

UMGENI INTERCHANGE

Proposal based in Umgeni, Durban

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INTRODUCTION

A VISION FOR A GREEN AND THRIVING NEIGHBOURHOOD

The time of **integration** and **vibrance** is in motion what used to be a **vehicle dominated hub** with **desolate office space** is now transformed into the city's leading **energy saving node**. The energy transition is due to the area's **circular functionality** with the **surrounding form**. The eThekweni Local Area Plan indicates the areas use as part of a **sports and leisure layer** within the Inner city of Durban as various **sports stadiums, malls and entertainment destinations** are located in and around the area. This indicates the **large amount of energy** in use providing for the opportunity to **coordinate interrelated activities within the area**, these draw from preceding designs depicted along the **Durban beach front and promenade** to enhance the design of the area and to **promote a sense of place** leading to **natural surveillance**.

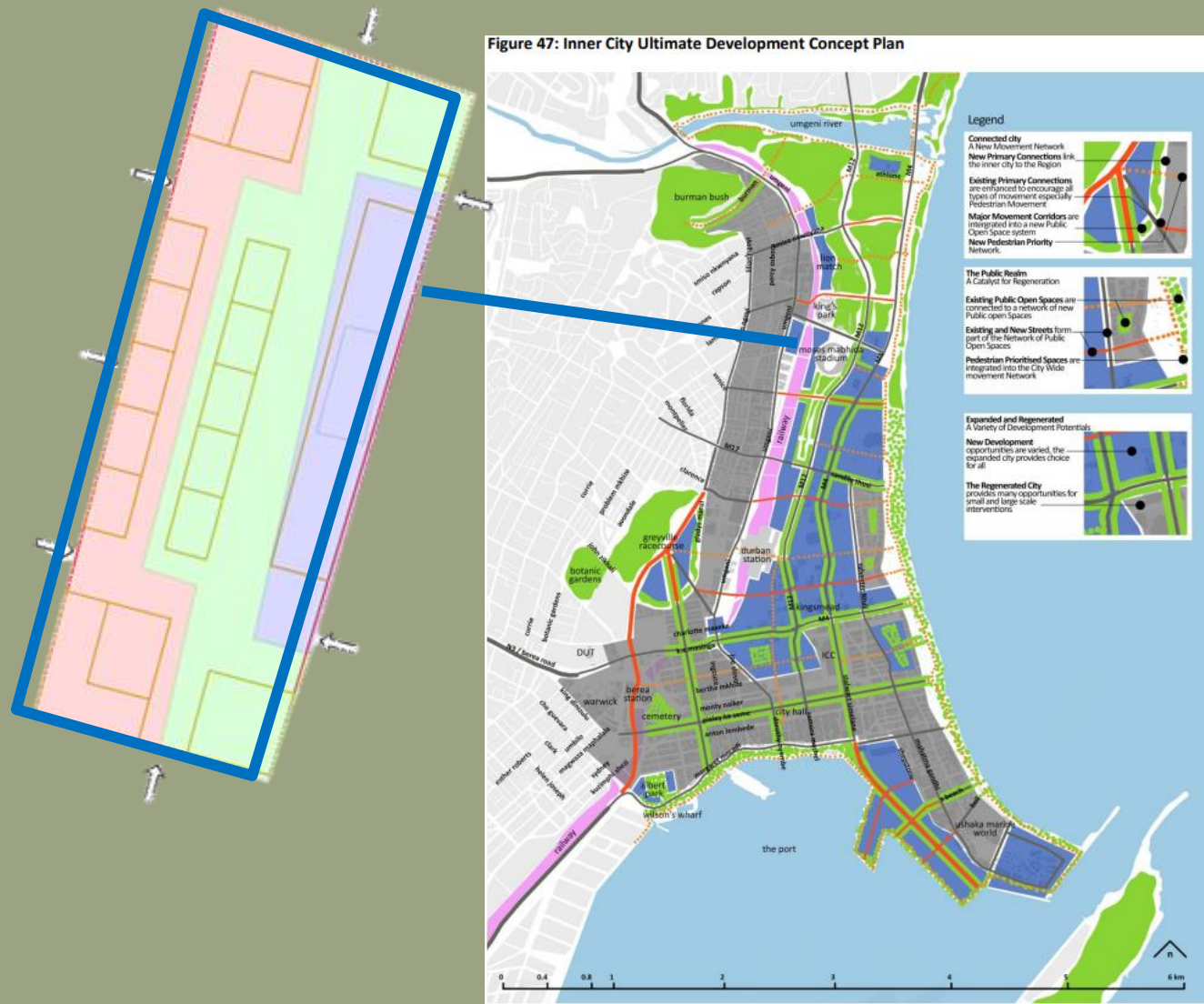


Figure 1: Context Map & Concept Plan

The transition is led by the **activation of space** through events and social gatherings as that is the **presiding cultural trend** hence by way of familiarity the space shall be transformed. Other nodes of significance such as **Florida Rd, Suncoast Entertainment Casino**, nearby stadiums such as **Moses Mabhida stadium** will be used to influence movement in the area through bicycle ride trails/underpass, segways and carts, all that is familiar to citizens.

In agency the city has designed **Next Gen Building Typologies** to bridge the housing gap for students, young professionals and low-middle families. The strategy works towards **enhancing choice and opportunity** within the city as we propose a **multi-use sports & leisure node**. The notion stems from the **15-minute city concept** and understanding that the young population of Durban are always on the move for locations with more employment options, namely the city's business district or Umhlanga, the north of Durban. These trends necessitate the traction of **telecom/ Digital marketing** company to guarantee a wide range of traction and response from all citizens in particular the youth. To incentivise businesses the city will subsidize the land and provide **green infrastructure solutions** to mitigate the cost on waste management infrastructure, involving the city with the facilitation and the monitoring of all **urban gardens on site**. To achieve the transition training and facilitation of waste management practices will be offered through community programmes that assist with the transition of waste management practices /Water use. This includes the servicing of **bulk water infrastructure** near the site in order to accommodate the proposed development and future densities.

WSUD principles allow for a **circular flow of water use** to promote the use of permeable water retention structures and gardens. **Grey water toilet systems** are to be connected to urban roof top gardens towards a holistic water saving reticulation method.

Values

- Affordability & Accessibility
- Integration
- Sustainable resource use
- Resilience & agility

eThekweni Municipality INNER-CITY SPATIAL PRINCIPLES

1. A Connected City
2. A Walkable City
3. An Integrated and Inclusive City
4. Realizing the Potential

BACKGROUND

Durban's subtropical climate has presented challenges within the city's infrastructure and service systems that correlate with the rise in youth unemployment. The Climate action plan 2019 reports several interrelated socio-economic challenges leading to a number of possible pathways towards a mitigation strategy. These statistics are reiterated within the Inner-city Local Area Plan, with highlight to specific areas of intervention for and overall, well functioning city. The proposal ensures to utilize these guiding documents for an informed development proposal. The plan sees an obligation to propose integration bridges that will aid in the activation of the space. The idea involves the design of preceding bridges found in the city of Cape Town for pedestrians to cross safely using non-motorized transport, walking and light-motor transport.

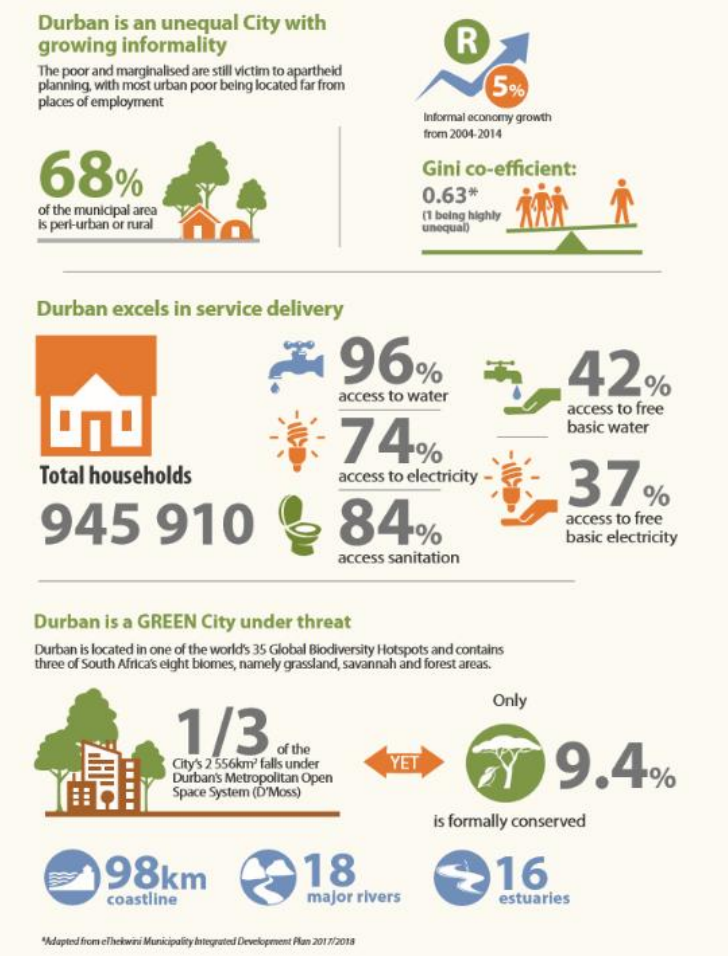


Figure 2. Guiding statistics. Climate Action plan 2019

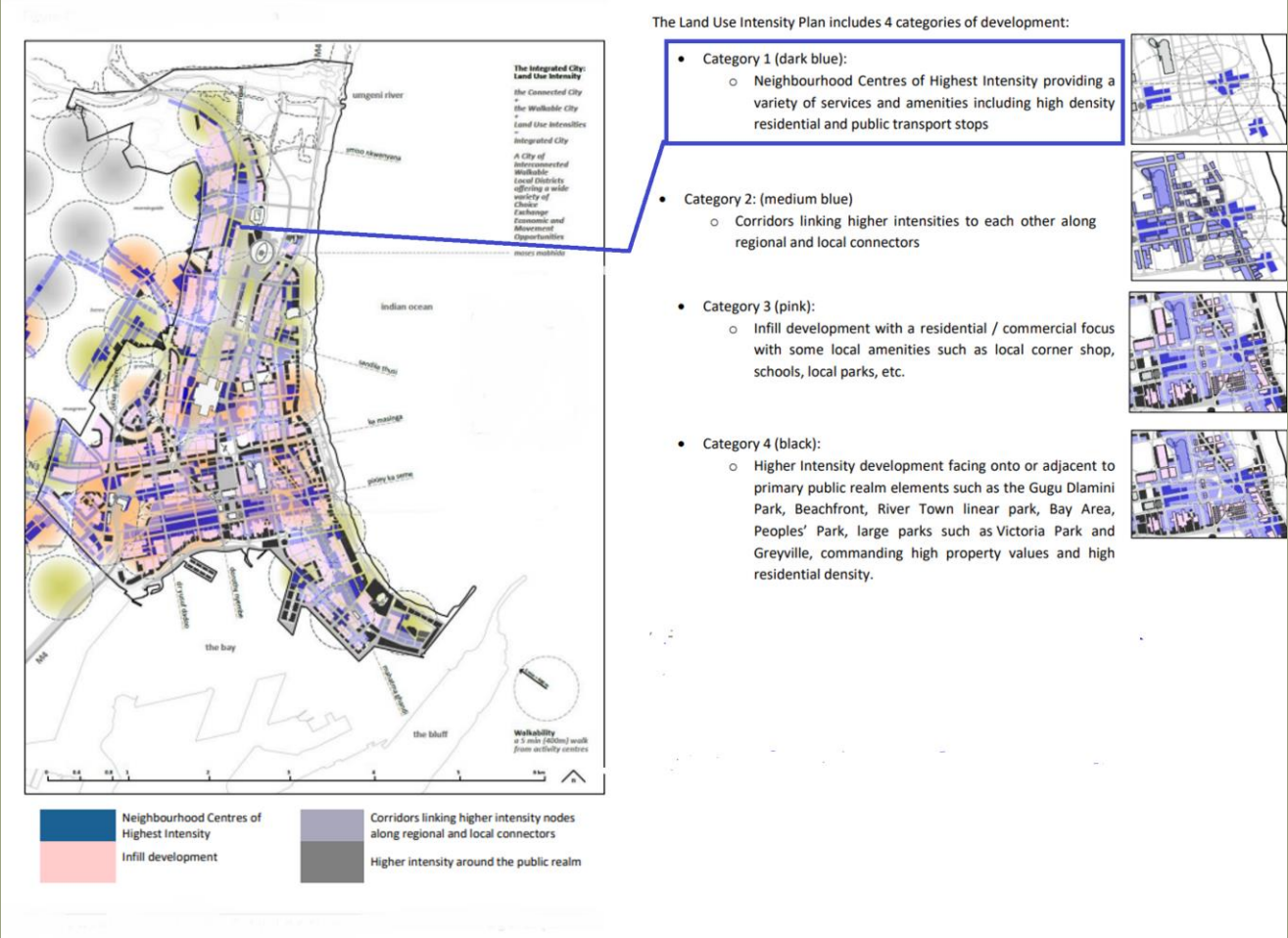


Figure 3. Land use intensity Plan. Inner-City Local Area Plan

In preparation for development to take place within the site passageways have been proposed to link to Category I (Dark Blue) in Land use Intensity plan areas highlighted in Figure 2. The development of such bridges will ensure multiple accessibility to activation points in and around the site as well as integration between surrounding



Figure 4: Proposed Integration Areas



Figure 5. Design for proposed passageway depicting Nelson Mandela Blvd, Cape Town seamless overpass design, By Team

STRATEGIES

Complete Neighborhoods

PHASE I

 **Mixed-use buildings**

 **Active ground floors**

 **Proximity of services**

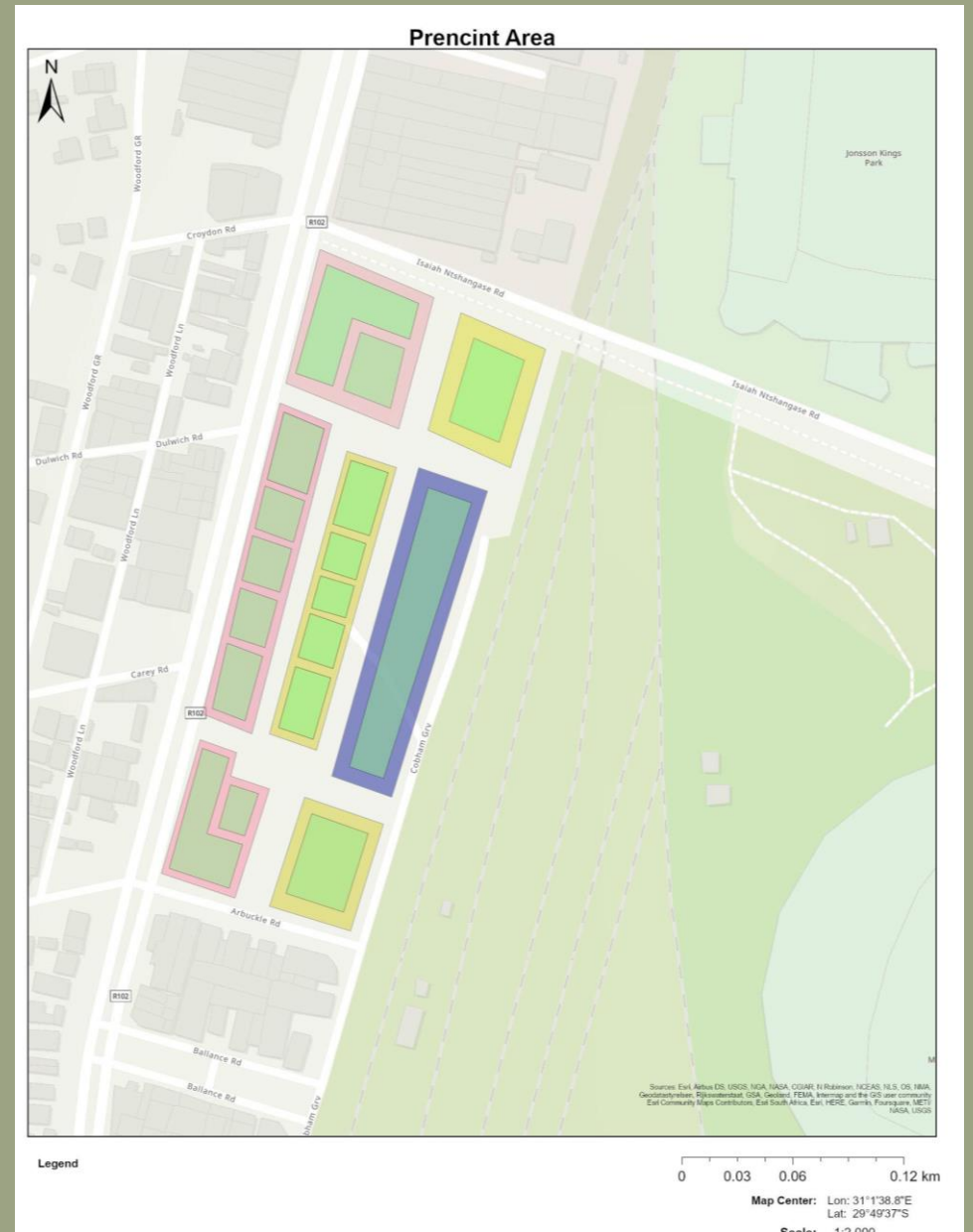




Figure 6. Proposed Block Phasing for site

Green Spaces & Nature-Based Solutions

PHASE 2


 **Urban greening**


 **Climate resilience**


 **Urban agriculture & local food production**

Circular Resources

PHASE 3

 **Minimise resource use**

 **Sustainable waste & water management**

 **Promote circularity**

Mixed-use buildings

Active ground floors

Proximity of services

Complete Neighborhoods

Objectives :

- Activating Umgeni Road
- Creating attractiveness and identity to the area
- Intensifying uses
- Sustainable development, anti-flooding systems, built - natural spaces balance

Infrastructure and Service Maintenance

- Roads
- Bulk Service Infrastructure
- Solar Energy Panels

PHASE 1

Mixed-Use Commercial, Retail, and Affordable Housing Block in Flood-Prone Durban

This design concept proposal aims to address the unique challenges posed by flood-prone Durban while creating an accessible, inclusive, sustainable and resilient mixed-use development. The concept aims to create a vibrant, flood-resilient development that enhances the safety, functionality, and attractiveness of the area. The proposal includes a combination of commercial spaces, retail outlets, and affordable housing units to promote economic growth and cater to the housing needs of the community. A desktop site analysis of the site has been conducted which has assisted the team to understand its flood patterns, water drainage systems, and flood risk areas. As the development is in a flood-prone city, developing strategies to mitigate the impact of flooding on the proposed development is crucial.

Rooftop Urban Garden

Ground 3 - 5.Social Housing Units

Ground 2.Offices

Ground 1.Mixed Use retail & commercial

Ground 0. Risen Foundation (Parking, Basement)



Figure 8.Proposed phasing of high-rise buildings

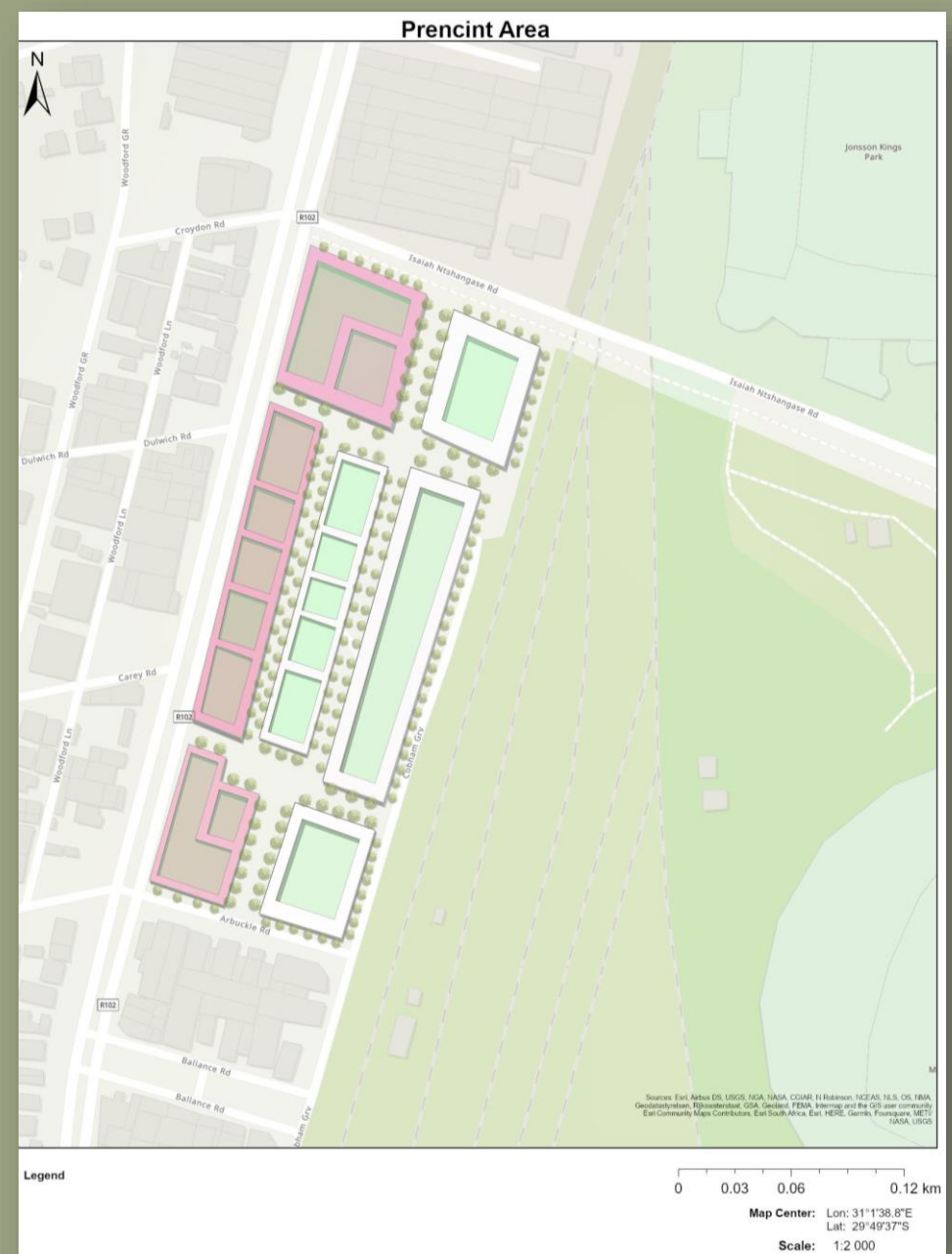


Figure 7. Proposed Mixed used division

Flexible Ground Floor Spaces:

Plan the ground floor to accommodate flexible spaces that can easily adapt to flood conditions. Consider incorporating removable or water-resistant barriers, modular partitions, and movable fixtures to allow for quick reconfiguration and protection of valuable assets during flood event.

Retail and Commercial Spaces:

The retail and commercial spaces will be on the 1st and 2nd floor, with an emphasis on flood-resistant materials and fixtures as those are the first two floors (and basement) that would be directly impacted by the flood. Incorporating flood-proofing measures, such as watertight doors, raised electrical outlets, and elevated storage areas, to protect goods and equipment during flooding would be critical for our site. The retail and commercial spaces (could be extended to 3 floors) will be the major generators of funds in the space as the rest of the building is an affordable housing space.

Mixed-Use Design:

We have allocated the upper floors from the 3rd floor of the building for affordable housing units, offering a mix of one-bedroom, two-bedroom, and three-bedroom apartments. Communal spaces will be added to our site, such as rooftop gardens, playgrounds, and community centers, to foster a sense of community and provide recreational areas for residents. Another good consideration would be for a school (pre-school) to be added to the building considering the density of our building and the fact that we attract people who work in our space, consumers who purchase goods from our space and those who live within it. We hope to create a space that caters to the needs of the community, and that would be a central place to do a lot of things (convenience).

Urban greening

Climate resilience

Urban agriculture & local food production

Green Spaces & Nature-Based Solutions

Objectives :

- Creating pedestrian public spaces designed to induce communities' engagement
- Activating ground floor by developing commercial locals and community locals

PHASE 2

Resilient Landscaping:

Integrate resilient landscaping elements, such as rooftop gardens (to address food security in the block), solar panels (for energy generation due to loadshedding), and bioswales (landscape features that collect polluted stormwater runoff, soak it into the ground, and filter out pollution). The latter feature will help absorb and filter excess water, reducing the strain on the existing drainage infrastructure and minimizing flood risks. Another good alternative to bioswales are rain gardens. The site could consider a mix of both.

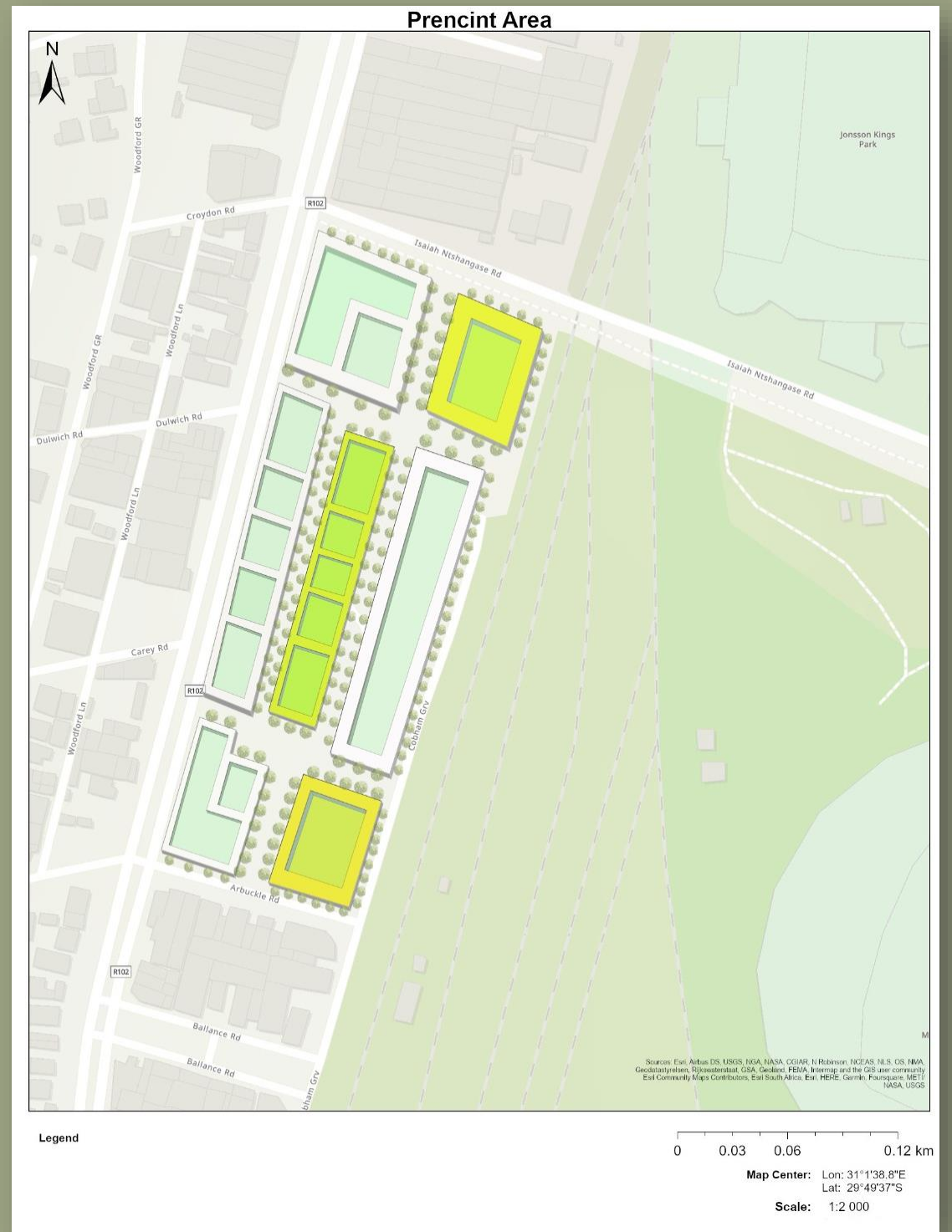


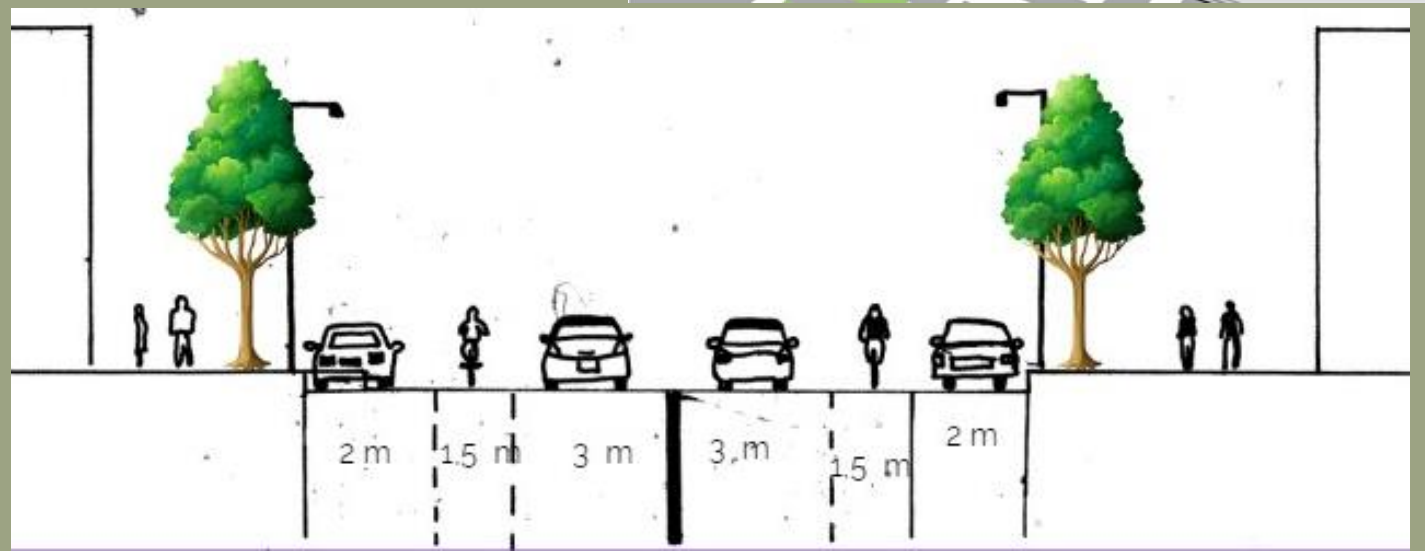
Figure 9. Proposed Phase 2 Affordable and Social Housing Development in correlation with Phase I



Figure 10. Green space promotion through presiding rooftop garden cafes



Figure 11. Pedestrian space layout design



Pedestrian spaces:

The project aims to extend the walkability of the city through expanding the Golden Mile Promenade right up to the project space, with indigenous plants to create a vibrant trail. This will not only lead the tenants and users of our space towards the beach area, allowing for a quick and seamless cycle, jog or walk to the beach (promoting good health and linking spaces), but it would also attract the users of the promenade space to our project by drawing them towards our space.

↓ Minimise resource use

💧 Sustainable waste & water management

♻️ Promote circularity

Circular Resources

PHASE 3

- Objectives :
- Utilize renewable energy sources
- Recycle to reuse waste and water
- Regenerate natural resources

Sustainable Design:

Sustainable design features need to be integrated throughout the development, including energy-efficient systems, solar panels, rainwater harvesting, and waste management systems. Locally sourced and recycled materials will be priorities in our project, as well as passive cooling and natural ventilation techniques as Durban is a very humid region, to reduce the environmental impact and enhance the development's resilience. This will assist in less people feeling the need to waste energy on central cooling system as those consume a lot. The commercial and retail spaces should however have central cooling.

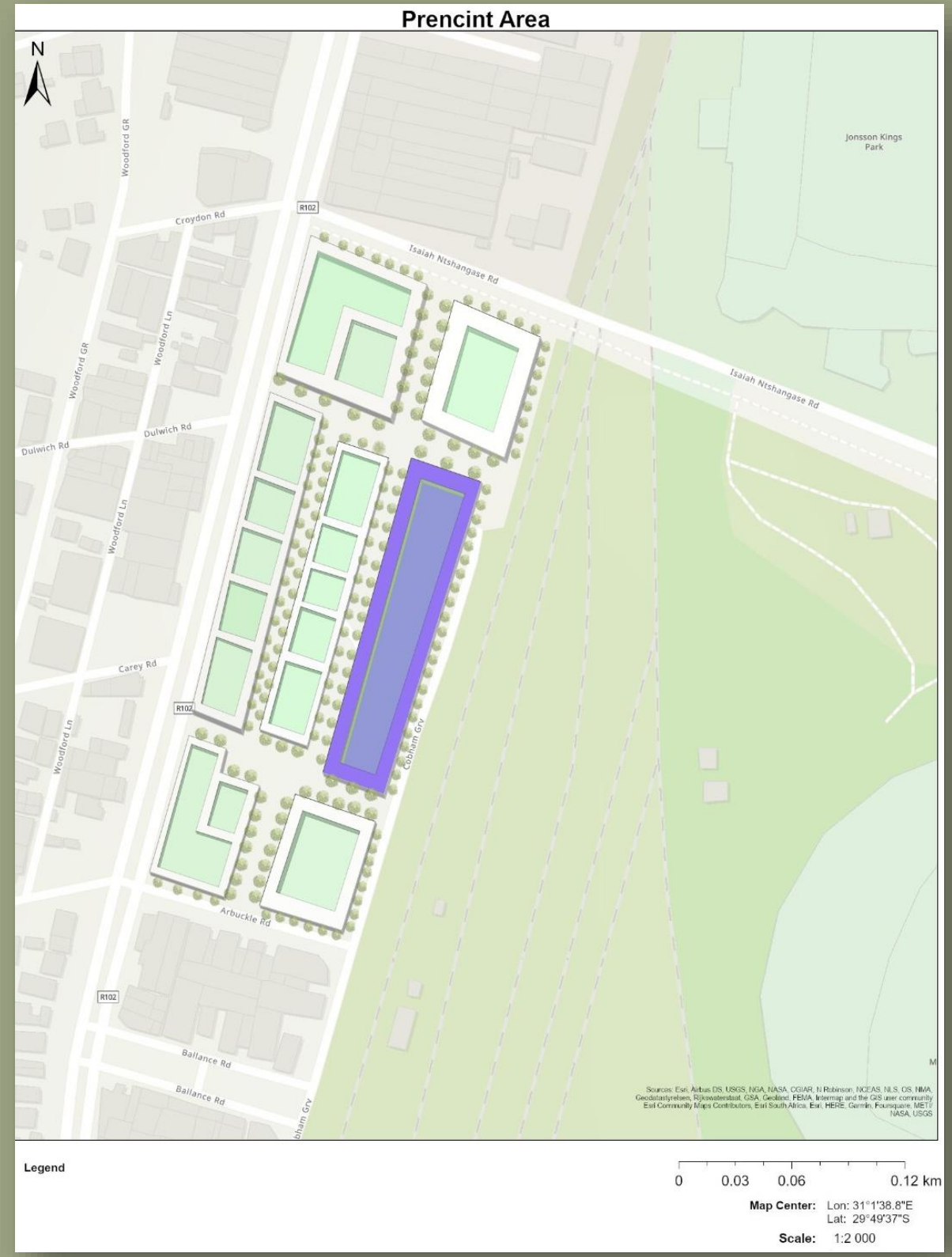


Figure 12. Phase 3 in cognizant with Resource circulation

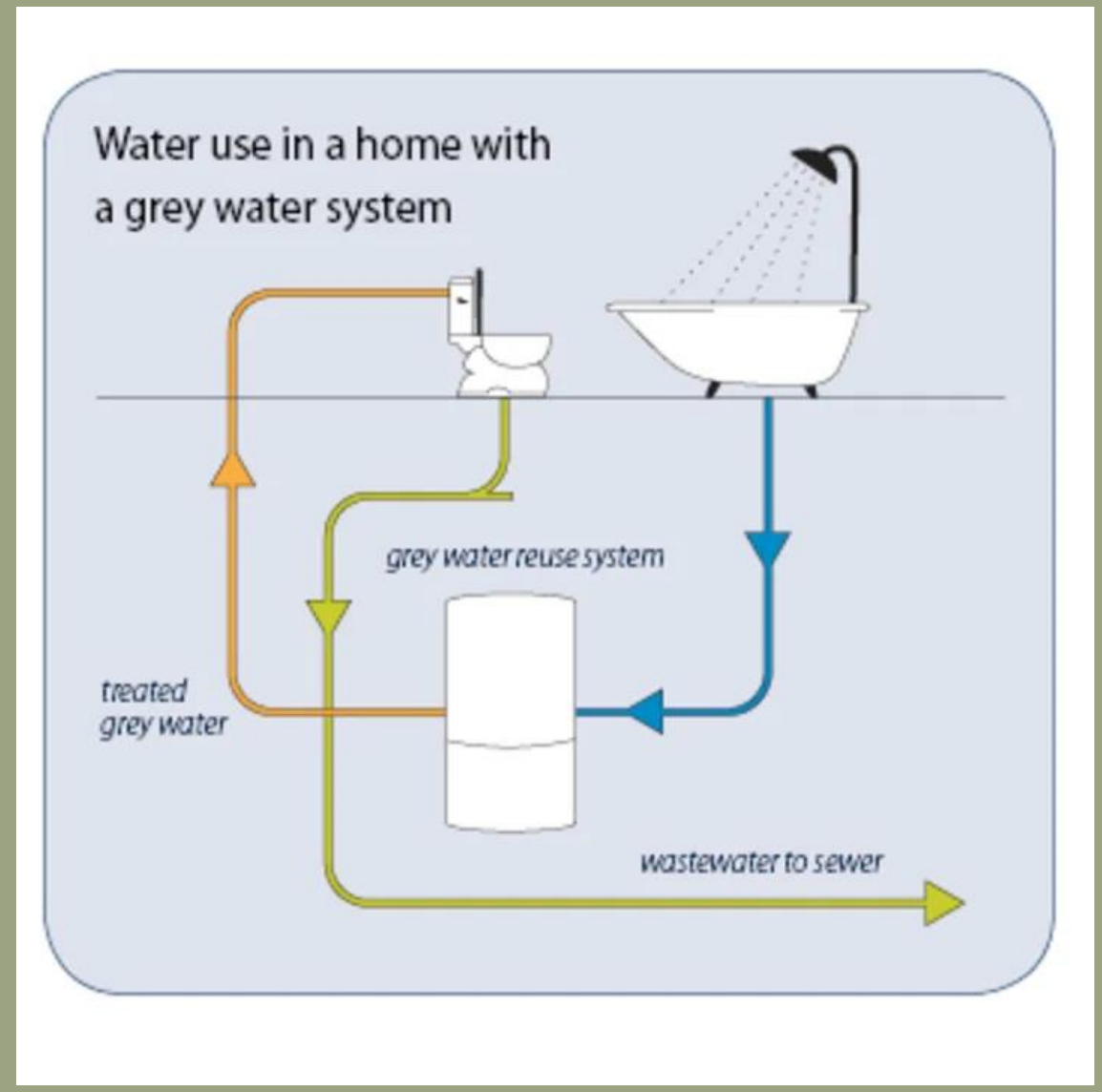


Figure 13. Grey water re-use system within affordable housing units in phase 3

PHASING

- The housing complex is strategically located along the railroad, providing convenient access to transportation for the residents. Situated facing the train station, it fosters connectivity and encourages the use of public transit. The complex is designed to be collective, offering a mix of social housing, affordable housing, and market-rate rentals, promoting inclusivity and diversity within the community. Considerations for flood risk and the integration of public spaces are also prioritized.
- Architecture and Layout:
 1. The architecture of the housing complex is designed to be visually appealing and harmonious with the surrounding urban fabric. It may feature a mix of low-rise and mid-rise buildings, with thoughtful placement to maximize views and minimize the impact of noise from the train station. The buildings could incorporate sustainable design principles, such as green roofs, solar panels, and energy-efficient systems.
- Housing Mix:
 2. The complex includes a diverse range of housing options to cater to different income levels and household sizes. This includes social housing units for low-income residents, affordable housing units for middle-income individuals/families, and market-rate rentals for those seeking conventional housing. The aim is to create a socially integrated community where residents from various backgrounds can live and interact.
- Flood Mitigation Strategies:
 3. Given the proximity to the railroad and the potential for flooding, the housing complex incorporates flood mitigation strategies to ensure the safety and well-being of the residents. This includes elevated ground floors, flood-resistant building materials, and appropriate drainage systems. The design may also integrate permeable surfaces, rain gardens, and retention basins to manage stormwater runoff and minimize the risk of flooding.
- Public Spaces:
 4. The housing complex features well-designed and interconnected public spaces that enhance the sense of community and encourage interaction among residents. The public spaces are linked to the train station, allowing seamless access and creating a vibrant and welcoming environment. The design may include pedestrian walkways, plazas, seating areas, green spaces, and recreational facilities. These spaces can be designed to accommodate social activities, outdoor events, and relaxation, providing a focal point for community engagement.
- Connectivity and Transit-Oriented Development:
 5. With its prime location facing the train station, the housing complex promotes transit-oriented development. This encourages residents to utilize public transportation, reducing reliance on private vehicles and promoting a more sustainable lifestyle. Pedestrian-friendly pathways, dedicated bike lanes, and convenient access to public transit stops further enhance connectivity and encourage active mobility.
- Amenities and Services:
 6. The housing complex may include on-site amenities and services to cater to the needs of the residents. This could include community centers, childcare facilities, healthcare clinics, retail spaces, and recreational facilities. Access to essential services within the complex reduces the need for extensive travel and contributes to a vibrant and self-sufficient community.
- By combining an inclusive housing mix, flood mitigation strategies, well-designed public spaces, and convenient connectivity to the train station, this housing complex creates a dynamic and resilient community that promotes social interaction, accessibility, and sustainable living.

IMPLEMENTATION PLAN

Housing project:

The housing project that we would like to create is a mixed income housing project, which mostly consists of social housing (50%) in order to address the housing crisis and 30% would include housing for the missing middle-income group and 20% caters for the high-income group.

The intriguing aspect about our project is that the tenants will have no idea as to what income bracket their neighbor belongs to as the housing offerings will be mixed across all floors allocated to housing. This directly addresses the Apartheid segregationist design as tenants will truly be living as one cohort, with access to the very same amenities in the building, fully promoting equality. The differences will be the offerings offered inside the apartments themselves.

INTERVENTIONS	Umngeni Road Precinct Phasing Plan				
Phase 1					
Mixed-Use Buildings	Year 1	Year 2	Year 3	Year 4	Year 5+
Create implementation plans					
Enlarge Roads to enhance walkability					
Build anti-flooding design					
Begin Building process					
Create Roof top Solar Plant					
Phase 2					
Green Spaces & Nature Based Solutions	Year 1	Year 2	Year 3	Year 4	Year 5+
Create an implementation plan					
Evaluate plans					
Begin Building process					
Design Roof top gardens after Building is complete					
Add trees on roads to create a green network					
Phase 3					
Circular Resources	Year 1	Year 2	Year 3	Year 4	Year 5+
Create implementation plans					
Evaluate plans					
Begin Building process for Social Housing					
Create storm water management plans					
Collect storm water for reuse and recycling for the city					
Add more solar plans on rooftops					

CONCLUSION

The Durban sports and leisure precinct is significant in unlocking economic growth throughout the city due to the facilities and activities centered in around the CBD. However due to a lack of maintenance on current service systems, opportunities and choices for the general public, most particularly the youth are limited thus adding onto the housing backlog and unemployment gap. The Umgeni site is also threatened by under utility and degenerative land practice thus the plan proposes to simultaneously ensure the application of regenerative practices through social programmes and projects. The proposal thus focuses on accommodating for the provision of housing through infrastructure servicing and maintenance for the expected density in future. The phasing plan overlaps due to the overlap in strategies and so does the phasing for implementation and this is accommodated by the design of multi-functional buildings proposed.

REFERENCES

Durban Climate Change Strategy 2022

eThekwini Inner City Local Area Plan Inner City LAP
Nov 2016

Web Sources
Google Maps
eThekwini Gis Data Portal