuring that no "economic dead spots" occur. The ramps also create smaller spaces within the boundaries of each platform. This allows for the commercial establishments to claim ownership of varying sized outdoor spaces.



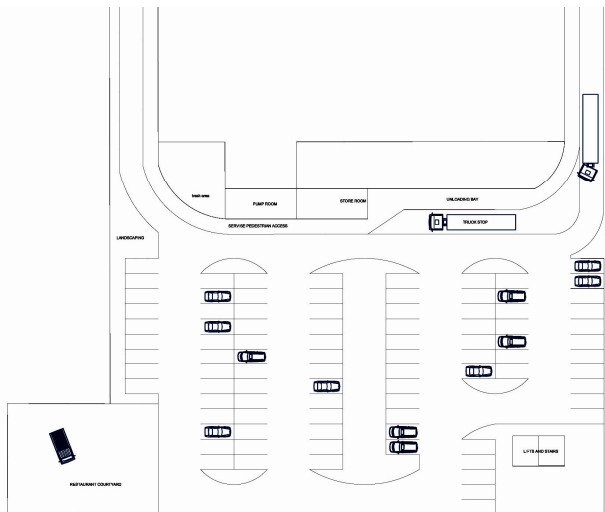
103 Ramps function as the main circulation element and forms the structure of the design

8.3.4 Services

The bulk of the services are located in the basement level. Access to the basement level is attained via a one way road, 4 meter wide, with a service walkway on one side. Trucks, with a maximum length of 14 meters, are accommodated for by the generous bends, gradient of 1:12 and 5 meter height of the basement level.

The design allows for 97 parking bays, a pump- and store room respectively and a service courtyard for the restaurant. The courtyard is accessed through the basement parking and allows easy entrance to medium sized service vehicles.

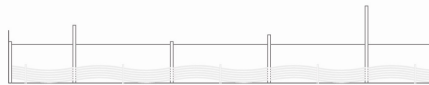
Service vehicles can also gain direct access to the platform terraces by means of the ramps, refer to point 8.3.3.



104 Basement parking, services and restaurant courtyard

8.3.5 Balustrades

Balustrades are designed so that they present maximum transparency without losing their robustness. The balustrade on the crocodile viewing platform needed extra attention to ensure that it enables views to the lake whilst providing maximum protection from people falling into the water. Two meter high mesh sheets are tensioned between columns of different height, visually dissolving the plane presented by the safety mesh. Because of the additional height of the columns, the mesh screen appears shorter and perceived to be visually less obtrusive. Please refer to Figure 104.



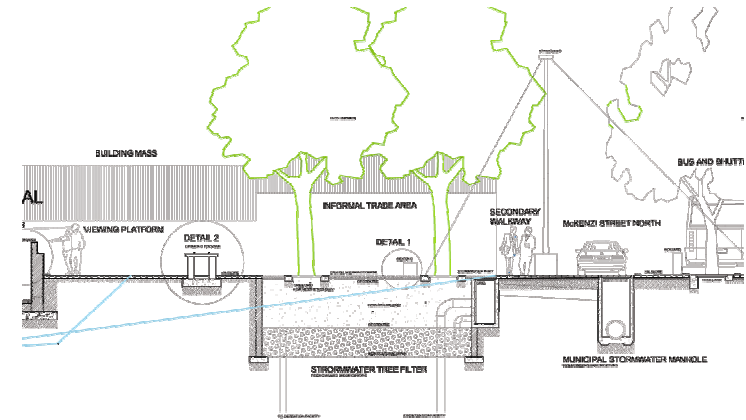
105 Balustrade to give maximum protection and transparency. The second balustrade dissolves the visual plane by projecting columns

Also the columns of the safety mesh screen are placed behind the columns of the hand balustrade to minimize the visual mass and solidity of the screen.

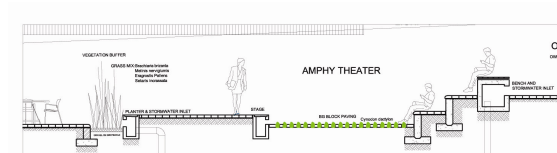
Viewed from the highest first platform a person of average height would view the lake without any horizontal obstructions.

8.3.6 Stormwater system with detention pond

As far possible stormwater systems were integrated throughout the designs, please refer to Figures 105 and 106.



106 Section through stormwater tree filter

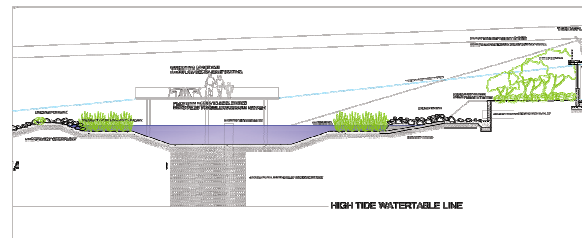


107 Section through stormwater inlets designed to function as seating or to passively irrigate vegetation in planters

The system was designed to first irrigate planting, before damming up excess runoff in the, on site, detention facility. If the precipitation is too great for the detention facility to handle, runoff is lead into municipal stormwater or drains into the lake via an agricultural drain. If a surge of runoff is experienced that is too great for the agricultural drain to

handle an emergency overflow channels into the lake exists. The channel is reinforced with renomatresses and planted to minimize the erosive qualities of runoff and keep the lake free of sediments.

Both the inlet and outlet of the detention pond, as per figure 107, is hidden out of view underneath the pedestrian bridge and its landing.



108 Section through detention facility showing the inlet, outlet and overflow

The form of the detention pond was determined by the slope of the land and can be described as a stretched oval shape.

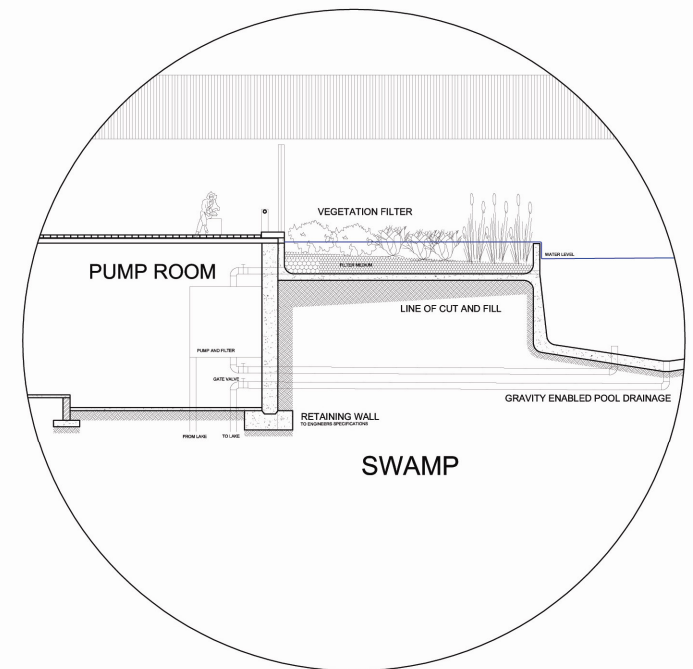
Please refer to point 8.4.4, dealing with the planting design in and around the detention facility. The majority of marsh and water plants are placed on the western edge of the pond. As figure 107 illustrates, the eastern edge is blocked from view by the shrub buffer, described in point 8.4.5. On the western edge the plants are displayed optimally from the viewing platform.

8.3.7 Crocodile diving pool and platform

Crocodile diving is an eco-tourism activity attracting a lot of attention and gaining popularity with eco-thrill seekers. Unfortunately crocodile diving is not possible in the waters of Lake St.Lucia considering the poor visibility and shallowness.

The Public Open Space Project proposes a crocodile diving pool as a feature that will provide visitors with entertainment and stimulate economic activity throughout the project.

Please refer to Figure 108. The services for such a pool will be located in the basement, in the pump room. Water will be pumped into the pool directly from the lake. It will be circulated and filtered through artificial and vegetation filters. Water will be replaced and drained by gravity directly into the detention pond.



109 Section through crocodile diving pond showing the services

Please refer to Figure 109 for the design considerations of such a pool:

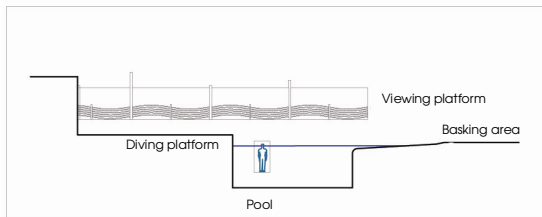
The crocodile viewing platform is ideally situated, with a height vantage, to offer spectators maximum exposure of a dive.

The safety and balustrade considerations have already been discussed in point 8.3.5.

The pool requires a depth of at least 3 meters deep to enable the cage to be comfortably submerged.

The edges of the pool also need careful consideration. The pool and its necessities are placed in such a manner that the platform that the cage is suspended from is isolated from the crocodile basking area. The edge of this platform is raised above water level and forms a right angle. This is done to discourage the crocodiles from going onto the platform were divers enter the cage. The opposite is true for the edge of the pool bordering the crocodile basking area. The edge mimics the gradual slope of a natural pond and provides a transitional zone between wet and dry. This enables the crocodiles to comfortably enter and exit the pool.

The basking area needs to be designed so that it has the maximum amount of sunlight. With the pool being on the southern side of a building it can't be placed in the buildings shadow and needs to be placed accordingly.



110 Line drawing through crocodile diving pond showing the different edges

8.3.8 Safety

Another reason for elevating viewing platforms and walkways is safety. One should remember that the site is located within a world heritage site, adjacent to a lake, with live animals like hippos and crocodiles. These animals are more than likely to make use of the detention pond – especially when the estuary is closed and salt concentrations in the lake rise. Elevated platform with balustrades are a safety requirement

8.4 PLANTING PALLET AND PLANTING DESIGN

The planting palette proposed for this scheme draws mostly from the indigenous swamp forest species that occurs on the site and around Lake St. Lucia. The rare, scattered patches of swamp forest are only found in this part of South Africa, near the coast. They are found where the water table is high and only plants tolerating the waterlogged conditions survive. Characteristic species of swamp forest are:

Barringtonia racemosa :

Small to medium sized tree (4-10m) found fringing coastal swamp forest, estuaries and rivers. A beautiful and decorative tree. Flowering from July to October. Carpets of white flowers float in water beneath the trees in estuaries and in swamps forests. The tree grows well in both wet and dry conditions. The flowers have an unpleasant scent.

Cassipourea gummiflua :

Medium sized to tall tree (4-12m). Flowers from December to April, and attract bees and ants.

Ficus sur :

Tall tree (10- 35 m). Attract birds. Beautiful flush of shiny coppery new leaves in spring.

Macaranga capensis :

Medium to tall deciduous tree (10 -25m)

Rauvolfia caffra

Medium to tall deciduous tree (7 -15m) Scented flowers from October to March. Attracts butterflies, monkeys and bushbabies. A quick growing tree.

Scolopia stolzii :

Small to medium sized tree (3 -15m). Sweetly scented flowers from April to September.

Syzigium cordatum

Medium sized evergreen tree (5 -12m). Lovely shape, decorative grey green leaves, white flowers and purple fruit.

Voacanga thouarsii

Medium to large tree (7-15m). Flowers from August to March and has a strong scent.

The planting design developed mostly out of the functional considerations for creating views that would visually link the lake and town. This implies that the height of the trees and shrubs are very important and are used to create visual buffers or frame vistas. The planting design calls for indigenous plants to create a height maintained vegetation area between the lake and the proposed development. Figure 110 shows the five functional planting zones that make up the planting design, namely:

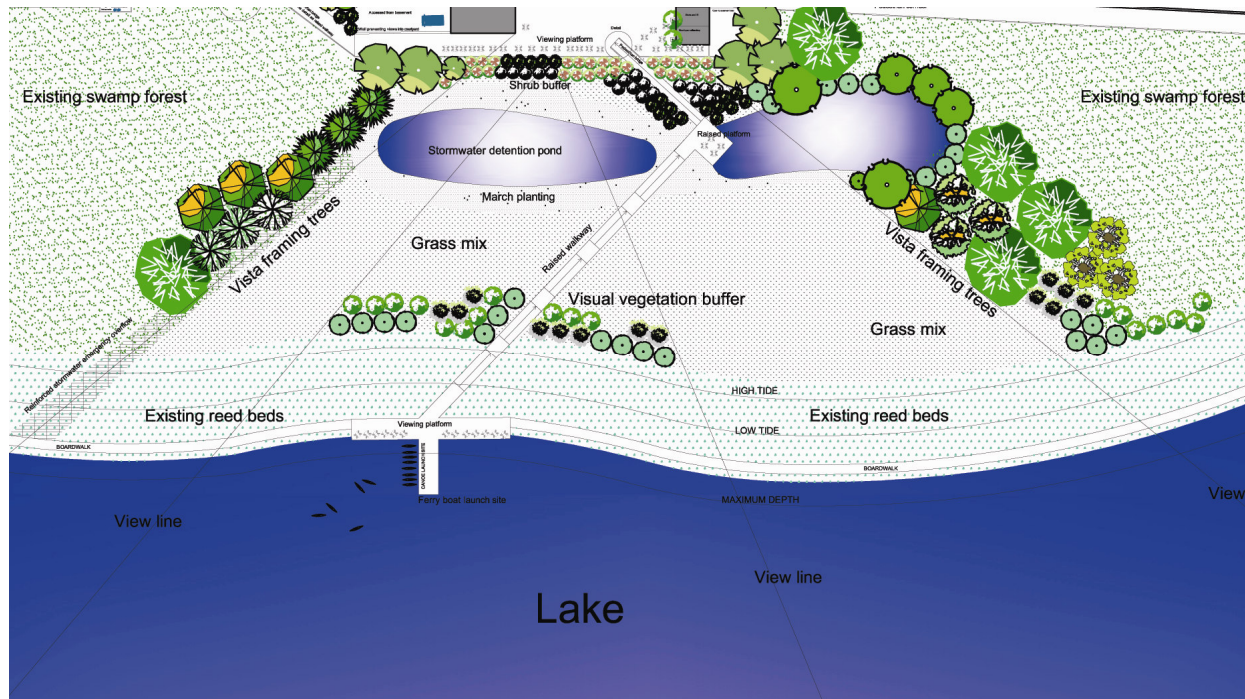
Visual vegetation buffer

Vista framing trees

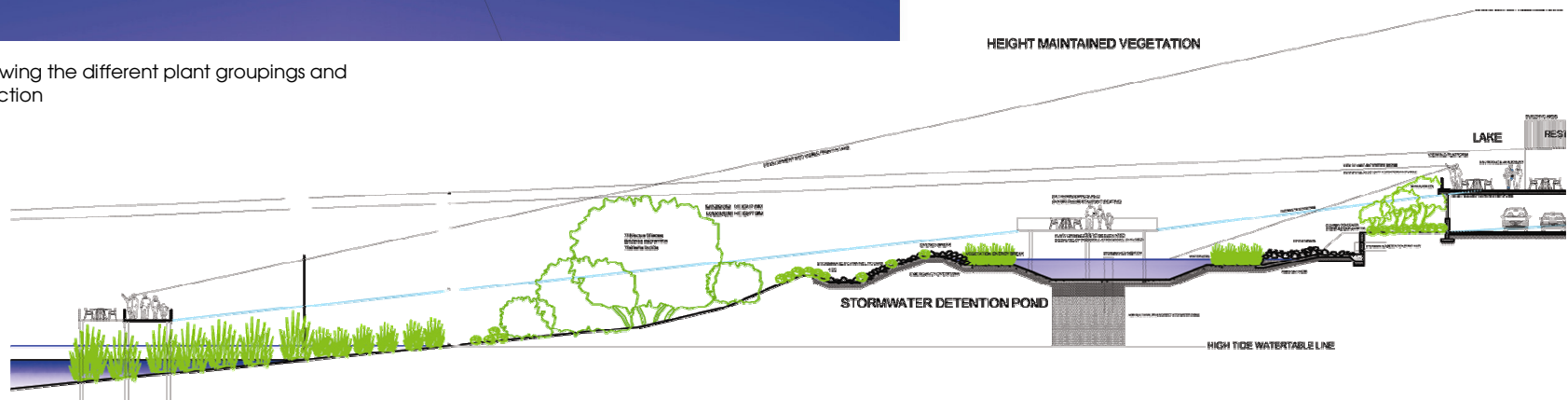
Grass mix with indigenous flowers

Existing reed beds and marsh planting

Shrub buffer



111 Plan showing the different plant groupings and their function



112 Section showing the different plant groupings and their function

8.4.1 Visual vegetation buffer

The landscape design calls for a vegetation screen, between 6 and 9 meters tall, located close to the high water mark. Please refer to Figure 111 showing a section through the proposed design and illustrates the functioning of the buffer screen. If the screen is lower than 6 meters the proposed boardwalk and jetty structure will become visible from the viewing platform. If the screen is higher than 9 meters the view over the open water of the lake becomes smaller. Species used for the buffer are all dense shrubs that flower and attract animals while able to withstand the harsh fluctuating conditions of the lake.

Species used: *Hibiscus tiliacea*
Bridelia micrantha
Halleria lucida

The shrubs will be planted in random clumps tightly next to each other mimicking their natural growing pattern, blending in seamlessly with the natural vegetation.

8.4.2 Vista framing Trees

The existing swamp forest creates the edges of the 'height maintained vegetation'. The height of these edges frames the view over the lake towards the Western Shores beautifully. The beauty of these existing edges will be amplified by ensuring that the characteristic swamp forest species are present.

The species are:

Barringtonia racemosa
Cassipourea gummiflua
Ficus sur
Macaranga capensis
Rauvolfia caffra
Scolopia stolzii
Syzigium cordatum
Voacanga thouarsii

The proposed clustering of the above mentioned species as in Figure 110 is meant to blend in with the existing vegetation but is not at all a random process. Rather the process is determined by functional and aesthetic considerations. For example, the decorative *Barringtonia racemosa* whose white flowers float in the water of estuaries and detention facilities can't be placed directly next to the viewing platform and restaurant because of its unpleasant scent. *Voacanga thouarsii* on the other hand flowers and has a strong perfume and can be located close to the viewing platform.

The flowers of *Cassipourea gummiflua* attracts masses of bees and ants and will be better if placed further away from the proposed development.

8.4.3 Grass mix with indigenous flowers

Point 5.3, dealing with the dredger spoil, explained that the original slope of the lake shore and the natural grassland covering was completely destroyed by dredging activities and gradually changed into indigenous swamp forest. In order to create a visual connection between the town and lake it is important to rehabilitate the area between the lake and the proposed development as in Figure 110 and Figure 111.

The proposed grass mix consists of the following species:

Cymbopogon validus
Hyparrhenia hirta
Melinis nerviglumis
Setaria megephylla
Stenotaphrum secundatum
Hyperthelia dissoluta
Dactyloctenium geminatum
Digitaria eriantha

It is important to remember that the process of decomposing plant material is enhanced, due to the humidity, and that veldgrass in St. Lucia does not require burning. Veldgrass is rather burned to keep woody plants from tacking over. Because this is a maintained landscape where people will constantly remove woody plant, burning still will not be required.

The above mentioned grass species can easily be harvested from surrounding farmland and be planted in clusters on site.

The following flowers and bulbs can be planted in patches, of the same specie, within the grassland. A consideration when choosing wild flowers is to remember that some plants need burning to induce flowering, these plants are not suited for this planting pallet. It is important that they are grouped in clusters and not randomly scattered throughout the design. The reason being that the impacts indigenous flowers can have often gets lost visually, if they are not grouped properly. Rather they must be patches of color that switch themselves on and off within the veldgrass mix. The indigenous flowers are:

Kniphofia coddiana
Kniphofia gracillis
Scadoxus puriceus
Cyrtanthus sanguineus
Crocasmia aurea
Cladiolus dalenii
Indigofera hedyantha
Leonotis intermedia
Tecoma capensis
Trachyandra asperata
Crassula pellucida subsp. Brachypetala
Bulbine abyssinica

Cyrtanthus bevilflorus
Hypoxis angustifolia
Eulophia speciosa
Brunsvigia natalensis
Crinum delagoense

8.4.4 Existing reed beds and marsh planting around detention facility

The following plants are present in the existing reed beds:

Typha capensis
Cyperus denudatus
Cyperus prolifer
Cyperus obtusiflorus
Schoenoplectus scirpoideus
Juncus kraussii

They will be planted around the detention facility on the western banks. The western bank is best viewed from the viewing platform as illustrated by Figure 111. Between them the following flowering species will be planted:

Kniphofia laxiflora
Zantedeschia aethiopica
Gladiolus papilio

8.4.5 Shrub buffer

When looking back from the lake towards the proposed development, one would get a clear view of the unattractive basement parking. The view needs to be buffered off with a vegetation screen that can't grow taller than 3 meters, or be made up of species that will allow for periodical pruning. Because of the proximity of the shrub buffer to the viewing

platform decorative species that are attractive in leaf, fruit, flower and perfume would be ideal.

The shrub screen would be made up of the following plant:

Gardenia thunbergia:

Heavily perfumed attractive flowers

Antidesma venosum:

Very tasty fruit popular with people

Erythrococca berberidea:

The large Hairtail butterfly (Antheus
lemons) breeds on the leaves of this plant.

8.4.6 Streetscape trees

Albizia adianthifolia is suggested to be used at the sides of McKenzie Street. The tree will define the edges and provide visual continuity.

Ekebergia capensis is suggested to be planted on the islands separating McKenzie Street north and south. It is a excellent tree for roadsides.

8.4.7 Platform tree

Ziziphus mucronata is used on all the platforms, except the first, because of its attractive form and importance in Zulu culture.

Trichilia emetica is used on the first platform because of its dense, spreading crown. The tree canopy will frame views of the lake as in Figure 100.

8.5 Conclusion

This thesis started by asking the question of what responsibilities an architect has towards nature and how much development equals exploitation, point 4.1 and 4.2.

This thesis recognized the socio-economic pressures on St.Lucia, and the environment in general, and suggested that the answer lies within the framework of the current paradigm, point 1 and 2.

In point 4, this thesis realized that the only responsibility an architect faces towards the environment is to ensure that he or she maximizes infection potential of the latest memes concerned with the alteration of the physical environment.

This faze of infection can be seen or formalized as gathering information, looking at codes, analyzing patterns and understanding paradigms of the area. Conceptualization and design thereafter is an automatic and random process based upon mutation and evolution of memes and memetic reproductive mechanisms.

Design in general can be seen as planned coincidence, but where the chance of the coincidence happening is maximized to such an extent that the odds of a design not realizing is omittable.

Another way of looking at any design is that it is the manifestation of a memplex, whether it is in the form of text, plan or image.

This thesis focused on the connection between the town and lake and presents a concept of how such a link is envisioned, both functionally and architecturally. After reading point 4.5 – 4.7 one realizes that this thesis is also a metaphysical connection between authorities, municipalities and private land owner.

This is because the thesis can be viewed as a memplex with the potential to infect the reader and be spread by him or her. In other word this thesis is much like a virus, or rather a digital vaccination.

This digital code 'vaccinates' developers against memes that cause negative physical environments. Our vaccination, this thesis, is also engineered to be contagious by illustrating the long term viability and benefits to developers, residents and local people of St.Lucia.

