Theoretical and policy content: Settlement making and township development
Performance qualities of integrated human settlements

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1.0 Making the Case

It is estimated that by 2007 the majority of the world’s population will live in cities, and by 2030, 60% of global population will live in cities\(^1\). Cities can be the engines for growth and development, while conversely, poorly planned and managed cities can also deepen poverty, erode social capital, and undermine ecosystems.

Settlement creation in South Africa has been dominated by the provision of housing. Housing is characterised by two overarching problems/issues, namely the quantity (backlog) of housing and, more recently a growing concern regarding the quality (location, form, housing typology, etc) of housing.

\(^2\)The poor form of housing at a town/city scale, and at a household scale impacts on the sustainability of the settlement. The impacts include:

- Increasing average distance travelled between work and home,
- Growing demand for fossil fuels and escalating CO\(_2\) emissions per capita as a result of distances travelled,
- Loss of productive land and biodiversity due to urbanisation and sprawling settlement form,
- Increasing electricity consumption (household scale), and
- Raising water consumption (household scale).

In response to the problems there has been a paradigm shift, resulting in a new policy framework\(^3\):

- The **Development Facilitation Act (1995) (DFA)** put a normative framework of general principles in terms of which development of land should be done. The general principles are as follows:
  - illegal occupation of land should be discouraged
  - promote the integration of the social, economic, institutional and physical aspects of land development;
  - promote integrated land development in rural and urban areas in support of each other;
  - promote the availability of residential and employment opportunities in close proximity to or integrated with each other;

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\(^1\) Tibaijuka A K 2006: Keynote Address to the Plenary Session of the World Planners Congress: The Importance of Urban Planning in Urban Poverty Reduction and Sustainable Development


\(^3\) Note: This is not an extensive review of the existing policy, other legislation and policies such as the Development Facilitation Act, Act 67 of 1995, and iKapa Elihlumayo are also significant in creating a policy context for sustainable settlement.
o optimise the use of existing resources including such resources relating to agriculture, land, minerals, bulk infrastructure, roads, transportation and social facilities;
o promote a diverse combination of land uses, also at the level of individual erven or subdivisions of land;
o discourage the phenomenon of “urban sprawl” in urban areas and contribute to the development of more compact towns and cities;
o contribute to the correction of the historically distorted spatial patterns of settlement in the Republic and to the optimum use of existing infrastructure in excess of current needs; and
o encourage environmentally sustainable land development practices and processes.
o Promote the participation of members of communities affected by land development in the process of land development.
o Develop the skills and capacities of disadvantaged persons involved in land development.
o promote the establishment of viable communities;
o promote sustained protection of the environment;
o meet the basic needs of all citizens in an affordable way; and
o ensure the safe utilisation of land by taking into consideration factors such as geological formations and hazardous undermined areas.

- The National Spatial Development Plan (NSDP) provides a framework to restructure the national space economy by providing guidance on how and where government should invest, in particular in infrastructure, facilities and housing. The NSDP establishes normative principles to guide all government infrastructure investment and development spending in order to meet the national objectives of economic growth, employment creation, sustainable service delivery, poverty alleviation and correction of historical.

The normative principles are:
o Economic growth is a prerequisite for the achievement of other policy objectives
o Government spending on fixed investment should be focused on places of economic growth and potential.
o Focus on people, not places in order to address past and current social inequalities.
o Future settlement and economic development opportunities should be channelled into activity corridors and nodes adjoining or linked to main growth centres.

Breaking New Ground – A Comprehensive Plan for the Development of Sustainable Human Settlements (2004) reflects a paradigm shift in national housing policy from building houses towards creating integrated human settlements. In essence this policy incorporates the quantitative and qualitative aspects of housing. This paradigm shift is highlighted in the new housing vision: “to promote the achievement of a non-racial, integrated society through the development of sustainable human settlements and quality housing.”
1.1 The starting point

Our aim is “to promote the achievement of a non-racial, integrated society through the development of sustainable human settlements and quality housing.” But what does this mean? We need to unpack these concepts in order to understand what it is we need to achieve.

1.1.1 What do we mean by “integrated”?

“Positive urban environments are integrated and interdependent, in the sense that there is a mix and overlap of activities and a Locational synergy – different but complementary activities and facilities located in close proximity benefit from each other.”

Integration has two components: physical and socio-economic integration:
Physical integration refers to the overlap and interdependence of functions and activities within the settlement, with the purpose of maximising the benefits of overlapping activities and uses. The challenge is to understand the complexity and to set up the preconditions for vitality during the task of place making or settlement creation. Physical integration characteristics include:
• well-designed dense developments connected by pedestrian-friendly streets, and
• a horizontal and vertical mix of uses (including residential, non-polluting industrial, services, commercial and institutional uses)

Socio-economic integration is an important characteristic of physical integration and refers to physical proximity of different socio-economic groups in area so as to create a cohesive community. Characteristics of socio-economic integration include the settlement of a range of socio-economic groups within walking distance of each other.

1.1.2 What do we mean by “sustainable”?

Sustainability refers to an awareness of the context in which a settlement occurs and its relationship with the surrounding environment. A sustainable settlement reduces the impact on the environment through reducing the use of resources and the production of waste while improving the liveability of the settlement.

Characteristics of a sustainable, liveable urban environment include the following:
• There is ease of access to employment, education, housing and recreation opportunities.
• Resources are used efficiently.
• There is a choice of services, as well as education, recreation and employment opportunities.
• There is a choice of housing typologies (forms) and densities.

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• There is reliable and affordable public transport and walkable local areas, reducing reliance on cars.
• There are quality public spaces.
• All residents have a sense of place or belonging.
• There is a mix of uses within a local area.

1.1.3 Performance Qualities

A sustainable human settlement is a liveable settlement. A liveable urban environment satisfies more than just basic needs of its citizens, it refers to the degree to which the individual’s and communities' needs for social amenity, well-being and health are met. It is closely linked to the concept of quality of life, or the level of satisfaction experienced perceived by inhabitants of a town or settlement. Liveable urban environments are characterised by the following performance qualities:

- Opportunity generation
Cities offer a range of urban opportunities (economic, social, cultural are recreational) which are generated through agglomeration of large numbers of people. However, the ability to generate these opportunities is not solely reliant on size and concentration of people, it is affected by the way in which a settlement is planned and designed. In the context of South Africa, it is important to generate opportunities for small-scale economic activity. Although plans (and planners) cannot create jobs, they can create the preconditions to promote or inhibit economic generation.

- Access
Sustainable human settlements should be characterised by equitable/easy and convenient access to opportunities and facilities. The road layout and location of facilities should ensure that facilities and urban opportunities are accessible by the greatest number of people. The road network should provide for the “lowest common denominator” and should therefore priorities pedestrian movement and public transport.

- Place-making
Place making refers to the creation of urban environments with a unique sense of place. Urban environments with a sense of place reflect the nature of their natural and cultural setting, creating identifiable and memorable places.

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2.0 Issues and Challenges: Fragmentation

2.1 Fragmentation: The Settlement

The legacy of Apartheid planning coupled with modernist planning theory in South African cities is mono-functional settlements where racial and income groups and urban activities are separated. As a result, cities and towns are characterised by:

- inappropriately located settlements (i.e. locating the urban poor on the periphery of the town/city or outside the town/city),
- unsuitable housing form (low density, one house one plot),
- poorly located social facilities with excessive space standards, and
- Limited tenure options.

The Department of Housing, City Planning and Environmental Management, the City of Tshwane (2004) in the report *A Macro Perspective on Residential Densities and Compaction for Tshwane* outlines the structure of a typical South African city, consisting of pockets of divergent nodes and suburbs.

**The Central Business District**

This is the oldest, highest order and most established node. The CBD contains a mix of land uses. Generally it is the focus of transport routes, making it accessible to the largest number of people. The inner city is declining as businesses move to decentralised suburban nodes.

**Established formal inner suburbs**

The inner suburbs are well located and surround the inner city. They typically accommodate upper income residents. Properties are generally large and the cost of living in these areas is high. These suburbs are becoming denser and containing a greater mix of uses over time. They are under threat from redevelopment for offices.

**Suburban nodes**

Suburban nodes have grown dramatically over the last twenty years, beginning as shopping nodes and diversifying to include office and entertainment uses. These nodes are space extensive and characterised by low intensity development. Generally, they are located in close proximity to highways and are accessible by private car. The environment is characterised by mass parking areas and a vehicular dominated road network, resulting in a hostile pedestrian environment and leading to gridlock at peak times.
New formal edge suburbs

Edge suburbs are emerging on the periphery of settlements. They are characterized by medium density developments (including townhouse, groups housing, high income estates) catering for middle income residents, creating mono-functional higher density residential. Residents rely on private transport.

Industrial and office parks

Industrial and office parks are located in decentralized and accessible locations on the edge of settlements, usually in close proximity to edge suburbs. Similar to edge suburbs, these industrial and office parks are dependant on private transport.

Low-income townships and associated informal areas

Located on the periphery of most urban areas are townships created by the apartheid government as temporary homes for the urban black population. The townships are characterised by mono-functional residential development (dormitory towns) separated from the rest of the city by buffer strips, railway lines or industrial land uses. New low cost housing projects and informal settlements are often located adjacent to these townships, perpetuating the apartheid city form.
2.2  Fragmentation: The neighbourhood and local area scale

“(subsidy housing) developments with their emphasis on the housing unit, inhibit access for and further isolate the mainly pedestrian or public-transport dependent residents from normal urban services, facilities and amenities and opportunities…

… To become sustainable and sustaining settlements requires planning interventions that will facilitate and support local entrepreneurial activities and a shift from the existing mono-functional dormitory nature of many of the residential areas. 9

The overall fragmentation of the neighbourhood is the result of poor functioning, fragmented elements. These are discussed below:

2.2.1 Movement Network

The current township is characterised by:
- Strict road hierarchies, resulting in inwardly oriented neighbourhoods bound by high order, mobility routes,
- Poor pedestrian access and a movement network with an automobile focus,

2.2.2 Public Facilities

The current township is characterised by:
- Public facilities are typically internalised within a neighbourhood, restricting access to the wider community.
- A programmatic approach to facility provision characterised by high space standards has resulted in underutilised facilities sites (e.g. school sites where fields are not developed)
- Under-provision of facilities
- Isolated single facilities
- High maintenance and development costs
- Space left after planning (S.L.A.P.), where facilities are planned, but never developed

2.2.3 Public Space

The current township is characterised by:
- Lack of integration/relationship between built and natural elements
- Focus on the house not the public environment
- Lack of relationship between public buildings and public environment
- “uncomfortable” public environment – no trees, seating, lighting

2.2.4 The House

The current township is characterised by:

- Lacks of sense of place (sameness) – all units look the same.
- Isolated housing units set in the middle of erven
- One solution to address the needs of all households.
3.0 The Building Blocks: Components of integrated human settlement

An integrated human settlement consists of a number of elements, or building blocks, which are assembled in an organised and legible manner to create a well functioning settlement. The elements which will be discussed in this paper are:

- The Movement Network,
- Public facilities,
- Public spaces, and
- The house.

This chapter will unpack the building blocks, categorising them into types or hierarchies. Hierarchies provide a strategic tool for understanding the Locational requirements of the elements of an integrated human settlement, allowing us to match compatible land uses and movement/access requirements. Chapter 4 will discuss the layout requirements of the building blocks.

3.1 Access and Movement

3.1.1 A Road Hierarchy: Movement and Access

A road hierarchy provides a tool to establish the roles of streets/roads within a movement system. Road hierarchies have been applied in a rigid and inflexible manner, resulting in monotonous or dysfunctional road dominant layouts. However, a road hierarchy can provide a strategic tool to prioritise street space for competing activities (movement, access, and other urban activities)\(^{10}\) and matching compatible land uses and activities with compatible traffic flow and access requirements.

Terminology varies greatly amongst road hierarchy and classification systems. A road hierarchy consists of a range of roads from major roads (heavy traffic flow, high design speeds, infrequent access spaces, no direct access) to minor roads (light traffic flow, low design speeds, frequent access points, access to building frontage). Generally, higher order roads are more mobility focused, while lower order roads are access focussed.

\(^{10}\) Stephen Marshall Building on Buchanan (n/d) Evolving road hierarchy for today’s streets-oriented design agenda
a  Variety and flexibility within the road hierarchy

The role and function of a road or street can vary over its length. At certain points or localities in the urban system, the mobility function of the road may be greater than the access function, and vice versa. In order to understand this, Stephen Marshall proposes that any street section is the result of a combination of the link status and the place status of the street. The link status refers to the street sections significance in the road network (in other words, its classification in the hierarchy), while the place status refers to the significance of the street section as an urban place (in other words its place in the nodal hierarchy). The link status stays constant over the length of the street, whereas the place status will differ along the route.

b  Proposed Hierarchy

The proposed road hierarchy (based on the hierarchy established by Stephen Marshall in “Building on Buchanan: Evolving road Hierarchy for Today's Streets-Oriented Design Agenda”) takes into account the link and place status of a street.

“Local Street”
- Local street
- Access is given priority, mobility is compromised in favour of activity
- Pedestrian intensive uses
- High level of direct access/Direct access to residential properties
- Also known as activity street (city of cape town), Local streets
- Link status: Access street
“District Road”
- Regional significance
- Continuous development (nodes)
- Medium to high density residential
- Direct access
- Interrupted movement flows
- Pedestrian oriented in sections
- Public transport
- Also known as Activity Routes (City of Cape Town) or mobility roads (Johannesburg),
- Link status: Collector streets, Local distributor

“Regional/City Road”
- Regional significance
- Line-haul public transport service, minimum interruption (optimal mobility)
- Interrupted flows at intersections
- Development areas linked to parallel and connecting side routes
- Nodal development
- Also known as Development Routes (City of Cape Town 2030 vision), Mobility spine (city of Johannesburg SDF),
- Link status: Arterial and sub-arterial roads

3.2 Public Facilities

Public facilities and services refer to services that cannot be provided by the individual household. Public facilities can be grouped into type or categories of public facilities in order to provide us with clues as to where they should be located in the urban system. These categories depend on the size of the area that they serve (their hinterland) and the degree of exposure or accessibility that they require.

Regional or higher order public facilities
- Serve the entire region, metropolitan area or city
- Unlikely to be planned for in a single housing layout, but rather planned in terms of an overall (municipal or town) development framework
- Location is determined by analysing the most suitable and accessible location for the greatest number of people

District or middle order public facility
- Serve a number of diverse and different communities
- These facilities are essential to the creation of sustainable human settlements at a neighbourhood scale, but serve a threshold beyond the individual neighbourhood (reword)

Local or lower-order public facilities
- Facilities utilised by a single community or neighbourhood
- Generally planned as part of a settlement layout
**Mobile public facilities**

A mobile unit travels through various areas in a region stopping at defined points along its route. These stopping points should be carefully identified and associated with existing community gathering points (such as a market, clinic) or town/neighbourhood centres.

(See annexure 1)

3.3 Public spaces

Public spaces refer to areas of a settlement or city where anyone has the right to come. They are the gathering places within a settlement. Public spaces include hard open space, ranging from streets and pavements to square and market places, and soft open spaces, such as parks. Public spaces provide the opportunity to invest in the public environment and influence private spending through improving the quality of environment and demonstrating confidence in an area.

Key design principles to keep in mind when developing public spaces are scale and enclosure. Scale refers to the size of the space in relation to its use and the surrounding urban structures. Generally, higher order public spaces are larger (e.g. a town square), while local public space (e.g. neighbourhood pocket park) are smaller and more intimate. Enclosure refers to the sense of definition, comfort and safety experienced by the user of a public space. Urban design elements that can be used in conjunction with public space to define/enclose the space include:

- Colonnades
- Surfacing and Paving
- Strategic and high quality planting
- Low walls and seating

3.4 Housing Unit - Choice

"For beneficiaries, choice is all but absent in the development of their subsidized housing, either in respect of the location of their houses within settlements, or house design. Those who have exercised a degree of choice – mostly through the PHP – are highly empowered by it, and appear committed to improving their housing."

Breaking New Ground states that “there is also a need to stimulate the supply of a more diverse set of housing environments and settlement types through greater choice of housing types, densities, location, tenure options, housing credit, and delivery routes (e.g. self-help, mutual self-help, contractor supply etc.)."

To this end, this paper introduces/explores/proposes the following housing typologies:

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11 Zack, T and S. Charlton, June 2003: Occasional paper 12, Better off, but... Beneficiaries’ perceptions of the government’s housing subsidy scheme
**Lower density housing typologies:**
- Incremental housing
- Single dwelling
- Second dwelling
- Semi-detached

**Higher density housing typologies:**
- Tenement housing
- Row house
- 3 or 4 storey walk-up
- Multi-storey

(See annexure 2 for housing primer)
4.0 How to arrange the elements to create a sustainable human settlement

The main structuring elements of a settlement are not houses, but public places and spaces, housing is simply the infill between these elements. Public spaces and places provide areas where people can meet and experience a settlement; they meet the needs of citizens that cannot be met on an individual household basis. They also provide the opportunity to get more “bang for your buck.” Money spent on the public environment has the opportunity to impact on a wider range of people than money spent on a household for the individual.

The urban elements or building block are arranged in a manner that creates an integrated human settlement that improves the quality of life of its residents.

4.1 Scale 1: Settlement

4.1.1 A Hierarchy of Nodes – Size and Significance

Nodes are the agglomeration of urban functions. They are created through the arrangement of a variety of urban building blocks. In addition, the type (size and significance) of node (planned or existing provides) us with clues on where to locate social facilities, types of housing and public spaces.

A hierarchy of nodes is proposed below:

**Neighbourhood node**
- Serves one or more local neighbourhoods
- Meets local needs (local service centre)
- Pedestrian friendly
- Generally have on-street parking
- Situated on a mobility route
- Example: Section T

**District node**
- Serves sub-regional areas or districts
- Larger than neighbourhood nodes
- May have developed from a neighbourhood node
- May have specialised services (office, industry)
- Public transport access
- Situated on mobility spine, supported by mobility roads

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**Regional/City node**
- Regional significance, attracts people from city wide and beyond
- Variety of goods, services and speciality of products
- On site parking
- Public transport access
- Situated on Mobility spine supported by urban freeways and mobility roads

![Diagram](image)

### 4.1.2 Promote Continuities: Movement Routes

Roads are not simply about moving from point A to point B (mobility focused), but have the potential to improve or hinder equitable access to opportunities and to channel and release (economic) energy along their entirety. A grid of continuous movement routes, accommodating a variety of transport modes maximises accessibility. At points of discontinuity (i.e. intersections), energy is released and the potential for economic activity is created.
4.1.3 Public Facilities

Public facilities that require the greatest amount of exposure (high visibility and access) should be located along the most accessible movement route. Intersections (the meeting of two routes) are the most accessible point in the movement system.

Rather than providing numerous single facilities, social facilities should be clustered at activity nodes, associated public transport and strong pedestrian movement. The order of facility provision should be informed by the hierarchy of facility, nodes and routes indicated.

How to decide what facilities to cluster?

In order to access what facilities should/can be cluster, the degree of compatibility should be accessed:

1. compatible: there are interrelationships between the facilities, they can or should be located close to one-another
2. neutral: there are no obvious relationships/linkages between the facilities, clustering them would have no benefit/disadvantages
3. Incompatible: the facilities are unsuitable to be located in close proximity to one another.\(^\text{13}\)

4.1.4 Promote Dignified Spaces: Hard Spaces

Public spaces should be part of a city wide network or hierarchy or spaces, concentrated in strategic focus areas defined in the Spatial Development Framework. The strategic focus areas are areas of substantial public/private investment and high intensity informal/formal commercial activity.

Higher order public spaces should be located highly exposed, accessible areas of the city (i.e. along higher order movement routes, in higher order nodes) in association with higher order facilities.

4.1.5 Housing

Higher density housing should be located along main public transport routes (higher order roads) and around public transport (higher order) nodes to improve efficiencies.
4.2 Scale 2: Neighbourhood

4.2.1 Narrow erven

The greatest service reticulation efficiency is achieved through keeping erf widths to a minimum. In promoting higher density, narrower erf sizes are required (based on the concept of row housing). A narrow erf frontage has a number of benefits, it:

- reduces the cost of the erf. “The single most important element determining individual erf cost is the street frontage width.”
- improves access. ‘When buildings are narrow, the street length is shortened, the walking distances are reduced, and street life is enhanced.’ (Gehl 2001: 96) He goes on to say that ‘narrow street frontages mean short distances between entrances – and entrances are where the majority of events nearly always take place.’ (Gehl 2001: 96)
- Creates positive streetscapes, through creating a sense of enclosure.
- Increased number of households serviced per unit length of service run
- Minimise road length thereby decreasing the cost of service provision per erf
- Increased efficiency in delivery of road based services, such as solid waste collection

4.2.2 Locating housing towards the front of the erf (interface)

The placing of a building on an erf relative to the street, the buildings on both sides of it and its rear boundary has multiple consequences. Locating the building towards the front of the erf:

- Improves security through passive surveillance of the street.
- Allows space for expansion of existing house, private garden or additional dwelling unit.
- Creates a sense of enclosure at a human scale

4.2.3 Pedestrian permeability

The layout of a block should be permeable and accessible to pedestrians. Pedestrian permeability has been created through an open road structure (grid). This structure aims to minimise pedestrian walking distances to the main public transport routes and maximise permeability and convenience of movement.

The primary concern of determining block size is pedestrian accessibility. Easy pedestrian access is generally accepted as any length less than 100m. Benefits of blocks of less than 100m in length include:

- Increased pedestrian permeability
- Constrain vehicle speed (50m blocks allow a speed of approximately 40 km/hr)
- Appropriate spacing for service points.

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14 City of Cape Town (January 2005) Investigation into Settlement Typologies for the Cape Town N2 Gateway Pilot Project
In conclusion, simplifying a complex urban system to key elements and allocating a hierarchy to those elements, gives urban practitioners a toolkit to create sustainable human settlements. The toolkit can be applied when establishing a new settlement, when improving an established township or settlement or accessing private/public development proposals.
6.0 Reference List


City of Cape Town (January 2005) *Investigation into Settlement Typologies for the Cape Town N2 Gateway Pilot Project*

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Zack, T and S. Charlton, (June 2003) Occasional paper 12, Better off, but... Beneficiaries’ perceptions of the government’s housing subsidy scheme
### 7.0 Annexure 1: Social Facilities Primer

<table>
<thead>
<tr>
<th>Educational Facility</th>
<th>Appearance</th>
<th>Type of Public Facility (Hierarchy)</th>
<th>Movement and access requirements</th>
<th>Compatible public facilities (a clustering should be encouraged)</th>
<th>Potential parameters for site dimensions – space standards</th>
<th>Layout on site</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary School</strong></td>
<td><img src="https://example.com/diagram.png" alt="Diagram" /></td>
<td><strong>Crèche, Primary School, Tertiary Education Facility, Clinic, Pocket park, multi-functional open space, sports facilities, libraries, MPCC</strong></td>
<td>Need to be visible and accessible to the greatest number of people, at the time as being located in safe, quiet location. Therefore should be located in close proximity to public transport interchanges, but on local roads, a block or two from higher order roads. Travel time: 20 mins (1.5 mins walking)</td>
<td><strong>Two components:</strong> Building; Recreational facility</td>
<td>Sharing is to be encouraged</td>
<td><img src="https://example.com/diagram.png" alt="Diagram" /></td>
</tr>
<tr>
<td><strong>High School</strong></td>
<td><img src="https://example.com/diagram.png" alt="Diagram" /></td>
<td><strong>Crèche, Primary School, Tertiary Education Facility, Clinic, Pocket park, multi-functional open space, sports facilities, libraries, MPCC</strong></td>
<td>Need to be visible and accessible to the greatest number of people. Travel time: 30 mins (2.5 km walk)</td>
<td><strong>Two components:</strong> Building; Recreational facility</td>
<td>Sharing is to be encouraged</td>
<td><img src="https://example.com/diagram.png" alt="Diagram" /></td>
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<tr>
<td><strong>Virtual Tour of Brasenos College</strong></td>
<td><img src="https://example.com/diagram.png" alt="Diagram" /></td>
<td><strong>Clinic, Hospital, Sports Stadium, Libraries, MPCC</strong></td>
<td>Need to be visible and accessible to the greatest number of people.</td>
<td><strong>Tertiary colleges suggested site size:</strong></td>
<td><strong>2000m² to 7000m²; total gross floor area 05000m² to 220000m²</strong></td>
<td><img src="https://example.com/diagram.png" alt="Diagram" /></td>
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<tr>
<td>Social Facility</td>
<td>Appearance</td>
<td>Type of Public Facility (Hierarchy)</td>
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<tr>
<td>Clinic</td>
<td>![Clinic Image](Clinic Image)</td>
<td>![Clinic Image](Clinic Image)</td>
<td>Need to be mobile and accessible to the greatest number of people, at the time as being located in safe, quite location. Therefore should be located in close proximity to public transport interchanges, but on local roads, a block or two from higher order roads.</td>
<td>Hospital, Pocket parks, multi-functional open space</td>
<td>Approximately 800 m²</td>
<td>![Clinic Layout](Clinic Layout)</td>
</tr>
<tr>
<td>Day Hospital</td>
<td>![Day Hospital Image](Day Hospital Image)</td>
<td>![Day Hospital Image](Day Hospital Image)</td>
<td>Need to be mobile and accessible to the greatest number of people.</td>
<td>Other emergency services (such as fire stations)</td>
<td>Minimum: 31 m x 60 m = 1860 m² or 37 m x 76 m = 2802 m²</td>
<td>![Day Hospital Layout](Day Hospital Layout)</td>
</tr>
<tr>
<td>Regional / District hospital</td>
<td>![Regional / District hospital Image](Regional / District hospital Image)</td>
<td>![Regional / District hospital Image](Regional / District hospital Image)</td>
<td>Access to high mobility routes. Distribute emergency vehicles, therefore should be located on higher order multi-functional routes that intersect with regional or primary distributors.</td>
<td>Other emergency services (such as fire stations)</td>
<td>A guide of 80 m² per bed (including supporting services and ancillary facilities)</td>
<td>![Regional / District hospital Layout](Regional / District hospital Layout)</td>
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### Public Open Space

<table>
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<tr>
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<th>Appearance</th>
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<tbody>
<tr>
<td>Local public places, pocket parks</td>
<td>![Local public places, pocket parks Image](Local public places, pocket parks Image)</td>
<td>![Local public places, pocket parks Image](Local public places, pocket parks Image)</td>
<td>Need to be located in safe, quite location. Therefore should be located in close proximity to public transport interchanges, but on local roads, a block or two from higher order roads.</td>
<td>Clinic, Primary School, Sports facilities, Library, MPCC, Place of Worship</td>
<td></td>
<td>![Local public places, pocket parks Layout](Local public places, pocket parks Layout)</td>
</tr>
<tr>
<td>Multi-functional Open Space</td>
<td>![Multi-functional Open Space Image](Multi-functional Open Space Image)</td>
<td>![Multi-functional Open Space Image](Multi-functional Open Space Image)</td>
<td>Need to be mobile and accessible to the greatest number of people, at the time as being located in safe, quite location. Therefore should be located in close proximity to public transport interchanges, but on local roads, a block or two from higher order roads.</td>
<td>Clinic, Primary School, Secondary School, Sports facilities, Library, MPCC, Place of Worship</td>
<td></td>
<td>![Multi-functional Open Space Layout](Multi-functional Open Space Layout)</td>
</tr>
<tr>
<td>Social Facility</td>
<td>Appearance</td>
<td>Type of Public Facility (Hierarchy)</td>
<td>Movement and access requirements</td>
<td>Compatible public facilities (clustering should be encouraged)</td>
<td>Potential parameters for site dimensions – space standards</td>
<td>Layout on site</td>
</tr>
<tr>
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</tr>
<tr>
<td>Sports field, sports club</td>
<td><img src="image1" alt="Sports field" /></td>
<td>Stadium</td>
<td>Need to be visible and accessible to the greatest number of people</td>
<td>Secondary School, Hall, Library, MPCC, Place of Worship</td>
<td></td>
<td><img src="image2" alt="Layout" /></td>
</tr>
<tr>
<td>Stadium</td>
<td><img src="image3" alt="Stadium" /></td>
<td>Stadium</td>
<td>Access to high visibility routes should be located on higher order multi-functional routes that intersect with regional or primary distributors</td>
<td></td>
<td></td>
<td><img src="image4" alt="Layout" /></td>
</tr>
<tr>
<td>District</td>
<td><img src="image5" alt="District" /></td>
<td>Markets</td>
<td>Highly accessible, located at interchanges, intersections</td>
<td>Public Transport Interchange, Municipal Offices, MPCC</td>
<td>21-24m, Max size of 250m²</td>
<td><img src="image6" alt="Layout" /></td>
</tr>
<tr>
<td>Public Rooms</td>
<td><img src="image7" alt="Public Rooms" /></td>
<td>Public Rooms</td>
<td>Easy access</td>
<td>Public Transport Interchange, Municipal Offices, MPCC, Post Office, Police Station</td>
<td>Max. 35 x 142 m²</td>
<td><img src="image8" alt="Layout" /></td>
</tr>
<tr>
<td>Sports field</td>
<td><img src="image9" alt="Sports field" /></td>
<td>Sports</td>
<td></td>
<td>Library, Hall, Place of worship, Post Office, Police Station</td>
<td>Max. 35 x 142 m²</td>
<td><img src="image10" alt="Layout" /></td>
</tr>
<tr>
<td>Social Facility</td>
<td>Appearance</td>
<td>Type of Public Facility (Hierarchy)</td>
<td>Movement and access requirements</td>
<td>Compatible public facilities (clustering should be encouraged)</td>
<td>Potential parameters for site dimensions – space standards</td>
<td>Layout on site</td>
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</tr>
<tr>
<td>Multi-purpose centre Hall</td>
<td><img src="image1.png" alt="Image" /></td>
<td>Multi-purpose centre (Hierarchy)</td>
<td>Require high visibility and need to be accessible to greatest number of people</td>
<td>Sports facilities, Secondary School, Tertiary Education Facility, Market, Public Plaza</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multi-purpose centre Satellite</td>
<td><img src="image2.png" alt="Image" /></td>
<td>Multi-purpose centre (Satellite)</td>
<td>Require high visibility and need to be accessible to greatest number of people</td>
<td>Sports facilities, Primary School, Market, Public Plaza</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multi-purpose centre Mobile</td>
<td><img src="image3.png" alt="Image" /></td>
<td>Multi-purpose centre (Mobile)</td>
<td>Need to be visible and accessible to the greatest number of people, at the time as being located in safe, quiet location. Therefore should be located in close proximity to public transport interchanges, but on local roads, a block or two from higher order roads.</td>
<td>Place of Worship, Primary or secondary school, MPCC, library</td>
<td>Place of Worship, library: 32 x 35.5 m = 1,152 m²</td>
<td></td>
</tr>
<tr>
<td>Hall</td>
<td><img src="image4.png" alt="Image" /></td>
<td>Hall</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Library</td>
<td><img src="image5.png" alt="Image" /></td>
<td>Library</td>
<td>Require high visibility and need to be accessible to greatest number of people</td>
<td>MPCC, Hall, education facility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Facility</td>
<td>Appearance</td>
<td>Type of Public Facility (Hierarchy)</td>
<td>Movement and access requirements</td>
<td>Compatible public facilities (clustering should be encouraged)</td>
<td>Potential parameters for site dimensions – space standards</td>
<td>Layout on site</td>
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<tr>
<td>Post Office</td>
<td></td>
<td></td>
<td>Require high visibility and need to be accessible to the greatest number of people.</td>
<td>Police Station, social services, MPCC.</td>
<td>27m x 60m = 1620m² to 61m x 76m = 4650m²</td>
<td></td>
</tr>
<tr>
<td>Police Station</td>
<td></td>
<td></td>
<td>Need to be visible and accessible to the greatest number of people, at the time as being located in safe, quite location. Therefore should be located in close proximity to public transport interchanges, but on local roads, a block or two from higher order roads.</td>
<td>Multi-functional open space, square, hall, clinic, library.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fire Station</td>
<td></td>
<td></td>
<td>Access to high mobility routes. Distribute emergency vehicles, therefore should be located on higher order multi-functional routes that intersect with regional or primary distributors.</td>
<td>Other emergency services, district hospital.</td>
<td>50m x 60m = 3000m² to 61m x 19m = 4800m²</td>
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</tbody>
</table>
### 8.0 Annexure 2: Housing Primer

<table>
<thead>
<tr>
<th>Dwelling type</th>
<th>Appearance (insert diagram)</th>
<th>Coverage considerations: Privacy and Sociability</th>
<th>Access to street</th>
<th>Partial site dimensions (diagram)</th>
<th>Layout on site (diagram)</th>
<th>Location criteria (node and street)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incremental housing</td>
<td></td>
<td>Negotiated shared spaces (complex)</td>
<td>Not all units have vehicular access</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Higher densities are achieved</td>
<td>Pedestrian environment prioritised</td>
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<tr>
<td></td>
<td></td>
<td>Lack of services</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>In-situ upgrade is expensive</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Variety of housing solutions</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Single dwelling</td>
<td></td>
<td>Low coverage resulting in lower densities</td>
<td>Street edges become discontinuous, often dominated by car/garage</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Least efficient in terms of service provision costs</td>
<td>Street loses its enclosure due to setbacks</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Small plots result in a loss of privacy due to proximity of neighbour</td>
<td>Circulation space increases</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Second dwelling</td>
<td></td>
<td>Greater efficiency in terms of coverage</td>
<td>Continuous street interface can be achieved</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Therefore higher densities can be achieved</td>
<td>Sense of enclosure can be created</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Narrower frontages result in improved service efficiency</td>
<td>On street parking</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Greater privacy can be achieved due to units being attached</td>
<td>Rear access lane may be necessary</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Privacy in backyard may be sacrificed</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Semi-detached</td>
<td></td>
<td>Greater efficiency in terms of coverage</td>
<td>Continuous street interface can be achieved</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Therefore higher densities can be achieved</td>
<td>Sense of enclosure can be created</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Narrower frontages result in improved service efficiency</td>
<td>Parking 1 or 2 bays</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Greater privacy can be achieved due to units being attached</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dwelling type</td>
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</tr>
</tbody>
</table>
| Tenement housing | ![Diagram](image1) | Greater coverage leading to higher net densities and lower land cost  
Increased efficiency in terms of services  
High level of privacy | Narrow frontage reduces circulation space required  
Continuous street edge creating a sense of enclosure  
Parking: 0 to 1, street parking | ![Diagram](image2) | ![Diagram](image3) | ![Diagram](image4)  
High level of privacy is possible  
No rear access to erf, except through unit (security)  
Parking: 0 to 1, street parking |
| Row house | ![Diagram](image5) | Higher coverage results in higher net densities  
Reduced land and service costs  
Greater level of privacy due to all units being attached | Positive streetscape created through continuity and enclosure resulting from narrow frontages  
High level of privacy is possible  
No rear access to erf, except through unit (security)  
Parking: 0 to 1, street parking | ![Diagram](image6) | ![Diagram](image7) | ![Diagram](image8) |
| 3 or 4 storey walk-up | ![Diagram](image9) | Greater densities can be accommodated on one erf  
Costs per unit of servicing the site is reduced considerably  
Greater privacy between units is possible, although private open space is reduced  
Cost of land per unit is reduced considerably | Sense of enclosure possible if units front onto the street  
Parking: 1 or 2 bays (if open bays are provided), street parking | ![Diagram](image10) | ![Diagram](image11) | ![Diagram](image12)  
High level of privacy is possible |
| Multi-storey | ![Diagram](image13) | High densities can be achieved through locating greater number of households on one erf  
Costs per unit of servicing the site is reduced considerably  
Greater privacy between units is possible, although private open space is reduced  
Cost of land per unit is reduced considerably | Sense of enclosure possible if units front onto the street  
Parking: 1 or 2 bays (if open bays are provided), street parking | ![Diagram](image14) | ![Diagram](image15) | ![Diagram](image16)  
High level of privacy is possible |