CATO RIDGE LOCAL AREA PLAN REVIEW, FUNCTIONAL AREA PLANS AND DRAFT SCHEME

FINAL LOCAL AREA PLAN (CONSOLIDATED REPORT)
As noted in the Inception Report for this project, “the preparation of the Cato Ridge Local Area Plan Review, Functional Area Plans and Draft Scheme is an iterative process and as a result all deliverables will be submitted as drafts and any amendments will be attended to in the final package of deliverables (where appropriate)”. 

FINAL LOCAL AREA PLAN - CONSOLIDATED REPORT

CONTRACT NO: 1N-18176
30 June 2018

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1 INTRODUCTION

1.1 BACKGROUND
The greater Cato Ridge Local Area Plan (LAP) study area includes large tracts of undeveloped, but zoned industrial land that have been mooted as part of a major metropolitan industrial growth node. This role has been ascribed by virtue of its location on the strategic N3 logistics corridor (SIP2) and the related need to provide job opportunities for the growing formal and informal residential suburbs of the Outer West Region of eThekwini Municipality.

Despite the areas’ inherent potential for economic development, development take-up has been slow, has occurred in a fragmented manner and there has been uncertainty, within various public and private sector stakeholder groupings, as to what the “real” role of the area should be.

The eThekwini Municipality, through the issuing of the Cato Ridge LAP Review, Functional Area Plans and Draft Scheme Project, recognised that significant change and development pressure had, and would continue to occur in and around the study area and that the existing (2012) LAP spatial plans and policies in place were not achieving the desired spatial pattern, development principles and economic growth originally anticipated.

Accordingly, the primary objectives of the review project were as follows:

1. Review the current Cato Ridge LAP (2012) to retrofit its strategic policy to respond more appropriately to emerging development pressures and trends, and to more effectively unlock development potential which is reflected through development applications being lodged with the eThekwini Municipality and adjacent municipalities.

2. Review the existing planning policy and related planning proposals to include the extended study area, which includes the growing and adjacent residential areas in such a manner as to integrate the extended area more effectively with the Cato Ridge Node and the SIP2 logistics corridor.

3. Identify, in light of the outcomes of the points above, actions, interventions and projects that will be able to more effectively unlock both public and private investment in the study area so as to stimulate economic growth and development and improve delivery of social services and infrastructure.

4. Review the Implementation Strategy related to the points above.

In short, this project is about generating a suite of planning and development products that will identify and unlock development opportunities in the Cato Ridge LAP Study Area.
1.2 THE STUDY AREA
The study area is 14\,526ha and is located on the western edge of the eThekwini municipal boundary. Ideally located on the SIP2 Corridor (N3), the study area straddles in the N3 national route between Durban and Johannesburg, the provincial R103 alternate route between Durban and Pietermaritzburg and the Natal Corridor (Natcor) railway line to the south. Access from this corridor to the rural communities in the north and agricultural land holdings to the south is limited.

The landscape is dramatic with a central plateau surrounded by an escarpment to deep river valleys to the north and gentler slopes to the south. This has resulted in a fragmented mix of residential, industrial and agricultural suburbs interspersed with key open space corridors of the eThekwini Metropolitan Open Space System associated with the upper catchments of the uMngeni and Mlazi Rivers.

1.3 PURPOSE OF THIS REPORT
The Preparation of the Local Area Plan Review (this project) has been an iterative process and this document represents the consolidation and refinement a number of independent phases of the project towards the preparation of a reviewed Cato Ridge Local Area Plan (LAP), the preparation of Functional Area Plans (FAP) for each of the ten (10) sub-areas located within Cato Ridge and the preparation of Draft Scheme recommendations for a portion of the study area.

The consolidated report has used the outcomes of the status quo and strategic integrated statement phase (Phase 1) to generate a development concept for the study area (Phase 2), to test the Infrastructure Implications (Phase 3), to prepare functional area plans (Phase 4) and to made recommendations for amending the Scheme (Phase 5). An Implementation Strategy (Phases 6 & 7) has also been prepared.

All phases have involved the presentation and circulation of draft documents to internal municipal and external public sector stakeholders for comment, input and refinement.

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1 6% of the total eThekwini Municipal area of 230\,245ha
1.4 PUBLIC PARTICIPATION PROCESS
Engagement with recognised and structured stakeholder groupings, and public, planned to take place at the Development Concept (Phases 1-3) and at the Functional Area Plan (Phases 4-6) Milestones of the project.

The project process however concluded, in consultation with the eThekwini Municipality, that it would be more beneficial to the project to present once to the Public once alignment between the internal stakeholders, both Municipal and Governmental, was secured.

As such, the public participation process was collapsed into a single Public Meeting at the completion of the project, whereby public stakeholders were given an opportunity to attend a Public Presentation, to engage with the Project Team at the Public Meeting and to review the Draft Local Area Plan document and make written submissions to the eThekwini Municipality.

The Public Meeting was advertised via the local Councillors, via notices in the local media, on eThekwini Municipality’s website and via email notification to stakeholders who had registered interest in the project since the project's Inception.

Figure 2-2: Public Meeting

1.5 DEFINING A “REVIEW”
In order to achieve the objective of a review of the Cato Ridge Local Area Plan, we first need to understand what “review” means in the context of this project.

A review can be defined as “a formal assessment of something with the intention of instituting change if necessary”. In order to assess whether change is necessary, we need to have an understanding of what has, or has not changed since the previous planning exercise.

1.5.1 What significant changes have transpired since the previous planning exercise?
- The Study Area increased by 250% (5,764ha to 14,526ha) to include the rural and peri-urban areas of KwaXimba, Shangase and Fredville to the north of the original study area
- The completion of the N3 Corridor Development Study for the Durban - Free State - Gauteng Logistics and Industrial Corridor (SIP2)
- SANRAL had rejected an additional interchange between the existing Cato Ridge and Hammarsdale interchanges on the basis of technical design reasons (this has been addressed in the review see Section 4.4).
- South Africa has been affected by a global recession which means that growth targets are off
- The start of the Dig-Out Port has been delayed
- eThekwini Municipality completed a Freight and Logistics Strategy that reinforces a transportation and logistics role for Cato Ridge
- Developers are applying for rezoning to a Logistics Zone which is not provided for in terms of the current LAP
- Phase 1 of Western Aqueduct has been completed
- A potential scheme to transfer sewerage to the Hammarsdale WWTW is being investigated by eThekwini
- Refinements and further ground-truthing to D’Moss has resulted in a larger environmental footprint particularly north of N3.
- There is the perception that little actual on-the-ground development is being realised.
1.5.2 What major issues are still unresolved for this review to address?

- The preferred location of a logistics Hub in the study area;
- Confirmation of a new interchange between Cato Ridge and Hammarsdale; and
- Conflict between environment imperatives and the development potential south of the N3.

Figure 2-3: Change in Study Area Boundary
2 DRIVERS OF DEVELOPMENT

Essentially there are three main drivers that are placing increasing pressure/focus on Cato Ridge as a development area for eThekwini: 1) Population growth and employment requirements; 2) Demand for economic land; and 3) Policy Imperatives

2.1 POPULATION AS A DRIVER

- The current metro population of eThekwini is 3.6m people.
- Projected population growth is 1.1% per annum which means that eThekwini needs to accommodate an additional 775,000 people by 2030.
- The current population in the Cato Ridge study area is 75,000 people and is growing at 1.2% per annum.
- Should the population of Cato Ridge continue to grow at current growth rates, the study area will need to accommodate an additional 35,000 people by 2030, thus absorbing 4.5% of the total metropolitan population anticipated growth.
- These new residents will need additional housing & job opportunities, preferably close to where they live to avoid the high costs associated with travel to other employment nodes in eThekwini.
- At current employment rates for the area (according to Statistics SA 2011 these are 25%), an additional 8,750 jobs would be required. At 50 jobs/ha generated by industrial land uses, an additional 175ha of land would be required to supply these jobs.
- These estimates do not include the current 150,000 people resident in the Greater Mpumalanga area who also need employment.

Figure 2-1: Current Population Growth Rates
2.2 DEMAND FOR ECONOMIC LAND AS A DRIVER

- Cato Ridge is strategically located on the N3 corridor equidistant between Durban and Pietermaritzburg (Figure 2-2).
- The Port of Durban is the major growth factor driving economy of Durban. This growth follows international trends for global supply chains where local businesses out-source segments of their business to other firms and thus require a greater reliance on logistics based industries to support this trend.
- The growth of the Durban Port, and its effect on the local industrial and logistics based land market, can be quantified using growth projects for Container Movements (TEUs - Ten-foot equivalent Unit) through the Durban Container Terminal.
- According eThekwini’s Industrial Land Strategy\(^2\), Transnet projected that by 2011 it would see 2.9m TEUs moving through the Port of Durban. By 2014\(^3\) this would have grown to 4.9m TEUs thus requiring an additional 170ha “back-of-port” land required to support the growth of containers and by 2037, once the Dig-Out Port was complete, 9.6m TEUs would be accommodated and an additional 335ha land required.

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\(^2\) Source: EM Industrial Land Strategy (2014)
\(^3\) In reality, the current (2015) TEU volume moving through the Port is 2.6m (proof of a global slump).
\(^4\) 35ha required for every 1m TEU, of which 20% is of every ha of container handling area is required to store empties
If additional hectares of land is required to support the growth of the Durban Port, where is this land located (Figure 2-3)?

- There is limited potential for new industrial areas within the Central, South Durban Basin and South areas of Durban, at most an additional 154ha could be realised in the Central and SBD area and 230ha in the South. For Port based development it is likely that these areas will see a retrofitting of existing industrial stock and a “pushing-out” of industries that do not need to be in the area. These businesses will have to relocate within eThekwini.

- There is land capacity to grow to the North, a possible 3,000ha but the north is not located on the N3 corridor and will requires additional transport costs so logistic based firms would be reluctant to located to far north.

- There is a potential 1,732ha of land in the Outer West which could also absorb relocated firms, new industrial development in eThekwini and is strategically located on the N3 corridor.

What does this mean for Cato Ridge?

- Land for manufacturing and non-related port activities & land for large-scale distribution centres is needed, EM running out on the central corridor.

- Demand for industrial land appears to be in the region of 30-45ha per annum (ILS). Cato Ridge has been able to deliver 10ha per annum to the market over past 10 years – can it deliver more if required?

Provided infrastructure capacity can be enhanced, the Cato Ridge has the potential to deliver more ha’s/annum to accommodate industrial expansion.

![Figure 2-3: Hectares of Industrial Land (Existing and Proposed)](image)
2.3 POLICY IMPERATIVES AS A DRIVER

2.3.1 Policy Directives for Cato Ridge
- All policies and plans speak to a growing role of logistics and industrial development (manufacturing) as key economic drivers for the region.
- In eThekwini policy, there is a dual social and environmental role associated with the area (Outer West Spatial Development Plan).
- The strategic economic role is assigned to Cato Ridge by virtue of its location in the N3 Corridor
- The N3 Corridor Development Study (SIP2) plan anticipates the following economic land demand in the KZN Industrial and Logistics Hub (Pinetown to Hilton) by 2045 (COGTA, 2016)
  o Industrial land to be 2,236ha, of which 908ha will be for manufacturing and 1,328ha for warehousing.
  o Office GLA of the order of 107,871m$^2$
  o Retail GLA of the order of 118,740m$^2$
  o 10 New Hotels
  o 180,000 new residential units
- The neighbouring municipality of Mkhambathini has also recognised this role and envisages similar economic development along the N3 between Camperdown and Umlaas Road. Areas bordering KwaXimba are reserved for eco-tourism opportunities
- The specific nature of what the node (Cato Ridge) could look like, how it could function and whether it can play the role proposed, is articulated through this LAP Review project.

Figure 2-4: Policy Directives for Cato Ridge
3 CONCEPTUAL FRAMEWORK

The Conceptual Framework provides the overall strategic direction for future planning and management of development in the Cato Ridge Local Area and as such articulates the roles that the area and its sub-precincts (functional areas) play(s) in the greater eThekwini area, a vision of what the area could look like and how it could function for various stakeholders, and it includes broad development principles and spatial structuring concepts that should guide its growth and change over time.

3.1 THE EMERGING SPATIAL STRUCTURE OF ETHEKWINI

As noted in the Northern Urban Development Corridor Project (SSI, 2011), the spatial structure of the eThekwini Municipality is changing. Whereas previously the structure was focused primarily around the CBD, the Port and related South Durban Basin (SDB) and the Pinetown New Germany hubs, as pressure for well-located and accessible land increases, the structure is reforming and new key strategic zones/hubs are emerging on the outskirts of the traditional municipal boundary. The King Shaka Airport and Dube Trade Port have established themselves in the north and Cato Ridge in the west is growing in importance (SSI, 2011).

These emerging zones/hubs have strategic significance to the City in that they are major drivers and locations of economic growth and employment creation and play an important role in the logistics platform of eThekwini and the national logistics platform for South Africa. Each has a different role (SSI, 2011).

The City and Port are the business engine of Durban focussed around transportation, maritime industry and business support, the SDB's role is to support the Port and forms the petrochemical hub, the West is growing to support road based logistics and industrial development whilst the new northern hub provides the air-based logistics installations and related supportive industrial and business development (SSI, 2011).

In order to respond to the emerging development pattern, a balance between national and metropolitan efficiency imperatives and those of City residents is required. Accordingly, the desirability and attractiveness of the eThekwini Municipal Area (EMA) as a destination of choice for doing business, for living and for visiting should also be protected and enhanced (SSI, 2011).

All of the above should be contemplated within a sustainable spatial and physical development framework that protects scarce resources (i.e. environmental and agricultural assets) and which builds in a capacity to accommodate climate change implications (SSI, 2011).

Cato Ridge, must be understood within this development context. The west is no longer merely the under-developed agricultural periphery of Durban that accommodates dramatic topography, dormitory suburbs, rural/traditional residential areas and old decentralised industrial nodes (SSI 2011).

The west is changing into a more complex and integrated development region, a region that needs to engage with the new national and metropolitan logistics imperatives, accommodate historic backlogs and redress past spatial imbalances all whilst ensuring that environmental imperatives are not lost in the process.

The Cato Ridge LAP Review is about ensuring an appropriate spatial response to this context.
3.2 THE ROLE OF CATO RIDGE
Cato Ridge has the potential to perform a number of social, economic and environmental roles at a range of scales from local to national. Importance.

These roles are articulated in Table 3-1.

3.3 DEVELOPMENT VISION
Cato Ridge will be a balanced and viable business town centre with a regenerated industrial hinterland and new major economic investment areas that will not only generate local employment but will also collectively enable the town to develop into an important sub-regional economic development node in the spatial structure of eThekwini Municipality.

The area will provide a quality living environment that supports a range of urban, suburban and rural/traditional lifestyle options for local communities with supporting services, facilities and amenities and that protects the environmental resources associated with the Mshwati, uMngeni and Sterkspruit (Mlazi) River catchments.

The urban form will be more compacted and structured and it will be punctuated by an integrated open space system that provides for the protection of biodiversity and for the recreational and cultural needs of the local and metropolitan population, whilst enhancing the resilience of the natural systems and local communities with respect to the implications of global environmental change.

### Table 3-1: The Role of Cato Ridge

<table>
<thead>
<tr>
<th>ROLES</th>
<th>SOCIAL</th>
<th>ECONOMIC</th>
<th>ENVIRONMENTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>NATIONAL</td>
<td>(what role does the area play with respect to the growth and development of South Africa)</td>
<td></td>
<td>Potential economic support role linked to national Durban-Gauteng SIP2 N3 Corridor</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Vegetation and species of national significance</td>
</tr>
<tr>
<td>PROVINCIAL/REGIONAL</td>
<td>Accommodate urbanisation</td>
<td>Contribution to the Durban to Pietermaritzburg N3 Corridor at a provincial level</td>
<td>Protected area – contributes to provincial conservation assets</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Waste dilution role for upper catchments in provincial riparian network</td>
</tr>
<tr>
<td>LOCAL</td>
<td>Provides for a small-holding lifestyle and suburban/traditional residential choices</td>
<td>Local employment potential linked to industry, agriculture, tourism and road-based logistics</td>
<td>Visual gateway to the metro and coastal areas</td>
</tr>
<tr>
<td></td>
<td>Recreational and adventure sport &amp; tourism activities</td>
<td>Local industrial and commercial opportunities</td>
<td>Local biodiversity and environmental assets</td>
</tr>
<tr>
<td></td>
<td>Local social services and activities</td>
<td>Tourism potential linked to natural environment/landscape</td>
<td>Eco-tourism significance – natural assets and landscape</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Landscape and sense of place</td>
</tr>
</tbody>
</table>
3.4 GOALS AND OBJECTIVES

The status quo assessment of Cato Ridge identified a number of critical success factors that need to be leveraged and/or created and responded to in order to improve the competitiveness, functionality, efficiency and sustainability of the area.

These factors provide the basis for the generation of the conceptual framework and provide the strategic objectives to which the spatial development concept must respond.

3.4.1 Policy Interventions
- Clarification of a “flexible” vision for the area that allows for a number of development scenarios to be accommodated i.e. what happens if a logistics hub is developed in the area, or what happens if the facility is located in Camperdown (or elsewhere in the Province).
- Articulation, and confirmation of the economic, social and environmental role of the area by all major stakeholders, public and private.
- Adjustment of economic development policy and associated municipal planning to accommodate this new role (e.g. zoning, development incentives, budgeting etc.).
- Balancing the demand for development “demand” with other emerging nodes in eThekwini.

3.4.2 Stakeholder Alignment
- Alignment of key stakeholders around a common vision for the area and its sub-precincts (functional areas) and neighbourhoods through the establishment of a suitable engagement forum and process.

3.4.3 Financial Planning
- Secure financial commitment from eThekwini Municipality (and other major stakeholders responsible for infrastructure) to implement proposals emanating from this plan timeously and incrementally in order to instil confidence in private sector investors.

3.4.4 Physical Interventions

Access and Circulation
- Improve the direct accessibility of the area from/to the N3.
- Strengthen linkages between sub-precincts (functional areas) and other adjacent sub-precincts (functional areas) of the study area.
- Upgrade the capacity of, and functionality of, road infrastructure where required.
- Clarify and confirm the role of, and future use of, unused rail infrastructure and servitudes in the area.

Land Use and Activity
- Diversify, and increase the intensity of land uses in the area.
- Make optimum use of vacant land to restructure the local area and to accommodate the opportunities associated therewith.
- Extend the Town Planning Scheme into intended development areas and amend scheme clauses and/or zones to accommodate appropriate land uses.

Environmental Quality
- Identify environmental “no-go” areas and areas where appropriate developments can interface with environmental assets.
- Protect the environment through appropriate development management systems i.e. rezoning and/or de-zoning land.
- Upgrade the environmental quality and ecological functioning of the uMngeni and Sterkspruit (Mlazi) river catchments.
- Upgrade the qualitative environment of the public realm across the local area.
- Introduce built form management strategies that promote more efficient use of land and that enhance the legibility and brand of the local area.

Bulk Infrastructure
- Confirm whether bulk sewerage capacity can be supplied by a transfer scheme to the Hammarsdale Treatment Works.
- Upgrade the capacity of, and functionality of, bulk infrastructure where required.
- Establish new guidelines for sustainable urban drainage in the area.
3.5 THE SPATIAL CONCEPT

3.5.1 Establish Cato Ridge as a Regional Logistics Hub & Industrial Production Node
- Establish Cato Ridge as City/Regional Logistics Hub and Industrial Production Node which complements existing industrial zones of the City and provides for expansion of industry and enhancement of the City’s logistics platform.
- This could be based on using existing Rail infrastructure north of the N3 as a base for a regional logistics hub OR through the establishment of a new much larger logistics hub on western edge of Cato Ridge (Camperdown).
- Either way the zones immediately adjacent to the N3 will provide opportunities for logistics and industrial activity growth and development.

3.5.2 Protect Ecological Assets
- The extent, location and ecological service value of the environmental assets located in the study demands that they perform an important national, regional and municipal role as a priority area for the supply of ecosystem goods and services.
- These assets perform a substantial and significant role in conserving biodiversity as well protecting the quality of life of the residents of eThekwini and should be protected.
- These assets contribute to the mitigation of climate change impacts and towards building urban resilience for eThekwini Municipality.

3.5.3 Protect Regional Mobility
- Protect and enhance Regional Mobility through upgrading the existing N3 capacity and augmenting with bypasses south of N3 as and when required in order to accommodate the growth and expansion of this area.

3.5.4 Establish Direct Access via New Interchange
- Provide a new Interchange in a central location which provides more direct access to developable portions of land on either side of the N3 and which also allows for reduced mixed traffic on the existing local circulation systems i.e. keep trucks out of residential areas and pinch points associated with existing interchanges.
- Phase construction of the interchange in accordance with anticipated growth rates on either side of the N3.

3.5.5 Establish Local Access and Circulation System
- Establish a local access and circulation system on either side of N3 which allows integration of northern and southern areas with the Hub area and with each other and which reduces local traffic on the N3.

3.5.6 Renew Cato Ridge Village
- Renew and redefine the Cato Ridge Village as Service and Commercial Centre to service the logistics hub and industrial production node role of the area and the needs of the adjacent residential populations.

3.5.7 Upgrade Infrastructure of Industrial Area
- Upgrade infrastructure of industrial zone to accommodate growth and new industry.

3.5.8 Upgrade Residential Areas
- Upgrade residential areas to provide attractive housing for workers and investors.

3.5.9 Protect Agricultural/Small-Holding Land
- Protect productive agricultural land for long-term food security of region and provide for smallholding lifestyle options for eThekwini residents.
Figure 3-2: Spatial Concept

1. Establish Cato Ridge as a regional logistics hub & industrial production node
2. Protect ecological assets
3. Protect regional mobility
4. Establish direct access via new interchange
5. Establish local access and circulation system
6. Renew Cato Ridge village
7. Upgrade infrastructure of industrial area
8. Upgrade residential areas
9. Protect agricultural land / small holding lifestyle options
3.6 APPLYING THE SPATIAL CONCEPT

In applying the spatial concept to the realities “on the ground” in Cato Ridge it became apparent to the project team that while there has been some consensus around the vision and role for the area, the scale and quantum of land provided under the spatial concept becomes a key variable in unlocking Cato Ridge for development.

As such three development scenarios were prepared for discussion and for a decision from eThekwini Municipality which resulted in a preferred development scenario being developed which forms the basis of the spatial development frameworks presented in this report.

3.6.1 Scenario 1: Environmental Priority
- Essentially represented the status quo
- The current footprint of D’Moss was applied to the study area regardless of existing development rights.
- The access and circulation system remains largely unchanged.
- Capacity enhancements to the current road and infrastructure systems are anticipated with minimal upgrading requirements in order to ensure that the area functions better.
- The landfill site would not be permitted due to environmental constraints
- The availability of unencumbered land would push developers to the periphery of development areas i.e. P385 thus making bulk infrastructure servicing difficult and inefficient and/or external to the eThekwini Municipality

3.6.2 Scenario 2: Spatial Consolidation
- This scenario was the closest to the provisions made in the previous Cato Ridge Study (2012).
- Existing land rights exist, particularly within the Harrison area are respected.
- Released additional land in and around existing developments to encourage the compaction, intensification and consolidation of the spatial footprint of the area.
- The environmental layer was refined to release secondary grassland and transitional areas for development.
- No expansion south of the N3 was permitted
- The scenario benefitted biodiversity protection, but raises concerns for bulk water provision and water quality safety and economic development with respect to unlocking new development areas.

3.6.3 Scenario 3: Economic Expansion
- Large tracts of land are released south of the N3 for economic and residential development.
- The new interchange is permitted in a new central location between the two Petrol Ports.
- This scenario raised major concerns for the protection of national conservation of grasslands targets but did allow for the more efficient provision of bulk wastewater infrastructure provision.

3.6.4 Balanced Scenario (Preferred)
- Recognising the need to balance environmental imperatives with social and economic imperatives, the project team was tasked with refining the scenarios and determining a balanced scenario that would maximise the release of economic land whilst at the same time ensuring that national biodiversity assets would be protected.
- This was achieved through the Development Planning and Environmental Management Unit undertaking additional studies, site visits and ground-truthing to confirm and refine environmental “no-go” areas and areas that could be released for future development.
- Essentially the scenario provides for the consolidation of existing development areas, together with the release of land to the south and north of the N3 for economic Development.
- The outcomes of this scenario are documented in the remaining sections of this report.
4 SPATIAL FRAMEWORKS

The Spatial Planning Frameworks translate the Spatial Concept into a set of, open space & environmental, land use, access & circulation, landscape strategy and bulk infrastructure, structuring frameworks and provides an overall guideline for more detailed planning and design for strategic public and private development decision-making within the study area.

4.1 ENVIRONMENTAL AND OPEN SPACE FRAMEWORK

4.1.1 Goals and Objectives

The primary goal of the environmental and open space framework is to protect and enhance the existing environmental assets based within existing settlement areas and to use the opportunity to establish a more robust and integrated open space system within undeveloped areas that will directly meet the needs of the local communities, as well as, respond to wider metropolitan and regional environmental planning needs with regard to environmental, services planning and management.

The following objectives are relevant in this regard:

- Maintain and protect the environmental assets of the CR local area
- Maintain a sustainable supply of environmental goods and services
- Enable the Municipality to meet national & provincial conservation targets
- Comply with the requirements of National Environmental Management: Biodiversity Act, namely that threatened ecosystems are taken into account in municipal spatial plans.
- Protect the open space system as a primary spatial structuring element
- Maintain and strengthen the area’s resilience to climate change impacts
- Provide for recreational and tourism opportunities and amenities
- Provide for integrated environmental planning and management, especially with regards to catchment management

4.1.2 Open Space and Environmental Elements

The broad level objectives listed in Section 4.1.1 can be achieved if an open space system is defined and protected, based on a specific range of biophysical and spatial planning needs.

The elements of the Environmental and Open Space Framework are derived from eThekwini Municipality’s metropolitan open space system ‘footprint’ that has been determined by the Environmental Planning and Climate Protection Department (EPCPD) using a Systemic Conservation Planning approach5 and which has been further refined during the preparation of this Local Area Plan (LAP) review by EPCPD.

The entire Cato Ridge LAP project area was closely assessed using GIS aerial imagery and associated spatial datasets. Sites of particular importance were earmarked for site inspections and vegetation and species data were collected for further analysis.

The results of interdepartmental analysis and independent environmental specialist studies made available to EPCPD have informed the development of the environmental ‘footprint’ depicted on Figure 4.4.

This footprint maximises economic development opportunities while still protecting threatened ecosystems and the services they provide.

Habitats and Eco-Systems

The open space system includes a variety of aquatic and terrestrial habitats and ecosystems, including thickets, grasslands, forests, wetlands and rivers. Each of these environments provides a host of ecological goods and services value to eThekwini Municipality and are home to an array of plant and animal species.

No development is permitted within these areas without approval from the Environmental Planning and Climate Protection Department.

Under certain circumstances eco-tourism developments will be permitted provided they adhere to National, Provincial and Local Environmental legislation and policy.

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5 “An approach to conservation that identifies important areas for conservation and prioritises actions by setting quantitative targets for biodiversity features such as broad habitat units or vegetation types. It is premised on conserving a representative sample of biodiversity pattern, including species and habitats (the principle of representation), as well as the ecological and evolutionary processes that maintain biodiversity over time (the principle of persistence)”, (eThekwini Municipality, 2016a: 3).
The major habitats/ecosystems that require protection include:

- **Grasslands**
  The study area includes the last remaining large contiguous grassland systems in the municipal area, and broader sub-region. These include the Critically Endangered KZN Sandstone Sourveld (KZNSS) and Vulnerable Ngongoni Veld (NV) grasslands.

Both of these grassland types are confined to KwaZulu-Natal, with the distribution of KZNSS falling predominately within and/or adjacent to the eThekwini Municipal area; and both require protection in terms of the National Environmental Management: Biodiversity Act (2004). The remaining areas are well under the minimum conservation thresholds required and there are limited alternative conservation opportunities within the municipality and/or region to meet these thresholds.

![Figure 4-1: Example of KwaZulu-Natal Sourveld (EM, 2016a)](image)

As such, it is imperative that all remaining representative patches of primary KZNSS and NV are protected from irreversible transformation. The EPCPD identified a number of intermediate and good condition KZNSS and NV grasslands to the north and south of the N3. These are to be retained as environmental protection areas. These grasslands are closely linked to the key water catchment areas mentioned above and will also aid in water provision and purification.

- **Bushveld/Thicket**
  The dominant habitat within the study area is Eastern Valley Bushveld associated with the steep river valleys of the uMngeni River Catchment. These areas have been protected by virtue of their steep slopes and will require ongoing protection and support.

Development in these areas is not supported, however eco-tourism activities associated with the KwaXimba Stewardship Area are supported provided they are managed in a sustainable manner.

![Figure 4-2: Eastern Valley Bushveld in the KwaXimba (EM, 2016a)](image)

Occurring within these threatened ecosystems are a number of threatened and protected species. By protecting the grasslands, the species associated with these grasslands will be sufficiently protected and catered for in terms of habitat requirements.

Table 4-1 provides a sample of some of the species present on site.

Those grasslands which were found during the site surveys to be in a degraded condition have been earmarked for development although a more pro-environment approach would have been to identify some of these areas for ecosystem restoration (DPEMU, 2017).

![Image](image)
- **Indigenous Forests**
  There are limited pockets of Eastern Scarp Forest located around the edges of the Harrison Flats escarpment. These forests are fragmented and require appropriate buffers to be established around them.
  Development within indigenous forests is not supported.

- **Wetlands & Water Courses**
  The Sterkspruit (Mlazi), Mshwati and uMngeni water catchments have a system of integrated rivers, streams and drainage lines, as well as their associated floodplain and wetland areas.
  These areas are not suitable for development and as such, no development permitted within watercourse and/or wetlands areas.

---

**Table 4-1: Sample of Threatened & Protected Species on Grasslands**

<table>
<thead>
<tr>
<th>GROUP</th>
<th>SPECIES</th>
<th>THREAT STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLANTS</td>
<td>Senecio exuberans</td>
<td>Endangered</td>
</tr>
<tr>
<td></td>
<td>Helichrysum pannosum</td>
<td>Endangered</td>
</tr>
<tr>
<td></td>
<td>Argyrolobium longifolium</td>
<td>Vulnerable</td>
</tr>
<tr>
<td></td>
<td>Eriosemopsis subanisophylla</td>
<td>Vulnerable</td>
</tr>
<tr>
<td></td>
<td>Hermannia sandersonii</td>
<td>Vulnerable</td>
</tr>
<tr>
<td></td>
<td>Dierama pallidum</td>
<td>Vulnerable</td>
</tr>
<tr>
<td></td>
<td>Brachystelma sandersonii</td>
<td>Vulnerable</td>
</tr>
<tr>
<td>BIRDS</td>
<td>Tumix nanus</td>
<td>Least Concern</td>
</tr>
<tr>
<td>REPTILES</td>
<td>Chamaesaura macrolepis</td>
<td>Not evaluated</td>
</tr>
<tr>
<td>AMPHIBIANS</td>
<td>Afrixalus spinifrons</td>
<td>Near Threatened</td>
</tr>
<tr>
<td></td>
<td>Hemisus guttatus</td>
<td>Vulnerable</td>
</tr>
<tr>
<td>BUTTERFLIES</td>
<td>Durbania amakosa</td>
<td>Endangered</td>
</tr>
<tr>
<td>MAMMALS</td>
<td>Oribi Antelope</td>
<td>Vulnerable</td>
</tr>
</tbody>
</table>

See Figure 4-4 for the spatial extent of the framework and Table 4-2 for the quantification of vegetation types under each of the scenarios.
Figure 4.4: Environmental and Open Space Framework
Table 4-2: Vegetation Types (eThekwini Municipality, 2015)

<table>
<thead>
<tr>
<th>VEGETATION TYPES</th>
<th>AREA (HA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KZN SANDSTONE SOURVLD &gt;450M</td>
<td>730.4</td>
</tr>
<tr>
<td>GRASSLANDS (NONGONI/OTHER) &gt;450M</td>
<td>667.4</td>
</tr>
<tr>
<td>SECONDARY GRASSLAND</td>
<td>118.5</td>
</tr>
<tr>
<td>EASTERN SCARP FOREST &gt;450M</td>
<td>85.8</td>
</tr>
<tr>
<td>EASTERN SCARP FOREST &lt;450M</td>
<td>1.7</td>
</tr>
<tr>
<td>TRANSITIONAL FOREST</td>
<td>27.0</td>
</tr>
<tr>
<td>TRANSITIONAL WOODLAND</td>
<td>130.7</td>
</tr>
<tr>
<td>EASTERN VALLEY BUSHVLD</td>
<td>4,654.8</td>
</tr>
<tr>
<td>TRANSITIONAL THICKET</td>
<td>415.2</td>
</tr>
<tr>
<td>WETLAND</td>
<td>681.8</td>
</tr>
<tr>
<td>NOT DETERMINED (OTHER)</td>
<td>648.8</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>8,162.1</strong></td>
</tr>
</tbody>
</table>

4.1.3 Environment Management

Core Conservation Areas

- Protect areas of high biodiversity that have the largest range of ecological and service functions, including the Sterkspruit (Mlazi), Mshwati and uMgeni River systems and associated habitats together with areas of KZN Sandstone Sourveld and Ngongoni Veld grasslands, which are of national significance.
- Establish the KwaXimba Stewardship\(^6\) Area in the uMgeni Catchment in partnership with the KwaXimba Traditional Council.
- Establish further conservation servitudes, stewardship and/or conservancy protection areas for relevant primary grassland areas and/or other important assets in order to ensure protection.
- Ensure that the open space and environmental assets are adequately managed to protect biodiversity, including the use of alien clearing programmes, burn programmes and fire breaks where appropriate.
- Designate/zone the open space and environmental footprint to protect it from inappropriate development and promote the sustainable use of the system.

\(^6\) “Biodiversity stewardship is about conservation, sustainable use and responsible management of biodiversity elements by the people that either own or are entrusted with them”.

([http://www.durban.gov.za/City_Services/development_planning_management/environmental_planning_climate_protection/Projects/Pages/eThekwini-Biodiversity-Stewardship-Programme.aspx](http://www.durban.gov.za/City_Services/development_planning_management/environmental_planning_climate_protection/Projects/Pages/eThekwini-Biodiversity-Stewardship-Programme.aspx))
Water Catchments

- Manage water quality and the quantity of water discharge into the main river catchments of the study area in order to ensure the protection of downstream water resources i.e. Sterkspruit (Mlazi), Mshwati and uMngeni Catchments.
- Manage high impact land uses and activities in the study area in order to ensure that they do not adversely affect water quality and quantity within the various drainage catchments within the area.
- Stormwater and wastewater management needs strong protection and enforcement measures in the uMngeni River Water catchment in order to protect eThekwini Municipality’s potable water supply.

Development Impacts

- Manage development, both existing and proposed, to avoid negative impacts on the open space and environmental assets in the area.
- Should an EIA process be initiated by a development application then the mitigation hierarchy (avoid, minimise, rehabilitate, offset) needs to be followed.
- Any development proposed with the open space network will require a more detailed environmental assessment and will require approval from the EPCPD.
- All project development areas that incorporate and/or border portions of D’Moss and/or proposed conservation areas should include provision for the effective management of the open space assets, or the interface with these assets, so as to maintain the ecological functioning of the open space system and the delivery of environmental services.
- Minimise the encroachment of development into the open space and environmental footprint and the removal and/or fragmentation of habitats.

Eco-Tourism Activities

- Promote the establishment of eco-tourism land uses on the periphery of open space and/or environmental assets.
- Encourage eco-tourism activities within the proposed KwaXimba Stewardship area i.e. trail running, birding, mountain biking etc.

Table 4-2 provides an overview of development guidelines for development within the vicinity of these habitats/ecosystems as provided by the EPCPD (eThekwini Municipality, 2010).
<table>
<thead>
<tr>
<th>Habitat/ Ecosystem</th>
<th>Types Requiring Protection</th>
<th>EPCPD Development Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grasslands</td>
<td>Dry Ngongoni Veld</td>
<td>• All three grassland types within the EMA are threatened as large areas of these ecosystems have already been lost. Further development in areas with these grassland types is not permitted.</td>
</tr>
<tr>
<td></td>
<td>Species rich KwaZulu-Natal Sandstone Sourveld</td>
<td>• Any development must be set back at least 25m from the edge of the grassland.</td>
</tr>
<tr>
<td></td>
<td>Coastal Grassland</td>
<td>• French Drains must not be located within 25 m of the edge of these grassland types.</td>
</tr>
<tr>
<td></td>
<td>Secondary Grasslands</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Swamp Forest</td>
<td>• Development within a forested area is not supported.</td>
</tr>
<tr>
<td>Indigenous Forests</td>
<td>Scarp Forest</td>
<td>• Minimum development buffer of 40m must be maintained from the forest canopy dripline.</td>
</tr>
<tr>
<td></td>
<td>Coastal Forests (incl. Dune Forest)</td>
<td>• The buffer area must be managed as an ecotone area, i.e. an area of transition from one ecosystem to another (grassland/forest ecotone).</td>
</tr>
<tr>
<td></td>
<td>Mangrove Forest</td>
<td></td>
</tr>
<tr>
<td>Wetlands</td>
<td>All Wetlands</td>
<td>• Minimum 30 m development buffer must be maintained between development and wetlands. The size of the buffer required depends on the size and the functionality of the wetland, as well as the nature of the proposed development.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The functionality and exact boundary of the wetland is established by wetland specialists during the development application process.</td>
</tr>
<tr>
<td>Water Courses</td>
<td>Rivers</td>
<td>• In general, a minimum buffer of 20 m is required between the footprint of development and the top of the bank of a stream or drainage line. The size of the buffer depends on the size and functionality of the system, as well as the density and type of development, and may be increased or decreased following a more detailed assessment.</td>
</tr>
<tr>
<td></td>
<td>Streams</td>
<td>• Development is not supported within the 1:100 year floodline. In addition, a setback of 10 to 40 m from the 1:100 year floodline is required, depending on the stream order. This is applied to ensure the protection of vegetation outside the flood zone.</td>
</tr>
</tbody>
</table>

7 Source eThekwini Municipality (2010) Development Assessment Guidelines, Environmental Planning & Climate Protection Department
4.2 LAND USE & ACTIVITY FRAMEWORK

4.2.1 Goals and Objectives

The overarching goal of the land use framework is to identify land for the efficient and sustainable expansion of the metropolitan area at Cato Ridge and to enable the establishment of a mix of land uses that will be appropriate and/or necessary to support the development of an emerging strategic economic role that has been identified for the area.

In addition, the framework needs to provide for a land use mix and an accompanying set of strategic spatial structuring tools and associated development controls that will promote the establishment of efficient and sustainable urban and rural settlement forms.

In order to achieve, the objectives of the land use and activity framework are:

- Balance competing demands for land for different uses including economic, environmental and social uses.
- Establish Cato Ridge as a City/Regional Logistics Hub and Industrial Production Zone.
- Promote the establishment of a balanced, integrated and sustainable mix of land uses and activities.
- Enable the establishment of a range of land uses that will be necessary to support the primary function of the logistics and industrial production hubs.
- Provide for land use clustering which enables the efficiency of interaction between related land uses, as well as, protection from incompatible uses and activities.
- Promote and encourage the establishment of a range of residential lifestyle options from urban to suburban and rural (smallholdings)/traditional.
- Enable the establishment of a hierarchy of commercial, industrial and service nodes that protect complimentary cores i.e.Mpumalanga Town Centre, Hillcrest, Shongweni, Camperdown etc.
- Promote the establishment of identifiable and discrete neighbourhoods and settlements with discrete centres focused around local commercial and community activities.
- Support more compact and structured urban settlement and economic development with higher densities (up to 40 units/ha) in appropriate, accessible locations, such as around activity nodes and spines.
- Ensure the establishment of an appropriate range of regional and local level community facilities.
- Promote the productive and recreational use of the landscape for agriculture, tourism, recreation and amenities.

4.2.2 Land Use and Activity Elements

The Cato Ridge study area must provide for the establishment of a mix of different activities in nodes, corridors and districts in a manner which attempts to encourage more vibrant, flexible and efficient living and working environments.

Within each of the broader land uses, a further level of land use and activity structuring will occur by virtue of the manner in which similar related land uses are grouped together to form functional and identifiable land use or activity “clusters” in response to user demands for location and identity benefits (e.g. manufacturing clusters, logistics clusters, agri-processing etc.).

The following guidelines provide a framework for assisting in the distribution and location of economic activity/land uses within the study area (Figure 4-6).

Residential
- The Cato Ridge local area will need to accommodate a variety of lifestyle options through the establishment of urban, suburban and rural/traditional settlement types.
- Where appropriate in each settlement type a range of housing typologies should be accommodated. These include detached and semi-detached housing, row housing (terraced), duplex complexes and medium rise buildings including 3-4 storey walk-ups.
- Mono-functional housing “estates” that obviate integration and regional mobility should be avoided.
- Land uses that can associate with and be mixed with residential uses such as home business, community facilities, local neighbourhood shopping, etc. should be encouraged and facilitated in identified activity nodes.
- Appropriate higher density residential development should be facilitated within activity nodes (See Table 4-4). The density of residential development will need to be suitable to the landscape setting, local character and site context of each location.

- The long-term goal for Cato Ridge is to see the transition of the existing Cato Ridge Village from a residential dormitory suburb to a mixed-use business and services node with higher density residential opportunities provided for.

- There are limited residential expansion opportunities in the study area and most are associated with the infill and intensification of existing settlement areas around the Cato Ridge Village, Fredville and Inchanga.

- Rural Residential land uses should be structured and consolidated within Fredville/Inchanga, Esikhelekehleni, Shangase and KwaXimba.

- Incremental growth within KwaXimba and Shangase to be accommodated.

Table 4-4 and Figure 4-7 provides an indication of the range of densities considered appropriate in different settlement areas within Cato Ridge.

<table>
<thead>
<tr>
<th>Spatial Element</th>
<th>Minimum Net Density*</th>
<th>Applicability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within and in Proximity to Mixed Use Local Nodes</td>
<td>40-100du/ha (Urban) 15-40du/ha (Rural)</td>
<td>Fredville (Urban) KwaXimba (Rural)</td>
</tr>
<tr>
<td>Within and in Proximity to Neighbourhood Nodes</td>
<td>40-80du/ha (Urban) 15-40du/ha (Rural)</td>
<td>Harrison (Urban) Fredville North (Urban) KwaXimba West x2 (Rural) KwaXimba East (Rural) Shangase Central x2 (Rural) Esikhelekehleni (Rural)</td>
</tr>
<tr>
<td>Other Areas Urban Suburban</td>
<td>30-80du/ha 15-40du/ha</td>
<td>Cato Ridge Village Fredville/Inchanga</td>
</tr>
<tr>
<td>Rural</td>
<td>1-15du/ha</td>
<td>KwaXimba/Shangase</td>
</tr>
</tbody>
</table>

*Net Density – The number of dwelling units per hectare of land calculated on land used for residential purposes only.

**Mixed Use Activity Nodes**

- Transition Cato Ridge village from a residential dormitory suburb to a mixed-use business and services orientated node with higher density residential opportunities provided for.

- Establish a system of mixed use/economic nodes at points of high accessibility along transport corridors.

- These nodes are to accommodate a range of retail, office, social, administration and residential land use activities.

- Large-scale mono functional office park developments with land consumptive built form and landscaping should be discouraged in favour of more compact and urban mixed-use residential, retail and office development forms. Where appropriate, office development is to be integrated with other land uses, including high density residential to optimise residential yields, increase net densities, and create more mixed-use environments in order to increase thresholds for public transport.

- Retail uses must be supported by high quality and well maintained public environments and linked to public transport.

- Opportunities for informal trading through the provision of appropriate infrastructure and space to trade must be provided for within existing nodes.

Table 4-5: Mixed Use Activity Nodes

<table>
<thead>
<tr>
<th>Activity Nodes</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban Nodes</td>
<td>Cato Ridge Village (Urban)</td>
</tr>
<tr>
<td>Local Nodes</td>
<td>Fredville (Urban) KwaXimba (Rural)</td>
</tr>
<tr>
<td>Neighbourhood Nodes</td>
<td>Harrison (Urban) Fredville North (Urban) KwaXimba West x2 (Rural) KwaXimba East (Rural) Shangase Central x2 (Rural) Esikhelekehleni (Rural)</td>
</tr>
</tbody>
</table>
**Industrial & Logistics Hubs**

- General Industry has the potential to create dust, noise, odour and other adverse environmental impacts. In general products are produced for other industrial businesses and there is a high reliance on the use of raw materials in the production process. Warehousing and distribution are considered ancillary to the main land use activity.

- Logistics areas are where the dominant types of activities of an area are warehousing and distribution. The transport impact of logistics has high impact on surrounding neighbourhoods and must be managed to ensure the impacts are controlled.

- General Industry should be accommodated in the existing Harrison Industrial area and new developments should be carefully controlled and appropriately sited and designed to avoid impacting on the existing amenity and character of adjoining areas as well as the environmental sensitivity of adjacent areas.

- Industrial and logistics expansion opportunities to be provided east of the existing Cato Ridge village and in the Harrison South areas. Logistic hub facilities can be accommodated within these areas provided direct access to this area from the N3 be secured via a new interchange.

- Clustering of activities with each of the industrial sub-areas should be encouraged i.e. food and beverages to the north of Harrison in the vicinity of the Abattoir, recycling in the vicinity of the landfill, metal products along the P1-3 in the vicinity of Assmang and SAFAL Steel and Chemicals and Building Supplies along the P1-3. Warehousing and distribution facilities should be clustered within Harrison South (provided the new interchange is built).

- Opportunities for informal trading through the provision of appropriate infrastructure and space to trade must be provided for within existing and proposed hubs.

- A regional general waste landfill site to cater for future waste disposal requirements is proposed on Eddie Hagan Drive as per Durban Solid Waste’s long-term requirements.

**Social Facilities**

- The efficient and sustainable provision of social facilities requires the provision and operation of different social services which can be best achieved by clustering compatible services in accessible locations.

- All new social facilities should be developed within the proposed activity nodes.

- According to the CSIR Guidelines for the Provision of Social Facilities in South African Settlements (2012), the current population of the study area (74,947 people) is adequately provided for in terms of the number of facilities required. It is noted that this assessment does not however reflect the quality of service at the facilities and/or reflect the ease of access to each facility. This is especially exacerbated by the topography of the study area and the resultant fragmented settlement pattern.

The land use framework’s ultimate capacity for total residential growth is for the population in the area to grow from 74,947 to 103,977 (15,785 to 21,651 household). This represents an overall population growth of 37%.

- In terms of the above-mentioned standards, no additional facilities other than those previously identified in EM’s Access Modelling programme would be needed to accommodate the growth in population (Table 4-6).

![Figure 4-5: Population Growth](image-url)
### Table 4-6: Social Facility Requirements According to Population Size

<table>
<thead>
<tr>
<th>CSIR AVERAGE THRESHOLD (POPULATION)</th>
<th>ACCEPTABLE TRAVEL DISTANCE (KM)</th>
<th>PROVISION CRITERIA</th>
<th>EXISTING FACILITY</th>
<th>REQUIRED</th>
<th>SURPLUS/SHORTFALL</th>
<th>MINIMUM SITE SIZE (ha)</th>
<th>COMMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EDUCATION</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary School</td>
<td>7,000</td>
<td>5km</td>
<td>C</td>
<td>19</td>
<td>15</td>
<td>-4</td>
<td>1.40</td>
</tr>
<tr>
<td>Secondary School</td>
<td>12,500</td>
<td>5km</td>
<td>C</td>
<td>8</td>
<td>8</td>
<td>-</td>
<td>2.60</td>
</tr>
<tr>
<td><strong>HEALTH &amp; EMERGENCY FACILITIES</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community Health Centre</td>
<td>100,000 to 140,000</td>
<td>90% of population with 5km</td>
<td>C</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1.50</td>
</tr>
<tr>
<td>Primary Health Clinic</td>
<td>24,000 to 70,000</td>
<td>90% of population with 5km</td>
<td>C</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0.50</td>
</tr>
<tr>
<td>Police Station</td>
<td>60,000 to 100,000</td>
<td>8km</td>
<td>C</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0.10</td>
</tr>
<tr>
<td>Fire Station</td>
<td>60,000 to 100,000</td>
<td>8-23min (response time)</td>
<td>C</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>0.30</td>
</tr>
<tr>
<td><strong>SOCIAL &amp; CULTURAL (PUBLIC SERVICE FACILITIES)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regional Library</td>
<td>200,000</td>
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</table>

**Criteria Categories**

C = Compulsory (basic essential service)
D = Discretionary (non-essential provision based on under supply/unserved need, distance or other factors including funding availability)
R = Recommended (valuable services that are unfunded or non-essential)
**Agriculture and Tourism**

- The Cato Ridge East functional area is an area that can provide for a range of agricultural activities that can generate economic activity and local employment, support food production and security and protect the existing environmental resources and landscape character. The intensification of agricultural production in this area should be supported.
- Smallholding lifestyle options as an alternative residential lifestyle choice should be protected.
- Eco-Tourism opportunities associated with the Harrison South Grasslands could be pursued provided there are no negative impacts on the Grasslands.
- Small-scale agriculture should be encouraged within and adjacent to settlements to increase economic activity as well as to supplement food sources for poor families.
- The KwaXimba/Shangase area is an important location for tourism development that generates economic activity and local employment and protects the existing environmental resources and landscape character. To this end, the development of the KwaXimba Stewardship area should be supported.

**Environment**

- Retain and protect the role of the open space cores and corridors within Cato Ridge as conservation areas that deliver environmental services. Establish green linkages between the catchments and between the open space system and surrounding environmental assets in Mkambathini and uMshwathi Municipalities.
- Dependent on individual site conditions related to condition of assets and vegetation type, some environmental sites may have potential as offset receiving areas.
- Promote the establishment of the KwaXimba Stewardship Area.
Figure 4-6: Land Use and Activity Framework
Table 4-7: Land Use Quantum in Gross Hectares (ha)

<table>
<thead>
<tr>
<th>LAND USE</th>
<th>EXISTING</th>
<th>FUTURE</th>
<th>TOTAL</th>
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<tr>
<td>Residential: Medium Impact</td>
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<td>146.1</td>
<td>4 131.5</td>
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**LAND USE**          | **EXISTING** | **FUTURE** | **TOTAL**  |
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<tr>
<td><strong>RURAL/TRADITIONAL RESIDENTIAL</strong></td>
<td>Management of low intensity peri-urban/rural/traditional settlement where the primary land use is residential, with supporting services and social facilities. On land that is in rural/peri-urban locations, is communally held and/or is under the jurisdiction of a traditional leader.</td>
<td>1-15 du/ha, 2 storeys</td>
<td>Upgrade and consolidation of rural / traditional settlements in Esikhelakehleleni, Freville, Harrison, KwaXimba Central, KwaXimba East, KwaXimba West and Shangase. Appropriate densification of settlement along major public transport corridors and within 800m of a local rural activity node and 400m of rural neighbourhood activity nodes where services infrastructure and environmental constraints permit.</td>
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<tr>
<td><strong>RESIDENTIAL LOW IMPACT</strong></td>
<td>Development of predominately-residential uses with a low density, including detached and semi-detached units, where a limited number of compatible ancillary uses that have a non-disruptive impact on neighbourhood amenity may be allowed, including supporting social facilities and open space amenities.</td>
<td>5-15 du/ha, 2 storeys</td>
<td>Consolidation of low density residential settlement in Cato Ridge East. Consolidation of low density residential settlement along the P1-3 and at Inchanga. Establish a new low density suburb at the entrance to KwaXimba West along Track 93221 (P1-3)</td>
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<tr>
<td><strong>RESIDENTIAL MEDIUM IMPACT</strong></td>
<td>Predominately-residential area with some medium density residential settlement and an increasing number of appropriate ancillary land uses to satisfy local demands and convenience. Excludes industrial and trade uses.</td>
<td>15-40 du/ha, 3 storeys</td>
<td>Consolidation and upgrade of existing Cato Ridge Village, long term expansion opportunities around the Village. Appropriate densification of settlement within Fredville along major public transport corridors and within 800m of local rural activity nodes and 400m of rural neighbourhood activity nodes where services infrastructure and environmental constraints permit.</td>
</tr>
<tr>
<td><strong>MIXED USE: MEDIUM IMPACT</strong></td>
<td>Provides for the long-term transition of Cato Ridge from a dormitory residential village to a business and services centre to serve the surrounding industrial area. Medium intensity mixed use development with a mix of business, institutional, civic and social uses, offices and medium density residential development and a strong focus on the quality of the public environment and visual appropriateness of built form.</td>
<td>60-100 du/ha, 3 storeys</td>
<td>Consolidation of existing general commercial areas within Cato Ridge Village. Development of new general commercial and mixed use development within the Cato Ridge Village adjacent to the N3 and along Uitkomst Road</td>
</tr>
<tr>
<td><strong>MIXED USE: LOW IMPACT</strong></td>
<td>Low to medium intensity mixed use development within identified nodes with a strong focus on providing local social facilities, offices and shops to support local residential thresholds in the area.</td>
<td>40-80 du/ha, 2 storeys</td>
<td>Establishment of mixed use developments within the local rural activity node of Fredville and along the P1-3 and D1000. Consolidation of mixed use developments at Inchanga</td>
</tr>
<tr>
<td>LAND USE DESIGNATION</td>
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<td>DEVELOPMENT CONTROLS</td>
<td>AREA OF APPLICATION</td>
</tr>
<tr>
<td>----------------------</td>
<td>--------------------</td>
<td>----------------------</td>
<td>--------------------</td>
</tr>
<tr>
<td><strong>LIGHT INDUSTRY: MEDIUM IMPACT</strong></td>
<td>Medium impact industrial and business development that permits manufacturing uses that are compatible with land uses permitted in adjacent sensitive land use zones, such as residential, mixed use and open space zones, i.e. manufacturing activities that usually do not involve significant vibration, noise or odour. May permit warehousing and distribution facilities, truck stops, container depots and staging areas. Is considered medium impact due to major traffic associated with possible truck staging and truck stop.</td>
<td>• 1.4 FAR • 70% Coverage • 6 storeys</td>
<td>• Establish new mixed-use development within the urban neighbourhood node on Harrison Flats,</td>
</tr>
<tr>
<td><strong>INDUSTRY: MEDIUM IMPACT</strong></td>
<td>Medium impact industrial and business development, including general, light and service industry and business. Warehousing and distribution must be ancillary to main primary industrial activity.</td>
<td>• 1.5 FAR • 70% coverage • 4 storeys</td>
<td>• Consolidation of existing industrial development on Harrison Flats</td>
</tr>
<tr>
<td><strong>INDUSTRY: LOW IMPACT</strong></td>
<td>Low impact industrial and business development, including general, light and service industry and business that are sensitive to adjacent environmental protection areas. Warehousing and distribution must be ancillary to main primary industrial activity.</td>
<td>• 0.5 FAR • 50% coverage • 2 storeys</td>
<td>• North of the N3 and Cato Ridge Village where development is in environmentally sensitive areas.</td>
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<tr>
<td><strong>LANDFILL</strong></td>
<td>Reservation of land for a regional landfill site for the disposal of solid waste, such as paper, glass and metal that is buried between layers of soil/dirt and other materials in such a way so as to reduce contamination of the surrounding land. A waste sorting and recycling facility may be permitted.</td>
<td>• At the discretion of the local authority.</td>
<td>• On Harrison Flats</td>
</tr>
<tr>
<td><strong>INSTITUTION</strong></td>
<td>This area provides for a full range of public and private health and welfare facilities, municipal and government administration and services, institutions, places of worship and educational facilities with associated buildings and recreational facilities.</td>
<td>• 0.4 FAR • 40% coverage • 3 storeys</td>
<td>• Existing facilities within residential and mixed use areas</td>
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<td><strong>INFRASTRUCTURE</strong></td>
<td>Provides for utilities and services, such as electricity substations (ESS), water treatment works (WTW), sewage disposal sites/ wastewater</td>
<td>• n/a</td>
<td>• Existing major infrastructure facilities</td>
</tr>
<tr>
<td>LAND USE DESIGNATION</td>
<td>LAND USE INTENTION</td>
<td>DEVELOPMENT CONTROLS</td>
<td>AREA OF APPLICATION</td>
</tr>
<tr>
<td>----------------------</td>
<td>--------------------</td>
<td>----------------------</td>
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</tr>
<tr>
<td>AGRICULTURE</td>
<td>Treatment works (WWTW), public utilities, pump stations, bulk stormwater and refuse sites.</td>
<td>n/a</td>
<td>Interface areas between urban/rural development and open space conservation areas</td>
</tr>
</tbody>
</table>
|                      | Low intensity and/or sustainable agricultural uses, including “traditional” and/or subsistence agricultural practices on communal land as well as residential small-holdings. | n/a                  | Across the study area. | Conservation  
|                      |                                                                                       |                      | Environmental Conservation Reserve |
| ENVIRONMENT          | Provides for the establishment of a functional open space system that enables the ecosystems contained to operate effectively and in a sustainable manner in order to deliver services that benefit the local and broader community. Development within this area is limited and subject to additional studies and approval. Any approved development needs to be sensitive to its visual impact. | n/a                  |                      | |
| RAIL                 | Provides for rail line and associated reserve requirements. | n/a                  | Existing rail reserves within Cato Ridge, Cato Ridge East and Harrison South | Railway Reserve |
| ROAD                 | Provides for roads, streets and associated reserve requirements. | n/a                  | Existing road reserves across the study area | Proposed Road Reserve  
|                      |                                                                                       |                      | Road Reserve |
Figure 4-7: Residential Density Framework

- **DENSITY TARGETS**
  - >40 DU/HA
  - 15 - 30 DU/HA
  - 5 TO 15 DU/HA
  - 0.5-5 DU/HA
  - <0.5 DU/HA
4.2.3 Spatial Distribution of Yields (includes Phasing)

The quantum of land that could be released to accommodate residential and economic growth over the next twenty years has been presented in Table 4-7. These gross area calculations are converted into Development Yields using the development parameters summarised in Table 4-9.

Given the highly sensitive environmental nature of the area, both from a biodiversity and water catchment perspective, it is anticipated the nett developable area for land parcels will be of the order of 50%. There are a number of parcels that contain slopes steeper than 1:3, have major servitudes traversing them or are simply too large for a single development and will need to be subdivided in order to provide new access routes and road reserves, additional service infrastructure etc. A gross leasable area (GLA) factor has been used to generate bulk infrastructure needs as an indication of the likely floor area to be realised for the study area.

Table 4-9: Development Parameters

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<th>AVERAGE GROSS:NET RATIO</th>
<th>DEVELOPABLE LAND%</th>
<th>AVERAGE GLA FACTOR</th>
<th>GROSS LEASABLE AREA (m²)</th>
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<tr>
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<td>100%</td>
<td>304</td>
<td>0.0</td>
<td>803</td>
<td>6 453</td>
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<tr>
<td>Residential: Low Impact</td>
<td>98</td>
<td>100%</td>
<td>98</td>
<td>-</td>
<td>-</td>
<td>795</td>
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<tr>
<td>Rural Residential</td>
<td>3 729</td>
<td>100%</td>
<td>3 724</td>
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<tr>
<td>Agriculture</td>
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<td>-</td>
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<tr>
<td>Institution</td>
<td>84</td>
<td>80%</td>
<td>63</td>
<td>0.1</td>
<td>63 217</td>
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<tr>
<td>Infrastructure</td>
<td>17</td>
<td>60%</td>
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<td>Environment</td>
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<td>GRAND TOTAL</td>
<td>18 508</td>
<td>70%</td>
<td>78</td>
<td>803</td>
<td></td>
<td>22 209</td>
</tr>
</tbody>
</table>

In broad terms:

- The study area is of the order of 18 500ha
- 5 130ha of the area is deemed developable
- Approximately 3 301 544m² of industrial GLA is planned for the study area; 164 101m² of mixed use (commercial) GLA; and 22 209 residential units (each of these values include existing GLA and/or Units).
- The area is not envisaged as a major residential growth area with the bulk of residential opportunities located to the north and south of the N3 corridor in KwaXimba and Mpumalanga.
- The majority of residential units require upgrading through various state subsidy programmes and/or consolidation, infill and densification of existing residential neighbourhoods.

---

Nett developable area has been calculated as a factor of the total area based on the size subdivisions, areas that would require land to be set aside for access roads, services and servitudes etc., areas that have large servitudes that traverse the site and/or the reflect the current state of land holdings. In general, existing residential areas are calculated as 100% developable, new industrial areas as 50% and mixed use and infill areas as 75% developable. These factors are captured in the GIS Model.
**Residential Units**

In terms of residential development, the Cato Ridge local area is largely developed with both peri-urban and rural/traditional settlement comprising the bulk of the housing stock. Upgrading, and enhancing these residential areas would be the focus of any housing interventions for the local area which would involve the restructuring of the settlement layouts, the transfer/confirmation of tenure and investment in supporting residential amenities and social services.

Based on the densities described in 4.2.2, the anticipated yield of new residential units is **1 711** (Table 4-10).

According to Figure 4-5, it is anticipated that the population in the greater Cato Ridge area will grow by **27 352** persons. At average household rates of 4.6 persons per household (the area average), an additional **5 866** household units will need to be provided in the area.

The CR Review only makes provision for **1 711** new units, therefore additional residential capacity will need to be secured in the adjacent functional areas i.e. Mpumalanga and/or Camperdown in support of this new industrial hub that is being planned.

<table>
<thead>
<tr>
<th>LAND USE</th>
<th>EXISTING UNITS</th>
<th>SHORT-TERM (&lt;5 yrs)</th>
<th>MEDIUM-TERM (5-10 yrs)</th>
<th>LONG-TERM (&gt;10 yrs)</th>
<th>TOTAL UNITS</th>
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</thead>
<tbody>
<tr>
<td>Residential: Medium Impact</td>
<td>5 276</td>
<td>547</td>
<td>630</td>
<td>6 453</td>
<td></td>
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<tr>
<td>Cato Ridge</td>
<td>228</td>
<td>157</td>
<td>630</td>
<td>1 015</td>
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</tr>
<tr>
<td>Fredville</td>
<td>5 048</td>
<td>390</td>
<td></td>
<td>5 438</td>
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</tr>
<tr>
<td>Residential: Low Impact</td>
<td>261</td>
<td>127</td>
<td>407</td>
<td>795</td>
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<tr>
<td>Fredville</td>
<td>261</td>
<td>127</td>
<td></td>
<td>388</td>
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<tr>
<td>KwaXimba West</td>
<td></td>
<td></td>
<td>407</td>
<td>407</td>
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<tr>
<td>Rural Residential</td>
<td>14 762</td>
<td></td>
<td></td>
<td>14 762</td>
<td></td>
</tr>
<tr>
<td>Esikhelekehlenni</td>
<td>1 511</td>
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<td></td>
<td>1 511</td>
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<td>Fredville</td>
<td>3 685</td>
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<td></td>
<td>3 685</td>
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<td>Harrison</td>
<td>746</td>
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<td>746</td>
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<tr>
<td>KwaXimba Central</td>
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<td>1 072</td>
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<td>Mixed Use: Low Impact</td>
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<td></td>
<td>36</td>
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</tr>
<tr>
<td>Cato Ridge</td>
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</tr>
<tr>
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<tr>
<td>Grand Total</td>
<td>20 498</td>
<td>674</td>
<td>-</td>
<td>1 037</td>
<td>22 209</td>
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</table>

**NEW UNITS 1 711**
### Industrial Yields Gross Leasable Area (GLA)

**Table 4-11: Land Release for Industrial Development**

<table>
<thead>
<tr>
<th>LAND USE/FAP</th>
<th>EXISTING SHORT-TERM (&lt;5 yrs)</th>
<th>MEDIUM-TERM (5-10 yrs)</th>
<th>LONG-TERM (&gt;10 yrs)</th>
<th>GRAND TOTAL</th>
<th>EXISTING SHORT-TERM (&lt;5 yrs)</th>
<th>MEDIUM-TERM (5-10 yrs)</th>
<th>LONG-TERM (&gt;10 yrs)</th>
<th>GRAND TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Industry: Medium Impact</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
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<td>68</td>
<td>224</td>
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<td>50 812</td>
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<td>5</td>
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<td>34</td>
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<td>-</td>
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<td>16 652</td>
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<td>77</td>
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<td>116</td>
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### Mixed Use Yields Gross Leasable Area (GLA)

**Table 4-12: Land Release for Mixed Use Development**

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<tr>
<th>LAND USE/FAP</th>
<th>EXISTING SHORT-TERM (&lt;5 yrs)</th>
<th>MEDIUM-TERM (5-10 yrs)</th>
<th>LONG-TERM (&gt;10 yrs)</th>
<th>GRAND TOTAL</th>
<th>EXISTING SHORT-TERM (&lt;5 yrs)</th>
<th>MEDIUM-TERM (5-10 yrs)</th>
<th>LONG-TERM (&gt;10 yrs)</th>
<th>GRAND TOTAL</th>
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<tbody>
<tr>
<td><strong>Mixed Use: Medium Impact</strong></td>
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<td></td>
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<td>-</td>
<td>111 393</td>
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<tr>
<td>Harrison South</td>
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<td>5</td>
<td>33 519</td>
<td>40 813</td>
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<td>111 393</td>
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<tr>
<td><strong>Mixed Use: Low Impact</strong></td>
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<td></td>
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<tr>
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<td>9</td>
<td>-</td>
<td>34</td>
<td>31 052</td>
<td>21 656</td>
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<td><strong>Grand Total</strong></td>
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<td>164 101</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

**NEW GLA** 2 360 255
Potential Employment Figures

It is estimated that approximately 424ha of net developable industrial land could be realised in the Greater Cato Ridge Area. This has the potential to create between 35 532 and 63 450 employment opportunities.

In terms of a low employment scenario, conservative estimates sourced from the NUDC project (SSI, 2010), indicate that employment density is approximately 84 jobs/ha. High scenario employment density is as per EMME/3 model rates (Arup, 2012) which are estimated at 150 jobs/ha.

New mixed-use net developable land area is of the order of 19ha. This translates to between 950 and 4 750 jobs based on a low employment density of 50 jobs/ha and a high employment density of 250 jobs/ha.

Table 4-13: Potential Employment Scenarios for Industrial Land

<table>
<thead>
<tr>
<th>LAND USE/FAP</th>
<th>NEW NET AREA (HA)</th>
<th>LOW SCENARIO 84 jobs/ha</th>
<th>HIGH SCENARIO 150 jobs/ha</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Industry: Medium Impact</strong></td>
<td></td>
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<tr>
<td>Cato Ridge Village</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Harrison</td>
<td>129</td>
<td>10 836</td>
<td>19 350</td>
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<tr>
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<td>168</td>
<td>300</td>
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<tr>
<td><strong>Industry: Low Impact</strong></td>
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<tr>
<td>Cato Ridge Village</td>
<td>22</td>
<td>1 848</td>
<td>3 300</td>
</tr>
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<td><strong>Light Industry: Medium Impact</strong></td>
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<tr>
<td>Cato Ridge East</td>
<td>58</td>
<td>4 872</td>
<td>8 700</td>
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<tr>
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<td>19 650</td>
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<td><strong>Landfill</strong></td>
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<tr>
<td>Harrison</td>
<td>81</td>
<td>6 804</td>
<td>12 150</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td>424</td>
<td>35 532</td>
<td>63 450</td>
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</table>

Table 4-14: Potential Employment Scenarios for Mixed Use Land

<table>
<thead>
<tr>
<th>LAND USE/FAP</th>
<th>NEW NET AREA (HA)</th>
<th>LOW SCENARIO 50 jobs/ha</th>
<th>HIGH SCENARIO 250 jobs/ha</th>
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<td>Cato Ridge Village</td>
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<td>500</td>
<td>2 500</td>
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<tr>
<td><strong>Mixed Use: Low Impact</strong></td>
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<td></td>
</tr>
<tr>
<td>Fredville</td>
<td>7</td>
<td>450</td>
<td>2 250</td>
</tr>
<tr>
<td>Harrison</td>
<td>2</td>
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<tr>
<td><strong>Grand Total</strong></td>
<td>19</td>
<td>950</td>
<td>4 750</td>
</tr>
</tbody>
</table>

9 SSI Engineers & Environmental Consultants (2010) Northern Urban Development Corridor: Generating Development Scenarios

4.3 LANDSCAPE STRATEGY AND FRAMEWORK

At present Cato Ridge could be described as the ‘forgotten’ lands of eThekwini Municipality and there is a sense that “anything” goes with little follow up, enforcement and/or recourse for those who flout existing development controls. Central to redefining Cato Ridge as a key economic node within eThekwini and commensurate with the area’s role is the need to consolidate activities in the area, to move away from an ad-hoc approach in dealing with development and to develop a discernible brand and identity that is conveyed through the landscape and imageability of the area.

4.3.1 Goals and Objectives

A discernible public space network and high quality landscaping in key investment areas of the local area is critical to the creation of a brand identity for the area, as well as, for the comfort and convenience of its residents, users and visitors.

To this end, the following area relevant:

- Promote the establishment of a legible environment
- Protect, enhance, rehabilitation environmental systems and natural scenic quality of the area
- Protect, enhance, rehabilitate and/or create a range of identifiable/discrete settlement characters and townscape function al areas (precincts)/districts/neighbourhoods i.e. urban, rural, agricultural industrial etc.
- Establish a high landscape quality for the primary access and mobility road network as the gateway and branding features of the area

4.3.2 Key Principles

**Overall Landscape Approach**

- Respond to the inherent quality of the area as a whole as well as to the inherent landscape qualities of each functional area (precinct)/district
- Create identifiable precincts or sub precincts based around their use and function and inherent landscape characteristics and quality
- Create orientating features such as precinct gateways, identifiable nodes and definable edges to provide structure to the landscape
- Avoid the creation of a continuous, undifferentiated ribbon of development along the N3 corridor by developing around nodes integrated by open space/agricultural/recreational areas and by developing each node with its own built form and landscaping character.
- Mitigate impacts of dirty/unsightly industry activities

**Public Open Space**

- Consolidate the primary open space D’Moss into a cohesive system of differentiated ecological and recreational spaces
- Create a hierarchy of urban and rural open space types including soft and hard spaces but also spaces which support the activities and role of each of the urban , rural and agricultural areas
- Developing public spaces that support social and economic activities, community engagement, access to public transport, human dignity, etc.
- Open Space/Agricultural Interface Areas are to be retained to separate residential and industrial/logistics areas.

**Built Form**

- Encourage the development of a more responsive built environment with supporting public spaces and create a more structured, responsive and intensive urban environment within the central areas, around activity nodes, along spines and major public transport corridors and in new development areas.
- Encourage increased densities and greater spatial definition within activity nodes by reducing buildings lines, facing buildings onto the street, encouraging active/responsive building frontages, providing a consistent landscaping treatment, etc.
- New developments along major roads, such as the N3, P1-3, P385 and Eddie Hagan Drive, to provide a landscaped edge and high quality building elevation treatments facing onto these routes.
- New industrial areas to be developed as high quality estates with care and attention paid built form and landscaping of streets and integration with adjoining areas.
4.3.3 Landscape Elements
The following interventions are proposed to establish an identity for various streets/neighbourhoods within the study area and to assist with orientation and imageability.

Gateways Zones
- Establish and/or upgrade gateways into the Cato Ridge local area i.e. the Cato Ridge, Hammarsdale and new interchange. Improvements should include large scale and distinctive planting, public art/landmarks and signage consolidation.

Landscaped Movement Corridors
- Promote the development of a “green” corridor along the N3 to enhance the scenic attractiveness of this gateway to the metro area. This could be achieved through retaining existing open spaces and agricultural lands where appropriate, removing alien vegetation, providing appropriate landscaping for new developments and creating view “corridors”.
- Establish tree-lined boulevards along Eddie Hagan, the P1-3, and new access route from the New Interchange with high landscaping quality with respect to planting/adjacent property landscaping and build form quality
- Control the scale and placement of signage on buildings along these corridors.

Areas of High Landscape and Scenic Quality
- Utilise and integrate all major natural features as key structuring elements for new urban form (i.e. rivers and streams, water bodies, high points and ridges etc).
- Protect view sheds of rivers/floodplains/wetlands from bridges and promote sensitive and ecologically sound design and construction of such infrastructure.
- Protect and enhance the scenic quality of the P1-3.
- Establish and protect the KwaXimba Stewardship area.

Landmark Features
- Significant highpoints and ridgelines (skylines) should be sensitively treated according to their context in terms of the overall local area, the sub-area they fall in or the neighbourhood/precinct in which they are located. These points should be enhanced either, through appropriate built form, or through the preservation of important and high quality natural features.

Buffer Zones
- Areas immediately adjacent to areas of high landscape and scenic quality should be subjected to additional development control that ensure that development is sensitive to the specific quality of the locale in which it falls.

Built Form Guidelines
- The individual and collective form of buildings contributes directly to the performance of the environment with respect to security, orientation of pedestrians, imageability of place and the general feeling of well-being of pedestrians. They also give shape to the public spaces and streets which they face onto and they affect the character and quality of those spaces in terms of aesthetics and memorability.
- Building massing should conform to the general massing character of each district / Built form should be used to define the character of each district.
- Building frontages should contribute to the public-ness of streetscape through locating entrances at street level and through ensuring maximum surveillance of the street from frontages facing the street.
- Building forms (in conjunction with the use of appropriate material, colours and textures) should be articulated and modulated to ensure a human scale and to merge in with district function and character i.e. residential, business, civic etc.
- Built form should be fine “grain” and human scale – either as a collection of small buildings grouped tightly together or as larger buildings with fine grain modulation of facades and elevations.
- Buildings should accentuate the role and character of the district with respect to scale and building typology.
- Built form should be used to articulate and or celebrate gateways and intersections.
Figure 4-8: Landscape Framework
4.4 ACCESS AND CIRCULATION FRAMEWORK

4.4.1 Goals and Objectives

Improved access to, and circulation within, the study area is critical to its efficient and effective operation and its competitiveness as an economic node in the future. It is also an important element to proving access to employment and social services for local (and future) residents of the area.

As such, the following objectives should be promoted and enabled:

- Establish a clear hierarchy in the transport network that facilitates both access and movement between the study area and the rest of the City/Province (metropolitan access) and within the study area between functional areas (local access).
- Protect and enhance the regional mobility and connectivity of the N3 SIP2 Corridor between Durban and Johannesburg.
- Increase the number of access points into the local area and enhance the capacity of existing access points to accommodate anticipated growth in the area.
- Enhance the circulation flows and increase the operational capacity of the existing network to accommodate current and future vehicles, freight traffic, public transportation and pedestrians (NMT) requirements within the precinct.
- Reduce the conflict between residential and heavy freight traffic.
- Integrate public transport routes in the area to the metropolitan Consolidated Public Transport Plan (CPTP) and enhance the commuter rail system between Cato Ridge and Hammarsdale.
- Where appropriate promote Transit-Orientated Development.
- Enhance connectivity between Cato Ridge and the Mpumalanga/Hammarsdale area.
- Where appropriate, prioritise non-motorised transport (NMT) movement and mobility within functional areas and maximise the comfort, convenience and safety of pedestrians and cyclists.
- Implement Traffic Demand Management Strategies.

4.4.2 Network Description

The key elements of the network hierarchy that will facilitate appropriate levels of mobility and accessibility for each route type, supports the public transport system and which informs an appropriate land use and density responses that will reinforce the public transport system, are as follows (Figure 4-9):

**National Mobility**

National/regional mobility between Durban and Johannesburg with limited access provided at key interchanges.

- The N3 Freeway is a key element to providing access into the study area and studies are underway to increase the capacity of this route.
- Access off the N3 is via the Cato Ridge Interchange (N3 and P1-3) and the Hammarsdale Interchange (N3 and P385/P245) in the short-to-long term.
- Provide direct access from the N3 into the heart of the local area via a new access point between the Engen and BP direct access service stations. Once this interchange is commissioned, it is proposed that the existing Cato Ridge Interchange be converted to a partial interchange with north facing ramps only. The proposed new interchange is to incorporate the existing Engen and BP direct access service centres. This will ensure compliance with access management along the National Route.

The design of this new interchange does not form part of the contract of this LAP Review.

**Metropolitan Mobility**

Major linkage routes that ensure mobility between key areas of the eThekwini Municipality. These routes are limited access routes with access provided at key intersections.

- Metropolitan Mobility into the study area is via the P1-3 (old Main Road) which runs parallel to the N3 from Durban to Pietermaritzburg and connects the study area to the Hillcrest and Pinetown to the east and to Camperdown to the West. This is a limited access route.
**Metropolitan Access**

Minor linkage routes providing local connectivity from mobility routes to lower order local routes.

- To the north of the study area, metropolitan access is provided by the P425 from the Hammarsdale Interchange connecting to the P1-3 (old Main Road).
- A circular route consisting of the P423/Eddie Hagan Drive (M52)/D1004/D1002 provides access from the P1-3 to KwaXimba and Shangase Tribal Areas.
- Tracks 93344 and 93223 connect the Cato Ridge Village to this circular route via KwaXimba West.
- To the south of the study area, metropolitan access is via the P385/Uitkomst Street (M50) loop which links Mpumalanga to the N3. This loop is external to the Cato Ridge study area.
- Capacity upgrades and enhancements are required for these routes to accommodate the growth planned for the area.
- A new north-south route should be constructed to connect the new interchange to the P1-3 (Old Main Road)/P423 (Eddie Hagan Drive) intersection.

**Local Access**

Local routes providing access to adjoining lands.

- Local access routes provide circulation into a number of functional areas. These include D1003 and Streets 65026 and 65001 into Fredville; Tracks 83201/83202/83564 into Shangase; D1021 & Track 94044 into KwaXimba; the P556 to Harrison South; and Doornug and Selby Roads in the Cato Ridge Village.
- It is proposed that a new local access link be constructed to connect Selby to Doornug Road in the Cato Ridge Village.
- In order to improve the internal connection between Fredville and KwaXimba, Track 65311 should be upgraded to connect Drakensberg Street to the P423 (M52) and to Street 65026 and a new link should be constructed along Track 65301 to connect to Track 94044.
- A new east-west route should be constructed parallel to the N3 to connect the new interchange to the P385 via the Cato Ridge Village. This will require that the railway line be bridged.
- The D157 should be upgraded to connect the new east-west link north with the P1-3 (old Main Road).
- Internal local roads should be constructed within each development block in order to provide access to individual erven.

**Rail**

- The main line (Natcor) that runs between Durban and Johannesburg traverses the study area. This line operates both freight and rail passenger services, however it will remain a predominately freight route with passenger services being increased over time to meet local population demand.
- A rail station is located north of the Cato Ridge Village and can be accessed via Selby/P1-3 (old Main Road).
- Feeder/haulage lines connect the Cato Ridge Station to Assmang and the old railway line, currently not operational between the Cato Ridge Station and Inchanga, should be converted to provide haulage services to the Harrison South Area, and/or could be reinstated to provide passenger services between Pietermaritzburg and Pinetown.
- Where appropriate, logistics facilities can be accommodated along the main or secondary rail line.

4.4.3 Road Network Infrastructure

- The access and circulation system will need to be improved and extended on a phased basis to support land use development in the area and to provide sufficient capacity to cater for associated growth in population and freight traffic movements.
- As such the road network will need to be strengthened, upgraded and extended in order to increase capacity to serve existing and future development, support public transport and NMT and improve connectivity and accessibility.
4.4.4 Public Transport
- Develop a Public Transport Feeder System that connects residential and industrial areas to major public transport corridors and associated stations/stops. Improve public transport services and infrastructure such as lay-byes and shelters in developed areas.
- Plan for such services in areas proposed for expansion and densification.
- Improve the existing passenger rail services via existing rail stations to meet the needs of the residents and workers in the area and to provide public transport links to Durban, Pinetown and Pietermaritzburg.
- Relocate the existing Taxi Rank at Dunbar to a new site west of the Cato Ridge Village where it can be integrated with expanded retail and commercial activities and will have space to grow.

4.4.5 NMT
- Improve NMT linkages, infrastructure and pedestrian environment, including links to rail stations and taxi ranks and the pedestrian environment in and around rail stations and taxi ranks.
- Improve pedestrian linkages between residential areas, social facilities and employment zones together with infrastructure such as sidewalks and pedestrian crossings (including bridges and underpasses) to improve safety and security.

4.4.6 Parking
- Parking for private vehicles should be provided for in terms of the municipal parking standards either as “on site” or “on street” provision.
- In logistics based developments sufficient provision for truck staging and parking must be provided on site.

4.4.7 Freight
- Road infrastructure into industrial areas must make sufficient provision to accommodate freight traffic.
- The existing truck stop in Cato Ridge should be relocated to west of the Cato Ridge Village and should be accommodated in a purpose built precinct that provides for truck staging, temporary parking and the retail needs of truckers. An attempt should be made to design a quick entry weighbridge of the N3, with the possibility of direct access into the truck stop.
- An additional truck stop may also be accommodated within the Harrison Flat areas should demand for such facility be warranted.
- Strong management and by-law enforcement is required to control the behaviour of freight traffic, particularly along the P1-3.

The road network elements of the Access and Circulation Framework are illustrated in Figure 4-9, the Public Transport Framework in Figure 4-10 and Figure 4-12.
Figure 4.9: Access and Circulation Framework
Figure 4-10: Public Transport Framework
Traffic Impact

The Cato Ridge LAP project has essentially been a review project that assessed previous work prepared in 2012 for the Cato Ridge (GMA/Arup Study) and has looked at what has changed, what the trends in the area are and assessed whether the development concept prepared was still relevant in terms of the social, economic and environmental imperatives of the Municipality.

As such the team has prepared an Access and Circulation Framework, together with this Traffic and Transportation Framework using their professional expertise (judgement), together with input from key government stakeholders, namely SANRAL, KZN DoT and ETA as participants to the project process.

The previous Transportation Planning Report and Model Outputs prepared by Arup as input into the 2012 LAP are a key informant to this review as the Terms of Reference for this Review Project did not make provision for the preparation of a new Traffic and Transportation Plan and/or Model.

An updated Traffic and Transportation Plan will be required in order to confirm quantum of land release and phasing in terms of development rights granted in the future.

The project lifespan of a Local Area Plan is five years and the Project Team, together with various transport stakeholders are confident that with the implementation of required upgrades and links, the proposed network is able accommodate increased traffic and transportation as per the five year demand projections.

It is however a major recommendation of the project that an updated Traffic and Transportation Model together with Roads Masterplan for the LAP area with detailed phasing for each area of land release, be prepared. This recommendation has been included in the Implementation Strategy (Chapter 8) and should be carried out within the 2018/2019 financial year.

In the interim, as is standard practice, all new developments will be required to prepare a detailed Traffic Impact Assessment in order to confirm the development’s cumulative impact on the transportation network of the area and the required package of improvements required to unlock development.

NB. The permissible Gross Leasable Area (GLA) per site may be capped according to the capacity of the transport network to absorb additional trips in advance of major road improvements.

The detailed feasibility of road alignments has not been confirmed as part of this study and may result in alternative alignments than those conceptually indicated and/or amendments to the capacity of the proposed transport network. This aspect is to be confirmed at project level by the respective developer (public and/or private).

Methodology

Land Use Quantum

- Land use allocated in Greater Cato Ridge has been aligned with existing development and policy plans as well as with social, economic and environmental imperatives of EM to see economic development unlocked in Cato Ridge.
- The land use has been quantified in terms of a developability ratio in order to determine nett developable areas and a factor has been applied to net areas to determine Gross Leasable Areas (GLA) and residential units (this is documented in the Land Use & Activity Framework).
- The GLA calculations form the basis for calculating vehicle trip rates.

Trip Generation

- GLA determined by land use planners and informed by the appropriate Scheme parameters
- Trip rates were calculated using the parameters identified ARUP 2012 study:
  - Industrial Uses (150 persons /ha)
  - Commercial/Mixed Use (250 persons/ha)
  - Facility/Institutions (250 persons/ha)
  - Residential – 1.1 trips / dwelling
  - Public vs Private Transport ratio of 55%:45%
  - Heavy goods vehicles account for approximately 6% of vehicles movements.
• Trips calculations for person/ha rates calculated using the following formula:
  \[ \frac{[(\text{GLA}/10\ 000 \times \text{TRIP RATE} \times 0.6 \times 0.5 \times 55\%)/14] + (\text{GLA}/10\ 000 \times \text{TRIP RATE} \times 0.6 \times 0.5 \times 45\%/1.2)]}{1} \]

Trips calculations for trips/low vehicle ownership dwellings (rural residential) rates calculated using the adjustment factors contained in the ETA manual

**Comparative Trip Generation Analysis**

• The proposed GLA and subsequent trips generated have been compared using comparative spatial “blocks” of development determined by the Arup Model in order to determine an order of magnitude difference between the original 2012 LAP and the review.

**Capacity Enhancements**

• Existing network assessed using professional judgement to determine new links and capacity upgrades.

• Upgrades and/or new links proposed based on:
  
  o Desired spatial structure

  o Recommendations for new links proposed by TMRP in order to improve accessibility and circulation

  o Proposed functionality (role) of roads

  o Augmented with proposals contained in the Cato Ridge 2012 Local Area Plan

  o Discussions with transport stakeholders (SANRAL and KZN DoT with regards to plans for their roads in the future)

**Recommendations**

• A series of recommendations have been made with respect to how to proceed with the release of development areas in the Cato Ridge LAP area.

**Land Use Quantum**

The development yields for the Cato Ridge LAP and FAP areas has been detailed in the Spatial Distribution of Yields (includes Phasing) Section.

In summary the amount of new development opportunities for release in the Cato Ridge LAP area are as follows:

• 424ha of net developable industrial land with an estimated 2.3 million square metres of GLA

• 19ha of net developable mixed use/commercial development with an estimated 99 529 million square metres of GLA; and

• 152ha of net developable land for new residential development with the potential for an additional 1 711 units.

**Table 4-15: New Development Opportunities**

<table>
<thead>
<tr>
<th>BROAD LAND USE</th>
<th>NET DEVELOPABLE AREA (HA)</th>
<th>POTENTIAL GLA (M²)</th>
<th>RESIDENTIAL UNITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>INDUSTRIAL</td>
<td>424</td>
<td>2 360 255</td>
<td>0</td>
</tr>
<tr>
<td>MIXED USE/COMMERCIAL</td>
<td>19</td>
<td>99 529</td>
<td>0</td>
</tr>
<tr>
<td>RESIDENTIAL</td>
<td>152</td>
<td>0</td>
<td>1 711</td>
</tr>
<tr>
<td>OTHER (INSTITUTION)</td>
<td>6</td>
<td>6 308</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td><strong>595</strong></td>
<td><strong>2 466 092</strong></td>
<td><strong>1 711</strong></td>
</tr>
</tbody>
</table>

The spatial distribution of these opportunities is conceptually illustrated Figure 4-11 (which also illustrates the associated trips generated).

The land use quantum per FAP has been grouped into clusters. These clusters of FAPs are related to the main transportation spine the cluster relies upon for access. I.e., Harrison Flats and KwaXimba rely predominately on Eddie Hagan Drive for access, Harrison South will rely on the P1-3 and the new access road from the new interchange on the N3 etc.

As is evident from the illustration, there is dominant economic heart associated with the consolidation and infill of Harrison Flats, Harrison South and Cato Ridge East into an industrial/logistics complex for the Outer West of eThekwini.

70% of the new development opportunities are located in this area, with the remainder in the surrounding clusters. The supporting residential and business clusters on the periphery are just as vital and require reinvestment and regeneration to support the industrial/logistics heart.
Trip Generation

Using the trip generation parameters described in the methodology, the land use quantum for new development generates an additional 5,945 vehicle trips for LAP. These vehicle trips need to be accommodated by the existing and proposed additions to the access and circulation network.

Table 4-16: Summary Trip Generation

<table>
<thead>
<tr>
<th>LAND USE</th>
<th>AREA (GLA m²)/ NO OF DWELLINGS</th>
<th>TRIP RATE</th>
<th>AM PEAK TOTAL (INCL. HGV)</th>
<th>IN</th>
<th>OUT</th>
<th>AM SPLIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>INDUSTRIAL</td>
<td>2,360,255 m²/ 255 m²</td>
<td>150</td>
<td>5,456</td>
<td>4,092</td>
<td>1,364</td>
<td>75%</td>
</tr>
<tr>
<td>SHORT-TERM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KwaXimba Central/Harrison Flats Cluster</td>
<td>512,616 m²/ 255 m²</td>
<td>1,185</td>
<td>889</td>
<td>296</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KwaXimba West Cluster</td>
<td>439,158 m²/ 255 m²</td>
<td>1,015</td>
<td>761</td>
<td>254</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MEDIUM-TERM</td>
<td>1,607,568 m²/ 255 m²</td>
<td>3,716</td>
<td>2,787</td>
<td>929</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KwaXimba Central/Harrison Flats Cluster</td>
<td>477,447 m²/ 255 m²</td>
<td>1,104</td>
<td>828</td>
<td>276</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harrison South Cluster</td>
<td>722,397 m²/ 255 m²</td>
<td>1,670</td>
<td>1,252</td>
<td>417</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cato Ridge East Cluster</td>
<td>407,723 m²/ 255 m²</td>
<td>943</td>
<td>707</td>
<td>236</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LONG-TERM</td>
<td>2,400,072 m²/ 255 m²</td>
<td>555</td>
<td>416</td>
<td>139</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KwaXimba Central/Harrison Flats Cluster</td>
<td>8,138 m²/ 255 m²</td>
<td>19</td>
<td>14</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harrison South Cluster</td>
<td>198,134 m²/ 255 m²</td>
<td>458</td>
<td>344</td>
<td>115</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KwaXimba West Cluster</td>
<td>33,800 m²/ 255 m²</td>
<td>78</td>
<td>59</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RESIDENTIAL</td>
<td>1,711 units/ 0.4</td>
<td>160</td>
<td>40</td>
<td>120</td>
<td>25%</td>
<td>75%</td>
</tr>
<tr>
<td>SHORT-TERM</td>
<td>674 units</td>
<td>74</td>
<td>19</td>
<td>56</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cato Ridge Village Cluster</td>
<td>157 units/ 1.1</td>
<td>13</td>
<td>3</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fredville / Esikhelekehleni / KwaXimba East Cluster</td>
<td>453 units/ 1.1</td>
<td>47</td>
<td>12</td>
<td>35</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harrison South Cluster</td>
<td>64 units/ 1.1</td>
<td>15</td>
<td>4</td>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MEDIUM-TERM</td>
<td>1,037 units/ 1.1</td>
<td>86</td>
<td>21</td>
<td>64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cato Ridge Village Cluster</td>
<td>630 units/ 1.1</td>
<td>52</td>
<td>13</td>
<td>39</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KwaXimba West Cluster</td>
<td>407 units/ 0.4</td>
<td>34</td>
<td>8</td>
<td>25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MIXED USE</td>
<td>99,529 m²/ 255 m²</td>
<td>309</td>
<td>232</td>
<td>77</td>
<td>75%</td>
<td>25%</td>
</tr>
<tr>
<td>SHORT-TERM</td>
<td>62,486 m²/ 255 m²</td>
<td>194</td>
<td>146</td>
<td>49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cato Ridge Village Cluster</td>
<td>26,173 m²/ 255 m²</td>
<td>81</td>
<td>61</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KwaXimba Central/Harrison Flats Cluster</td>
<td>9,003 m²/ 255 m²</td>
<td>16</td>
<td>12</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fredville / Esikhelekehleni / KwaXimba East Cluster</td>
<td>16,652 m²/ 255 m²</td>
<td>52</td>
<td>39</td>
<td>13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KwaXimba West Cluster</td>
<td>14,640 m²/ 255 m²</td>
<td>45</td>
<td>34</td>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MEDIUM-TERM</td>
<td>37,060 m²/ 255 m²</td>
<td>115</td>
<td>86</td>
<td>29</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cato Ridge Village Cluster</td>
<td>37,060 m²/ 255 m²</td>
<td>115</td>
<td>86</td>
<td>29</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FACILITY</td>
<td>6,308 m²/ 255 m²</td>
<td>20</td>
<td>15</td>
<td>5</td>
<td>75%</td>
<td>25%</td>
</tr>
<tr>
<td>SHORT-TERM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fredville / Esikhelekehleni / KwaXimba East Cluster</td>
<td>6,308 m²/ 255 m²</td>
<td>20</td>
<td>15</td>
<td>5</td>
<td>75%</td>
<td>25%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>2,466,092 m²/ 1,711 units</td>
<td>5,945 new trips</td>
<td>4,379</td>
<td>1,566</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* HGV (Heavy Goods Vehicle)
As is evident with the spatial distribution of the land use quantum, the trip generation reflects the same spatial pattern (Figure 4-11).

The bulk of new trips onto the network occurs within the industrial clusters and the economic heart. It is within these areas that the main transportation and road infrastructure interventions and improvements are recommended in order to accommodate the growth of Cato Ridge.

1 205 trips are generated to the south of the N3, whilst the remaining 4 740 trips are generated to the north.

It is important to note, that without the benefit of a model to run scenarios regarding modal splits, traffic demand management strategies etc. it is difficult to reflect how these numbers may be increased and/or decreased within the AM peak in order to ‘spread the load’ on the network.

Traffic Demand Management Strategies need to be developed for the Outer West Region.
Comparative Trip Generation Analysis

In the absence of a traffic model being prepared for the Cato Ridge LAP Review (not provided for in the Terms of Reference), the previous Traffic Study (2012) and model output from the Arup 2012 report has been used as a key informants for this review project.

The purpose of the comparative assessment has been to assess the ‘order of magnitude’ difference between the GLA proposed by both plans, but also to assess where the major differences in GLA occur spatially. This assists the project team, in the absence of a new model, to determine an appropriate Access and Circulation Framework, as well as, proposed capacity enhancements to existing infrastructure and/or proposed new infrastructure requirements in order to accommodate the anticipated traffic generated by the development (Table 4-17).

Table 4-17: Summary Trip Generation

<table>
<thead>
<tr>
<th>LAND USE/FAP CLUSTER</th>
<th>DEVELOPABLE LAND USE QUANTUM</th>
<th>TOTAL TRIPS</th>
<th>TRIPS IN</th>
<th>TRIPS OUT</th>
<th>DEVELOPABLE LAND USE QUANTUM</th>
<th>TOTAL TRIPS</th>
<th>TRIPS IN</th>
<th>TRIPS OUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>CATO RIDGE VILLAGE CLUSTER</td>
<td>80 ha</td>
<td>262</td>
<td>164</td>
<td>98</td>
<td>111 ha</td>
<td>672</td>
<td>208</td>
<td>464</td>
</tr>
<tr>
<td>Industrial</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mixed Use</td>
<td>63 233 m²</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residential</td>
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<td></td>
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</tr>
<tr>
<td>KWAXIMBA CENTRAL/HARRISON FLATS CLUSTER</td>
<td>214 ha</td>
<td>2 153</td>
<td>1 615</td>
<td>538</td>
<td>214 ha</td>
<td>529 ha</td>
<td>2 146</td>
<td>1 684</td>
</tr>
<tr>
<td>Industrial</td>
<td>924 743 m²</td>
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</tr>
<tr>
<td>Mixed Use</td>
<td>5 003 m²</td>
<td></td>
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<tr>
<td>Residential</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HARRISON CENTRAL/HARRISON FLATS CLUSTER</td>
<td>138 ha</td>
<td>2 143</td>
<td>1 600</td>
<td>543</td>
<td>179 ha</td>
<td>868</td>
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</tr>
<tr>
<td>Industrial</td>
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</tr>
<tr>
<td>CATO RIDGE EAST CLUSTER</td>
<td>58 ha</td>
<td>943</td>
<td>707</td>
<td>236</td>
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<tr>
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<tr>
<td>KWAXIMBA WEST CLUSTER</td>
<td>64 ha</td>
<td>327</td>
<td>229</td>
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<td>51 ha</td>
<td>204</td>
<td>153</td>
<td>51</td>
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<tr>
<td>Industrial</td>
<td>107 258 m²</td>
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<td>Mixed Use</td>
<td>14 640 m²</td>
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<tr>
<td>Residential</td>
<td>407 units</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FREDVILLE / ESIKHELEKHELENI / KWAXIMBA EAST CLUSTER</td>
<td>40 ha</td>
<td>118</td>
<td>65</td>
<td>53</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mixed Use</td>
<td>16 652 m²</td>
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<tr>
<td>Residential</td>
<td>453 units</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>595 ha</td>
<td>5 945</td>
<td>4 379</td>
<td>1 566</td>
<td>888 ha</td>
<td>3 889</td>
<td>2 617</td>
<td>1 332</td>
</tr>
<tr>
<td>Industrial</td>
<td>2 360 255 m²</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Mixed Use</td>
<td>99 529 m²</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residential</td>
<td>1 711 units</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
Since the previous study the following key changes have occurred in the area:

- Environmental ‘no-go’ areas have been refined and confirmed with trade-offs provided by EPCPD.
- Bulk infrastructure solutions have been provided to accommodate the release of development in the area.
- The proposed interchange to unlock Harrison South and provide direct access into Harrison Flats has been confirmed as a viable option with conditions.

In comparing like with like, the following key differences are noted:

- The study of the review area is 2.5 times the size of the area assessed in the 2012 LAP.
- The additional footprint added is largely areas requiring in-situ upgrading and/or areas with minimal infill potential. It is assumed that existing developments and their impact on the network would have been factored into the Arup model as part of the status quo.
- The main areas which do not correlate from a traffic generation/development quantum perspective are the Harrison South Cluster which no longer has the same environmental limitations on it as previously considered (i.e. more land can be release for development and Cato Ridge East (this area was not quantified in the previous study).

### 4.4.9 Key Capacity Enhancements Recommended

<table>
<thead>
<tr>
<th>ID</th>
<th>FUNCTIONAL AREA</th>
<th>TYPE OF INTERVENTION</th>
<th>NO OF LANES (ULTIMATE)</th>
<th>ORDER OF MAGNITUDE COST</th>
<th>RESPONSIBILITY</th>
</tr>
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<tbody>
<tr>
<td>SHORT-TERM</td>
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<tr>
<td>F-01</td>
<td>Fredville</td>
<td>New Link</td>
<td>2</td>
<td>39 360 000</td>
<td>ETA</td>
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<tr>
<td>H-01</td>
<td>Harrison</td>
<td>New Link</td>
<td>2</td>
<td>29 664 000</td>
<td>ETA/Developer</td>
</tr>
<tr>
<td>H-02</td>
<td>Harrison</td>
<td>New Link</td>
<td>2</td>
<td>47 328 000</td>
<td>ETA/Developer</td>
</tr>
<tr>
<td>H-03</td>
<td>Harrison</td>
<td>New Link</td>
<td>2</td>
<td>6 192 000</td>
<td>ETA/Developer</td>
</tr>
<tr>
<td>H-04</td>
<td>Harrison</td>
<td>New Link</td>
<td>2</td>
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<tr>
<td>N3-01</td>
<td>N3 Corridor</td>
<td>Upgrade Capacity</td>
<td>8</td>
<td>1 098 432 000</td>
<td>ETA/SANRAL/Developer</td>
</tr>
<tr>
<td>MEDIUM-TERM</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>N3-02</td>
<td>N3 Corridor</td>
<td>New Interchange</td>
<td>4</td>
<td>60 312 000</td>
<td>ETA/SANRAL/Developer</td>
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<tr>
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<td>4</td>
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<td>ETA/Developer</td>
</tr>
<tr>
<td>CE-02</td>
<td>Cato Ridge East</td>
<td>New Link</td>
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<td>27 312 000</td>
<td>ETA/Developer</td>
</tr>
<tr>
<td>CRV-06</td>
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<td>New Link</td>
<td>4</td>
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<td>TA/Developer</td>
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<tr>
<td>H-09</td>
<td>Harrison</td>
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<tr>
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<td>6</td>
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</tr>
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<td>Upgrade Capacity</td>
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<tr>
<td>H-06</td>
<td>Harrison</td>
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<td>LONG-TERM</td>
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<td></td>
</tr>
<tr>
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<td>N3 Corridor</td>
<td>Downgrade Interchange</td>
<td>1</td>
<td>tbd</td>
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</tr>
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<td>New Link</td>
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<td>13 728 000</td>
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<td>CRV-07</td>
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<td>CRV-08</td>
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<td>4</td>
<td>27 864 000</td>
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<td>E-01</td>
<td>Esikhalekehleni</td>
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<td>ETA</td>
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<td>New Link</td>
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<tr>
<td>H-08</td>
<td>Harrison</td>
<td>Realign Link</td>
<td>2</td>
<td>3 528 000</td>
<td>ETA</td>
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<tr>
<td>CRV-01</td>
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<td>ETA</td>
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<td>CRV-04</td>
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<td>2</td>
<td>44 520 000</td>
<td>ETA</td>
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</table>

**TOTAL 1 098 432 000**

See Section 4.4.2 or Table 8-3: Implementation Plan Projects for a description of the recommended capacity enhancement.
Figure 4-12: Road Network Upgrade Framework
4.4.10 Key Recommendations

**LAP Lifespan**
- The life-space of a local area plan is 5 years. At each review the recommendations and planning proposed for the area needs to be revisited and reassessed in the light of development take-up, strategic policy changes and the implementation of projects and actions proposed therein.

- Whilst the LAP is a strategic document indicating intent and a proposed future spatial structure, all new development will be required to undertake normal development application measures i.e. rezoning, environmental and traffic impact assessments. In the event that the proposed network is unable to cope with the proposed quantum of development, these site level assessments will prevent developments from being approved.

- Whilst cognisant of the longer-term planning horizon, the focus of the plan should be to unlock development in the next 5 to 10 years.

**Modelled Capacity of the Network**
- The existing CR2012 LAP traffic models indicate that the key capacity enhancements listed above can accommodate between 1.2 to 1.9 m$^2$ of GLA.

- The amount of development planned for Phase 1 and 2 release in the CR 2017 is within these thresholds.

- In the absence of an updated model, the capacity of the network should be monitored and controlled through individual TIA applications.

**Preparation of Updated Traffic Model for Outer West Corridor**
- The Outer West Corridor Traffic and Transportation Plan should be updated outside the scope of this assignment in order to verify the impact of the additional GLA proposed for the area, but within the context of the whole Corridor and greater eThekwini Region. This would need to include a Roads Masterplan for the LAP with detailed phasing for each area of landed release.

- Such a study needs to understand the implications of the following dimensions in improving the capacity of the existing network to accommodate new development:
  - The proposed intermodal facility planned in Harrison South and its potential to reduce reliance on the N3 to connect to the Port of Durban (this was not modelled in 2012).
  - Alternate east-west regional linkages to the north and south of eThekwini that provide a regional alternative to the N3.
  - The planned reinstatement of PRASA passenger rail services on the Old Railway line to Pinetown.
  - The impact of the upgraded Hammarsdale Interchange
  - The delayed Port Expansion plans of Transnet.

**Commitment of Transport Stakeholders**
- There needs to be commitment from all transport stakeholders, national, provincial and municipal to implement the planned upgrades and capacity enhancements as outlined in the Access and Circulation Framework.

- The eThekwini Transport Authority supports the LAP and development of Cato Ridge area provided that the capacity of the N3 corridor and strategic transportation network is not compromised. It should be noted that the detailed feasibility of the network provided has not been tested and may result in amendments to the proposed capacity of the network and/or final alignments. Respective developers will need to provide appropriate traffic and transportation studies, at project level, will be required in order to confirm these aspects.

- The Department of Transport supports the LAP and development of Cato Ridge area, however all road upgrades required on the existing Provincial roads will have to be funded by the developer and or Municipality.

- SANRAL is in support of the LAP however, any SANRAL affected road infrastructure (new / upgrades) required for development, will be to the cost of the relevant development / developer and the eThekwini Municipality.
5 BULK INFRASTRUCTURE FRAMEWORK

5.1 INFRASTRUCTURE REQUIREMENTS (IMPLICATIONS)
The upgrading of existing bulk infrastructure supplying services to the Cato Ridge Local Area and/or the reticulation within each of the functional areas needs to keep pace with the demands of existing and new development in order for the local area to be a competitive investment location and in order to protect existing economic development and provide an appropriate infrastructure platform for the existing residents within the area.

In addition consideration should be given in all instances of new infrastructure and upgrading of existing infrastructure to the construction of green infrastructure.

The infrastructure implications required to provide an adequate level of service in line with the proposal of the Cato Ridge Local Area Plan have been assessed and the findings described in the chapter that follows.

Infrastructure requirements are a function of the planned land-use zone within each area. Infrastructure required to service the given area includes the following:

- Potable water supply
- Sanitation
- Storm water management
- Solid waste management
- Electricity supply
- Road networks (see Traffic & Transportation Chapter)

5.1.1 Goals and Objectives
The aim of this framework is to guide the delivery of infrastructure and services to address existing backlogs, support future development and minimise environmental impacts through the pursuit of the following key objectives:

- Identify and facilitate the provision of an appropriate level of supporting infrastructure to service existing and future development and which protects environmental resources.
- Retain the ecological integrity of the open space system to provide a green infrastructure network that can assist with surface water management, flood risk attenuation and waste assimilation to reduce the need for hard infrastructure.
- Encourage more sustainable approaches to infrastructure delivery, such as sustainable drainage systems (SuDS), rainwater harvesting, water sensitive urban design, etc.
- Protect human health and the environmental assets and quality of the area.
- Provide for the basic needs of communities in terms of water, sanitation and electricity services.
- Support the social and economic objectives for the area through the servicing of economic development and employment creation initiatives.
- Determine the anticipated demand and infrastructure upgrades required to meet these demands in each of the functional areas, including a logical phasing approach to the provision of infrastructure.

5.1.2 Key Principles
- Maximise the use of areas that can be served with gravity water borne sewer reticulation.
- Limit the expansion of development within the uMgeni River Catch (Sewer and stormwater flows impact on the city’s main water supply).
- Consolidate the Waste Water Treatment Works to a regional works at Hammarsdale as per the eThekwini Municipalities corporate strategy.
- Liaise with relevant developers, landowners and other stakeholders to identify common solutions to servicing new development and avoid ad-hoc, individual solutions that are not cost effective and/or sustainable.
- Reduce the need for pumping of sewage to a minimum.
- Consolidate development in order to optimise the efficiency of providing infrastructure to an area.
5.2 WATER DEMANDS AND WASTEWATER FLOW GENERATION

Each functional area is presumed to fulfill a specific role and purpose as defined in the functional area plan prepared in the LAP review.

The table below summarises the roles and purposes of each of these functional areas:

Table 5-1: Summary Roles of Functional Areas

<table>
<thead>
<tr>
<th>FUNCTIONAL AREA</th>
<th>LAND USE TYPE</th>
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</thead>
<tbody>
<tr>
<td>CATO RIDGE VILLAGE</td>
<td>Agriculture, Light industry, Commercial, Mixed Use and Residential near the N3</td>
</tr>
<tr>
<td>CATO RIDGE EAST</td>
<td>Light Industry and agriculture interspersed with open environmental areas south of the N3</td>
</tr>
<tr>
<td>HARRISON FLATS SOUTH</td>
<td>Light and medium industry south of the R103 and north of the N3</td>
</tr>
<tr>
<td>HARRISON FLATS</td>
<td>Light and medium industry, Rural residential, landfill site north of the R103 and either side of Eddie Hagen Drive.</td>
</tr>
<tr>
<td>FREDVILLE</td>
<td>Mixed use commercial, Medium impact residential and Rural residential along Layby Road</td>
</tr>
<tr>
<td>KWAXIMBA WEST</td>
<td>Rural Residential with small mixed-use community centres along the D1022 road.</td>
</tr>
<tr>
<td>KWAXIMBA CENTRAL</td>
<td>Low impact residential, Rural residential and Small mixed use community centre along the main road, MR423</td>
</tr>
<tr>
<td>KWAXIMBA EAST</td>
<td>Predominantly rural residential, with small mixed use community centres along the district road, D1004.</td>
</tr>
<tr>
<td>ESIKHELEKEHLENI</td>
<td>Rural residential developments along the district road, D1004.</td>
</tr>
<tr>
<td>SHANGASE</td>
<td>Rural residential along the district road, D1004.</td>
</tr>
</tbody>
</table>

Table 5-2 summarises the assumptions made regarding water demand and sewage generation given a particular land use type.

The water demands are based on the Redbook: Guidelines for Human Settlement and wastewater flows on eThekwini Municipality’s design guidelines for foul water sewers:

Table 5-2: Summary of Water Demand and Sewage Generation

<table>
<thead>
<tr>
<th>LAND USE</th>
<th>UNITS</th>
<th>POTABLE WATER DEMAND</th>
<th>WASTE WATER GENERATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIXED USE AND COMMERCIAL: MEDIUM IMPACT</td>
<td>t/100 m²</td>
<td>450</td>
<td>400</td>
</tr>
<tr>
<td>INDUSTRY: LIGHT AND LOW IMPACT</td>
<td>t/ha/day</td>
<td>25 000</td>
<td>20 000</td>
</tr>
<tr>
<td>INDUSTRY: MEDIUM IMPACT</td>
<td>t/ha/day</td>
<td>56 250</td>
<td>45 000</td>
</tr>
<tr>
<td>INSTITUTIONS AND MIXED USE LIGHT IMPACT (COMMUNITY CENTRES)</td>
<td>t/100 m²</td>
<td>400</td>
<td>350</td>
</tr>
<tr>
<td>RESIDENTIAL: MEDIUM IMPACT</td>
<td>t/unit/day</td>
<td>1000</td>
<td>800</td>
</tr>
<tr>
<td>RESIDENTIAL: LOW IMPACT</td>
<td>t/unit/day</td>
<td>750</td>
<td>600</td>
</tr>
<tr>
<td>RURAL RESIDENTIAL</td>
<td>t/unit/day</td>
<td>500</td>
<td>400</td>
</tr>
</tbody>
</table>
5.3 WATER SUPPLY INFRASTRUCTURE

5.3.1 Water Supply Goals & Objectives
- Maintain existing water supply infrastructure systems, including water reservoirs, pump stations and water pipelines, and upgrade and extend water supply infrastructure to support new developments and settlement growth in the local area.
- Undertake improvements to water supply infrastructure in a co-ordinated and phased manner to support settlement growth and economic development.
- Development of the Cato Ridge area needs to incorporate the following considerations from a water design perspective, using the Guidelines for Human Settlement (Red Book) as a reference:
  - Storage reservoirs must have a minimum storage capacity of 48 hours of AADD.
  - The peak flow velocity in reticulation pipelines should not exceed 2 m/s.
  - Placement and distribution of fire hydrants in reticulation networks should be based on the type of land-use activities and associated risks.
  - Normal minimum pressure delivered to end-users is 250 kPa and 150 kPa to hydrants for fire flow requirements. The top water level of new reservoirs or elevated storage tanks as well as losses in reticulation pipelines must be considered in order to cater for this requirement.

5.3.2 Water Supply System Operation
The area within the study boundary comprises 3 reservoir reticulation gravity supply zones. These are the centrally located Cato Ridge Reservoir zone, the Abattoir Reservoir zone located within Harrison Flats (understood to be privately owned and operated, but supplied from Cato Ridge Reservoir) and the northern area (north of the uMgeni River) which is supplied from the Mkhizwana WTW via the Mkhizwana Reservoirs. Refer to the figure below indicating the current reservoir supply zones.

Figure 5-1: Current Reservoir Supply Zones
The supply area south of the Cato Ridge Reservoir, namely Harrison Flats South, Cato Ridge Village and Cato Ridge East are supplied directly from the Western Aqueduct water supply pipelines from Umlaas Road to eThekwini.

Water is transferred to the Cato Ridge Reservoir and Abattoir Reservoir through an existing GRP pipe from a cross connection on the existing DN 500 steel pipeline en route to Alverstone Nek. The new DN 1600 steel pipeline (Western Aqueduct) augments flow in the existing DN 500 steel pipeline to eThekwini.

The industrial area, a high-level zone in the vicinity of the Abattoir Reservoir, is supplied by boosting flow from the outlet of the Abattoir reservoir directly into reticulation.

The existing western aqueduct may need to be relocated in areas where future road upgrades are required to support the expansion of the local road network. The impact is to be identified during detailed design and relocation minimised.

5.3.3 Potable Water Demand & Storage
Each of the 10 functional areas in the study area falls within a designated supply zone of one of the reservoir supply areas identified above. Water demand of each functional area is dependent on the land use activity, net developable area and expected densities.

In terms of eThekwini Municipality standards and requirement, an acceptable capacity for reservoir storage is to provide 48 hours of average daily demand as this should provide adequate balancing storage for shut downs and fire-fighting requirement.

The unit demands from Section 5.2 above have been used to estimate the ultimate water demands for each area as shown in the table below.

Table 5-3: Potable Water Demand and Storage

<table>
<thead>
<tr>
<th>EXISTING RESERVOIR SUPPLY ZONE</th>
<th>ESTIMATED CURRENT DEMAND (Mℓ/ day)</th>
<th>FUNCTIONAL AREA (FAP)</th>
<th>ULTIMATE DEMAND PER FUNCTIONAL AREA (Mℓ/ day)</th>
<th>DEVELOPMENT PHASING (years)</th>
<th>ULTIMATE DEMAND FOR SUPPLY ZONE (Mℓ/ day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUPPLY FROM WESTERN AQUEDUCT</td>
<td>2.0</td>
<td>Cato Ridge Village</td>
<td>5.8</td>
<td>Less than 5 More than 10</td>
<td>13.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cato Ridge East</td>
<td>2.1</td>
<td>5 to 10</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Harrison South</td>
<td>5.1</td>
<td>5 to 10 More than 10</td>
<td></td>
</tr>
<tr>
<td>CATO RIDGE RESERVOIR</td>
<td>8.2</td>
<td>KwaXimba West</td>
<td>1.5</td>
<td>5 to 10</td>
<td>32.8</td>
</tr>
<tr>
<td>(INCLUDING ABATTOIR RESERVOIR SUPPLYING THE HARRISON FLATS HIGH LEVEL ZONE)</td>
<td></td>
<td>KwaXimba Central</td>
<td>2.8</td>
<td>5 to 10</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>KwaXimba East</td>
<td>0.4</td>
<td>5 to 10</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fredville</td>
<td>8.4</td>
<td>Less than 5</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Esikhelekehleni</td>
<td>0.7</td>
<td>5 to 10</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Harrison Flats</td>
<td>19.0</td>
<td>5 to 10 More than 10</td>
<td></td>
</tr>
<tr>
<td>MKHIZWANA A1</td>
<td>0.8</td>
<td>Shangase</td>
<td>0.8</td>
<td>5 to 10</td>
<td>0.8</td>
</tr>
<tr>
<td>MKHIZWANA A4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Supply from Western Aqueduct
New suitably sized water supply and reticulation pipework from the Western Aqueduct should be considered as land is unlocked for development. In the short term (<5 years) this would include the Cato Ridge Village and parts of Fredville commercial centre along the main road.

For security of supply in the long term, it is proposed that a 26 Mℓ capacity reservoir be constructed to provide 48 hours of storage for the supply zone to provide balancing storage to the area as demand increases. This would be the preferred option rather than reliance on supply directly off the Western Aqueduct. The reservoir should be constructed in phases as demand increases, to limit water remaining unused in storage for lengthy periods.

Supply from Cato Ridge Reservoir, including Abattoir Reservoir Zone
The ultimate demand in the Cato Ridge and Abattoir Reservoir zones is estimated to be 33 Mℓ/day. The most significant demand will be from the development of the Harrison Flats industrial zone accounting for 18.5 Mℓ/day and development of this precinct is expected to occur in the next 5 to 10 years. The existing Cato Ridge Reservoir has a capacity of 22.7 Mℓ and this is more than adequate to meet the current demands. The implication is that ultimately an additional 41 Mℓ of storage capacity would be required, preferably on or adjacent to the existing reservoir site. In the interim, the capacity of the Cato Ridge Reservoir should be increased in phases as demand increases.

eThekwini Municipality should confirm whether the Abattoir Reservoir (10 Mℓ) would be used as part of the scheme, as this will impact on the final size of the Cato Ridge Reservoir. With the developments of the Fredville residential, KwaXimba East and Esikhelekehlene only expected in the medium to long term as commercial development in the adjacent Harrison Flats and Harrison South areas is undertaken; there is no urgency for this storage capacity in the short term.

As development unfolds, bulk water supply pipelines would need to be provided (or upgraded supply pipelines in the case where existing infrastructure does not suffice) and sized to cater for seasonal peak flows. Typically such a pipeline would need to be provided from the Western Aqueduct offtake along the R103 to service Cato Ridge Village, Cato Ridge East and Harrison South, along Eddie Hagen Drive to the Cato Ridge Reservoir. This supply would also be required for the Harrison Flats industrial zone and for the long-term development in the Cato Ridge East and Harrison Flats South areas.

A further bulk supply line upgrade would then be required to service the KwaXimba Region Central Region along the D1004. Dedicated outlet supply pipeline upgrades would be required to service Fredville, Esikhelekehlene and KwaXimba East along the D1022 eastwards and KwaXimba West along the D1004 westwards. These pipeline upgrades to these residential areas will need to be phased to meet future development as and when required.

Supply to Mkhizwana Zones
The independent Mkhizwana WTW and storage reservoirs north of the uMngeni River should be upgraded to cater for additional demands generated from residential housing development in the Shangase area. Currently there is storage capacity available but this would ultimately need to be upgraded to a total of 2 Mℓ to allow for 48 hrs of storage capacity. As part of the area is currently un-serviced, new water reticulation infrastructure would be required. Adequate bulk water supply networks should be provided along the main road and sized for peak flows.
5.4 WASTEWATER INFRASTRUCTURE

5.4.1 Wastewater Goals & Objectives

- Increase the effective wastewater treatment capacity of the Hammarsdale WWTW to provide the regional works for serving existing and proposed development in the catchment area, including Mpumalanga, Georgedale, Hammarsdale, Cato Ridge, Clifftdale and parts of Shongweni.

- Develop wastewater infrastructure on a catchment basis using gravity sewers and avoiding pump stations and rising mains as far as practicable to service new development.

- Urban and industrial development within Sterkspruit River catchment to discharge to the Hammarsdale WWTW with phased upgrades to increase effective wastewater treatment capacity to meet demand.

- Industrial development within the uMgeni River Catchment to discharge into the Hammarsdale WWTW via a new pump station and rising main and/or the proposed Bulk Trunk Sewer.

- Limited residential development within uMgeni River catchment to discharge to the Fredville WWTW with phased upgrades to increase effective wastewater treatment capacity to meet demand.

- Peri-urban/rural settlements within uMgeni River catchment to utilise on-site wastewater treatment systems in the short to medium term (to be reviewed in the medium to long term).

- Manage and control industrial and urban discharges to the Hammarsdale WWTW to reduce the level of pollutants that currently generate high COD levels and to boost the capacity for wastewater treatment from urban and industrial development.

- The use of private wastewater treatment systems to service developments should generally be avoided. The municipality may consider such an approach where it can be demonstrated to the satisfaction of the municipality that the proposed development achieves significant social and/or economic objectives for the area, that the proposed system will meet required standards, that adequate monitoring and maintenance will be provided and that the system will be connected to any future public system provided.

- Interim wastewater solutions in advance of bulk infrastructure being provided may be considered at the discretion eThekwini Water and Sanitation.

- Monitor the water quality in each of the river catchments and identify and address water pollution sources to retain and improve the water quality status of rivers.

- Monitor the treated wastewater discharges from existing and future WWTWs to ensure that applicable standards are maintained.

- Sewer pipelines will need to be designed in accordance with EM’s sanitation design guidelines for the design of foul water sewers. Such considerations that should be designed for include:
  - Minimum self-cleansing pipeline velocities of 0.66 m/s and
  - Pipe grades should be specified accordingly. Trunk mains to be graded flatter than the critical slope to ensure sub-critical velocities.
  - Maximum pipe flow velocities of 3 m/s for reticulation pipework but trunk mains to have velocities that are lower than critical velocity
  - Minimum pipeline diameters of 150 mm
  - Size pipes to cater for a reserve capacity of 0.6 X diameter
  - Adequate sizing of sewage pump station capacities
5.4.2 Wastewater System Operation

There are three wastewater treatment works (WWTW) within the study area. These are the municipal owned and operated Fredville works and the Cato Ridge pond system and the Abattoir works, which is privately owned and operated. The Hammarsdale WWTW, owned and operated by eThekwini Municipality, is located in the adjacent downstream catchment.

The Cato Ridge catchment area is characterised by sewerage systems that drain to three wastewater pump stations which discharge into a gravity sewer trunk main that flows to the Cato Ridge ponds. The northern and western extents of the study area do not have any water-borne sanitation and are serviced by urine diversion toilets. EWS does not wish to increase the generation of wastewater flows to the north and east because of drainage towards the uMngeni River and Inanda dam.

Fredville WWTW is a standalone system in the east of the study area. It has a rated capacity of 2 Mℓ/day and services the Fredville Area to the east of Cato Ridge and the Harrison flats. This Fredville reticulation system also includes an existing wastewater pump station referred to as Reitvlei.

The Abattoir WWTW is privately owned and is located on the northern side of the Harrison Flats industrial area. The previous Cato Ridge LAP report stated that the design capacity of this works is 5.4 Mℓ/day. Currently inflow to the works is 1 Mℓ/day and the design capacity of the works is between 6 and 7 Mℓ/day.
It is understood that the long-term vision of eThekwini Municipality is for regionalising the Hammarsdale WWTW to receive wastewater flows from the Cato Ridge and Harrison Flats areas. The intention is for Cato Ridge ponds to be decommissioned and all flows from these areas to be transferred via a new outfall main to the Hammarsdale WWTW.

The length of this outfall is estimated to be 11 km in length and would need to be sized for ultimate flows [including receiving flows pumped from adjacent catchments external to the study zone, such as Key Ridge, Mpumalanga, Cliftdale and Hammarsdale].

EWS planned to appoint a consultant towards the end of 2018 for the design of the outfall sewer.

5.4.3 Wastewater Generation
From the land use activities indicated in the functional are plans, wastewater generation for ultimate development state is summarised in the table below.

Table 5-4: Wastewater Generation

<table>
<thead>
<tr>
<th>TREATMENT WORKS CATCHMENT BOUNDARY</th>
<th>TREATMENT WORKS DESIGN CAPACITY (Mℓ/day)</th>
<th>FUNCTIONAL AREA (FAP)</th>
<th>ULTIMATE FLOW PER FAP (Mℓ/day)</th>
<th>DEVELOPMENT PHASING (years)</th>
<th>TOTAL ULTIMATE FLOW GENERATION (Mℓ/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAMMARSDALE</td>
<td>9.2</td>
<td>Cato Ridge Village</td>
<td>5.0</td>
<td>Less than 5</td>
<td>26.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cato Ridge East</td>
<td>1.7</td>
<td>5 to 10</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Harrison South</td>
<td>4.3</td>
<td>5 to 10</td>
<td></td>
</tr>
<tr>
<td>ABATTOIR / HAMMARSDALE</td>
<td>6.0-7.0</td>
<td>Harrison Flats</td>
<td>15.2</td>
<td>5 to 10</td>
<td></td>
</tr>
<tr>
<td>FREDVILLE</td>
<td>2.0</td>
<td>Fredville</td>
<td>6.7</td>
<td>Less than 5</td>
<td>6.7</td>
</tr>
<tr>
<td>ON SITE</td>
<td></td>
<td>KwaXimba West</td>
<td>1.2</td>
<td>-</td>
<td>1.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>KwaXimba Central</td>
<td>2.2</td>
<td>-</td>
<td>2.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>KwaXimba East</td>
<td>0.2</td>
<td>-</td>
<td>0.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Shangase</td>
<td>0.9</td>
<td>-</td>
<td>0.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Esikhelekehleni</td>
<td>0.6</td>
<td>-</td>
<td>0.6</td>
</tr>
</tbody>
</table>

Hammarsdale & Abattoir WWTW
A new sewer trunk main will be required to transfer sewage generated from Cato Ridge Village, Cato Ridge East, Harrison Flats and Harrison South to the head of the proposed outfall to the Hammarsdale WWTW. It will need to be based on the ultimate flow development of 26.2 Mℓ/day average dry weather flow. It is understood that EWS have previously prepared a plan and costing for the trunk sewer main.

Logically the most critical infrastructure to be provided is the trunk main system linking Cato Ridge Village to the connection to the outfall to Hammarsdale. The existing pump stations that transfer flow from Cato Ridge into the gravity sewer will need to be upsized accordingly. As and when land is unlocked for development in the Harrison Flats South, Cato Ridge East and Harrison Flats areas over the longer term of 5 to 10 years, this new trunk system can be extended upwards into the catchment.

The potential opportunity for the Abattoir WWTW to receive effluent flows from the Harrison Flats development zone needs to be investigated. If this is not possible, it will need to be diverted into the outfall to Hammarsdale WWTW via a new Harrison Flats South sewerage system.
Cognisance needs to be taken of eThekwini Municipality’s intention to upgrade the Hammarsdale WWTW. In a report prepared by Royal HaskoningDHV and submitted to the Water and Sanitation design branch, recommendations were made to upgrade the Hammarsdale WWTW in phases.

Even though the works is hydraulically sized for 27 Mℓ/day, due to the high COD loading characteristics of industrial wastewater, the plant has been de-rated to having a process capacity of less than 9.2 Mℓ/day.

The current average flow to the treatment works is estimated to be about 7.0 Mℓ/day. Royal HaskoningDHV recommended the following time frames for the upgrade of the works:

<table>
<thead>
<tr>
<th>UPGRADE</th>
<th>CURRENT</th>
<th>2020</th>
<th>2030</th>
<th>2080</th>
</tr>
</thead>
<tbody>
<tr>
<td>RATED CAPACITY</td>
<td>9.2 Mℓ/day</td>
<td>28.2 Mℓ/day</td>
<td>48.4 Mℓ/day</td>
<td>72 Mℓ/day</td>
</tr>
</tbody>
</table>

At each phase of the upgrades, the discharge permits of treated effluent into the Sterkspruit River will need to be evaluated and application made for the increased discharge flow.

**Fredville WWTW**

The Fredville WWTW has a design capacity of 2 Mℓ/day. Currently the works receives inflows of 0.5 Mℓ/day. There is no spare capacity in the works because of a bottleneck restriction with the solids handling capabilities of the works. The works will therefore need to be upgraded to cater for the additional flows due to development within the catchment area. It is estimated that ultimately 5.8 Mℓ/day of sewage will be generated from current industrial and the existing medium density housing flows and from future residential and rural residential housing development. The discharge permit of treated effluent into the Mngcweni River from the works will also need to be evaluated and upgraded, depending on the level of upgrade to the treatment works. Water-borne sewage infrastructure such as reticulation pipework and pump stations will need to be provided as development is extended into the catchment. Sewage that is generated in what can be deemed sparsely populated rural locations can be treated on site using septic tank systems.

**On-Site**

The remaining areas north of Harrison Flats will need to have on site sanitation where development is considered to be outside of the urban development line. These areas are primarily of a low impact residential and rural residential nature and can be treated by on site by means of septic tank systems or similar approved by EWS e.g. Urine Diversion Toilets to service the Fredville Area.
5.5 STORMWATER (SURFACE WATER) INFRASTRUCTURE

5.5.1 Stormwater Goals & Objectives
- Promote the use of sustainable urban drainage systems (SUDS) in new developments and retrofit existing developments where feasible and appropriate.
- Strengthen the resilience of the open space system and its role in managing surface water drainage and avoiding/reducing flooding.
- Ensure that surface water runoff rates from new developments do not exceed the runoff rates of the site in its greenfield state.

5.5.2 Stormwater System Operation
The area comprises 3 principal river systems with associated tributaries. North of N3, the Msunduzi River has a minor catchment with tributaries including the Mshwati and KwaGogoda Rivers. The Msunduzi flows into the uMngeni River which drains several tributaries. South of N3, the Sterkspruit River flows in a north to south direction. The assumption is that stormwater run-off that is generated is discharged into one of these nearby river systems.

Bulk municipal stormwater infrastructure was traditionally designed for surface run-off flows generated based on the assumption that 40% of a given property development was a hardened, impermeable surface area. There were no requirements for on-site management of stormwater run-off.

Historical prioritisation of urban stormwater design was to disperse excess run-off into one of the nearest natural drainage courses. Focussing only on this aspect of stormwater management, leads to environmental damage and erosion of natural watercourses and streams.

In the more recent past, all new developments have been subject to updated stormwater management requirements.

5.5.3 Considerations for Further Development/Future Planning of the Area
For new developments in the Cato Ridge area, managing the increase in surface run-off which is generated due to the increase in hardened surfaces (i.e. roofs of building and paved surfaces) is the responsibility of the developer.

The developer must provide a stormwater management plan (SWMP). The plan needs to detail how the excessive surface run-off, being the difference in flows for pre and post development for the 1:10 and 1:50 rainfall recurrence scenarios, will be managed on the site, to limit the rate of discharge to the municipal systems.

Stormwater management for the Cato Ridge development should be subject to the requirements of Sustainable Urban Drainage Systems (SUDS). SUDS place an emphasis not only on the quantity of run-off but also water quality, amenity and biodiversity aspects of stormwater management.

SUDS can be categorised into 3 types namely:
- **Source control** - Green roofs, rainwater harvesting and agricultural drain soak-aways
- **Local controls** - Filter strips, swales and infiltration trenches
- **Regional control** - Detention ponds, retention ponds and constructed wetlands

For the design of storm water infrastructure in the area, consideration should be given to the South African Guidelines for Sustainable Drainage Systems (WRC Report No. TT558/13) and the eThekwini Municipality Stormwater Design Manual.

**All future developments in the area must be required to have and to implement a stormwater plan which has been approved by the Municipality’s Coastal and Drainage section.**

Special attention should be given to rainwater harvesting measures in rural residential housing developments. By attenuating rainfall from house roofs into on-site storage tanks, the tanks act as both a source control measure, and a storage tank for grey water activities.
5.6 SOLID WASTE MANAGEMENT

5.6.1 Solid Waste Management Goals & Objectives
- Waste minimisation strategies need to be developed for the local area that encourage the reuse and recycling of solid waste material generated in the area.
- Solid waste disposal services to be extended into new developments and upgraded settlements
- The environmental Record of Decision for the Cat Ridge Landfill Site is imminent.

5.6.2 Solid Waste System
Solid waste is collected and transported to the nearest solid waste handling site. The nearest general solid waste site is Marianhill.

The table below summarises the landfill sites accessible to Cato Ridge, as well as the classification of the types of waste that the sites are able to accept.

Table 5-6: Landfill Sites in eThekwini & Neighbouring Municipalities

<table>
<thead>
<tr>
<th>LANDFILL SITE</th>
<th>DISTANCE FROM CATO RIDGE</th>
<th>COMMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAMMARSDALE</td>
<td>15km</td>
<td>Transfer Station</td>
</tr>
<tr>
<td>(eThekwini Municipality)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SHONGWENI</td>
<td>21km</td>
<td>Hazardous Waste – Closed</td>
</tr>
<tr>
<td>(Private)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NEW ENGLAND ROAD</td>
<td>30km</td>
<td>General Waste</td>
</tr>
<tr>
<td>(The Msunduzi Municipality)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MARAINHILL</td>
<td>45km</td>
<td>General Waste, Registered National Conservancy</td>
</tr>
<tr>
<td>(eThekwini Municipality)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BISASAR ROAD</td>
<td>50km</td>
<td>Garden Refuse and Building Rubble Only, Transfer Station</td>
</tr>
<tr>
<td>(eThekwini Municipality)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BUFFELSDRAAI</td>
<td>75km</td>
<td>General Waste</td>
</tr>
<tr>
<td>(eThekwini Municipality)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ILLOVU</td>
<td>83km</td>
<td>General Waste</td>
</tr>
<tr>
<td>(eThekwini Municipality)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KWADUKUZA</td>
<td>116km</td>
<td>Hazardous Waste</td>
</tr>
<tr>
<td>(KwaDukuza Municipality)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Harrison Flats has been identified as an area where a future general solid waste landfill site could be established. Consideration needs to be given to the type of development that may be zoned immediately around the chosen site, as well as environmental concerns such as the lining system, leachate treatment and suitability of cover material.

The environmental Record of Decision for the Cato Ridge Landfill Site is imminent.

Until such time as the landfill site has been developed, general waste generated from development will need to be disposed of to one of the landfill sites listed in Table 5-6.

Hazardous waste generated from heavy industries will need to be disposed of at one of the specialised sites capable of dealing with hazardous waste.
5.7 ELECTRICITY

5.7.1 Electricity Goals & Objectives
- The upgrading of the bulk electricity infrastructure will need to be undertaken in co-ordination with Eskom. The utilisation of solar energy should be promoted to service future development and reduce demand for bulk electricity infrastructure provision.
- Promote and support renewable energy initiatives in new developments and retrofits of existing development, such as solar panels for public housing projects, to help manage/reduce electricity demand and improve sustainability.
- Building design for private and public uses should consider the use of green energy principles and design and in particular public buildings should set the example in terms of the use and implementation of these principles.
- Reserve corridors and buffers along major electricity power line servitudes and avoid encroachment of inappropriate development.

5.7.2 Electricity System
Eskom is the electricity services provider within the study boundary. The area is serviced by the substations listed in the table below.

Table 5-7: Sub- Stations Servicing Cato Ridge

<table>
<thead>
<tr>
<th>SUBSTATION</th>
<th>VOLTAGE (KV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CATO RIDGE</td>
<td>88</td>
</tr>
<tr>
<td>TRELAWNEY</td>
<td>132</td>
</tr>
<tr>
<td>FERRALLOYS</td>
<td>132</td>
</tr>
<tr>
<td>ABATTOIR</td>
<td>132</td>
</tr>
<tr>
<td>CATO RIDGE TRACTION</td>
<td>88</td>
</tr>
</tbody>
</table>

The Cato Ridge and Cato Ridge traction substations are supplied from an 88 kV overhead power line from Georgedale substation. The Trelawney, Feralloys and Abattoir substations are supplied from the 132 kV overhead power line from Georgedale Substation. The Abattoir and Feralloys substations are dedicated supplies.

Eskom has a network development plan for each substation outlined below.

Abattoir Substation
The Abattoir Substation has been deloaded by the Nagle Dam Substation. 2 x 40 MVA transformers are installed at Abattoir Substation, and the current loading is 23 MVA, which is 28.8% of total capacity, and 57.5% of firm capacity. An additional 17 MVA firm capacity is available.

Cato Ridge Substation
1 x 20 MVA and 1 x 10 MVA transformers are installed at Cato Ridge Substation. The substation was previously used to supply SAFAL Steel, an 8 MVA load. This load has subsequently been transferred to Trewlaney Substation. The current loading on the two transformers at Cato Ridge Substation is 11.5 MVA (58% of 20 MVA) and 3.1 MVA (31% of 10 MVA).

Given the different ratings of the two transformers, only 10 MVA firm capacity is available in the substation, which is less than the current load. An additional unfirm capacity of 15.4 MVA is available at Cato Ridge Substation.

A future additional load of 5 MVA is expected to be added to Abattoir Substation, as applications have been received by Afroprop (0.5 MVA), Inchanga Mall (1 MVA) and Crème Margenta (1.5 MVA), reducing the available firm capacity to 12 MVA.

5.8 INFORMATION COMMUNICATIONS TECHNOLOGY
- High capacity and affordable ICT is fast becoming the norm in new urban areas and is a prerequisite to the establishment of sustainable and competitive economic development areas. Accordingly, the upgrading of and addition of new ICT infrastructure must be considered as part of the planning of the development of the local area and/or the individual functional areas.
- ICT infrastructure to be provided by either public and/or private service providers.
- Care must be taken to return public infrastructure back to its original condition when networks and/or system upgrades are implemented in the area.
Figure 5-3: Bulk Infrastructure Framework
6  FUNCTIONAL AREA PLANS

Ten (10) discrete but inter-connected Functional Areas (Figure 6-1) have been identified within the Greater Cato Ridge Study Area.

Major natural features such as river valleys and escarpments, major transport corridors (i.e. national routes or railway lines), their unique character and identity, and/or primary land use characteristic (i.e. residential, industrial or environmental) has defined each of the Functional Areas.

The following development guidelines provide a desired role for each of the areas based on their inherent qualities and characteristics to support and accommodate specific forms of settlement and activity, and to either protect and/or enhance the environment.

Each area must function as a local activity system with a range of social facilities, economic opportunities and services required by local residents.

The Functional Area Plan provides a basis for identifying and integrating specific land use, movement, open space, landscaping, built-form and infrastructure proposals for each area.

Figure 6-1 : Functional Areas
6.1 CATO RIDGE VILLAGE FUNCTIONAL AREA PLAN.

ROLE

- Mixed use business and services urban node with supporting residential community to support the SIP2 corridor and surrounding industrial zones.
- National biodiversity (grasslands) and regional environmental assets consolidation and protection.

Table 6-1: Cato Ridge Village Development Yields

<table>
<thead>
<tr>
<th>LAND USE/PHASE</th>
<th>TOTAL AREA (HA)</th>
<th>NET AREA (HA)</th>
<th>GLA (M²)</th>
<th>DWELLING UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cato Ridge</td>
<td>586</td>
<td>341</td>
<td>294 277</td>
<td>1 138</td>
</tr>
<tr>
<td>Existing</td>
<td>451</td>
<td>238</td>
<td>109 146</td>
<td>351</td>
</tr>
<tr>
<td>Residential: Medium Impact</td>
<td>23</td>
<td>23</td>
<td>803</td>
<td>228</td>
</tr>
<tr>
<td>Mixed Use: Medium Impact</td>
<td>9</td>
<td>5</td>
<td>33 519</td>
<td>-</td>
</tr>
<tr>
<td>Mixed Use: Low Impact</td>
<td>29</td>
<td>14</td>
<td>-</td>
<td>36</td>
</tr>
<tr>
<td>Industry: Medium Impact</td>
<td>6</td>
<td>3</td>
<td>20 665</td>
<td>-</td>
</tr>
<tr>
<td>Industry: Low Impact</td>
<td>21</td>
<td>10</td>
<td>50 812</td>
<td>-</td>
</tr>
<tr>
<td>Institution</td>
<td>4</td>
<td>3</td>
<td>3 347</td>
<td>-</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>5</td>
<td>3</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Environment</td>
<td>0</td>
<td>0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Agriculture</td>
<td>354</td>
<td>177</td>
<td>-</td>
<td>87</td>
</tr>
</tbody>
</table>

Phase 1

| Residential: Medium Impact | 14 | 14 | - | 157 |
| Mixed Use: Medium Impact  | 10 | 5  | 40 813 | - |
| Industry: Low Impact     | 29 | 15 | 73 458 | - |

Phase 3

<p>| Residential: Medium Impact | 57 | 57 | - | 630 |
| Mixed Use: Medium Impact  | 10 | 5  | 37 060 | - |
| Industry: Low Impact     | 14 | 7  | 33 800 | - |</p>
<table>
<thead>
<tr>
<th>LAND USE &amp; ACTIVITY</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Define Cato Ridge village as a mixed-use business, services and transport node serving the surrounding industrial zones.</td>
<td></td>
</tr>
<tr>
<td>Provide for informal trading activities to be accommodated within the node.</td>
<td></td>
</tr>
<tr>
<td>Provide for the long-term mixed use/higher density residential expansion of Cato Ridge south of the existing village.</td>
<td></td>
</tr>
<tr>
<td>Relocate the existing truck stop from within Cato Ridge village to the west of the P385/Uitkomst Rd, along the P1-3.</td>
<td></td>
</tr>
<tr>
<td>Cluster trucking related business and activities around a formalised truck staging/stop facility.</td>
<td></td>
</tr>
<tr>
<td>Make provision for easy access retail that serves the trucking industry in areas where appropriate short-term parking can be provided.</td>
<td></td>
</tr>
<tr>
<td>Consolidate existing industrial development north of the P1-3 and restrict new development in terms of environmental and infrastructure limitations.</td>
<td></td>
</tr>
<tr>
<td>Protect and consolidate remaining agricultural activities on the P385 in order to preserve the integrity of the adjacent Mkambathini agricultural production area.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ACCESS &amp; CIRCULATION</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Upgrade the capacity of the existing Cato Ridge interchange to accommodate additional development.</td>
<td></td>
</tr>
<tr>
<td>The capacity of the N3 to be increased [widened].</td>
<td></td>
</tr>
<tr>
<td>P1-3 and P385 to be upgraded to two lanes in both directions.</td>
<td></td>
</tr>
<tr>
<td>New local access roads to be constructed to connect to Cato Ridge East.</td>
<td></td>
</tr>
<tr>
<td>Stacking and parking areas for trucks to be accommodated on-site.</td>
<td></td>
</tr>
<tr>
<td>Local roads to be provided internal to development blocks to provide access to individual erven.</td>
<td></td>
</tr>
<tr>
<td>Access to individual properties off local access roads to be discouraged.</td>
<td></td>
</tr>
<tr>
<td>Extend the current road based public transport system into new development areas.</td>
<td></td>
</tr>
<tr>
<td>Upgrade the rail station at Cato Ridge for extended passenger services and integrate with the Cato Ridge Taxi Rank.</td>
<td></td>
</tr>
<tr>
<td>Extend Doornug Road East to connect directly with Selby/Newmark Roads.</td>
<td></td>
</tr>
<tr>
<td>Signalised intersections to be provided at the intersections of the P1-3 and P385/Uitkomst Road, the P385 and the new local access road to the south that connects to Old Gergea Road.</td>
<td></td>
</tr>
<tr>
<td>The intersection of Dunbar Road with the P1-3 to be signalised.</td>
<td></td>
</tr>
<tr>
<td>Make provision of generous pedestrian walkways (&gt;2m) along all major routes connecting into high employment areas.</td>
<td></td>
</tr>
<tr>
<td>All roads to make provision for non-motorised transport infrastructure.</td>
<td></td>
</tr>
<tr>
<td>All guidelines for access and circulation must be confirmed by an updated Traffic and Transportation Model together with Roads Masterplan for LAP Area with approval by KZN Department of Transport.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LANDSCAPE</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Create identifiable neighbourhoods that respond to their dominant land use character within each development block tied together by consistently landscaped linkage roads and pedestrian sidewalks.</td>
<td></td>
</tr>
<tr>
<td>Establish a high quality built form, landscaping and public space quality for Cato Ridge through the provision of landscaped streets, pedestrian sidewalks, and higher quality building frontages onto adjoining access roads and by responding to existing contours to avoid the creation of large-scale platforms for new buildings.</td>
<td></td>
</tr>
<tr>
<td>Promote the development of a “green” corridor along the N3 route to enhance the scenic attractiveness of this gateway to the metro area. This could be achieved through retaining existing open spaces and agricultural lands where appropriate, removing alien vegetation, providing appropriate landscaping for new developments and creating viewing corridors.</td>
<td></td>
</tr>
<tr>
<td>Edges and interfaces with limited access roads (e.g. N3/MR385) should be landscaped and/or architecturally treated to reduce visual impact and contribute to the experience of the road user. No service areas should face on to these roads unless adequately and appropriately screened.</td>
<td></td>
</tr>
<tr>
<td>Control the scale and placement of signage on buildings.</td>
<td></td>
</tr>
<tr>
<td>Establish a landmark gateway at the intersection of Doornug and Uitkomst Road (P385).</td>
<td></td>
</tr>
<tr>
<td>Boulevard treatment to be provided along Doornug Road.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ENVIRONMENT</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Manage open space assets to maintain and/or improve the delivery of environmental service in accordance with D’Moss management guidelines.</td>
<td></td>
</tr>
<tr>
<td>Prohibit development within the 100-year floodplain, slopes steeper than 1:3 and/or environmentally sensitive areas.</td>
<td></td>
</tr>
<tr>
<td>Improve the management of natural habitats (such as wetlands, grasslands, woodlands, rivers and dams) associated with the uMngeni and Mlazi river catchments to increase these habitats’ ability to supply services such as flood avoidance, water regulation and supply, erosion control, waste treatment and nutrient cycling and food production.</td>
<td></td>
</tr>
<tr>
<td>Investigate the feasibility of establishing a nature reserve and/or stewardship area in order to protect national grassland assets.</td>
<td></td>
</tr>
</tbody>
</table>
### INFRASTRUCTURE

- Extent of final environmental boundaries to be determined through an appropriate environmental assessment process.
- Establish appropriate buffer zones from development in terms of the environmental framework.
- No sand winning without approval from the local environmental authority.

#### INFRASTRUCTURE

- Sustainable approaches to infrastructure provision such as Sustainable Drainage Systems (SuDS), renewable energy technologies (e.g., solar panels) and rainwater harvesting (i.e., rainwater tanks) should be encourage for all new developments, and where feasible, the infrastructure of existing developments should be retrofitted.
- Water-borne sanitation to be provided via the construction of new bulk trunk sewer lines (Harrison, Cato Ridge East and Cato Ridge West Trunk Sewer) connecting Harrison to an upgraded regional Hammarsdale WWTW.
- Development west of the Old Georgedale Road will require the construction of a new sewer pump station at the developers cost and will be at the discretion of eThekwini Water and Sanitation.
- Development north of P1-3 may connect to the existing pump station at the developer's cost and is at the discretion of EWS.
- Electricity bulk services & reticulation to be provided Eskom.
- Extend sewer, water and electricity reticulation systems to service new development areas.
- Solid waste collection via Durban Solid Waste services to the nearest solid waste site.
- Control effluent discharge and stormwater runoff generated by further industrial development.
- Retain the ecological integrity of the open space system to provide a green infrastructure network that can assist with surface water management, flood risk attenuation and waste assimilation to reduce the need for hard infrastructure.
Figure 6-2: Cato Ridge Village Functional Area Plan – Land Use & Activity Framework
Figure 6-3: Cato Ridge Village Functional Area Plan – Residential Density Framework
Figure 6-4: Cato Ridge Village Functional Area Plan – Phasing Framework
Figure 6-5: Cato Ridge Village Functional Area Plan – Access & Circulation Framework
Figure 6-6: Cato Ridge Village Functional Area Plan – Public Transport Framework
Figure 6-7: Cato Ridge Village Functional Area Plan – Network Enhancement Framework
Figure 6-8: Cato Ridge Village Functional Area Plan – Landscape Framework
Figure 6-9: Cato Ridge Village Functional Area Plan – Environmental & Open Space Framework
Figure 6-10: Cato Ridge Village Functional Area Plan – Bulk Infrastructure
Figure 6-11: Cato Ridge Village Functional Area Plan – Draft Land Use Scheme
6.2 CATO RIDGE EAST FUNCTIONAL AREA PLAN

ROLE

- Medium impact light industrial/logistics development expansion zone.
- Intensive agriculture/small-holdings settlement protection zone.
- National biodiversity (grasslands) and regional environmental assets consolidation and protection.

<table>
<thead>
<tr>
<th>LAND USE/PHASE</th>
<th>TOTAL AREA (HA)</th>
<th>NET AREA (HA)</th>
<th>GLA (M²)</th>
<th>DWELLING UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cato Ridge East</td>
<td>442</td>
<td>221</td>
<td>416 637</td>
<td>76</td>
</tr>
<tr>
<td>Existing</td>
<td>326</td>
<td>163</td>
<td>8 913</td>
<td>76</td>
</tr>
<tr>
<td>Mixed Use: Low Impact</td>
<td>4</td>
<td>2</td>
<td>8 913</td>
<td>-</td>
</tr>
<tr>
<td>Agriculture</td>
<td>321</td>
<td>161</td>
<td>-</td>
<td>76</td>
</tr>
<tr>
<td>Phase 2</td>
<td>116</td>
<td>58</td>
<td>407 723</td>
<td>-</td>
</tr>
<tr>
<td>Light Industry: Medium Impact</td>
<td>116</td>
<td>58</td>
<td>407 723</td>
<td>-</td>
</tr>
</tbody>
</table>
**Table 6-4: Cato Ridge East FAP Guidelines**

<table>
<thead>
<tr>
<th>LAND USE &amp; ACTIVITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establish Cato Ridge East as a mixed low impact manufacturing industrial and logistics activity node where new industrial, logistic, warehouse &amp; distribution facilities are activities permitted.</td>
</tr>
<tr>
<td>No heavy (polluting) manufacturing activities to be permitted</td>
</tr>
<tr>
<td>Densities for residential development to be no greater than 5du/ha.</td>
</tr>
<tr>
<td>Encourage intensive agricultural development on remaining smallholdings.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ACCESS &amp; CIRCULATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establish a new intersection from the N3 to provide direct access into the FA.</td>
</tr>
<tr>
<td>The capacity of the N3 to be increased (widened).</td>
</tr>
<tr>
<td>Provide for a new local access road to be constructed parallel to the N3 in order to connect the new industrial area in Cato Ridge East to the P385 south of the existing Cato Ridge village and to a new interchange north of the proposed industrial area.</td>
</tr>
<tr>
<td>Stacking and parking areas for trucks to be accommodated on-site.</td>
</tr>
<tr>
<td>Local roads to be provided internal to development blocks to provide access to individual erven.</td>
</tr>
<tr>
<td>Access to individual properties off local access roads to be discouraged</td>
</tr>
<tr>
<td>Extend the current road based public transport system into new development areas.</td>
</tr>
<tr>
<td>Local access routes into agricultural/residential areas to be designed to discourage freight traffic.</td>
</tr>
<tr>
<td>Make provision of generous pedestrian walkways (&gt;2m) along all major routes connecting into high employment areas.</td>
</tr>
<tr>
<td>All roads to make provision for non-motorised transport infrastructure.</td>
</tr>
<tr>
<td>All guidelines for access and circulation must be confirmed by an updated Traffic and Transportation Model together with Roads Masterplan for LAP Area with approval by KZN Department of Transport.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ENVIRONMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manage open space assets to maintain and/or improve the delivery of environmental service in accordance with D’Moss management guidelines.</td>
</tr>
<tr>
<td>Prohibit development within the 100-year floodplain, slopes steeper than 1:3 and/or environmentally sensitive areas.</td>
</tr>
<tr>
<td>Improve the management of natural habitats (such as wetlands, grasslands, woodlands, rivers and dams) associated with the Mlazi river catchments to increase these habitats’ ability to supply services such as flood avoidance, water regulation and supply, erosion control, waste treatment and nutrient cycling and food production.</td>
</tr>
<tr>
<td>Investigate the feasibility of establishing a nature reserve and/or stewardship area in order to protection national grassland assets.</td>
</tr>
<tr>
<td>Extent of final environmental boundaries to be determined through an appropriate environmental assessment process.</td>
</tr>
<tr>
<td>Establish appropriate buffer zones from development in terms of the environmental framework.</td>
</tr>
<tr>
<td>No sand-winning without approval from the local environmental authority</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LANDSCAPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create identifiable industrial neighbourhoods within each development block tied together by consistently landscaped linkage roads and pedestrian sidewalks.</td>
</tr>
<tr>
<td>Establish a high quality built form, landscaping and public space quality for Cato Ridge East through the provision of landscaped streets, pedestrian sidewalks, and higher quality building frontages onto adjoining access roads and by responding to existing contours to avoid the creation of large-scale platforms for new buildings.</td>
</tr>
<tr>
<td>Promote the development of a “green” corridor along the N3 route to enhance the scenic attractiveness of this gateway to the metro area. This could be achieved through retaining existing open spaces and agricultural lands where appropriate, removing alien vegetation, providing appropriate landscaping for new developments and creating view “corridors”.</td>
</tr>
<tr>
<td>Edges and interfaces with limited access roads (e.g. N3/MR385) should be landscaped and/or architecturally treated to reduce visual impact and contribute to the experience of the road users. No service areas should face on to these roads unless adequately and appropriately screened.</td>
</tr>
<tr>
<td>Control the scale and placement of signage on buildings</td>
</tr>
<tr>
<td>Boulevard treatment along new access road from the new N3 interchange.</td>
</tr>
<tr>
<td>Establish a landmark gateway at the intersection of Eddie Hagan Drive, the P1-3 and the new direct access road off the N3.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INFRASTRUCTURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sustainable approaches to infrastructure provision such as Sustainable Drainage Systems (SuDS), renewable energy technologies (e.g. solar panels) and rainwater harvesting (i.e. rainwater tanks) should be encourage for all new developments, and where feasible, the infrastructure of existing developments should be retrofitted.</td>
</tr>
</tbody>
</table>
• Water-borne sanitation to be provided via the construction of new bulk trunk sewer lines (Harrison & Cato Ridge East Trunk Sewers) connecting Harrison to an upgraded regional Hammarsdale WWTW.
• Electricity bulk services & reticulation to be provided Eskom.
• Extend sewer, water and electricity reticulation systems to service new development areas.
• Solid waste collection via Durban Solid Waste services to the nearest solid waste site.
• Control effluent discharge and stormwater runoff generated by further industrial development.
• Retain the ecological integrity of the open space system to provide a green infrastructure network that can assist with surface water management, flood risk attenuation and waste assimilation to reduce the need for hard infrastructure.
Figure 6-12: Cato Ridge East Functional Area Plan – Land Use & Activity Framework
Figure 6-13: Cato Ridge East Functional Area Plan—Residential Density Framework
Figure 6-14: Cato Ridge East Functional Area Plan – Phasing Framework
Figure 6-15: Cato Ridge East Functional Area Plan– Access & Circulation Framework
Figure 6-16: Cato Ridge East Functional Area Plan– Public Transport Framework

CATO RIDGE EAST
FUNCTIONAL AREA PLAN

- PT ROUTE: METROPOLITAN
- PT ROUTE: LOCAL
- PT ROUTE: LOCAL (PROPOSED)
- TAXI RANK
- PT STOPS (MAJOR)
- RAIL
- RAIL STATION

PUBLIC TRANSPORT FRAMEWORK
Figure 6-17: Cato Ridge East Functional Area Plan– Network Enhancement Framework
Figure 6-18: Cato Ridge East Functional Area Plan – Landscape Framework
Figure 6-19: Cato Ridge East Functional Area Plan– Environmental & Open Space Framework
Figure 6-20: Cato Ridge East Functional Area Plan—Bulk Infrastructure
Figure 6-21: Cato Ridge East Functional Area Plan– Draft Land Use Scheme
6.3 HARRISON FUNCTIONAL AREA PLAN

ROLE

- Medium impact industrial development consolidation and revitalisation zone.
- Regional waste disposal zone.
- Consolidation and in-situ upgrading of low-density rural settlement areas.
- Regional environmental assets consolidation and protection.

Table 6-5: Harrison Development Yields

<table>
<thead>
<tr>
<th>LAND USE/PHASE</th>
<th>TOTAL AREA (HA)</th>
<th>NET AREA (HA)</th>
<th>GLA (M²)</th>
<th>DWELLING UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harrison</td>
<td>1 089</td>
<td>556</td>
<td>1 429 429</td>
<td>746</td>
</tr>
<tr>
<td>Existing</td>
<td>501</td>
<td>343</td>
<td>510 721</td>
<td>746</td>
</tr>
<tr>
<td>Rural Residential</td>
<td>255</td>
<td>250</td>
<td>-</td>
<td>746</td>
</tr>
<tr>
<td>Industry: Medium Impact</td>
<td>235</td>
<td>88</td>
<td>510 384</td>
<td>-</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>11</td>
<td>5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Phase 1</td>
<td>126</td>
<td>63</td>
<td>433 123</td>
<td>-</td>
</tr>
<tr>
<td>Mixed Use: Low Impact</td>
<td>4</td>
<td>2</td>
<td>5 003</td>
<td>-</td>
</tr>
<tr>
<td>Industry: Medium Impact</td>
<td>122</td>
<td>61</td>
<td>428 120</td>
<td>-</td>
</tr>
<tr>
<td>Phase 2</td>
<td>136</td>
<td>68</td>
<td>477 447</td>
<td>-</td>
</tr>
<tr>
<td>Industry: Medium Impact</td>
<td>136</td>
<td>68</td>
<td>477 447</td>
<td>-</td>
</tr>
<tr>
<td>Phase 3</td>
<td>326</td>
<td>81</td>
<td>8 138</td>
<td>-</td>
</tr>
<tr>
<td>Landfill</td>
<td>326</td>
<td>81</td>
<td>8 138</td>
<td>-</td>
</tr>
</tbody>
</table>
### Table 6-6: Harrison FAP Guidelines

#### LAND USE & ACTIVITY

- Consolidate and revitalise Harrison Flats as a metropolitan node for mixed medium impact manufacturing industrial node where new industrial, logistic, warehouse & distribution facilities are activities permitted.
- Encourage clustering within the FA i.e. food and beverages in the vicinity of the Abattoir, metal products around the Assmang and SAFAL steel complexes, chemicals and building materials along the P1-3 corridor and recycling activities around the proposal landfill site.
- No new heavy (polluting) manufacturing activities to be permitted.
- Establish a mixed-use urban neighbourhood activity node at the intersection of Eddie Hagan and the MR423 which serves the local industrial precinct.
- Provide for informal trading activities to be accommodated within the nodes.
- Support the development of low density (limited) tourism related activities at the edge of the Harrison Flats plateau.
- Upgrade and consolidate existing rural/traditional settlements in the FA.
- Cluster residential development near major access intersections and places with good road access in order to facilitate the provision of an efficient public transport system.
- Cluster residential development in order to retain sufficient communal land for agricultural development, to facilitate the efficient provision of basic services and to minimise the impact on sensitive environmental areas.
- Limit densities for rural housing to be no greater than 3du/ha.
- Identify and clearly demarcate communal grazing lands.

#### ACCESS & CIRCULATION

- Direct access into the precinct from the N3 is required to improve the transport efficiencies of the area and to minimise the impact of transport using access routes into neighbouring precincts.
- P1-3 to be upgraded to two lanes in both directions.
- The intersection of Eddie Hagan and the P1-3 to be signalised and Eddie Hagan and the two new local access roads proposed.
- Provide for a new local access road along the eastern edge of the industrial precinct (along former rail servitude) that would connect to Drakensberg and Brahman Roads thus providing a local access loop to Eddie Hagan.
- Stack and parking areas for trucks to be accommodated on-site.
- Local roads to be provided internal to development blocks to provide access to individual erven.
- Access to individual properties off local access roads to be discouraged.
- A traffic circle is to be provided at the intersection of Eddie Hagan and the MR423 (main access road into KwaXimba Central) and Drakensberg Street.
- Facilities for Public Transport to be accommodated within the activity Node at the intersection of Drakensberg Road and Eddie Hagan.
- Make provision of generous pedestrian walkways (>2m) along all major routes connecting into high employment areas.
- All roads to make provision for non-motorised transport infrastructure.
- All guidelines for access and circulation must be confirmed by an updated Traffic and Transportation Model together with Roads Masterplan for LAP Area with approval by KZN Department of Transport.

#### ENVIRONMENT

- Manage open space assets to maintain and/or improve the delivery of environmental service in accordance with D’Moss management guidelines.
- Prohibit development within the 100-year floodplain, slopes steeper than 1:3 and/or environmentally sensitive areas.
- Improve the management of natural habitats (such as wetlands, grasslands, woodlands, rivers and dams) associated with the uMngeni river catchments to increase these habitats’ ability to supply services such as flood avoidance, water regulation and supply, erosion control, waste treatment and nutrient cycling and food production.
- Extent of final environmental boundaries to be determined through an appropriate environmental assessment process.
- Establish appropriate buffer zones from development in terms of the environmental framework.
- No sand-winning without approval from the local environmental authority.
LANDSCAPE

- Create identifiable industrial neighbourhoods within each development block tied together by consistently landscaped linkage roads and pedestrian sidewalks.
- Establish a high quality built form, landscaping and public space quality for Harrison through the provision of landscaped streets, pedestrian sidewalks, and higher quality building frontages onto adjoining access roads and by responding to existing contours to avoid the creation of large-scale platforms for new buildings.
- Edges and interfaces with limited access roads (e.g. N3/MR385/P1-3) should be landscaped and/or architecturally treated to reduce visual impact and contribute to the experience of the road users. No service areas should face on to these roads unless adequately and appropriately screened.
- Control the scale and placement of signage on buildings.
- Boulevard treatment along Eddie Hagan Drive.
- Establish a landmark gateway at the intersection of Eddie Hagan Drive, the P1-3 and the new direct access road off the N3.

INFRASTRUCTURE

- Sustainable approaches to infrastructure provision such as Sustainable Drainage Systems (SuDS), renewable energy technologies (e.g. solar panels) and rainwater harvesting (i.e. rainwater tanks) should be encourage for all new developments, and where feasible, the infrastructure of existing developments should be retrofitted.
- Water-borne sanitation to be provided via the construction of a new bulk trunk sewer line (Harrison Trunk Sewer) connecting Harrison to an upgraded regional Hammarsdale WWTW.
- Additional water-borne sanitation may be provided to areas north of Drakensberg Road by the private Abattoir WWTW, provided there is adequate capacity at the treatment works, that the treatment works agrees to accept additional effluent and with approval from eThekweni Water and Sanitation.
- Electricity bulk services & reticulation to be provided Eskom.
- Extend sewer, water and electricity reticulation systems to service new development areas.
- Solid waste collection via Durban Solid Waste services to the nearest solid waste site.
- Control effluent discharge and stormwater runoff generated by industrial development.
- Retain the ecological integrity of the open space system to provide a green infrastructure network that can assist with surface water management, flood risk attenuation and waste assimilation to reduce the need for hard infrastructure.
Figure 6-22: Harrison Functional Area Plan– Land Use & Activity Framework
Figure 6-23: Harrison Functional Area Plan– Residential Density Framework
Figure 6-24: Harrison Functional Area Plan– Phasing Framework
Figure 6-25: Harrison Functional Area Plan – Access & Circulation Framework
Figure 6-26: Harrison Functional Area Plan– Public Transport Framework
Figure 6-27: Harrison Functional Area Plan– Network Enhancement Framework
Figure 6-28: Harrison Functional Area Plan– Landscape Framework
Figure 6-29: Harrison Functional Area Plan– Environmental & Open Space Framework
Figure 6-30: Harrison Functional Area Plan – Bulk Infrastructure
Figure 6-31: Harrison Functional Area Plan—Draft Land Use Scheme
6.4 HARRISON SOUTH FUNCTIONAL AREA PLAN

ROLE
- Light/medium impact industrial/logistics development expansion zone.
- Regional environmental assets consolidation and protection.

Table 6-7: Harrison South Development Yields

<table>
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<tr>
<th>LAND USE/PHASE</th>
<th>TOTAL AREA (HA)</th>
<th>NET AREA (HA)</th>
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<th>DWELLING UNIT</th>
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<tr>
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<td>Light Industry: Medium Impact</td>
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<td>Light Industry: Medium Impact</td>
<td>57</td>
<td>28</td>
<td>198 134</td>
<td>-</td>
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</table>
Table 6-8: Harrison South FAP Guidelines

| LAND USE & ACTIVITY | • Establish Harrison South as mixed low impact manufacturing industrial and logistics activity node where new industrial, logistic, warehouse & distribution facilities are activities permitted.  
• Encourage clustering within the FA i.e. chemicals and building materials along the P1-3 corridor, warehousing and distribution around the proposed new interchange and existing value logistics complex along the old main railway line.  
• No new heavy (polluting) manufacturing activities to be permitted. |
| ACCESS & CIRCULATION | • Direct access into the precinct from the N3 is required to improve the transport efficiencies of the area and to minimise the impact of transport using access routes into neighbouring precincts.  
• P1-3 to be upgraded to two lanes in both directions.  
• The intersection of Eddie Hagan and the P1-3 to be signalised and Eddie Hagan and the new local access road proposed that connects opposite SAFAL Steel.  
• The P556 (and overpass to the N3) to be upgraded to accommodate additional traffic.  
• Provide for new local access roads to connect the various development blocks within the FA and to connect to neighbouring FAs.  
• Extend the current road based public transport system into new development areas.  
• Stacking and parking areas for trucks to be accommodated on-site.  
• Local roads to be provided internal to development blocks to provide access to individual erven.  
• Access to individual properties off local access roads to be discouraged  
• Make provision of generous pedestrian walkways (>2m) along all major routes connecting into high employment areas.  
• All roads to make provision for non-motorised transport infrastructure.  
• All guidelines for access and circulation must be confirmed by an updated Traffic and Transportation Model together with Roads Masterplan for LAP Area with approval by KZN Department of Transport. |
| ENVIRONMENT | • Manage open space assets to maintain and/or improve the delivery of environmental service in accordance with D’Moss management guidelines.  
• Prohibit development within the 100-year floodplain, slopes steeper than 1:3 and/or environmentally sensitive areas.  
• Improve the management of natural habitats (such as wetlands, grasslands, woodlands, rivers and dams) associated with the uMgeni river catchments to increase these habitats’ ability to supply services such as flood avoidance, water regulation and supply, erosion control, waste treatment and nutrient cycling and food production.  
• Extent of final environmental boundaries to be determined through an appropriate environmental assessment process.  
• Establish appropriate buffer zones from development in terms of the environmental framework.  
• No sand winning without approval from the local environmental authority. |
| LANDSCAPE | • Create identifiable industrial neighbourhoods within each development block tied together by consistently landscaped linkage roads and pedestrian sidewalks.  
• Establish a high quality built form, landscaping and public space quality for Harrison South through the provision of landscaped streets, pedestrian sidewalks, and higher quality building frontages onto adjoining access roads and by responding to existing contours to avoid the creation of large-scale platforms for new buildings.  
• Boulevard treatment along new access road from the new N3 interchange to the intersection of Eddie Hagan Drive and the P1-3.  
• Promote the development of a “green” corridor along the N3 route to enhance the scenic attractiveness of this gateway to the metro area. This could be achieved through retaining existing open spaces and agricultural lands where appropriate, removing alien vegetation, providing appropriate landscaping for new developments and creating view “corridors”.  
• Edges and interfaces with limited access roads (e.g. N3/MR385/P1-3) should be landscaped and/or architecturally treated to reduce visual impact and contribute to the experience of the road users. No service areas should face on to these roads unless adequately and appropriately screened.  
• Control the scale and placement of signage on buildings |
| INFRASTRUCTURE | • Sustainable approaches to infrastructure provision such as Sustainable Drainage Systems (SuDS), renewable energy technologies (e.g. solar panels) and rainwater harvesting (i.e. rainwater tanks) should be encourage for all new developments, and where feasible, the infrastructure of existing developments should be retrofitted. |
• Water-borne sanitation to be provided via the construction of a new bulk trunk sewer line (Harrison Trunk Sewer) connecting Harrison to an upgraded regional Hammarsdale WWTW.
• Development east of the MR556 will require the construction of a new sewer pump station (at the developers private cost) and will be at the discretion of eThekwini Water and Sanitation,
• Electric bulk services & reticulation to be provided Eskom.
• Extend sewer, water and electricity reticulation systems to service new development areas.
• Control effluent discharge and stormwater runoff generated by industrial development.
• Solid waste collection via Durban Solid Waste services to the nearest solid waste site.
• Retain the ecological integrity of the open space system to provide a green infrastructure network that can assist with surface water management, flood risk attenuation and waste assimilation to reduce the need for hard infrastructure.
Figure 6-32: Harrison South Functional Area Plan– Land Use & Activity Framework
Figure 6-33: Harrison South Functional Area Plan – Phasing Framework
Figure 6-34: Harrison South Functional Area Plan– Access & Circulation Framework
HARRISON SOUTH
FUNCTIONAL AREA PLAN

- PT ROUTE: METROPOLITAN
- PT ROUTE: LOCAL
- PT ROUTE: LOCAL (PROPOSED)
- TAXI RANK
- PT STOPS (MAJOR)
- RAIL
- RAIL STATION

PUBLIC TRANSPORT FRAMEWORK

Figure 6.35: Harrison South Functional Area Plan – Public Transport Framework
Figure 6-36: Harrison South Functional Area Plan– Network Enhancement Framework
Figure 6-37: Harrison South Functional Area Plan – Landscape Framework
Figure 6-38: Harrison South Functional Area Plan – Environmental & Open Space Framework
Figure 6-39: Harrison South Functional Area Plan – Bulk Infrastructure
Figure 6-40: Harrison South Functional Area Plan – Draft Land Use Scheme
### 6.5 FREDVILLE FUNCTIONAL AREA PLAN

**ROLE**

- Medium density peri-urban and low density rural area in-situ upgrading and consolidation.
- Rural services and public transport node.
- Regional environmental assets consolidation and protection.

#### Table 6-9: Fredville Development Yields

<table>
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<tr>
<th>LAND USE/PHASE</th>
<th>TOTAL AREA (HA)</th>
<th>NET AREA (HA)</th>
<th>GLA (M²)</th>
<th>DWELLING UNIT</th>
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<td>ENVIRONMENT</td>
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<tr>
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| • Consolidate the local rural node of Fredville (Inchanga) at the intersection of the P1-3 and 65024 Road as a social services, commercial, transport and government cluster serving the broader Fredville community.  
• Establish a rural neighbourhood node on Layby Road in the vicinity of the Fredville Clinic to serve the local community of Fredville north.  
• Cluster pension pay-points, community halls, shops, post offices, temporary trading areas and other social services in and around identified activity nodes.  
• Provide for the development of a new library, police station and Community Health Centre within the node.  
• Consolidate mixed use developments along the P1-3 and D1000.  
• Promote home business, provided that there are no negative impacts on the neighbours and/or environmentally sensitive areas.  
• Promote higher density development (<40du/ha) in the Fredville (Inchanga) local rural node adjacent to public transport routes and facilities.  
• Provide for infill and consolidation in the Inchanga suburb.  
• Upgrade and consolidate existing peri-urban settlements to the south of the FA.  
• Upgrade and consolidate existing rural/traditional settlements to the north of the FA that border sensitive environmental areas.  
• Limit densities for rural housing to be no greater than 3du/ha and no greater than 30du/ha for peri-urban residential areas.  
• Create identifiable neighbourhoods within each development block tied together by consistently landscaped linkage roads and pedestrian sidewalks.  
• Encourage a more intensive built form within the Fredville (Inchanga) local rural activity node and Fredville rural neighbourhood node with defined public space/streets and a positive pedestrian environment.  
• Encourage a finer grain of residential development along the existing and potential road linkages with medium densities and buildings located to define the street.  
• Spatially define and landscape activity nodes.  
• Use vacant institution sites for high quality public buildings that provide structure and identity to the node.  
• Establish a gateway with landmark features at the intersection of the P1-3 and 65024 Road.  
• Maintain a rural/traditional settlement character in areas adjacent to the KwaXimba Stewardship area.  
• Sustainable approaches to infrastructure provision such as Sustainable Drainage Systems (SuDS), renewable energy technologies (e.g. solar panels) and rainwater harvesting (i.e. rainwater tanks) should be encourage for all new developments, and where feasible, the infrastructure of existing developments should be retrofitted.  
• Water-borne sanitation to be provided via the existing Fredville Treatment Works to existing medium density housing areas.  
| • P1-3 to be upgraded to two lanes in both directions.  
• Upgrade the D1000.  
• Provide traffic calming measures in the vicinity of the Fredville (Inchanga) node, especially in the vicinity of schools along the route.  
• Upgrade 65024 Street and Layby road to accommodate public transport and NMT facilities.  
• Establish a new local access road connection between Fredville (65024 Street) and Harrison (Drakensberg Street)  
• Provide for the development of a legible hierarchy of roads and streets with the upgrading of residential settlements in the area.  
• Make provision of generous pedestrian walkways (>2m) along all major routes connecting into high employment areas.  
• All roads to make provision for non-motorised transport infrastructure.  
• All guidelines for access and circulation must be confirmed by an updated Traffic and Transportation Model together with Roads Masterplan for LAP Area with approval by KZN Department of Transport.  
| • Manage open space assets to maintain and/or improve the delivery of environmental service in accordance with D’Moss management guidelines.  
• Prohibit development within the 100-year floodplain, slopes steeper than 1:3 and/or environmentally sensitive areas.  
• Improve the management of natural habitats (such as wetlands, grasslands, woodlands, rivers and dams) associated with the uMgeni river catchments to increase these habitats’ ability to supply services such as flood avoidance, water regulation and supply, erosion control, waste treatment and nutrient cycling and food production.  
• Extent of final environmental boundaries to be determined through an appropriate environmental assessment process.  
• Establish appropriate buffer zones from development in terms of the environmental framework.  
• No sand-winning without approval from the local environmental authority  
| • Create identifiable neighbourhoods within each development block tied together by consistently landscaped linkage roads and pedestrian sidewalks.  
• Encourage a more intensive built form within the Fredville (Inchanga) local rural activity node and Fredville rural neighbourhood node with defined public space/streets and a positive pedestrian environment.  
• Encourage a finer grain of residential development along the existing and potential road linkages with medium densities and buildings located to define the street.  
• Spatially define and landscape activity nodes.  
• Use vacant institution sites for high quality public buildings that provide structure and identity to the node.  
• Establish a gateway with landmark features at the intersection of the P1-3 and 65024 Road.  
• Maintain a rural/traditional settlement character in areas adjacent to the KwaXimba Stewardship area.  
• Sustainable approaches to infrastructure provision such as Sustainable Drainage Systems (SuDS), renewable energy technologies (e.g. solar panels) and rainwater harvesting (i.e. rainwater tanks) should be encourage for all new developments, and where feasible, the infrastructure of existing developments should be retrofitted.  
• Water-borne sanitation to be provided via the existing Fredville Treatment Works to existing medium density housing areas. |
• Development within 400m of the local rural node of Fredville (Inchanga) will require the construction of a new sewer pump station and will be at the discretion of eThekwini Water and Sanitation.
• On-site sanitation to be provided to areas deemed rural/traditional settlement in nature, outside the UDL and in areas that require lower-density development in order to protect the adjacent sensitive water catchments. Urine Diversion toilets to service Fredville.
• Extend sewer, water and electricity reticulation systems to service the upgrading of existing development areas.
• Storm-water management to occur on-site.
• Water services to rural/traditional settlement areas at appropriate rural services standards to be provided by EWS.
• Electricity services at appropriate peri-urban/rural services standards to be provided by Eskom.
• Solid waste collection via Durban Solid Waste services to the nearest solid waste site.
• Retain the ecological integrity of the open space system to provide a green infrastructure network that can assist with surface water management, flood risk attenuation and waste assimilation to reduce the need for hard infrastructure.
Figure 6-41: Fredville Functional Area Plan– Land Use & Activity Framework
Figure 6-42: Fredville Functional Area Plan– Residential Density Framework
Figure 6-43: Fredville Functional Area Plan– Phasing Framework
Figure 6-44: Fredville Functional Area Plan – Access & Circulation Framework
Figure 6-45: Fredville Functional Area Plan – Public Transport Framework
Figure 6-46: Fredville Functional Area Plan– Network Enhancement Framework
Figure 6-48: Fredville Functional Area Plan– Environmental & Open Space Framework
Figure 6-49: Fredville Functional Area Plan– Bulk Infrastructure
Figure 6-50: Fredville Functional Area Plan – Draft Land Use Scheme
6.6 KWAXIMBA CENTRAL FUNCTIONAL AREA PLAN

ROLE

- Low density rural settlement area in-situ upgrading and consolidation.
- Eco-Tourism, cultural and adventure sports destination.
- Regional environmental assets consolidation and protection.

Table 6-11: KwaXimba Central Development Yields

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<th>LAND USE/PHASE</th>
<th>TOTAL AREA (HA)</th>
<th>NET AREA (HA)</th>
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<td>14 109</td>
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Table 6-12: KwaXimba Central FAP Guidelines

**LAND USE & ACTIVITY**
- Consolidate the local rural node of KwaXimba at the intersection of the P423 and D1002 as a social service, commercial and government cluster serving the broader KwaXimba community.
- Establish a rural neighbourhood node on the D1002 in the vicinity of Ngidi and Luphaphe Schools to serve the local community of KwaXimba Central.
- Cluster pension pay-points, community halls, shops, post offices, temporary trading areas and other social services in and around identified activity nodes.
- Promote home business, provided that there are no negative impacts on the neighbours and/or environmentally sensitive areas.
- Upgrade and consolidate existing rural/traditional settlements in the FA
- Cluster residential development near major access intersections and places with good road access in order to facilitate the provision of an efficient public transport system.
- Cluster residential development in order to retain sufficient communal land for agricultural development, to facilitate the efficient provision of basic services and to minimise the impact on sensitive environmental areas.
- Limit densities for rural housing to be no greater than 5du/ha.
- Identify and clearly demarcate communal grazing lands.
- Promote the establishment of eco-tourism and adventure sports facilities and activities in a sustainable manner.

**ACCESS & CIRCULATION**
- The P423 and D1000 to be upgraded to provide for adequate regional public transport facilities.
- Upgrade local access routes and ensure that provision is made for public transport facilities to service local distribution services.
- Provide traffic calming measures in the vicinity of schools along all routes.
- Provide for the development of a legible hierarchy of roads and streets with the upgrading of residential settlements in the area.
- All roads to make provision for non-motorised transport infrastructure.
- All guidelines for access and circulation must be confirmed by an updated Traffic and Transportation Model together with Roads Masterplan for LAP Area with approval by KZN Department of Transport.

**ENVIRONMENT**
- Manage open space assets to maintain and/or improve the delivery of environmental service in accordance with D’Moss management guidelines.
- Prohibit development within the 100-year floodplain, slopes steeper than 1:3 and/or environmentally sensitive areas.
- Improve the management of natural habitats (such as wetlands, grasslands, woodlands, rivers and dams) associated with the uMgeni river catchments to increase these habitats’ ability to supply services such as flood avoidance, water regulation and supply, erosion control, waste treatment and nutrient cycling and food production.
- Support the establishment of the KwaXimba Stewardship area.
- Extent of final environmental boundaries to be determined through an appropriate environmental assessment process.
- Establish appropriate buffer zones from development in terms of the environmental framework.
- No sand winning without approval from the local environmental authority.

**LANDSCAPE**
- Ensure that building forms are appropriately sited and designed to avoid the creation of obtrusive developments within the landscape.
- Encourage the clustering of rural settlement and buildings to avoid sprawl and create places with form and identity in the landscape.
- Encourage the clustering of public buildings within activity nodes.
- Encourage a more intensive built form with the KwaXimba local rural activity node with defined public space/streets and a positive pedestrian environment.
- Spatially define and landscape activity nodes.
- Maintain a rural/traditional settlement character.

**INFRASTRUCTURE**
- Sustainable approaches to infrastructure provision such as Sustainable Drainage Systems (SuDS), renewable energy technologies (e.g. solar panels) and rainwater harvesting (i.e. rainwater tanks) should be encourage for all new developments, and where feasible, the infrastructure of existing developments should be retrofitted.
- On-site sanitation to be provided to areas deemed rural/traditional settlement in nature, outside the UDL and in areas that require lower-density development in order to protect the adjacent sensitive water catchments.
- Storm-water management to occur on-site.
- Water services at appropriate rural services standards to be provided by EWS.
- Electricity services at appropriate rural services standards to be provided by Eskom.
- Solid waste collection services as per eThekwini’s rural services standards.
• Retain the ecological integrity of the open space system to provide a green infrastructure network that can assist with surface water management, flood risk attenuation and waste assimilation to reduce the need for hard infrastructure.
Figure 6-51: KwaXimba Central Functional Area Plan– Land Use & Activity Framework
Figure 6-52: KwaXimba Central Functional Area Plan – Residential Density Framework
Figure 6-53: KwaXimba Central Functional Area Plan– Access & Circulation Framework
Figure 6-54: KwaXimba Central Functional Area Plan– Public Transport Framework
Figure 6-55: KwaXimba Central Functional Area Plan– Landscape Framework
Figure 6-56: KwaXimba Central Functional Area Plan– Environmental & Open Space Framework
Figure 6-57: KwaXimba Central Functional Area Plan– Bulk Infrastructure
6.7 KWAXIMBA EAST FUNCTIONAL AREA PLAN

ROLE

- Regional environmental assets consolidation and protection.
- Stewardship conservation reserve.
- Eco-Tourism and adventure sports destination.
- Low density rural settlement area in-situ upgrading and consolidation.

Table 6-13: KwaXimba East Development Yields

<table>
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<tr>
<th>LAND USE/PHASE</th>
<th>TOTAL AREA (HA)</th>
<th>NET AREA (HA)</th>
<th>GLA (M²)</th>
<th>DWELLING UNIT</th>
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<td>305</td>
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<td>606</td>
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<td>Rural Residential</td>
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<td>303</td>
<td>-</td>
<td>606</td>
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<tr>
<td>Institution</td>
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<td>2 481</td>
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</table>
Table 6-14: KwaXimba East FAP Guidelines

| LAND USE & ACTIVITY | • Establish a rural neighbourhood node on the D1004 in the vicinity of the Isithumba Centre and Ndunakazi School to serve the local community of KwaXimba East  
• Cluster pension pay-points, community halls, shops, post offices, temporary trading areas and other social services in and around identified activity nodes.  
• Promote home business, provided that there are no negative impacts on the neighbours and/or environmentally sensitive areas.  
• Upgrade and consolidate existing rural/traditional settlements in the FA  
• Cluster residential development near major access intersections and places with good road access in order to facilitate the provision of an efficient public transport system.  
• Cluster residential development in order to retain sufficient communal land for agricultural development, to facilitate the efficient provision of basic services and to minimise the impact on sensitive environmental areas.  
• Limit densities for rural housing to be no greater than 2du/ha.  
• Identify and clearly demarcate communal grazing lands.  
• Promote the establishment of eco-tourism and adventure sports facilities and activities within the KwaXimba Stewardship area, in a sustainable manner. |
| ACCESS & CIRCULATION | • The D1004 to be upgraded to provide for adequate regional public transport facilities.  
• Provide traffic calming measures in the vicinity of schools along all routes.  
• Provide for the development of a legible hierarchy of roads and streets with the upgrading of residential settlements in the area.  
• All roads to make provision for non-motorised transport infrastructure.  
• All guidelines for access and circulation must be confirmed by an updated Traffic and Transportation Model together with Roads Masterplan for LAP Area with approval by KZN Department of Transport. |
| ENVIRONMENT | • Manage open space assets to maintain and/or improve the delivery of environmental service in accordance with D’Moss management guidelines.  
• Prohibit development within the 100-year floodplain, slopes steeper than 1:3 and/or environmentally sensitive areas.  
• Improve the management of natural habitats (such as wetlands, grasslands, woodlands, rivers and dams) associated with the uMgeni river catchments to increase these habitats’ ability to supply services such as flood avoidance, water regulation and supply, erosion control, waste treatment and nutrient cycling and food production.  
• Support the establishment of the KwaXimba Stewardship area  
• Extent of final environmental boundaries to be determined through an appropriate environmental assessment process.  
• Establish appropriate buffer zones from development in terms of the environmental framework.  
• No sand winning without approval from the local environmental authority. |
| LANDSCAPE | • Retain existing panoramic views from elevated lands over the surrounding river valleys.  
• Ensure that building forms are appropriately sited and designed to avoid the creation of obtrusive developments within the landscape.  
• Encourage the clustering of rural settlement and buildings to avoid sprawl and create places with form and identity in the landscape.  
• Spatially define and landscape activity nodes.  
• Maintain a rural/traditional settlement character.  
• Eco-Tourism facilities to “blend-in” to the landscape. |
| INFRASTRUCTURE | • Sustainable approaches to infrastructure provision such as Sustainable Drainage Systems (SuDS), renewable energy technologies (e.g. solar panels) and rainwater harvesting (i.e. rainwater tanks) should be encourage for all new developments, and where feasible, the infrastructure of existing developments should be retrofitted.  
• On-site sanitation to be provided to areas deemed rural/traditional settlement in nature, outside the UDL and in areas that require lower-density development in order to protect the adjacent sensitive water catchments.  
• Storm-water management to occur on-site.  
• Water services at appropriate rural services standards to be provided by EWS.  
• Electricity services at appropriate rural services standards to be provided by Eskom.  
• Solid waste collection services as per eThekwini’s rural services standards.  
• Retain the ecological integrity of the open space system to provide a green infrastructure network that can assist with surface water management, flood risk attenuation and waste assimilation to reduce the need for hard infrastructure. |
Figure 6-58: KwaXimba East Functional Area Plan – Land Use & Activity Framework
Figure 6-59: KwaXimba East Functional Area Plan – Residential Density Framework
Figure 6-60: KwaXimba East Functional Area Plan – Access & Circulation Framework
Figure 6-61: KwaXimba East Functional Area Plan – Public Transport Framework
Figure 6.62: KwaXimba East Functional Area Plan – Landscape Framework
Figure 6-63: KwaXimba East Functional Area Plan – Environmental & Open Space Framework
Figure 6-64: KwaXimba East Functional Area Plan – Bulk Infrastructure
6.8 KWAXIMBA WEST FUNCTIONAL AREA PLAN

ROLE

- Regional environmental assets consolidation and protection.
- Low density rural settlement area in-situ upgrading and consolidation.

<table>
<thead>
<tr>
<th>LAND USE/PHASE</th>
<th>TOTAL AREA (HA)</th>
<th>NET AREA (HA)</th>
<th>GLA (M²)</th>
<th>DWELLING UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>KwaXimba West</td>
<td>796</td>
<td>795</td>
<td>4,939</td>
<td>2,655</td>
</tr>
<tr>
<td>Existing</td>
<td>755</td>
<td>754</td>
<td>4,939</td>
<td>2,248</td>
</tr>
<tr>
<td>Rural Residential</td>
<td>749</td>
<td>749</td>
<td>-</td>
<td>2,248</td>
</tr>
<tr>
<td>Institution</td>
<td>7</td>
<td>5</td>
<td>4,939</td>
<td>-</td>
</tr>
<tr>
<td>Phase 3</td>
<td>41</td>
<td>41</td>
<td>-</td>
<td>407</td>
</tr>
<tr>
<td>Residential: Low Impact</td>
<td>41</td>
<td>41</td>
<td>-</td>
<td>407</td>
</tr>
</tbody>
</table>
### Table 6-16: KwaXimba West FAP Guidelines

<table>
<thead>
<tr>
<th>LAND USE &amp; ACTIVITY</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establish a rural neighbourhood node at the intersection of D1021 and D1022 in the vicinity of the Nonqanda Primary School and at the intersection of the D1022 and 94044 Road to serve the local communities of KwaXimba West.</td>
<td></td>
</tr>
<tr>
<td>Cluster pension pay-points, community halls, shops, post offices, temporary trading areas and other social services in and around identified activity nodes.</td>
<td></td>
</tr>
<tr>
<td>Promote home business, provided that there are no negative impacts on the neighbours and/or environmentally sensitive areas.</td>
<td></td>
</tr>
<tr>
<td>Upgrade and consolidate existing rural/traditional settlements in the FA</td>
<td></td>
</tr>
<tr>
<td>Cluster residential development near major access intersections and places with good road access in order to facilitate the provision of an efficient public transport system.</td>
<td></td>
</tr>
<tr>
<td>Cluster residential development in order to retain sufficient communal land for agricultural development, to facilitate the efficient provision of basic services and to minimise the impact on sensitive environmental areas.</td>
<td></td>
</tr>
<tr>
<td>Limit densities for rural housing to be no greater than 3du/ha.</td>
<td></td>
</tr>
<tr>
<td>Identify and clearly demarcate communal grazing lands.</td>
<td></td>
</tr>
<tr>
<td>Promote the establishment of eco-tourism and adventure sports facilities and activities in a sustainable manner.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ACCESS &amp; CIRCULATION</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Track 93223 and D1022 to be upgraded to provide for adequate regional public transport facilities.</td>
<td></td>
</tr>
<tr>
<td>Provide for a new local access route to connect district road 94044 to Eddie Hagan Drive.</td>
<td></td>
</tr>
<tr>
<td>Upgrade local access routes and ensure that provision is made for public transport facilities to service local distribution services.</td>
<td></td>
</tr>
<tr>
<td>Provide traffic calming measures in the vicinity of schools along all routes.</td>
<td></td>
</tr>
<tr>
<td>Provide for the development of a legible hierarchy of roads and streets with the upgrading of residential settlements in the area.</td>
<td></td>
</tr>
<tr>
<td>All roads to make provision for non-motorised transport infrastructure.</td>
<td></td>
</tr>
<tr>
<td>All guidelines for access and circulation must be confirmed by an updated Traffic and Transportation Model together with Roads Masterplan for LAP Area with approval by KZN Department of Transport.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ENVIRONMENT</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manage open space assets to maintain and/or improve the delivery of environmental service in accordance with D’Moss management guidelines.</td>
<td></td>
</tr>
<tr>
<td>Prohibit development within the 100-year floodplain, slopes steeper than 1:3 and/or environmentally sensitive areas.</td>
<td></td>
</tr>
<tr>
<td>Improve the management of natural habitats (such as wetlands, grasslands, woodlands, rivers and dams) associated with the uMgeni river catchments to increase these habitats’ ability to supply services such as flood avoidance, water regulation and supply, erosion control, waste treatment and nutrient cycling and food production.</td>
<td></td>
</tr>
<tr>
<td>Extent of final environmental boundaries to be determined through an appropriate environmental assessment process.</td>
<td></td>
</tr>
<tr>
<td>Establish appropriate buffer zones from development in terms of the environmental framework.</td>
<td></td>
</tr>
<tr>
<td>No sand winning without approval from the local environmental authority.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LANDSCAPE</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retain existing panoramic views from elevated lands over the surrounding river valleys.</td>
<td></td>
</tr>
<tr>
<td>Ensure that building forms are appropriately sited and designed to avoid the creation of obtrusive developments within the landscape.</td>
<td></td>
</tr>
<tr>
<td>Encourage the clustering of rural settlement and buildings to avoid sprawl and create places with form and identity in the landscape.</td>
<td></td>
</tr>
<tr>
<td>Spatially define and landscape activity nodes.</td>
<td></td>
</tr>
<tr>
<td>Maintain a rural/traditional settlement character.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INFRASTRUCTURE</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sustainable approaches to infrastructure provision such as Sustainable Drainage Systems (SuDS), renewable energy technologies (e.g. solar panels) and rainwater harvesting (i.e. rainwater tanks) should be encourage for all new developments, and where feasible, the infrastructure of existing developments should be retrofitted.</td>
<td></td>
</tr>
<tr>
<td>On-site sanitation to be provided to areas deemed rural/traditional settlement in nature, outside the UDL and in areas that require lower-density development in order to protect the adjacent sensitive water catchments.</td>
<td></td>
</tr>
<tr>
<td>Storm-water management to occur on-site.</td>
<td></td>
</tr>
<tr>
<td>Water services at appropriate rural services standards to be provided by EWS.</td>
<td></td>
</tr>
<tr>
<td>Electricity services at appropriate rural services standards to be provided by Eskom.</td>
<td></td>
</tr>
<tr>
<td>Solid waste collection services as per eThekwini’s rural services standards.</td>
<td></td>
</tr>
<tr>
<td>Retain the ecological integrity of the open space system to provide a green infrastructure network that can assist with surface water management, flood risk attenuation and waste assimilation to reduce the need for hard infrastructure.</td>
<td></td>
</tr>
</tbody>
</table>
Figure 6-65: KwaXimba West Functional Area Plan– Land Use & Activity Framework
Figure 6-66: KwaXimba West Functional Area Plan– Residential Density Framework
Figure 6.67: KwaXimba West Functional Area Plan– Phasing Framework
Figure 6-68: KwaXimba West Functional Area Plan – Access & Circulation Framework
Figure 6-69: KwaXimba West Functional Area Plan – Public Transport Framework
Figure 6-70: KwaXimba West Functional Area Plan – Landscape Framework
Figure 6-71: KwaXimba West Functional Area Plan – Environmental & Open Space Framework
Figure 6-72: KwaXimba West Functional Area Plan – Bulk Infrastructure
Figure 6-73: KwaXimba West Functional Area Plan – Draft Land Use Scheme
### 6.9 SHANGASE FUNCTIONAL AREA PLAN

**ROLE**

- Low density rural settlement area in-situ upgrading and consolidation.
- Regional environmental assets consolidation and protection.

<table>
<thead>
<tr>
<th>LAND USE/PHASE</th>
<th>TOTAL AREA (HA)</th>
<th>NET AREA (HA)</th>
<th>GLA (M²)</th>
<th>DWELLING UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shangase</td>
<td>738</td>
<td>737</td>
<td>4 067</td>
<td>1 072</td>
</tr>
<tr>
<td>Existing</td>
<td>738</td>
<td>737</td>
<td>4 067</td>
<td>1 072</td>
</tr>
<tr>
<td>Rural Residential</td>
<td>733</td>
<td>733</td>
<td>-</td>
<td>1 072</td>
</tr>
<tr>
<td>Institution</td>
<td>5</td>
<td>4</td>
<td>4 067</td>
<td>-</td>
</tr>
</tbody>
</table>
Table 6-18: Shangase FAP Guidelines

| LAND USE & ACTIVITY | • Establish a rural neighbourhood node in the vicinity of the Nogunjwa High School to serve the local community of Shangase.  
• Cluster pension pay-points, community halls, shops, post offices, temporary trading areas and other social services in and around identified activity nodes.  
• Promote home business, provided that there are no negative impacts on the neighbours and/or environmentally sensitive areas.  
• Upgrade and consolidate existing rural/traditional settlements in the FA  
• Cluster residential development near major access intersections and places with good road access in order to facilitate the provision of an efficient public transport system.  
• Cluster residential development in order to retain sufficient communal land for agricultural development, to facilitate the efficient provision of basic services and to minimise the impact on sensitive environmental areas.  
• Limit densities for rural housing to be no greater than 2du/ha.  
• Identify and clearly demarcate communal grazing lands.  
• Promote the establishment of eco-tourism and adventure sports facilities and activities in a sustainable manner. |
| ACCESS & CIRCULATION | • The 83201/2 Tracks to be upgraded to provide local access into Shangase and for adequate local distribution public transport facilities.  
• Provide for the development of a legible hierarchy of roads and streets with the upgrading of residential settlements in the area.  
• All roads to make provision for non-motorised transport infrastructure.  
• All guidelines for access and circulation must be confirmed by an updated Traffic and Transportation Model together with Roads Masterplan for LAP Area with approval by KZN Department of Transport. |
| ENVIRONMENT | • Manage open space assets to maintain and/or improve the delivery of environmental service in accordance with D’Moss management guidelines.  
• Prohibit development within the 100-year floodplain, slopes steeper than 1:3 and/or environmentally sensitive areas.  
• Improve the management of natural habitats (such as wetlands, grasslands, woodlands, rivers and dams) associated with the uMgeni river catchments to increase these habitats’ ability to supply services such as flood avoidance, water regulation and supply, erosion control, waste treatment and nutrient cycling and food production.  
• Support the establishment of the KwaXimba Stewardship area  
• Extent of final environmental boundaries to be determined through an appropriate environmental assessment process.  
• Establish appropriate buffer zones from development in terms of the environmental framework.  
• No sand winning without approval from the local environmental authority. |
| LANDSCAPE | • Retain existing panoramic views from elevated lands over the surrounding river valleys.  
• Ensure that building forms are appropriately sited and designed to avoid the creation of obtrusive developments within the landscape.  
• Encourage the clustering of rural settlement and buildings to avoid sprawl and create places with form and identity in the landscape.  
• Spatially define and landscape activity nodes.  
• Maintain a rural/traditional settlement character |
| INFRASTRUCTURE | • Sustainable approaches to infrastructure provision such as Sustainable Drainage Systems (SuDS), renewable energy technologies (e.g. solar panels) and rainwater harvesting (i.e. rainwater tanks) should be encourage for all new developments, and where feasible, the infrastructure of existing developments should be retrofitted.  
• On-site sanitation to be provided to areas deemed rural/traditional settlement in nature, outside the UDL and in areas that require lower-density development in order to protect the adjacent sensitive water catchments.  
• Storm-water management to occur on-site.  
• Water services at appropriate rural services standards to be provided by EWS.  
• Electricity services at appropriate rural services standards to be provided by Eskom.  
• Solid waste collection services as per eThekwini’s rural services standards.  
• Retain the ecological integrity of the open space system to provide a green infrastructure network that can assist with surface water management, flood risk attenuation and waste assimilation to reduce the need for hard infrastructure. |
Figure 6-74: Shangase Functional Area Plan - Land Use & Activity Framework
Figure 6-75: Shangase Functional Area Plan – Residential Density Framework
Figure 6-76: Shangase Functional Area Plan – Access & Circulation Framework
Figure 6.77: Shangase Functional Area Plan – Public Transport Framework
Figure 6-78: Shangase Functional Area Plan – Landscape Framework
Figure 6-79: Shangase Functional Area Plan – Environmental & Open Space Framework
Figure 6-80: Shangase Functional Area Plan – Bulk Infrastructure – Bulk Infrastructure

SHANGASE FUNCTIONAL AREA PLAN

SOLID WASTE
- PROPOSED LANDFILL

ELECTRICITY
- ELECTRICAL TRANSMISSION LINES

MPP
- OIL PIPELINE

BULK WATER
- WATER BULK TRUNK
- RESERVOIRS

BULK WASTEWATER
- SEWERAGE TRUNK
- PROPOSED SEWERAGE TRUNKS
- W WTW
- PUMP STATIONS

PROPOSED TREATMENT SOLUTION
- WBS (FREDVILLE W WTW)
- WBS (PUMP TO FREDVILLE W WTW)
- WBS (HAMMARSDALE W WTW)
- WBS (PUMP TO HAMMARSDALE W WTW)
- WBS (PRIVATE ABATTOIR W WTW)
- ON-SITE SANITATION
- N/A

BULK INFRASTRUCTURE FRAMEWORK
6.10 ESIKHELEKELENI FUNCTIONAL AREA PLAN

ROLE

- Low density rural settlement area in-situ upgrading and consolidation.
- Regional environmental assets consolidation and protection.

Table 6–19: Esikhelekehleni Development Yields

<table>
<thead>
<tr>
<th>LAND USE/PHASE</th>
<th>TOTAL AREA (HA)</th>
<th>NET AREA (HA)</th>
<th>GLA (M²)</th>
<th>DWELLING UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Esikhelekehleni</td>
<td>303</td>
<td>303</td>
<td>-</td>
<td>1 511</td>
</tr>
<tr>
<td>Existing</td>
<td>303</td>
<td>303</td>
<td>-</td>
<td>1 511</td>
</tr>
<tr>
<td>Rural Residential</td>
<td>303</td>
<td>303</td>
<td>-</td>
<td>1 511</td>
</tr>
</tbody>
</table>
### Table 6-20: Esikhelekehleni FAP Guidelines

| LAND USE & ACTIVITY | • Establish a rural neighbourhood node on the D1004 in the vicinity of the Esikhelekehleni Hall & Skhelekehleni Clinic to serve the local community.  
• Cluster pension pay-points, community halls, shops, post offices, temporary trading areas and other social services in and around identified activity nodes.  
• Promote home business, provided that there are no negative impacts on the neighbours and/or environmentally sensitive areas.  
• Upgrade and consolidate existing rural/traditional settlements in the FA  
• Cluster residential development near major access intersections and places with good road access in order to facilitate the provision of an efficient public transport system.  
• Cluster residential development in order to retain sufficient communal land for agricultural development, to facilitate the efficient provision of basic services and to minimise the impact on sensitive environmental areas.  
• Limit densities for rural housing to be no greater than 5du/ha.  
• Identify and clearly demarcate communal grazing lands.  
• Promote the establishment of eco-tourism and adventure sports facilities and activities in a sustainable manner. |
| ACCESS & CIRCULATION | • The D1004 to be upgraded to provide for adequate regional public transport facilities.  
• Provide traffic calming measures in the vicinity of the proposed activity node and schools along all routes.  
• Provide for the development of a legible hierarchy of roads and streets with the upgrading of residential settlements in the area.  
• All roads to make provision for non-motorised transport infrastructure.  
• All guidelines for access and circulation must be confirmed by an updated Traffic and Transportation Model together with Roads Masterplan for LAP Area with approval by KZN Department of Transport. |
| ENVIRONMENT | • Manage open space assets to maintain and/or improve the delivery of environmental service in accordance with D’Moss management guidelines.  
• Prohibit development within the 100-year floodplain, slopes steeper than 1:3 and/or environmentally sensitive areas.  
• Improve the management of natural habitats (such as wetlands, grasslands, woodlands, rivers and dams) associated with the uMngeni river catchments to increase these habitats’ ability to supply services such as flood avoidance, water regulation and supply, erosion control, waste treatment and nutrient cycling and food production.  
• Support the establishment of the KwaXimba Stewardship area  
• Extent of final environmental boundaries to be determined through an appropriate environmental assessment process.  
• Establish appropriate buffer zones from development in terms of the environmental framework.  
• No sand winning without approval from the local environmental authority. |
| LANDSCAPE | • Retain existing panoramic views from elevated lands over the surrounding river valleys.  
• Ensure that building forms are appropriately sited and designed to avoid the creation of obtrusive developments within the landscape.  
• Encourage the clustering of rural settlement and buildings to avoid sprawl and create places with form and identity in the landscape.  
• Spatially define and landscape activity nodes.  
• Maintain a rural/traditional settlement character. |
| INFRASTRUCTURE | • Sustainable approaches to infrastructure provision such as Sustainable Drainage Systems (SuDS), renewable energy technologies (e.g. solar panels) and rainwater harvesting (i.e. rainwater tanks) should be encourage for all new developments, and where feasible, the infrastructure of existing developments should be retrofitted.  
• On-site sanitation to be provided to areas deemed rural/traditional settlement in nature, outside of the UDL and in areas that require lower-density development in order to protect the adjacent sensitive water catchments.  
• Storm-water management to occur on-site.  
• Water services at appropriate rural services standards to be provided by EWS.  
• Electricity services at appropriate rural services standards to be provided by Eskom.  
• Solid waste collection services as per eThekwini’s rural services standards.  
• Retain the ecological integrity of the open space system to provide a green infrastructure network that can assist with surface water management, flood risk attenuation and waste assimilation to reduce the need for hard infrastructure. |
Figure 6-81: Esikhelekehleni Functional Area Plan – Land Use & Activity Framework
Figure 6-82: Esikhelekehleni Functional Area Plan – Residential Density Framework
Figure 6-83: Esikhelekehleni Functional Area Plan – Access & Circulation Framework
Figure 6-84: Esikhelekehleni Functional Area Plan – Public Transport Framework
Figure 6-85: Esikhelekehleni Functional Area Plan – Network Enhancement Framework
Figure 6-86: Esikhelekehleni Functional Area Plan – Landscape Framework

ESIKHELEKEHLENI
FUNCTIONAL AREA PLAN

GATEWAY ZONES

LANDSCAPED MOVEMENT CORRIDOR

ESTABLISH A HIGH QUALITY TOWN CENTRE ENVIRONMENT

ESTABLISH A HIGH QUALITY MIXED USE ENVIRONMENT

REINFORCE AND/OR ESTABLISH A HIGH QUALITY MIXED USE ENVIRONMENT

ESTABLISH HIGH QUALITY INDUSTRIAL DISTRICTS

REHABILITATE AND ENHANCE INDUSTRIAL DISTRICTS

ESTABLISH SUBURBAN SETTLEMENT CHARACTER

REINFORCE SUBURBAN SETTLEMENT CHARACTER

PROTECT AND ENHANCE RURAL/TRADITIONAL SETTLEMENT CHARACTER

PROTECT AND ENHANCE AGRICULTURAL CHARACTER

ESTABLISH LANDFILL REHABILITATION ENVIRONMENT

PROTECT AND ENHANCE THE SCENIC QUALITY AND ENVIRONMENTAL FUNCTIONALITY OF THE OPEN SPACE SYSTEM

LANDSCAPE FRAMEWORK
Figure 6-87: Esikhelekehleni Functional Area Plan – Environmental & Open Space Framework
Figure 6-88: Esikhelekehleni Functional Area Plan – Bulk Infrastructure
7 LAND USE MANAGEMENT PLAN (DRAFT SCHEME)

7.1 PACKAGE OF PLANS

“The eThekwini Municipality has developed a comprehensive land use management system for the entire Municipal area to give effect to the requirements of Section 26 of the Municipal Systems Act (2000). A key aspect of this system is the preparation of a “Planning and Development Management Toolbox” which includes an integrated Package of Plans.

This Package of Plans (Figure 7-1) is a cyclic, integrated and iterative process and shows the move from Municipal wide strategic level plans to detailed local level plans and land-use schemes.

It is important therefore to consider the entire Package of Plans as part of the Integrated Development Plan and Spatial Development Framework and representing the city’s spatial response to its development challenges as, together, this communicates the City’s strategic spatial planning intention through to the detailed land use guidelines as required in terms of the Municipal Systems Act and Spatial Planning and Land Use Management Act (SPLUMA)” (eThekwini Municipality, 2016b:110).

7.2 CURRENT LAND USE MANAGEMENT SYSTEMS

There are a number of land use management systems and procedures with different levels of controls, processes and authorities applicable to the study area.

These include:

- **The Outer West Scheme** (2014c) provides the current statutory framework for land use management in the Cato Ridge area. The OWS incorporates the five previous schemes in the area, including Bothas Hill, Cato Ridge, Harrison and Inchanga (Figure 7-2).

- **R293 townships** with land use controls in terms of the KwaZulu-Natal Land Affairs Act No. 11 of 1992, including Fredville have now been incorporated into the Primary Scheme for the area i.e. the Outer West Scheme (eThekwini Municipality, 2017).

- **LFTEA townships** established under the Less Formal Township Establishment Act No. 113 of 1991 with land use controls applied in terms of their respective conditions of establishment. These have been consolidated into the Outer West Scheme.

- Lands not covered by a formal zoning scheme are considered agricultural land in terms of the Subdivision of Agricultural Land Act No. 70 of 1970 and the subdivision of land required for the development of these lands is subject to the Act.

- **Ingonyama Trust lands** administered under the KwaZulu Ingonyama Trust Act No. 3 of 1994 and KwaZulu-Natal Ingonyama Trust Amendment Act, 1997 (Act No. 9 of 1997). These areas are exempt from the Subdivision of Agricultural Land Act No. 70 of 1970.
The preparation of this Land Use Management Plan is intended to assist the Municipality towards this goal.

### 7.3 DRAFT SCHEME FOR CATO RIDGE

The terms of reference for this project requires that a Land Use Management Plan (Draft Scheme) be prepared for the Cato Ridge, Harrison, Harrison South and Cato Ridge East Functional Areas which spatially correlate with the extent of the previous Cato Ridge Study prepared in 2012.

The intention of the Draft Land Use Management plan is to provide eThekwini Municipality with a Draft Scheme in order to review its current land use development controls that are in place for the Greater Cato Ridge area and to make recommendations for any amendments to these controls in order to guide both public and private sector development initiatives.

The land use framework described in Section 4.2 presents a suite of broad land use designations which provide the basis from which to determine which land use management zones would be most applicable to the study area.

In the preparation of this draft scheme, the existing Outer West Scheme zones, clauses and development controls have been used where possible. In some instances the spatial allocation of these zones have been amended to reflect the strategic intent of the LAP and FAPs, or specific development controls and/or permitted land use activities have been changed.

The Draft Scheme recommendations are intended as a guide to the LUMS Department until such time as a formal scheme review is put in place and are therefore subject to change at the detailed translation stage.

Table 7-1 describes the scheme intent and development parameters of each of the land use zones whilst Figure 7-3 illustrates the proposed spatial distribution of the applicable zones. Table 7-2 notes the permissible land uses within each zone.

Key recommendations, associated with the Draft Scheme, are noted in Section 7.4.
## Table 7-1: Recommended Land Use Zones for Cato Ridge LAP

<table>
<thead>
<tr>
<th>LAND USE ZONE</th>
<th>SCHEME INTENT</th>
<th>DWELLING UNITS PER HECTARE</th>
<th>MIN ERF SIZE</th>
<th>DEVELOPMENT PARAMETERS</th>
<th>FLOOR AREA RATIO</th>
<th>COMMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPECIAL RESIDENTIAL 3600</td>
<td>To provide, preserve, use land or buildings for single residential use in a form of a dwelling house and ancillary uses. Protection of the quality and character of residential neighbourhood and the well-being of its residents limiting multiple uses of buildings to minimize adverse impact on the residential environment. Business that comply with residential amenity such as a Bed and Breakfast Establishment, Guest House Establishment and Home Business at the discretion of the eThekwini Municipality.</td>
<td>1du /3 600m²</td>
<td>3600m²</td>
<td>2</td>
<td>30%</td>
<td>0.35</td>
</tr>
<tr>
<td>SPECIAL RESIDENTIAL 900</td>
<td>To provide, preserve, use land or buildings for single residential use in a form of a dwelling house and ancillary uses. Protection of the quality and character of residential neighbourhood and the well-being of its residents limiting multiple uses of buildings to minimize adverse impact on the residential environment. Business that comply with residential amenity such as a Bed and Breakfast Establishment, Guest House Establishment and Home Business at the discretion of the eThekwini Municipality.</td>
<td>1du /900m²</td>
<td>900m²</td>
<td>2</td>
<td>30%</td>
<td>0.4</td>
</tr>
<tr>
<td>INTERMEDIATE RESIDENTIAL 3</td>
<td>To provide, preserve, use land or buildings for single residential use and Multiple Unit Developments in the form of dwelling houses and ancillary uses. Protection of the quality and character of residential neighbourhood and the well-being of its residents limiting multiple uses of buildings to minimize adverse impact on the residential environment.</td>
<td>1du /1800m²</td>
<td>1800m²</td>
<td>2</td>
<td>35%</td>
<td>0.35</td>
</tr>
<tr>
<td>TOURIST</td>
<td>The purpose of this zone will be to accommodate a wide range of recreational, entertainment, residential and commercially related activities, in such a way that the uses contribute towards the creation of a dynamic, harmonious and well balanced tourism related zone of the highest aesthetic, landscaping and urban design quality.</td>
<td>n/a</td>
<td>1800m²</td>
<td>2</td>
<td>20%</td>
<td>n/a</td>
</tr>
<tr>
<td>LIMITED COMMERCIAL 1</td>
<td>To provide, preserve, use land or buildings for low impact commercial purposes. Accommodation of commercial or business activities within a residential area where the commercial activity provides a service to the residential community and is not detrimental to the residential amenity of the area.</td>
<td>n/a</td>
<td>450m² (1)</td>
<td>2</td>
<td>25%</td>
<td>0.25</td>
</tr>
<tr>
<td>LIMITED COMMERCIAL 3</td>
<td>To provide, preserve, use land or buildings for low impact commercial purposes. Accommodation of commercial or business activities within a residential area where the commercial activity provides a service to the residential community and is not detrimental to the residential amenity of the area.</td>
<td>n/a</td>
<td>450m² (1)</td>
<td>2</td>
<td>25%</td>
<td>0.35</td>
</tr>
<tr>
<td>LAND USE ZONE</td>
<td>SCHEME INTENT</td>
<td>DWELLING UNITS PER HECTARE</td>
<td>MIN ERF SIZE</td>
<td>DEVELOPMENT PARAMETERS</td>
<td>COMMENT</td>
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<td></td>
</tr>
<tr>
<td>GENERAL COMMERCIAL 1</td>
<td>To provide, preserve, use land or buildings for medium impact commercial purposes. Accommodation of commercial or business activities within a residential area where the commercial activity provides a service to the residential community and is not detrimental to the residential amenity of the area.</td>
<td>n/a</td>
<td>450m² (1) 1800m² (2)</td>
<td>3 80% / Residential: 50% 1.00 / Residential: 0.35</td>
<td>Existing zone.</td>
<td></td>
</tr>
<tr>
<td>MIXED USE 3</td>
<td>The purpose of this zone will be to accommodate a wide range of recreational, entertainment, tourist, residential, shopping and business or commercially related activities, in such a way that the uses contribute towards the creation of a dynamic, harmonious and well balanced Zone of the highest aesthetic, landscaping and urban design quality.</td>
<td>n/a</td>
<td>1800m²</td>
<td>2 50%</td>
<td>N/A</td>
<td>Existing zone.</td>
</tr>
<tr>
<td>PETROL FILLING STATION</td>
<td>To provide, preserve, use land or buildings for a Fuelling and Service Station which shall be sited and designed so as to satisfy the eThekwini Municipality that traffic entering and leaving the Erf will not adversely affect movement of pedestrians or vehicles on any public road or place.</td>
<td>n/a</td>
<td>1800m²</td>
<td>2 40%</td>
<td>0.20</td>
<td>Existing zone.</td>
</tr>
<tr>
<td>SERVICE INDUSTRY 1</td>
<td>To provide, preserve, use land or buildings for a low impact mix of industrial activities and services and could be an interface to high impact industrial areas or as independent entities. Commercial activities such as, wholesale and shops are permitted at the discretion of the Municipality. Extractive and noxious industrial activities are prohibited in this zone.</td>
<td>n/a</td>
<td>900m²</td>
<td>2 50%</td>
<td>0.50</td>
<td>Existing zone.</td>
</tr>
<tr>
<td>LOGISTICS 2</td>
<td>To use land or buildings for low impact mix of logistics, warehousing as well as light and service industrial activities primarily associated with the movement of goods, to compliment and support the local economy, particularly the logistics sector, as promoted in the National Infrastructure Plan’s Strategic Integrated Project 2 (SIP2) corridor within eThekwini. Logistics is the process of planning, implementing and controlling the effective and efficient flow of goods and services from the point of origin to the point of consumption. Extractive and noxious industrial activities are prohibited in this zone.</td>
<td>n/a</td>
<td>900m²</td>
<td>6 70%</td>
<td>1.40</td>
<td>Existing zone.</td>
</tr>
<tr>
<td>GENERAL INDUSTRY 1</td>
<td>To provide, preserve, use land or buildings for full range of industrial uses where the emphasis is on bulk and heavy industry and where due cognisance must be taken of environmental impacts. Ensuring sustainable locations which accommodate the requirements for industrial activities and minimize their impact on surrounding uses</td>
<td>n/a</td>
<td>1800m²</td>
<td>2 50%</td>
<td>0.50</td>
<td>Existing zone.</td>
</tr>
<tr>
<td>GENERAL INDUSTRY 2</td>
<td>To provide, preserve, use land or buildings for full range of industrial uses where the emphasis is on bulk and heavy industry and where due cognisance must be taken of environmental impacts. Ensuring sustainable locations which accommodate the requirements for industrial activities and minimize their impact on surrounding uses</td>
<td>n/a</td>
<td>1800m²</td>
<td>4 70%</td>
<td>1.50</td>
<td>Existing zone.</td>
</tr>
<tr>
<td>LAND USE ZONE</td>
<td>SCHEME INTENT</td>
<td>DWELLING UNITS PER HECTARE</td>
<td>MIN ERF SIZE</td>
<td>DEVELOPMENT PARAMETERS</td>
<td>FLOOR AREA RATIO</td>
<td>COMMENT</td>
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</tr>
<tr>
<td>SPECIAL INDUSTRY</td>
<td>To provide, preserve, use land or buildings for a full range of heavy and high impact industrial activities that produce fumes, gases, vapours, dust, smell, noise, vibration or other causes excluding extractive industry that are deemed dangerous to the general public by the eThekwini Municipality.</td>
<td>n/a</td>
<td>1800m²</td>
<td>N/A</td>
<td>70%</td>
<td>1.50</td>
</tr>
<tr>
<td>EDUCATIONAL</td>
<td>To provide, preserve, use land or buildings for a full range of educational facilities either public or private. Institutional facilities that to the discretion of eThekwini Municipality does not affect the amenity of the area, recreational facilities ancillary to the educational establishment and accommodation of students, educators and other staff of the educational establishment.</td>
<td>n/a</td>
<td>1800m²</td>
<td>3</td>
<td>40%</td>
<td>0.40</td>
</tr>
<tr>
<td>INSTITUTION 2</td>
<td>To provide, preserve, use land or buildings for Institutions such as hospitals, nursing homes, sanatorium, clinic, convalescent home, orphanage, retirement centre, or other buildings used as a public or private institution except those included in restricted building.</td>
<td>n/a</td>
<td>1800m²</td>
<td>2</td>
<td>25%</td>
<td>0.35</td>
</tr>
<tr>
<td>INSTITUTION 3</td>
<td>To provide, preserve, use land or buildings for Institutions such as hospitals, nursing homes, sanatorium, clinic, convalescent home, orphanage, retirement centre, or other buildings used as a public or private institution except those included in restricted building.</td>
<td>n/a</td>
<td>1800m²</td>
<td>2</td>
<td>75%</td>
<td>2.00</td>
</tr>
<tr>
<td>GOVERNMENT &amp; MUNICIPAL</td>
<td>Land reserved for uses normally undertaken by National, Provincial and Municipal Government, providing a service to the general public (museum and places of cultural significance and heritage). Land owned by organs of state including infrastructure, utilities and public amenities which do not qualify for inclusion into any other zone, i.e. electrical sub-stations, waste water treatment works, landfill sites, cemeteries &amp; crematorium. Including land uses relating to public services, i.e. Police Services, Correctional Facilities, and Fire Protection, together with specialized uses that is not amicable within any residential environment.</td>
<td>n/a</td>
<td>Municipal discretion</td>
<td>6</td>
<td>80%</td>
<td>n/a</td>
</tr>
<tr>
<td>ADMINISTRATION</td>
<td>Reserved for the use or erection of buildings or facilities of the various tiers of government.</td>
<td>n/s</td>
<td>n/s</td>
<td>n/s</td>
<td>n/s</td>
<td>n/s</td>
</tr>
<tr>
<td>CEMETERY/CREMATORIUM</td>
<td>To provide, preserve, use land or buildings for designed for the inhumation of corpses and where deceased are burned to ash, and includes facilities for associated religious and administrative functions.</td>
<td>n/a</td>
<td>n/a</td>
<td>2</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>LAND USE ZONE</td>
<td>SCHEME INTENT</td>
<td>DWELLING UNITS PER HECTARE</td>
<td>MIN ERF SIZE</td>
<td>DEVELOPMENT PARAMETERS</td>
<td>COMMENT</td>
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</tr>
<tr>
<td>AGRICULTURE 1</td>
<td>To provide, preserve, use land or buildings for Agricultural productivity, residential smallholding and uses ancillary to agricultural activity are permitted at the discretion of eThekwini Municipality.</td>
<td>n/a</td>
<td>2ha</td>
<td>2</td>
<td>10%</td>
<td>0.10</td>
</tr>
<tr>
<td>PUBLIC OPEN SPACE</td>
<td>This land is reserved as open space for the use and the enjoyment of the Public, once such area is in municipality ownership.</td>
<td>n/s</td>
<td>n/s</td>
<td>n/s</td>
<td>n/s</td>
<td>n/s</td>
</tr>
<tr>
<td>PRIVATE OPEN SPACE</td>
<td>To provide, preserve, use land or buildings for provision of active and passive recreational areas on privately owned land. Generally to promote private recreation, enhance aesthetical appearance and promote the maintenance of functional open space systems.</td>
<td>n/a</td>
<td>n/a</td>
<td>2</td>
<td>n/a</td>
<td>0.15</td>
</tr>
<tr>
<td>CONSERVATION</td>
<td>A zone where the protection of the natural environment is of primary importance and land ownership is to remain with the private sector, albeit with limited rights subject to approval by the Municipality. Not suitable for Council or public body owned land. The zone normally imposed on site that carries a primary zone, i.e. split zoning. The final “set-back line” to be determined on the ground prior to development.</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>ENVIRONMENTAL CONSERVATION RESERVE</td>
<td>Publically owned land dedicated to the conservation and management of natural areas of land and/or water for the ecosystem goods and services that the areas provide and the biodiversity which they support.</td>
<td>n/s</td>
<td>n/s</td>
<td>n/s</td>
<td>n/s</td>
<td>n/s</td>
</tr>
<tr>
<td>SEWAGE DISPOSAL WORKS</td>
<td>Buildings and other works incidental thereto permitted.</td>
<td>n/s</td>
<td>n/s</td>
<td>n/s</td>
<td>n/s</td>
<td>n/s</td>
</tr>
<tr>
<td>RAILWAY RESERVE</td>
<td>Railway purposes and incidental purposes permitted. Where no agreement has been entered into with the Municipality in terms of the Legal Succession to the South African Transport Services Acts, this land is effectively zoned for Existing Uses, Transportation Uses and Ancillary Uses in terms of such legislation.</td>
<td>n/s</td>
<td>n/s</td>
<td>n/s</td>
<td>n/s</td>
<td>n/s</td>
</tr>
<tr>
<td>LAND USE ZONE</td>
<td>SCHEME INTENT</td>
<td>DWELLING UNITS PER HECTARE</td>
<td>MIN ERF SIZE</td>
<td>DEVELOPMENT PARAMETERS</td>
<td>FLOOR AREA RATIO</td>
<td>COMMENT</td>
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</tr>
<tr>
<td>PROPOSED ROAD</td>
<td>Proposed Reservations for New Roads and widening of existing roads as shown on the scheme map(s) shall become effective at dates to be determined.</td>
<td>n/s</td>
<td>n/s</td>
<td>n/s</td>
<td>n/s</td>
<td>Existing reservation.</td>
</tr>
<tr>
<td>ROAD</td>
<td>Existing roads.</td>
<td>n/s</td>
<td>n/s</td>
<td>n/s</td>
<td>n/s</td>
<td>Existing reservation.</td>
</tr>
</tbody>
</table>

Notes:
1. Must see additional controls for each zone
2. Exclusively Commercial [1]
4. n/a – Not Applicable
5. n/s – Not Specified
Figure 7-3: Draft Land Use Scheme
<table>
<thead>
<tr>
<th></th>
<th>RESIDENTIAL</th>
<th>COMMERCIAL/MIXED USE</th>
<th>INDUSTRIAL</th>
<th>CIVIL &amp; SOCIAL</th>
<th>A</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>P = Permitted</td>
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<tr>
<td>C = Conditional</td>
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<tr>
<td>X = Excluded</td>
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</tbody>
</table>

**RESIDENTIAL**

<table>
<thead>
<tr>
<th>Purpose for which building may be erected and used, and land may be used.</th>
<th>RESIDENTIAL</th>
<th>COMMERCIAL/MIXED USE</th>
<th>INDUSTRIAL</th>
<th>CIVIL &amp; SOCIAL</th>
<th>A</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boarding House</td>
<td>X X X C X C X X X X X X X X X</td>
<td></td>
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<tr>
<td>Caravan Park</td>
<td>X X X X X X X X P</td>
<td></td>
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<tr>
<td>Chalet Development</td>
<td>X X X X P</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Dwelling House</td>
<td>X X C X P</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Extended Residential Building</td>
<td>X X X C X</td>
<td></td>
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</tr>
<tr>
<td>Flat</td>
<td>X X X P P</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Hotel</td>
<td>X X X X C X</td>
<td></td>
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</tr>
<tr>
<td>Mobile Home</td>
<td>X X X X X X X X X X X</td>
<td></td>
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</tr>
<tr>
<td>Mobile Home Park and Camping Ground</td>
<td>X X X X X X X X X X X</td>
<td></td>
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<td>Multiple Unit Development</td>
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<td>Residential Building</td>
<td>X X X P P</td>
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<tr>
<td>Retirement Centre</td>
<td>X C X X X P C</td>
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**RETAIL & OFFICE**

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<th>COMMERCIAL/MIXED USE</th>
<th>INDUSTRIAL</th>
<th>CIVIL &amp; SOCIAL</th>
<th>A</th>
<th>E</th>
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<tr>
<td>Action Sports bar</td>
<td>X X X C C</td>
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<tr>
<td>Adult Premises</td>
<td>X X X X X X X</td>
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<tr>
<td>Betting Depot</td>
<td>X X X X C C</td>
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<tr>
<td>Car Wash</td>
<td>X X X P P P</td>
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<tr>
<td>Convention Centre</td>
<td>X X X X X X X X X C</td>
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<tr>
<td>Direct Access Service Centre</td>
<td>X X X X C C C</td>
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<td>Drive-in Cinema</td>
<td>X X X X X X X X X X</td>
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<td>Escort Agency</td>
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<tr>
<td>Flea Market</td>
<td>X X P P P P C</td>
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<tr>
<td>Fueling And Service Station</td>
<td>X X X P P P C P</td>
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<tr>
<td>Garden Nursery</td>
<td>C C C C C C C C C C C</td>
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<tr>
<td>Health and Beauty Clinic</td>
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<tr>
<td>Health Studio</td>
<td>X X C C C C C C C C C C C P</td>
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<tr>
<td>Laundry</td>
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<tr>
<td>Motor Display Area</td>
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<td></td>
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</tr>
<tr>
<td>Night Club</td>
<td>X X X C C C C X X X X X X X</td>
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</tr>
<tr>
<td>Office (Medical)</td>
<td>X X X C P P C C C X X X X X X X</td>
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<td></td>
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<td></td>
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<tr>
<td>Parkade</td>
<td>X X X X C C C C C C C C C C P P</td>
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<tr>
<td>Pet Grooming Parlour</td>
<td>X X X P P P P P X X X X X X X X X</td>
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<tr>
<td>Restaurant / Fast Food Outlet</td>
<td>X X X P P P P C C C C C C C C C C C X C C X</td>
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<tr>
<td>Shop</td>
<td>X X X P P P P P C C C C C C C C C X X X X X C</td>
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<tr>
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<td>CIVIL &amp; SOCIAL</td>
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<td><strong>P = Permitted</strong></td>
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<tr>
<td><strong>C Conditional</strong></td>
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</tr>
<tr>
<td>Tavern</td>
<td>C X X X X X C C C C</td>
<td>X X X X X X X X X X</td>
<td>C X C X X X</td>
<td>X X X X X X X C</td>
<td>X</td>
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</tr>
</tbody>
</table>

**INDUSTRY**

- Arts and Crafts Workshop: X X X P C C P P X C C C C X P X C C C X X
- Builder's Yard: X X X X X X X X X X C C C C C X X X X X X
- Commercial Workshop: X X X P C C P P X C P X P P P X X C C X X
- Container Depot: X X X X X X X X C X X X X X X X X X X X
- Display Area: X X X C C C C X X X X C X X X X X X X X X X
- Industry - Extractive: X X X X C C C X X X X X X X X X X X X X
- Industry - General: X X X X X X X X X P X X X X X X X X X X
- Industry - Light: X X X X C C C X X X X P P P P X X X X X X
- Industry - Noxious: X X X X X X X X C C C C C X X X X X X X
- Motor Garage: X X X X X X X X X C X C C C C X X X X X X X
- Motor Vehicle Test Centre: X X X X X X X X X X C C P P X P X X X X X X
- Motor Workshop: X X X X X X X X X C C X C X C P P X X X X X X
- Recycling Centre: X X X X X X X X X X C C C C C C X X X X X X
- Refuse Disposal: X X X X X X X X X X X X X X X C P X X X X X X
- Sand-wiring: X X X X X X X X X X X X X X X X X X X X X X X X
- Scrap Yard: X X X X X X X X X X X X X X X X X X X X X X X X
- Special Industrial Building: X X X X X X X X X X X X X X X X X X X X X X X X
- Transport Depot: X X X X X X X X C X P X X C X X X X X X
- Truck Stop: X X X X X X X X X X C X C C C C X X X X X X X
- Warehouse: X X X C C P P X P P P X X X X X X X

**CIVIC AND SOCIAL**

- Cemetery: X X X X X X X X X X X X X X X X C X X C C P C X
- Convention Centre: X X X C C C C C X X X X X X X X P C X X X X X
- Correctional Facility: X X X X X X X X X X X X X X X C P X X X X X X
- Crèche: C C C C C C C C C X X X X X X X X X C C P P X X X
- Crematorium: X X X X X X X X X X X X X X X X X X X X X X X X
- Educational Establishment: X X C C C C C P X X X X X X X X P P P X X X
- Funeral Parlour: X X X C C X C X X X C C P X X P X X X
- Institution: X X X X X C X C X X X X X X X X P C P P C X X
- Mortuary: X X X X X C X X X X C C X X X X X C P X X C P X X
- Museum: X X C C C X C X C C P X X X X X X X X X C C C X X X
- Place of Public Assembly: X C C C C C C C C X X X X X X X X C P C P X X
- Place of Public Entertainment: X X X C C P C C X X X X X X X X C X X X X X
- Place of Public Worship: X X X C C C C C C X X X X X X C C C P X X
<table>
<thead>
<tr>
<th>Purpose for which buildings may be erected and used and land may be used.</th>
<th>RESIDENTIAL</th>
<th>COMMERCIAL/MIXED USE</th>
<th>INDUSTRIAL</th>
<th>CIVIL &amp; SOCIAL</th>
<th>A</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>P</strong> = Permitted</td>
<td><strong>SPECIAL RESIDENTIAL 1,900</strong></td>
<td><strong>SPECIAL RESIDENTIAL 3,000</strong></td>
<td><strong>LIMITED COMMERCIAL 1</strong></td>
<td><strong>LIMITED COMMERCIAL 2</strong></td>
<td><strong>GENERAL COMMERCIAL 1</strong></td>
<td><strong>GENERAL COMMERCIAL 2</strong></td>
</tr>
<tr>
<td><strong>C</strong> = Conditional</td>
<td><strong>SPECIAL RESIDENTIAL 1,900</strong></td>
<td><strong>SPECIAL RESIDENTIAL 3,000</strong></td>
<td><strong>INTERMEDIATE RESIDENTIAL 1</strong></td>
<td><strong>LIMITED COMMERCIAL 1</strong></td>
<td><strong>LIMITED COMMERCIAL 2</strong></td>
<td><strong>GENERAL COMMERCIAL 1</strong></td>
</tr>
<tr>
<td><strong>X</strong> = Excluded</td>
<td><strong>SPECIAL RESIDENTIAL 1,900</strong></td>
<td><strong>SPECIAL RESIDENTIAL 3,000</strong></td>
<td><strong>INTERMEDIATE RESIDENTIAL 1</strong></td>
<td><strong>LIMITED COMMERCIAL 1</strong></td>
<td><strong>LIMITED COMMERCIAL 2</strong></td>
<td><strong>GENERAL COMMERCIAL 1</strong></td>
</tr>
</tbody>
</table>

Note:

1. Any land use type not specifically identified in the definitions may be considered on its merit by Special Consent.
7.4 KEY RECOMMENDATIONS

Key recommendations related to the spatial application of the zones are as follows:

1. Significant portions of land in the Harrison Flats area is currently zoned General Industry 2. This area is bordered by the environmentally sensitive uMgeni River Catchment. As such, development on any site in this area should be subject to an environmental assessment in order to confirm the precise development footprint permitted. This may result additional environmental servitudes and/or limitations being imposed and a reduction in the ultimate permissible floor area of the development.

2. General Industry 2 zones immediately north of the Cato Ridge village should be rezoned to General Industry 1 in order to minimise the intensity of development permitted in an environmentally sensitive water catchment, and bulk infrastructure and transportation constraint area. As such, development on any site in this area should be subject to an environmental assessment in order to confirm the precise development footprint permitted. This may result additional environmental servitudes and/or limitations being imposed and a reduction in the ultimate permissible floor area of the development.

3. Service Industry 2 zones immediately north of Cato Ridge to be rezoned to Service Industry 1 in order to minimise the intensity of development permitted in an environmentally sensitive water catchment, and bulk infrastructure and transportation constraint area. As such, development on any site in this area should be subject to an environmental assessment in order to confirm the precise development footprint permitted. This may result additional environmental servitudes and/or limitations being imposed and a reduction in the ultimate permissible floor area of the development.

4. Where areas of environmental sensitivity have been identified as having high conservation value, these areas must be rezoned to Conservation and/or Environmental Conservation Reserves. The extent of these areas to be confirmed with survey diagrams for incorporation into the scheme.

5. Replace Agriculture 3 zones by either rezoning to a more appropriate economic, and/or conservation related use.

Where agricultural activity/small-holdings are the desired land use, rezone Agriculture 3 zones to Agriculture 1 thus removing the risk of non-agricultural activities being granted via special consent procedures.

6. Remove amenity and landscape reserves and replace with more appropriate urban design and public landscaping guidelines as management overlays.

7. Extend the scheme to include land parcels previously excluded from the scheme boundary.

8. Ultimately the scheme needs to be extended wall to wall across the entire study area.

This is however beyond the scope of this project.
Figure 7-4: Amendments Required to the Existing Scheme
8 IMPLEMENTATION STRATEGY

8.1 APPROACH

Unlocking development in the Cato Ridge Local Area is recognised as both a Provincial and Metropolitan Development Goal that needs to be achieved in a manner that both sustainable and cost-effective for the municipality.

The intention of this chapter is to identify some of the key elements of an approach that will assist with the implementation of development within Cato Ridge. This includes the identification of critical actions that will need to be undertaken in order to significantly change the manner in which development will unfold in this area.

The approach has been informed by the following contextual characteristics:

- The Outer West region of the eThekwini Municipality is one of four sub-metropolitan regions each competing for municipal investment to support and/or stimulate growth and development;
- The region has the smallest population and the least amount of economic investment in the eThekwini Municipal area, primarily as a result of its location on the historic ‘periphery’ of the City.
- The core of the Cato Ridge Local Area is located within eThekwini’s Dense Urban Integration Zone (i.e. a recognised spatial targeting area).
- There are a myriad of development initiatives planned and/or operating across the eThekwini Municipal area each with their own agenda, aims and objectives and each competing for a share of public investment to support their development objectives. (i.e. Shongweni Regional Node, Hammarsdale and Keystone Park, Dube Tradeport, Automotive Supplier Park, SANRAL, KZN DoT requirements etc.)

In order for the development of the Cato Ridge Local Area to be a success, there needs to be a move away from a “business as usual” approach and a reactive development control manner.

Through the preparation of the original Cato Ridge Local Area Plan project (2002) and this review (2017/2018), the Municipality has initiated a process which is more proactive and forward-looking.

However, the efficient and sustainable development of the Cato Ridge Local Area will require ongoing significant, strategic and proactive intervention by the Municipality, in conjunction with other key role players, to change the nature of planning and development in the Outer West and to influence the spatial redirection of both private and public investment into an area that has previously been spatially marginalised.

8.2 KEY INTERVENTION AREAS

The following key interventions will be necessary in order to initiate and/or consolidate development investment spatially within the Cato Ridge Local Area in a manner that reinforces sustainable economic growth objectives in the eThekwini Integrated Development Plan (IDP) and that are necessary to create employment and reduce poverty.

The key interventions identified and explained as follows include:

- Infrastructure & Environment Quality Improvement
- Regulatory Improvements & Enforcement
- Coordinate, integrate and align activities and energies of all key stakeholders
- Release land for development in a coordinated manner
- Alignment of public investment
- Monitoring and Review of the LAP (described in Section 9)

8.2.1 Infrastructure & Environment Quality Improvement

The mandate to Local Municipalities, under the South African Constitution and Municipal Structures Act, requires acquiring funding that surpasses the ability of municipalities to generate entirely from their traditional revenue generating mechanisms and/or their proportional share from provincial and national government.

The eThekwini Municipality is no exception and will need to find additional financial support to deliver this plan, as well as ensure that the money it does spend, is spent well and in areas that leverages the highest return i.e. the municipality must direct municipal and grant funding investment into “capital web” enhancement.

Fortunately there are various sources of grants, loans and funding that exist with a mandate that are in line with core infrastructure and services areas of municipalities and that can be tapped into (Table 8-1).
### Table 8-1: Potential Project Funding Sources

<table>
<thead>
<tr>
<th></th>
<th>CAPITAL ITEMS</th>
<th>OPERATIONS &amp; MAINTENANCE</th>
<th>MANAGEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RATES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SPECIAL RATING AREAS</strong></td>
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<td></td>
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<td><strong>LOANS</strong></td>
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<tr>
<td><strong>ASSET SALES</strong></td>
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<td></td>
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<tr>
<td><strong>DEVELOPER CONTRIBUTIONS</strong></td>
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<tr>
<td><strong>STATE OPERATIONAL GRANTS</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>STATE CAPITAL GRANTS</strong></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**Rates**

The identification of land to be released for development and/or redevelopment provides an opportunity for the municipality to capture additional rates income which can be indirectly reinvested into the area and/or redistributed to other areas in need.

Capital investment into the local area will leverage an ongoing rates return from private sector development. In order to ensure the highest maximum return, an emphasis must be placed on creating high quality urban environments.

**Special Rating Areas**

Under section 22 of the Municipal Property Rates Act a Special Rating Area can be determined to augment regular municipal operations and maintenance in a defined geographic area. Fifty percent (50%) of the property owners within the defined special area would need to agree to establish and fund the special rating area.

This would need to be negotiated with landowners in the area.

**Loans**

Borrowing from the private and/or the public sector for infrastructure that will service future generations is an appropriate strategy. The municipality would need to be mindful of keeping a manageable level of debt before it entered into borrowings to support the Local Area.

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**Disposal of Assets**

Some funds could be raised through the sale of assets that are no longer required by the Municipality. This approach may provide some revenue for specific projects but it would depend on the City having assets which it wishes to dispose of. Land should be sold at full market value or alternatively be developed through a market related long-term leasing arrangement.

**Developer's Contributions**

Collecting “development contributions” on new developments is an accepted approach towards ensuring that developers contribute financially to the establishment of specifically bulk infrastructure and services that will be required by such new developments. However, such contributions need to be determined at a municipal level.

Any policy for development contributions should not only be limited to bulk water, sanitation, stormwater, road and electricity infrastructure, but should also cover the requirements for additional public parking, public facilities and public open space (active and passive) required in the area.

**Grants**

State grants and special purpose payments have the potential to provide a significant contribution toward assisting the city with realising its vision for the area. It is important that the Municipality stays informed about the range of grant opportunities that may be open to it. Such grant funding could include funding opportunities associated with the N3 development corridor (SIP2), national funding through the Neighbourhoods Development Grant, the Urban Restructuring Zone grants, public transport grants, municipal infrastructure grants etc.

The Social Housing Act (2008) makes provision for the establishment of Restructuring Zones in order to assist accredited social housing institutions and private sector landlords to deliver social housing. It would be appropriate to apply for such a designation for Cato Ridge Village and/or the Fredville Node in order for grants to be secured to assist with the delivery of social/gap housing in the area.
8.2.2 Regulatory Improvements & Enforcement

The following represent how the administration of the regulatory framework as it relates to investments by either the private sector and/or other spheres of government in relation to land released Cato Ridge can achieve the vision set out for the area.

Scheme Amendments

A Scheme is intended to control development. Through this function, land and property values are preserved.

The proposals contained within the Land Use Framework have been guided by the Outer West Town Planning Scheme, however some scheme amendments will be required to accommodate the proposals to allow new development as well as for environmental protection. This will occur through a formal scheme review process.

Details regarding recommendations to amend the scheme are contained in the Land Use Management (Draft Scheme) Chapter

Design Code and Review Committee

The introduction of a Design Code and Review Committee aimed at ensuring the development of quality buildings and quality public environment that contributes to the overall value and character of the area is recommended.

These tools (i.e. design codes and review committee) should be set up for specific functional areas (see below) and applied in cases where new developments are proposed.

The design code and the design review committee will specifically be useful for facilitating and directing:

- key catalytic investment projects
- the development of mixed use higher density areas
- the development of multi-functional spaces;
- the development of quality public buildings
- the landscaping of visual corridors associated with Gateways into the eThekwini Municipality and key high visual quality areas,
- the development of active building edges; and
- improvement in the integration between public and private spaces.

Enforcement

There is a perceived lack of land use and transport by-law enforcement in the Cato Ridge Area. A firm commitment, and quick action, to enforce Town Planning Scheme, Traffic and other built environment by-laws is required from all relevant authorities in order to stamp illegal land uses, illegal development and traffic control issues and install investor confidence in the area.

8.2.3 Coordination, Integration and Aligning Stakeholders

In the first instance it will be necessary for the Municipality to take the lead through playing an active coordinating and directing role in the area. In this regard three areas of coordination should be targeted.

- Alignment of Municipal stakeholders
- Alignment of other key public stakeholders
- Coordination of Private Stakeholders

In the first instance the objective is to ensure that all municipal sectors are made fully aware of the Cato Ridge Local Area Planning initiative and that their respective planning and budgets reflect the intentions of the initiative. The PSC for this project should remain on as the coordinating mechanism.

In the second instance all provincial and national spheres of government and parastatals should made fully aware of the Cato Ridge Local Area Planning initiative and urged to align their respective planning and budgets to reflect the intentions of the initiative.

In the third instance the existing development forum consisting of key public and private sector development stakeholders in the Outer West should be reinforced in order to confirm and communicate a common direction for the Outer West and to achieve a greater level of coordination with respect to individual stakeholder investment objectives.

The development forum should be expanded to include Hammarsdale, Mpumalanga, Peacevale/Key Ridge and Shongweni and not just focus on Cato Ridge as a number of the issues related to bulk infrastructure, transportation and environment affect the broader sub-region and are not just localised to Cato Ridge.

The objectives of the forum should be based on the following principles:

1. Understanding and supporting existing energies and strengths of all stakeholder groups (i.e. eThekwini Municipality, current and future landowners, community representatives, local leadership structures etc.).
Identifying what initiatives exist/or require establishing and communicate how the Cato Ridge fits into broader metropolitan priorities.

2. Focusing investment, both sectorally and spatially, through identifying and agreeing on common areas for both new development areas and for brownfields development and or redevelopment.

3. Integrating investment by promoting projects and initiatives which mix public and private investment, where necessary, to achieve common goals.

4. Shared benefits by ensuring that all stakeholders benefit from opportunities for development created by public investment, especially around employment and business opportunities for local residents and businesses.

8.2.4 Land Release (Phasing)

The release of land for urban development has been informed by the objectives of the Cato Ridge Local Area project as they relate to existing policies of the eThekwini Municipality’s with respect to the establishment of compact and integrated cities. However, it has also been considered in the light of the commitments and stated intentions of the Municipality, other government entities and the private sector.

The key element of the land release approach is to release land for both non-residential and residential purposes in a manner that consolidates the existing fragmented urban form and that concentrates development around the proposed main transportation spine, existing infrastructure and land parcels with existing development rights.

It is necessary for there to be a shared commitment to this as both the public and private sector players have previously struggled to deliver development informed by these sustainability imperatives.

In this context priority has been given to releasing land in areas where market demand intersects with infrastructure capacity or where infrastructure can be easily extended whether it is by the private sector or public sector or in some form of partnership. Phasing to be guided by an updated Traffic and Transportation Model together with Roads Masterplan for the Outer West Region is completed.

The exact phasing of development by private developers in the targeted areas over the next 20 years will be difficult to predict and therefore an approach that provides for a level of flexibility within targeted areas is proposed (Figure 8-1).

Such an approach provides for a ‘window’ of development opportunities that can be sustainable serviced and allows for a developer to choose where within the ‘window’ development will occur.

The phasing strategy (window areas) for land release for the next 20 years is illustrated Figure 8-1 and is guided by the following principles:

- **Short-term priority (0-5 years)** release areas concentrated around existing clusters of development which will consolidate (and densify) the existing development footprint and will increase thresholds for service and public transport efficiencies. Areas that already have the necessary zoning in place and some infrastructure which may require limited upgrades to capacity.

  These areas are concentrated around the Cato Ridge Village, Fredville, and Harrison Flats.

- **Medium-term priority (5-10 years)** release areas consolidated around the infill and further take-up of Harrison Flats and opportunities along the P1-3. This requires the unlocking of a new Interchange which will connect the N3 (near the existing Engen 1 Stop) directly to Eddie Hagan Drive. The road configurations associated with this piece of infrastructure will greatly enhance the capacity and efficiency of the municipal transport network servicing Cato Ridge. This phase leverages existing transportation infrastructure and the investment in Bulk Sewer Trunks that will connect Harrison Flats to the Hammarsdale Treatment Works.

- **Longer term priorities (>10 years)** areas are located to the west of the existing Cato Ridge Village. It is envisaged that over time the role of the Cato Ridge Village will be redefined from an industrial housing estate (dormitory suburb) to an industrial town centre that serves the Greater Cato Ridge and Mpumalanga area and will accommodate additional mixed use commercial and residential land uses adjacent to the N3 and straddling the MR385. The downgrading of the existing N3 interchange to a ‘partial’ interchange (northern ramps only) and the associated supporting road network is a vital design component for the release of this phase which will required detailed design.

  The regional landfill for eThekwini will be commissioned if the EIA is approved.
Figure 8-1: Land Release and Phasing Framework
Ultimate Land Use Release Quantum

As quantified in the Land Use Framework, the ultimate quantum of land that could be released to accommodate residential and economic growth over the next twenty years is summarised in Table 8-2.

A high economic and low economic growth scenario have been used to test the potential “take-up” of land per land release phase.

- **Low Economic Scenario:**
  - Industrial land take-up is projected at 10ha/annum
  - Mixed Use (commercial and retail) take-up at 3.5ha/annum
  - Residential demand as 500 people and 125 units per annum

- **High Economic Scenario:**
  - Industrial land take-up is projected at 45ha/annum
  - Mixed Use (commercial and retail) take-up at 10ha/annum
  - Residential demand as 1,750 people and 430 units per annum

Table 8-2: Land Use Demand Estimates and Planned Release Quantum

<table>
<thead>
<tr>
<th></th>
<th>DEMAND</th>
<th>PLANNED RELEASE[^11]</th>
<th>AREA (HA)</th>
<th>GLA (m(^2))</th>
<th>RESIDENTIAL UNITS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INDUSTRY</strong>[^12]**</td>
<td><img src="image" alt="Table" /></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Short-Term Priority (0-5 years)</td>
<td>LOW GROWTH</td>
<td>HIGH GROWTH</td>
<td>10 ha/annum</td>
<td>45 ha/annum</td>
<td></td>
</tr>
<tr>
<td>50 ha</td>
<td>225 ha</td>
<td>77 ha</td>
<td>512 616 m(^2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medium-Term Priority (5-10 years)</td>
<td>50 ha</td>
<td>225 ha</td>
<td>230 ha</td>
<td>1 607 568 m(^2)</td>
<td></td>
</tr>
<tr>
<td>Long-Term Priority (&gt;10 years)</td>
<td>50 ha</td>
<td>225 ha</td>
<td>116 ha</td>
<td>231 934 m(^2)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>150 ha</td>
<td>675 ha</td>
<td>423 ha</td>
<td>2 352 118 m(^2)</td>
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</tr>
<tr>
<td><strong>MIXED USE (COMMERCIAL/RETAIL)</strong>[^13]**</td>
<td><img src="image" alt="Table" /></td>
<td></td>
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</tr>
<tr>
<td>Short-Term Priority (0-5 years)</td>
<td>3.5 ha/annum</td>
<td>10 ha/annum</td>
<td>17.5 ha</td>
<td>50 ha</td>
<td>14 ha</td>
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<tr>
<td>Medium-Term Priority (5-10 years)</td>
<td>17.5 ha</td>
<td>50 ha</td>
<td>0 ha</td>
<td>0 m(^2)</td>
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</tr>
<tr>
<td>Long-Term Priority (&gt;10 years)</td>
<td>17.5 ha</td>
<td>50 ha</td>
<td>5 ha</td>
<td>37 060 m(^2)</td>
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<tr>
<td>Total</td>
<td>52.5 ha</td>
<td>150 ha</td>
<td>19 ha</td>
<td>99 529 m(^2)</td>
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<tr>
<td><strong>RESIDENTIAL</strong>[^14][^15]**</td>
<td><img src="image" alt="Table" /></td>
<td></td>
<td>125 units/annum</td>
<td>430 units/annum</td>
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<td>Short-Term Priority (0-5 years)</td>
<td>625 units</td>
<td>2 150 units</td>
<td>48 ha</td>
<td>-</td>
<td>674 units</td>
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<tr>
<td>Medium-Term Priority (5-10 years)</td>
<td>625 units</td>
<td>2 150 units</td>
<td>0 ha</td>
<td>-</td>
<td>0 units</td>
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<tr>
<td>Long-Term Priority (&gt;10 years)</td>
<td>625 units</td>
<td>2 150 units</td>
<td>98 ha</td>
<td>-</td>
<td>1 037 units</td>
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<tr>
<td>Total</td>
<td>1 875 units</td>
<td>7 500 units</td>
<td>146 ha</td>
<td>1 711 units</td>
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</tr>
</tbody>
</table>

[^11]: Excludes existing areas
[^12]: According to the eThekwini Municipality’s Industrial Land Strategy, demand for industrial land is projected in the region of 30 to 45 hectares per annum.
[^13]: Based on take-up assumptions as per Northern Urban Development Corridor (2010)
[^14]: The current growth rate for the Greater Cato Ridge Area is 1.2% per annum which indicates that within 20 years, an additional 35,000 people would need to be accommodated in the area. This equates to 1,750 additional people per year, at 4 persons/household, 500 units per year. At 1.1% growth it is 500 people and 125 units per annum. A large percentage of this growth will need to be accommodated in existing rural residential areas.
[^15]: Excludes the rural upgrading required for existing residential development in the area. Additional land outside the study area is required for residential development.
8.2.5 Alignment of Public Sector Investment

Key bulk infrastructure elements relating to transportation, water and sanitation should be phased and prioritised towards the servicing of the targeted land release phase areas described in Section 8.2.4.

Principles that could be used to guide investment phasing within the 10-year planning horizon include:

- Infrastructure investment by the public sector may need to invest ahead of demand in order to direct and facilitate private sector investment in targeted areas.
- Infrastructure investment should be monitored against actual development demand within the targeted areas and public investment structured so as to ensure that it will leverage private and other public development investment in these targeted areas.
- Private sector finance/funding contributions will be required to “bring infrastructure projects forward” to meet market demands where the municipality/service provider only intends providing infrastructure at a later date.
- Infrastructure required for public housing should be phased as far as possible to align with requirements to service land.

8.3 IMPLEMENTATION PLAN

A number of strategic interventions across sectors have been identified in order to unlock development within Cato Ridge.

These interventions are listed and categorised in Table 8-3 in terms of the following indicative phasing (subject to available funding and prioritisation by eThekwini Municipality):

- Immediate Priorities (2018/2019 Financial Year)
- Short Term Priorities (<5 years)
- Medium Term Priorities (5-10 years)
- Long Term Priorities (>10 years)

These projects need to have funding secured and need to be incorporated into the eThekwini Municipality’s Medium Term Expenditure Framework (MTEF).
### Implementation Plan Projects

<table>
<thead>
<tr>
<th>ID</th>
<th>NAME</th>
<th>PROJECT DESCRIPTION</th>
<th>FUNCTIONAL AREA</th>
<th>RESPONSIBILITY</th>
<th>BUDGET ESTIMATE</th>
<th>PHASING</th>
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<tbody>
<tr>
<td><strong>PRECINCT AND STATUTORY PLANNING</strong></td>
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<tr>
<td>P01</td>
<td>Scheme Review</td>
<td>Review Outer West Scheme to align with and incorporate Draft Scheme recommendations in Cato Ridge LAP.</td>
<td>Cato Ridge Village Cato Ridge East Harrison Flats Harrison South</td>
<td>Land Use Management</td>
<td>R 0.75m</td>
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<td>P03</td>
<td>Fredville Urban Design Framework</td>
<td>Preparation of an Urban Design Framework for the Fredville Local Urban Node.</td>
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<td>Strategic Planning Unit</td>
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<td>P04</td>
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<td>Preparation of an Urban Design Framework for the KwaXimba Local Rural Node.</td>
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<td>Strategic Planning Unit</td>
<td>R 1.0m</td>
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<td>P05</td>
<td>Cato Ridge Local Area Plan Review</td>
<td>Review of Local Area Plan in terms of Monitoring and review guidelines.</td>
<td>All</td>
<td>Strategic Planning Unit</td>
<td>R 1.5m</td>
<td>Medium</td>
</tr>
<tr>
<td><strong>TRANSPORTATION</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>T01</td>
<td>Outer West Transport Model and Roads Masterplan</td>
<td>Preparation of a detailed Traffic and Transportation model (Aimsun) together with a Roads Masterplan for the LAP area with detailed phasing for each area of land release,</td>
<td>Outer West</td>
<td>eThekwini Transport Authority</td>
<td>R 2.0m</td>
<td>Immediate</td>
</tr>
<tr>
<td>T02</td>
<td>Harrison, Harrison South and Cato Ridge East Preliminary Roads Layout Design</td>
<td>Preparation of preliminary layout designs for new roads in area in order to ensure reservation of road reserves, to guide private developers and to prevent encroachment into these strategic corridors.</td>
<td>Cato Ridge East Harrison Harrison South</td>
<td>eThekwini Transport Authority/SANRAL/eThekwini Roads Department</td>
<td>R2.0m</td>
<td>Immediate</td>
</tr>
<tr>
<td>F-01</td>
<td>New Link</td>
<td>New access route to connect the two FAP areas.</td>
<td>Fredville</td>
<td>ETA</td>
<td>R 39.3m</td>
<td>Short</td>
</tr>
<tr>
<td>H-01</td>
<td>New Link</td>
<td>New 2 lane internal access road to provide structure and access to the sub-precinct.</td>
<td>Harrison</td>
<td>ETA/Developer</td>
<td>R 29.6m</td>
<td>Short</td>
</tr>
<tr>
<td>H-02</td>
<td>New Link</td>
<td>New 2 lane internal access road to provide alternate access to the sub-precinct (both industrial and residential access).</td>
<td>Harrison</td>
<td>ETA/Developer</td>
<td>R 47.3m</td>
<td>Short</td>
</tr>
<tr>
<td>H-03</td>
<td>New Link</td>
<td>New 2 lane internal access road to provide structure and access to the sub-precinct, including a direct access point into Fredville from KwaXimba.</td>
<td>Harrison</td>
<td>ETA/Developer</td>
<td>R 6.1m</td>
<td>Short</td>
</tr>
<tr>
<td>H-04</td>
<td>New Link</td>
<td>New 2 lane internal access road to provide structure and access to the sub-precinct,</td>
<td>Harrison</td>
<td>ETA/Developer</td>
<td>R 18.9m</td>
<td>Short</td>
</tr>
<tr>
<td>N3-01</td>
<td>Upgrade Capacity</td>
<td>Widening of N3 to 4 lanes per direction. Includes capacity enhancements to existing Cato Ridge Interchange.</td>
<td>N3 Corridor</td>
<td>ETA/SANRAL/Developer</td>
<td>TBD</td>
<td>Short</td>
</tr>
<tr>
<td>N3-02</td>
<td>New Interchange</td>
<td>Construction of new interchange between Cato Ridge and Hammarsdale. Will incorporate the existing Engen and BP direct access service centres. This will ensure compliance with access management along the National Route.</td>
<td>N3 Corridor</td>
<td>ETA/SANRAL/Developer</td>
<td>R 60.3m</td>
<td>Medium</td>
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<tr>
<td>ID</td>
<td>NAME</td>
<td>PROJECT DESCRIPTION</td>
<td>FUNCTIONAL AREA</td>
<td>RESPONSIBILITY</td>
<td>BUDGET ESTIMATE</td>
<td>PHASING</td>
</tr>
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</tr>
<tr>
<td>CE-01</td>
<td>New Link</td>
<td>Construction of new 4 lane arterial to connect N3 via the new interchange to the realigned D12 and to provide access to Cato Ridge East.</td>
<td>Cato Ridge East</td>
<td>ETA/Developer</td>
<td>R 6.4m</td>
<td>Medium</td>
</tr>
<tr>
<td>CE-02</td>
<td>New Link</td>
<td>Realignment and extension of D12 to 4 lane arterial to provide access from Cato Ridge East to the MR 385.</td>
<td>Cato Ridge East</td>
<td>ETA/Developer</td>
<td>R 110.1m</td>
<td>Medium</td>
</tr>
<tr>
<td>CE-03</td>
<td>New Link</td>
<td>Upgrade capacity of D12 to connect to MR556.</td>
<td>Cato Ridge East</td>
<td>ETA/Developer</td>
<td>R 27.3m</td>
<td>Medium</td>
</tr>
<tr>
<td>CRV-06</td>
<td>New Link</td>
<td>Upgrade capacity of MR385.</td>
<td>Cato Ridge Village</td>
<td>ETA/Developer</td>
<td>R 32.2m</td>
<td>Medium</td>
</tr>
<tr>
<td>H-09</td>
<td>New Link</td>
<td>New internal 2 lane access road to structure and serve the sub-precinct.</td>
<td>Harrison</td>
<td>Developer</td>
<td>R 49.2m</td>
<td>Medium</td>
</tr>
<tr>
<td>HS-01</td>
<td>New Link</td>
<td>Construction of new 6 lane arterial to connect N3 via the new interchange to the junction of Eddie Hagan and the P1-3.</td>
<td>Harrison South</td>
<td>ETA/ Developer</td>
<td>R 46.6m</td>
<td>Medium</td>
</tr>
<tr>
<td>HS-02</td>
<td>New Link</td>
<td>Realignment of D12 to provide a 2 lane access road to connect between Harrison South and Cato Ridge East over the N3 via the existing bridge.</td>
<td>Harrison South</td>
<td>Developer</td>
<td>R 49.9m</td>
<td>Medium</td>
</tr>
<tr>
<td>HS-03</td>
<td>New Link</td>
<td>Realignment of D12 to provide a 2 lane access road to connect between Harrison South and Cato Ridge East over the N3 via the existing bridge.</td>
<td>Harrison South</td>
<td>Developer</td>
<td>R 29.4m</td>
<td>Medium</td>
</tr>
<tr>
<td>CRV-03</td>
<td>Upgrade Capacity</td>
<td>Upgrade the capacity of the P1-3 by widening the road from 2 lanes to 3 lanes in each direction from the Cato Ridge Interchange to Thousand Hills Street and beyond.</td>
<td>Cato Ridge Village</td>
<td>ETA</td>
<td>R 148.5m</td>
<td>Medium</td>
</tr>
<tr>
<td>H-05</td>
<td>Upgrade Capacity</td>
<td>Upgrade the capacity of the central stretch of Eddie Hagan to 2 lanes in each direction.</td>
<td>Harrison</td>
<td>ETA</td>
<td>R 27.1m</td>
<td>Medium</td>
</tr>
<tr>
<td>H-06</td>
<td>Upgrade Capacity</td>
<td>Upgrade the capacity of the southern extent of Eddie Hagan to 3 lanes in each direction.</td>
<td>Harrison</td>
<td>ETA</td>
<td>R 15.7m</td>
<td>Medium</td>
</tr>
<tr>
<td>HS-04</td>
<td>Upgrade Capacity</td>
<td>Upgrade the capacity of the MR556 to connect the P1-3 to the D12 in order to provide connectivity between Harrison South and Cato Ridge East and alternative access to the sub-precinct via the new N3 interchange.</td>
<td>Harrison South</td>
<td>ETA</td>
<td>R 60.2m</td>
<td>Medium</td>
</tr>
<tr>
<td>N3-03</td>
<td>Downgrade Interchange</td>
<td>Closure of east-facing ramps in order to accommodate interchange spacing requirements of new Interchange</td>
<td>N3 Corridor</td>
<td>ETA/SANRAL/Developer/KZN DoT</td>
<td>Tbd</td>
<td>Long</td>
</tr>
<tr>
<td>CRV-02</td>
<td>New Link</td>
<td>Provide new access road to provide connectivity within the FAP and connect the Village to the realigned D12.</td>
<td>Cato Ridge Village</td>
<td>ETA</td>
<td>R 13.7m</td>
<td>Long</td>
</tr>
<tr>
<td>CRV-07</td>
<td>New Link</td>
<td>New link to structure FAP and local term internal access.</td>
<td>Cato Ridge Village</td>
<td>ETA</td>
<td>R 30.9m</td>
<td>Long</td>
</tr>
<tr>
<td>CRV-08</td>
<td>New Link</td>
<td>New link as extension of realigned D12 to connect to P1-3 and westward to Camperdown.</td>
<td>Cato Ridge Village</td>
<td>ETA/Developer</td>
<td>R 27.8m</td>
<td>Long</td>
</tr>
<tr>
<td>E-01</td>
<td>New Link</td>
<td>New access route to connect the two FAP areas.</td>
<td>Esikelekehleni</td>
<td>ETA</td>
<td>R 54.8m</td>
<td>Long</td>
</tr>
<tr>
<td>H-07</td>
<td>New Link</td>
<td>New access route from Eddie Hagan to connect to track 94044 in order to provide direct access into KwaXimba West.</td>
<td>Harrison</td>
<td>ETA</td>
<td>R 21.9m</td>
<td>Long</td>
</tr>
<tr>
<td>CRV-05</td>
<td>Realign Link</td>
<td>Realign P1-3 to bypass Camperdown Town Centre.</td>
<td>Cato Ridge Village</td>
<td>ETA</td>
<td>R 78.4m</td>
<td>Long</td>
</tr>
<tr>
<td>ID</td>
<td>NAME</td>
<td>PROJECT DESCRIPTION</td>
<td>FUNCTIONAL AREA</td>
<td>RESPONSIBILITY</td>
<td>BUDGET ESTIMATE</td>
<td>PHASING</td>
</tr>
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<td>---------</td>
</tr>
<tr>
<td>H-08</td>
<td>Realign Link</td>
<td>Realignment of intersection and link</td>
<td>Harrison</td>
<td>ETA</td>
<td>R 3.5m</td>
<td>Long</td>
</tr>
<tr>
<td>CRV-01</td>
<td>Upgrade Capacity</td>
<td>Upgrade capacity of Doornrug Road.</td>
<td>Harrison South</td>
<td>ETC</td>
<td>R 17.4m</td>
<td>Long</td>
</tr>
<tr>
<td>CRV-04</td>
<td>Upgrade Capacity</td>
<td>Upgrade capacity to link to Cato Ridge Village</td>
<td>Cato Ridge Village</td>
<td>ETA</td>
<td>R 44.5m</td>
<td>Long</td>
</tr>
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</table>

**INFRASTRUCTURE (POTABLE WATER & SANITATION)**

<table>
<thead>
<tr>
<th>ID</th>
<th>NAME</th>
<th>PROJECT DESCRIPTION</th>
<th>FUNCTIONAL AREA</th>
<th>RESPONSIBILITY</th>
<th>BUDGET ESTIMATE</th>
<th>PHASING</th>
</tr>
</thead>
<tbody>
<tr>
<td>I01</td>
<td>Bulk Water Pipeline</td>
<td>Bulk Supply Pipeline from Western Aqueduct to Harrison South Cato Ridge East Reservoir (3.5 km)</td>
<td>Cato Ridge Village Harrison South</td>
<td>Water &amp; Sanitation Department</td>
<td>R 20.0m</td>
<td>Short</td>
</tr>
<tr>
<td>I02</td>
<td>Reservoir Capacity Enhancement</td>
<td>Harrison Flats South Cato Ridge East Reservoir (13 Mt)</td>
<td>Harrison South</td>
<td>Water &amp; Sanitation Department</td>
<td>R 20.0m</td>
<td>Short</td>
</tr>
<tr>
<td>I03</td>
<td>Bulk Water Pipeline</td>
<td>Supply pipeline from Cato Ridge Reservoir to Harrison Flats (1.75 km)</td>
<td>Cato Ridge East Harrison Flats Harrison South</td>
<td>Water &amp; Sanitation Department</td>
<td>R10.0m</td>
<td>Medium</td>
</tr>
<tr>
<td>I04</td>
<td>Reservoir Capacity Enhancement</td>
<td>Additional Storage at Cato Ridge Res (20 Mt)</td>
<td>Harrison Flats</td>
<td>Water &amp; Sanitation Department</td>
<td>R30.0m</td>
<td>Medium</td>
</tr>
<tr>
<td>I05</td>
<td>Reservoir Capacity Enhancement</td>
<td>Additional storage Harrison Flats South, Cato Ridge East Reservoir (13 Mt)</td>
<td>Harrison South</td>
<td>Water &amp; Sanitation Department</td>
<td>R 20.0m</td>
<td>Long</td>
</tr>
<tr>
<td>I06</td>
<td>Reservoir Capacity Enhancement</td>
<td>Further Storage at Cato Ridge Res (20 Mt)</td>
<td>Harrison Flats</td>
<td>Water &amp; Sanitation Department</td>
<td>R30.0m</td>
<td>Long</td>
</tr>
<tr>
<td>I07</td>
<td>Outfall Sewer</td>
<td>Cato Ridge to Hammarsdale Outfall Sewer (11km)</td>
<td>Cato Ridge East External</td>
<td>Water &amp; Sanitation Department</td>
<td>R100.0m</td>
<td>Short</td>
</tr>
<tr>
<td>I08</td>
<td>Trunk Sewer</td>
<td>Harrison Flats to Cato Ridge Trunk Sewer (5 km)</td>
<td>Cato Ridge East Harrison Flats Harrison South</td>
<td>Water &amp; Sanitation Department</td>
<td>R40.0m</td>
<td>Medium</td>
</tr>
<tr>
<td>I09</td>
<td>Sewage Pump Stations</td>
<td>Sewage Pump Stations</td>
<td>All</td>
<td>Water &amp; Sanitation Department</td>
<td>R50.0m</td>
<td>Medium</td>
</tr>
<tr>
<td>I10</td>
<td>Hammarsdale WWTW Phase 1 Upgrade</td>
<td>Upgrade of the Hammarsdale WWTW (Phase 1)</td>
<td>External</td>
<td>Water &amp; Sanitation Department</td>
<td>R250.0m</td>
<td>Long</td>
</tr>
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</table>

**ENVIRONMENT**

<table>
<thead>
<tr>
<th>ID</th>
<th>NAME</th>
<th>PROJECT DESCRIPTION</th>
<th>RESPONSIBILITY</th>
<th>BUDGET ESTIMATE</th>
<th>PHASING</th>
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</thead>
<tbody>
<tr>
<td>E01</td>
<td>D’Moss Management and Acquisition Programme</td>
<td>Continue programme to manage and acquire D’Moss lands within Mpumalanga study area, including KZN Sandstone Sourveld in the northern areas with the broad aim of including these grasslands in a proposed KZNSS Nature Reserve. This would be one of the largest areas of KZN Sandstone Sourveld under environmental protection.</td>
<td>All</td>
<td>eThekwini EPCPD</td>
<td>TBD</td>
</tr>
<tr>
<td>E02</td>
<td>Water Quality Monitoring Programme</td>
<td>Develop a local water quality-monitoring programme for the Mlazi and Sterkspruit Rivers to monitor changes in water quality.</td>
<td>All</td>
<td>eThekwini WSD</td>
<td>TBD</td>
</tr>
<tr>
<td>ID</td>
<td>NAME</td>
<td>PROJECT DESCRIPTION</td>
<td>FUNCTIONAL AREA</td>
<td>RESPONSIBILITY</td>
<td>BUDGET ESTIMATE</td>
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<tr>
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</tr>
<tr>
<td>E03</td>
<td>Landscaping Plan for Eddie Hagan Drive</td>
<td>Preparation of guidelines for both the private sector and public sector with respect to landscaping key visual amenity corridors into the KwaXimba Tourism Area</td>
<td>Harrison Flats</td>
<td>Parks Department</td>
<td>TBD</td>
</tr>
<tr>
<td>E04</td>
<td>Landscaping Plan for N3</td>
<td>Preparation of guidelines for both the private sector and public sector with respect to landscaping key visual amenity corridors into the KwaXimba Tourism Area</td>
<td>Cato Ridge Village</td>
<td>Parks Department</td>
<td>TBD</td>
</tr>
</tbody>
</table>
# 9 Monitoring and Review

## 9.1 Monitoring and Review Process

A Local Area or Functional Area Plan is not a blueprint for development and therefore must be able to respond to changing circumstances in order to remain relevant.

Such changes include changes within the broader policy environment, development pressures, economic growth and development requirements and/or changing political priorities. These changes however need to be effected through a coordinated monitoring and review system.

Monitoring and Review is process by which the success of the plan is assessed using key performance indicators that measure development trends, the plan is reviewed in light of these, and where necessary amended, or replaced to reflect necessary changes (Figure 9-1).

### 9.1.1 Monitoring

The monitoring system proposed for the Local Area Plan focuses on:

- ensuring the adoption of the Local Area Plan by the Municipality
- the implementation of the Local Area Plan and its strategies and policies by both the public and private sectors
- the impact of the plan on achieving its desired effects in terms of the type, form, rate and impact of growth
- achieving the strategic priorities set by eThekwini Municipality to deliver against its vision

Key performance areas (KPAs), objectives and targets for the implementation of the Cato Ridge Local Area Plan are outlined in Table 9-1. These include indicators based on the Monitoring and Reporting outcome indicators as required by National Treasury’s City Support Programme (2017), and other indicators deemed necessary to monitor the LAP.

Only indicators relevant and meaningful for the monitoring and review of the Cato Ridge Local Area Plan have been provided. Each indicator code chosen has also been edited to suit the requirements of monitoring the implementation of the LAP.

### 9.1.2 Review

- The review of the Local Area Plan is the responsibility of the eThekwini Municipal Strategic Planning Department in conjunction with other municipal departments and in consultation with public and private stakeholders.
- Whilst monitoring is ongoing, the review of the plan should occur every five (5) years. Any form of review must be based on the assessment of the plan according to the KPAs adopted to monitor the LAP.
- During the review process for the LAP, it may be necessary to review the need for the proposed projects or to consider additional projects that address changing requirements in the area.

The review of existing projects or the introduction of additional projects will need to be assessed against their ability to address the strategic objectives, KPAs and targets outlined in Table 9-1.

![Figure 9-1: Monitoring and Review Process](image-url)
Table 9-1 Key Performance Areas and Key Indicators

<table>
<thead>
<tr>
<th>KPA/OBJECTIVE</th>
<th>INDICATOR CODE AS REFERENCE</th>
<th>INDICATOR SHORT NAME</th>
<th>INDICATOR FORMULA</th>
<th>RESPONSIBLE DEPARTMENT</th>
<th>SOURCE</th>
<th>FREQUENCY</th>
<th>BASELINE</th>
<th>TARGET</th>
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<tr>
<td>WELL GOVERNED CITIES</td>
<td></td>
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<tr>
<td>Council Approval</td>
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<td>Approved LAP</td>
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<td>IDP Alignment</td>
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</tr>
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<td>Regulatory Enhancements</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>tbc</td>
</tr>
<tr>
<td>Delivery of public sector projects to</td>
<td>WG12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Annual</td>
<td>-</td>
<td>95%</td>
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<tr>
<td>Cato Ridge (Spatial Targeting)</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>Annual</td>
<td>-</td>
<td>tbd</td>
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<tr>
<td>COMPACT CITIES AND TRANSFORMED URBAN</td>
<td>CC1</td>
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<td></td>
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<td>Annual</td>
<td>0ha</td>
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</tr>
<tr>
<td>A compact and transformed urban/rural</td>
<td>CC2</td>
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<td></td>
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<td></td>
<td>Annual</td>
<td>-</td>
<td>10%</td>
</tr>
<tr>
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</tbody>
</table>

- Council Approval:
  - **Council Approval** of Local Area Plan:
    - **KPA/INDICATOR CODE**: n/a
    - **INDICATOR SHORT NAME**: n/a
    - **INDICATOR FORMULA**: n/a
    - **RESPONSIBLE DEPARTMENT**: Strategic Planning Department
    - **SOURCE**: Council Minutes
    - **FREQUENCY**: Once-off
    - **BASELINE**: -
    - **TARGET**: Approved LAP

- IDP Alignment:
  - **Percentage of identified projects included in EM Integrated Development Plan and Medium Term Expenditure Framework**:
    - **KPA/INDICATOR CODE**: n/a
    - **INDICATOR SHORT NAME**: n/a
    - **INDICATOR FORMULA**: (No of projects on MTEF) / (No of projects identified in LAP) x 100
    - **RESPONSIBLE DEPARTMENT**: Strategic Planning Department
    - **SOURCE**: MTEF
    - **FREQUENCY**: Annual
    - **BASELINE**: -
    - **TARGET**: 100%

- Regulatory Enhancements:
  - **Scheme amendments as per LAP recommendations**:
    - **KPA/INDICATOR CODE**: n/a
    - **INDICATOR SHORT NAME**: n/a
    - **INDICATOR FORMULA**: n/a
    - **RESPONSIBLE DEPARTMENT**: Land Use Management Department
    - **SOURCE**: Scheme
    - **FREQUENCY**: 5 year cycle
    - **BASELINE**: -
    - **TARGET**: tbc

- Establish Design Review Committee:
  - **KPA/INDICATOR CODE**: n/a
  - **INDICATOR SHORT NAME**: n/a
  - **INDICATOR FORMULA**: n/a
  - **RESPONSIBLE DEPARTMENT**: Architecture / Urban Design Department
  - **SOURCE**: Meeting Minutes
  - **FREQUENCY**: Annual

- Delivery of public sector projects to Cato Ridge (Spatial Targeting):
  - **WG12 Expenditure of Capital Budget**:
    - **KPA/INDICATOR CODE**: LG2
    - **INDICATOR SHORT NAME**: Expenditure of Capital Budget
    - **INDICATOR FORMULA**: (Total actual capital expenditure) / (Budgeted capital expenditure) x 100
    - **RESPONSIBLE DEPARTMENT**: Treasury
    - **SOURCE**: Annual Financials
    - **FREQUENCY**: Annual
    - **BASELINE**: tbd
    - **TARGET**: 95%

- **WG13 Percentage change in the value of properties in the Study Area**:
  - **KPA/INDICATOR CODE**: LG13
  - **INDICATOR SHORT NAME**: Percentage change in the value of properties in the Study Area
  - **INDICATOR FORMULA**: ((Value of privately owned buildings study area on year 3) - (Value of privately owned buildings in study area in year 1)) / (Value of privately owned buildings in integration zones on year 1)) x 100
  - **RESPONSIBLE DEPARTMENT**: Rates Department
  - **SOURCE**: City Valuation Roll
  - **FREQUENCY**: 3 year cycle
  - **BASELINE**: R 1.538 billion (2017)
  - **TARGET**: 10% increase in value per year
<table>
<thead>
<tr>
<th>KPA/OBJECTIVE CODE AS REFERENCE</th>
<th>OBJECTIVE</th>
<th>Indicator Short Name</th>
<th>Indicator Formula</th>
<th>Responsible Department</th>
<th>Source</th>
<th>Frequency</th>
<th>Baseline</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CC3</td>
<td>Number of building plan applications processed in the study area as a percentage of the total number of building plan applications city-wide</td>
<td>(Number of building plan applications processed in the study area) / (Total number of building plan applications processed citywide) x100</td>
<td>Building Plans Department</td>
<td>Development Register</td>
<td>Annual</td>
<td>-</td>
<td>10%</td>
</tr>
</tbody>
</table>

### INCLUSIVE CITIES

<table>
<thead>
<tr>
<th>Development Forum Expanded</th>
<th>Development Forum Established</th>
<th>n/a</th>
<th>Economic Development Department Strategic Planning Department</th>
<th>Records of Meetings</th>
<th>Annual</th>
<th>0</th>
<th>3 meetings per annum</th>
</tr>
</thead>
<tbody>
<tr>
<td>New housing options with social diversity</td>
<td>IC2</td>
<td>Gross residential unit density per hectare within study area</td>
<td>(Number of households in study area) : (area of study area (hectares))</td>
<td>City GIS Housing Department</td>
<td>Statistics SA LAP</td>
<td>Annual</td>
<td>0.85du/ha</td>
</tr>
<tr>
<td>Affordable and efficient public transport services</td>
<td>IC7</td>
<td>Number of all dwelling units within Study area that are within 800 metres of access points to the integrated public transport system as a percentage of all dwelling units within Study Area</td>
<td>(Number of all dwelling units within study area that are within 800 metres of access points to the integrated public transport system) / (Number of dwelling units study area) x100</td>
<td>eThekwini Transport Authority GIS CITP</td>
<td>3 year cycle</td>
<td>tbc</td>
<td>50%</td>
</tr>
</tbody>
</table>

### PRODUCTIVE CITIES

<p>| Rising GVA | PC1 | Productive GVA of study area as a percentage of metro productive GVA | (Productive GVA of study area) / [Metro productive GVA] x100 | Economic Development Department | Economic Research Data Statistics SA | Annual | tbc | 2% growth per annum |</p>
<table>
<thead>
<tr>
<th>KPA/ OBJECTIVE</th>
<th>INDICATOR CODE AS REFERENCE</th>
<th>INDICATOR SHORT NAME</th>
<th>INDICATOR FORMULA</th>
<th>RESPONSIBLE DEPARTMENT</th>
<th>SOURCE</th>
<th>FREQUENCY</th>
<th>BASELINE</th>
<th>TARGET</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SUSTAINABLE CITIES</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resource Efficiency</td>
<td>SC4</td>
<td>Green drop score for municipality</td>
<td>As per DWS Green Drop</td>
<td>eThekwini Water &amp; Sanitation</td>
<td>eThekwini Water &amp; Sanitation</td>
<td>2 year cycle</td>
<td>tbc</td>
<td>tbc</td>
</tr>
<tr>
<td></td>
<td>SC5</td>
<td>Blue drop score for the municipality</td>
<td>As per DWS Blue Drop</td>
<td>eThekwini Water &amp; Sanitation</td>
<td>eThekwini Water &amp; Sanitation</td>
<td>2 year cycle</td>
<td>tbc</td>
<td>tbc</td>
</tr>
<tr>
<td></td>
<td>SC9</td>
<td>Tonnes of commercial and industrial waste sent to landfill per GLA of commercial and industrial property</td>
<td>([(Tons of commercial waste to landfill city-wide) + (Tons of industrial waste to landfill city-wide)] / [(GLA of commercial space city-wide) + (GLA of industrial space city-wide)])</td>
<td>Durban Solid Waste</td>
<td>Durban Solid Waste</td>
<td>Annual</td>
<td>tbc</td>
<td>tbc</td>
</tr>
<tr>
<td><strong>Integrity of Ecosystems</strong></td>
<td>SC10</td>
<td>Percentage of scientifically derived minimum targets achieved for vegetation types included in a relevant biodiversity plan (e.g., Biodiversity Sector Plan)</td>
<td>[(Area of vegetation type that is formally protected) / (Area of vegetation type required to meet national targets)] x 100</td>
<td>Environmental Planning and Climate Protection Department</td>
<td>Annual Report</td>
<td>Annual</td>
<td>tbc</td>
<td>tbc</td>
</tr>
<tr>
<td></td>
<td>SC11</td>
<td>Percentage of vegetation types required for meeting targets (with or without formal protection) that are appropriately managed</td>
<td>[(Total area of vegetation type managed)/(Total area of vegetation type required to meet target)] x 100</td>
<td>Environmental Planning and Climate Protection Department</td>
<td>Annual Report</td>
<td>Annual</td>
<td>tbc</td>
<td>tbc</td>
</tr>
</tbody>
</table>
REFERENCES

Arup (2012) SSAreas per Zone Rev6 Excel Spreadsheet
COGTA (2016) Nodal Plan Region 1: Umgungundlovu & eThekwini Industrial and Logistics Hub, April
CSIR (2008) Accessibility Mapping and Optimisation of Community Social Services in eThekwini, September
eThekwini Municipality (2016a) Durban’s Systematic Conservation Assessment, Environmental Planning and Climate Protection Department,
eThekwini Municipality (2014b) Industrial Land Study and Land Strategy Development - Phase 2 Study Analysis Report, Prepared by The Planning Initiative, March
eThekwini Municipality (2014c) Outer West Scheme, Review July 2014
eThekwini Municipality (2013) Land Use and the Environment in Tribal Communities of the eThekwini Municipality: Guideline Document for Tribal Authorities, Environmental Planning & Climate Protection Department
eThekwini Municipality (2010) Development Assessment Guidelines, Environmental Planning & Climate Protection Department
Royal HaskoningDHV (2014) Mpumalanga Local Area Plan: Strategic Assessment Planning
SSI Engineers & Environmental Consultants (2011) Northern Urban Development Corridor
SSI Engineers & Environmental Consultants (2010) Northern Urban Development Corridor: Generating Development Scenarios, March
Statistics SA (2011) Census Data