3 Spatial Planning and Land Use Management

Land is modified and transformed to support human activity and to enable residents, businesses, industry, agriculture and ecological systems to thrive. This includes building roads, railway lines, infrastructure, buildings, schools, health facilities, recreational open space, and farms. Where these are placed and how they interact is dependent on the natural environment, transport systems, demographics, socio-economic factors and policy.

As a large percentage of the municipality's population live in towns, the ways in which urban areas are planned, designed and built can impact life in KwaDukuza. Currently, urban settlements are spreading out and encroaching on valuable agricultural land and ecologically sensitive areas. This is known as sprawl. A pattern of sprawl creates traffic problems as people have to travel further, it negatively impacts the local ecology, and overburdens local resources, services and infrastructure. This, in turn, can put strain on the local economy and municipal finances.

3.1 What changes do we need?

In response to national policy, municipalities throughout South Africa are encouraging higher density new development and the densification of existing areas. One strategy to do this is by placing emphasis on development within a designated urban edge to reduce sprawl. Increased urban density and a compact urban form allows for cheaper infrastructure provision as more people can be serviced in a smaller space with a reduced impact on sensitive ecological areas and high value agriculture land. To aid the transition to low emission development in KwaDukuza, urban areas need to be made up of diverse, medium-density, safe neighbourhoods with a vibrant town center and increased connectivity through a network of safe, well-designed public spaces and corridors.

The principles of this spatial vision are:

Threshold density:
Where density is increased to reduce the rate of urban expansion and sprawl, to support transport infrastructure and services, to reduce the cost of municipal service provision, and to protect valuable agricultural land and sensitive ecosystems.

Increased diversity:
Where diversity is increased to promote shared urban space for citizens who have different incomes, cultures and family structures.

Permeable urban form:
Where towns and suburbs are laid out in such a way as to have easily navigable urban grids with many points of entry and exit. This increased choice of route improves accessibility and connectivity between different areas in the towns.

Pedestrian priority:
Where citizens are encouraged to walk when needing to make short trips rather than use private vehicles. This can promote more active lifestyles and improved health, increased safety as more people are on the street and reduced greenhouse gas emissions.

Connected and safe public space:
The increased provision and improved access to public open spaces (hard or soft surfaces) in urban areas that are safe and within a short walking distance from home or work for children to play safely and connect with nature and people.

The following guidelines indicate voluntary best practice which, when implemented, can work towards seeing these principles manifest in the municipality.

3.2 How do we design our buildings?

3.2.1 Design to enable density thresholds

Choose a previously developed site within the urban edge, i.e. select a brownfield site rather than a greenfield site. This is called infill development and building within the urban edge increases urban density to support efficient and more sustainable infrastructure provision while reducing the harmful effects of development on the natural environment and high-value agricultural land.

Fast Fact:

Difference between brown and greenfield site

A brownfield site is a plot of land that has been used previously, as a building, car park or other urban uses. A greenfield site refers to an unused, still naturally vegetated plot of land.

Appropriately maximise building height, bulk and set-backs: Design buildings to make use of the maximum bulk and height permitted by the land use zoning scheme. Place the building as close to the site's street edge as is allowed by the zoning scheme. This helps to create a dense urban form and maximises the use of land within the urban edge to prevent unnecessary sprawl.

3.2.2 Promote increased social and land use diversity

Mixed use: Where possible include more than one use in the design of a building. The most successful uses to mix include residential, offices, retail and education, especially where retail and other high-activity spaces are placed on the ground floor to improve security and provide services in close proximity to where people live and work.

Mixed income: When designing residential or commercial units in particular, ensure that a variety of sizes and typologies are available to encourage owners/tenants from a range of income groups.

Flexible base building designs: Consider floor heights and layouts which are common to most building typologies not just one (such as parking garages) to encourage the reuse rather than demolition of buildings when a new use is required. This is to allow for an easy future retrofit, which reduces the use of new materials and reduces greenhouse gas emissions.

3.2.3 Promote a permeable urban form

Increase accessibility: Do not obstruct pathways or service lots that are adjacent to or even on the site as they can be used by pedestrians or cyclists to increase accessibility.

3.2.4 Design for pedestrians

Design an interactive street facade: Within the commercial town centers of urban areas especially, building function and space layout on the ground floor should be interactive and engage pedestrians, such as stores or public facilities e.g. libraries. The facades of buildings should be designed so that they promote activity on the ground floor (edge activation), ensure that development is at a human scale, and allow for interactive spaces. Other interventions which can have a marked positive impact are the treatment of shop fronts, implementation of traffic calming measures (such as pinching a road to allow wider pavements for coffee shops tables or informal traders), thus slowing vehicular traffic while still allowing pedestrian movement, and building design such that parking garages are not located on the street-facing frontage.

Design pedestrian entrances: Ensure that there is ease of access for pedestrians from surrounding walkways and transport stops to access a building or site (such as a shopping centre). It can be unsafe and deter pedestrians when the only access point is shared with motor vehicles.

3.2.5 Create safe and connected public open spaces

Enhance the building's surroundings: Where possible, look to providing appropriate seat furniture and bicycle racks along the street-facing edges of the buildings, plant trees and other appropriate vegetation and pave the walkways in front of the building.

Figure 4: An interactive facade from KwaDukuza Town Centre

Building or site boundary fences and walls: Boundary walls and fences fronting onto public streets, parks and other open spaces are highly visible and directly affect the character and visual amenity of neighbourhoods. For the building to have a more positive aesthetic impact and safety benefit on surrounding public open space, design the perimeter boundaries so that they are visually permeable and are not too high (1.8m on street boundaries and 2.1m on lateral boundaries).

3.3 How do we enhance our precincts?

3.3.1 Design for enabling density thresholds

Human-scaled density: Higher density living can have many benefits for residents and contribute to better performing urban environments. Medium/ high density housing can be accommodated in 3- to 6-storey buildings.

Transit-orientated density: Match areas of planned higher density on primary connection routes through an area or along roads that have a higher transit capacity. Denser areas need greater transit capacity to prevent congestion.

3.3.2 Promote increased social and land use diversity

Mixed-use developments: Ensure that there are a variety of uses within each neighbourhood. This can be provided for in separate buildings, which are close to one another or within the same building. This can include residential, retail, offices, education and public open with high activity uses, such as retail, on the ground floor with commercial, residential or hotels on the floors above.

Mixed income housing: Allow for a variety of housing typologies (apartments, townhouses, detached and semi-detached housing) and employment opportunities within a neighbourhood to promote a community with a variety of incomes.

A regular grid pattern: Designing and implementing a regular grid pattern can allow for flexibility over time. This is because the town layout is not designed for any particular sector (residential, commercial or retail) and therefore the buildings can easily change function without disrupting movement routes and the urban environment.

3.3.3 Promote a permeable urban form

Increased accessibility: Reduce the number of cul-de-sacs in neighbourhoods as these inhibit accessibility by creating deadends with little choice of route and movement. This can create unnecessary congestion and increase the use of cars rather than active transport options thereby increasing the municipality's greenhouse gas emissions from motor vehicles.

Connectivity: Ensure that all new planned areas or townships are well connected to the existing urban form, structure and roads to improve the connectivity between areas in a town (the more points of entrance/exit there are, the higher the connectivity and accessibility). This can happen through joining up and aligning new streets with existing ones.

A networked grid: Using a grid pattern as the structure for an urban layout can offer increased connectivity and accessibility as it increases the choice of route available to move from one place to another and increases the ease by which this is done. A networked grid, which has a hierarchy or roads, allows for less congestion on smaller roads and gives multiple options for all types of traffic (NMT, public transport, private vehicles and freight).

3.3.4 Design for pedestrians

Increased accessibility: Give priority to pedestrians or cyclists for accessibility. The design of precincts should include well-connected pathways to allow for ease of access by pedestrians in urban centers. These pathways should be wide enough to accommodate pedestrians walking in both directions.

Local connectivity: Having a variety of uses accommodating a variety of daily activities within each neighbourhood facilitates pedestrian priority by having these facilities in close proximity to one another and where people live and work so that people can choose to walk rather than drive their cars. These activities include a food market, pharmacy, medical center/doctors' rooms, crèche, bank or ATM, library, school, restaurants and fitness center.

Design settlements using perimeter blocks: Place buildings on the outside, street edge of urban blocks where a semi-private courtyard can be created for residents. This provides a well-defined edge to the street which can improve safety, walkability and the experience for people on the street.

Good walkways are defined by sufficiently wide pavements along streets that have few obstructions (such as parked cars or unmanaged informal trade) and include benches, the provision of shade and sufficient street lighting.

Urban design for safety: Ensure that infrastructure provision and public space design is done in accordance with the best practices for urban safety. This includes:

- Clear boundaries and collective ownership of public space
- Increased surveillance and visibility
- Safe access and movement
- Positive relationships and layered spaces
- Good urban management and monitoring

3.3.5 Create safe and connected public open spaces

Well-located public open space: Where possible choose sites for public open space which are adjacent to ecological systems, such as rivers, wetlands, hills and estuaries. This will allow these more ecologically sensitive areas to be used appropriately with little negative impact of these systems, thereby protecting them from future detrimental land use.

Connected open space systems: Design public spaces in a neighbourhood so that they form part of larger ecological networks and walking and cycling routes in the town and municipality.

Accessible open space systems: Public open space (whether a soft or hard surface) is to be interspersed within neighbourhoods to allow all citizens easy and regular access (within a 5 - 10 minute walk from all homes or places of work).

Clustering of services: Cluster community services, such as schools, crèches, clinics, libraries and community sports grounds, around public open spaces to increase the number of people watching and doing activities on the street or park (passive surveillance). Clustering can also reduce the amount of space that many services require as they can share spaces during different times of the day.

Case Study

Cornubia Urban Development
Umhlanga

Cornubia is a 1300ha integrated human settlements project, which forms part of the extension of Umhlanga, just outside Durban. The total cost is estimated to be R25 billion with a development time span of 25 years. Through this public-private partnership the developers have taken a sustainable city approach with housing, retail, public open space, community facilities, schools, clinics and light industry being accommodated within the settlement. These functions are to be connected via non-motorised transport routes within the settlement and with the Integrated Bus Rapid Transport System to areas beyond its boundary. The key spatial and land use planning practices employed include: increased diversity (in function, income and opportunity), increased residential density to reduce sprawl, the inclusion and connectivity of public space, emphasis on public transport and walking, and a zero unemployment policy.

Source: *van Zandvoort, F. 2015. Changing the Umhlanga Skyline. Earthworks. 24: 70 - 80*