

RESTRUCTURING THE TOWNSHIP PHYSICAL ENVIRONMENT

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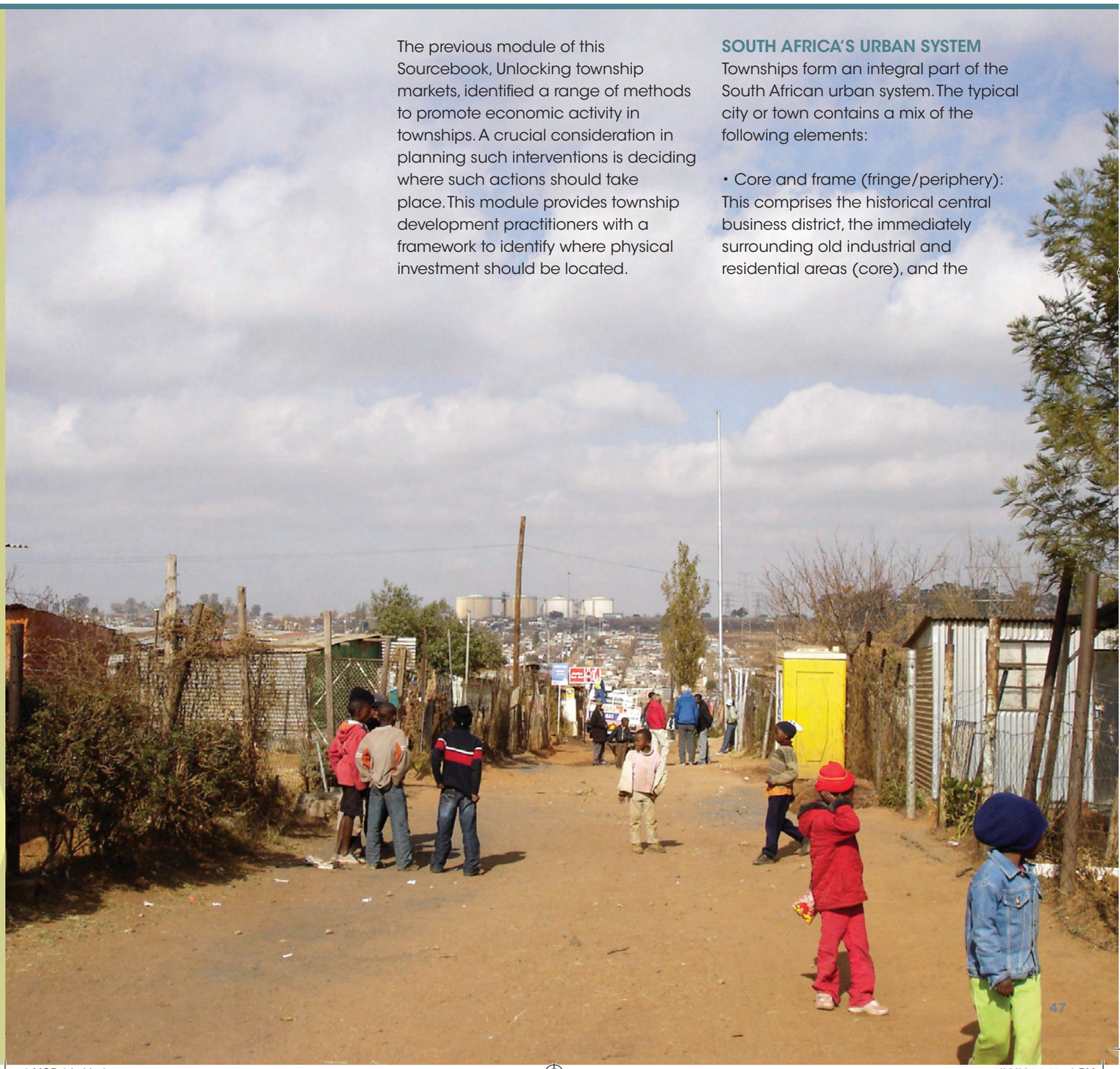
3.1 INTRODUCTION

The previous module of this Sourcebook, Unlocking township markets, identified a range of methods to promote economic activity in townships. A crucial consideration in planning such interventions is deciding where such actions should take place. This module provides township development practitioners with a framework to identify where physical investment should be located.

SOUTH AFRICA'S URBAN SYSTEM

Townships form an integral part of the South African urban system. The typical city or town contains a mix of the following elements:

• Core and frame (fringe/periphery): This comprises the historical central business district, the immediately surrounding old industrial and residential areas (core), and the



supporting transport and movement networks (frame). Traditionally, these networks focus on and reinforce the centre. The fringe, or periphery, is newer development associated with the city or town, but which lies outside the network of business, residential and other development associated with the core.

- Decentralised commercial centres and suburbs: Over the past several decades, as settlements grew and expanded (aided by the expansion of cars and construction of freeways), new centres have sprung up, shifting the focus of commercial activity from the core to a range of new commercial centres and precincts.

- Industrial areas: These comprise of a mix of new and old industrial areas where the focus is on manufacturing. These are important employment centres.

- Upper- and middle-income residential neighbourhoods: These generally well-serviced, well-maintained areas are also located near jobs, shopping centres and amenities. While these areas have remained predominantly white since the end of apartheid, this is changing. Some of the new residential developments around Gauteng since 1990, for example, are far more diverse.

- Declining residential neighbourhoods: Generally these are older neighbourhoods associated with or close to the core or centre. With the decline of traditional cores, so too have the residential neighbourhoods abutting them tended to decline as residents and businesses move to what are perceived as more attractive suburban locations.

- Townships and post-apartheid additions: Townships are usually located outside the urban core and can be formal or informal. They are generally far from places of economic activity and employment. Townships were planned as 'labour pools' that would be separate from the rest of the city while remaining economically dependant. These townships were (and in many cases still are) untouched by the economic forces driving city development. As a result they are:
  - poorly resourced in terms of social and community services
  - characterised by single-function residential development (dormitory towns)
  - separated from the rest of the city by buffer strips, railway lines or industrial areas.

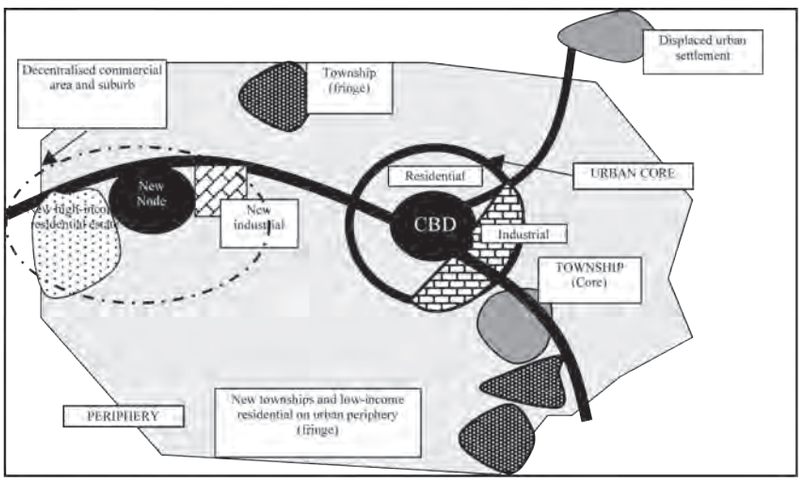
New, low-cost housing projects and informal settlements are often located next to these townships, perpetuating apartheid spatial planning.

The two figures on page 49 show typical elements of a South African city or town setup and typical elements of a rural setup.

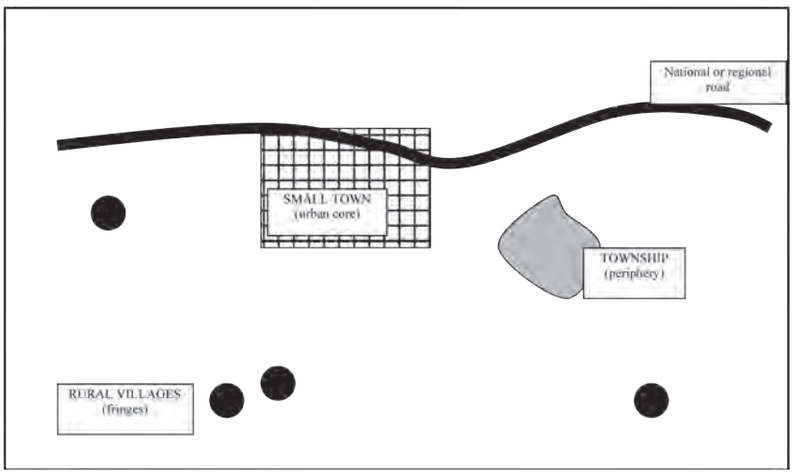
This module discusses township development from a spatial (locational) perspective, and from the point of view of the built environment.

The location of a township relative to the economic system on which it depends is crucial. Interventions in this category are things that can be done outside the township, but which improve its advantages relative to the broader economic system (or relationship to the local town in a rural context). Examples include developing new economic hubs and corridors that bring jobs and opportunities closer to

Typical elements of a South African city or town setup



Typical elements of a South African rural setup



(Source: MCA Planners for TTRI)

the township residents, or upgrading road linkages.

The built environment, including public spaces, is the other primary focus of this module. Physical interventions in this category relate to things that can be done inside the township to improve its economy as a whole. Examples include strengthening economic nodes within the township, or addressing the way in which the movement of people improves the viability of business locations. These interventions would remain the same in principle whether in a large township in a metropolitan area, or a small rural township.

3.2 IMPROVING SPATIAL ADVANTAGE

COMMON PROBLEMS

Peripheral location

Townships, especially old 'homeland' settlements, are typically located far from jobs, facilities and services. They are often sited on the urban periphery or a few kilometres outside the town. These 'dormitory settlements' were designed as places for people to live and supply labour, with few of the services and facilities needed for communities to grow and develop. Access to work and shopping is expensive and time-consuming due to long distances and poor public transport.

In some cases, the expansion of cities and towns has overtaken a township's peripheral location and absorbed it into the urban area (Alexandra is an example). While this shift can help to improve a township's spatial advantage, it is not enough, on its own, to improve the quality of life of the residents.

Polarised urban growth

Development trends since 1994 have tended to reinforce apartheid settlement patterns. Turok (2001), notes the continuing trend for economic activity in decentralising centres to resist locating in immediate proximity to predominantly low-income areas. As a result new urban nodes or decentralised suburban centres – such as Sandton and Centurion in Gauteng, or even towns such as Worcester, with its new mall – are still developed some distance from townships.

Perpetuating this pattern is the trend to locate middle- and high-income residential developments far from townships. As a result, the infill of spaces around townships is dominated by low-income groups. This in turn creates low-income 'buffers' that become progressively larger as migration to the cities grows. This polarised growth pattern serves to keep township residents trapped

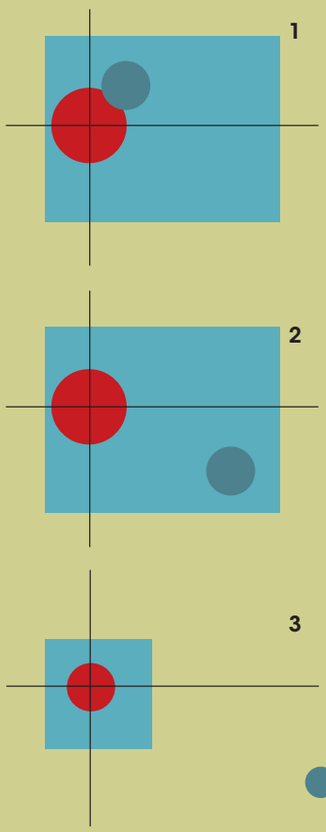
CATEGORISATION OF TOWNSHIPS WITHIN A GEOGRAPHICAL TYPOLOGY OF SETTLEMENTS

The CSIR differentiates settlement types in terms of their geographical location, classifying them into broad categories and sub-types (see CSIR 2002). Townships feature prominently across the broad categories reflecting a range of different types (see adjoining figure). The broad types include:

1. **Urban core:** These townships are located close to the traditional city core or business area and are generally characterised by high dwelling-unit densities and high levels of economic activity. They may be formal or informal, but are close to areas of formal employment and economic growth (e.g. Alexandra in Johannesburg, Galeshewe in Kimberley, Cato Manor in Durban).
2. **Urban fringe:** These townships are located outside the urban core and can be formal or informal. While still within the city or town, they are on its fringes, and far from places of economic growth and centres of employment (e.g. Soweto in Johannesburg, Khayelitsha in Cape Town, Nduli outside Ceres, Zolani near Ashton).
3. **Displaced urban and/or rural settlement types:** These townships are located outside of, and long distances from, urban areas and centres of economic growth and employment. They can include displaced, formally planned, mass-built townships (e.g. Botshabelo in the Free State, Winterveld in Tshwane), peri-urban informal settlements (e.g. Loskop in KwaZulu-Natal) and former 'homeland' towns that may be part of planned industrial decentralisation areas (e.g. Bhisho and Mmabatho).

The range varies greatly according to context.

Township settlement typology



(Source: MCA Planners for TTRI)

in locations where long-distance travel is necessary to access economic and social opportunities. Ivory Park in Midrand is an example of this pattern. Similarly, the development of high-income areas in Fourways leapfrogged Ivory Park and focused on Centurion and to the west of the N1 freeway. Ivory Park has continued to grow, while the area surrounding it has declined.

Unidirectional transport flows

Many people who live in townships travel to cities and towns every day for work or education. This results in a highly inefficient system where public transport (trains, buses and taxis) are full in one direction and empty on return.

Poor transport connections between townships and new economic nodes

Many townships were developed at a time when economic activity was concentrated in the urban core, and public transport was designed accordingly. Since the 1970s cities and larger towns have seen a shift towards multinodal growth (e.g. the Claremont node in Cape Town). While many of these new centres are accessible to private vehicles, they are effectively off the public transport grid. To access these centres, township residents are required to make multiple connections. Such journeys are typically expensive and lengthy. It is not uncommon, for example, for workers to travel two hours each way to and from their workplace. Furthermore, public transport is often unreliable and frequently unsafe, especially outside normal working hours, aggravating the unsatisfactory state of affairs.

STRATEGIES FOR IMPROVING SPATIAL ADVANTAGE

In responding to the four broad problems outlined above, the central aim of township interventions is to improve spatial advantage. In such instances the very least the intervention should achieve is to reduce the friction of distance (the cost and time of travelling) between the township and jobs, services and amenities. Where there are locational advantages (e.g. proximity to a new growth area, an industrial area or a major amenity) these should be exploited, and investment should seek to reinforce such advantages through stronger transport linkages or infill growth.

Strategy 1: Channel urban growth into areas that strengthen advantage

Channelling or directing development is a long-term strategy. At the outset, this requires working with the agencies responsible for the location and direction of urban expansion to do the following:

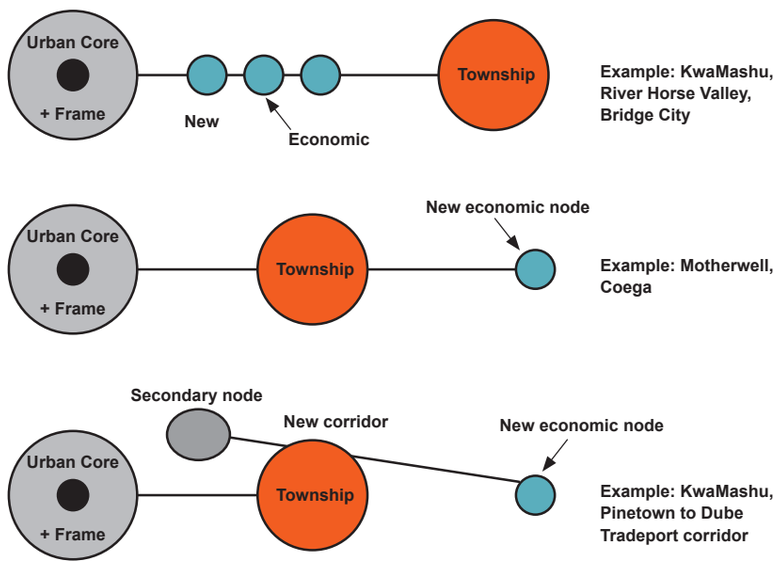
- Promote the establishment of new economic centres or nodes in locations that achieve at least one of the following three conditions:
  - Position new growth on (or next to) the primary movement channels between the township and the main existing economic nodes (preferably as close to the township as possible), especially where this cannot be located within the township.
  - Locate new growth, or develop existing opportunities, at points that extend the main movement channel through (or adjacent to) the township.
  - Locate growth at points that create new movement corridors between an existing economic node and a new one that traverses the township.

The diagram on page 52 illustrates these potential growth channels.

In addition to this, it would be important to:

- Challenge processes that enable the location of exclusively low-income housing estates on

Urban growth channels



(Source: MCA Planners for TTRI)

greenfield land next to townships. Developments that accommodate a broader range of income groups should be encouraged.
  - Attract high-order facilities and activities into nodes adjacent to the township (e.g. Bridge City).

- The movement routes themselves can help to 'knit' the township into the broader urban fabric by developing them as multimodal, integrated and mixed-use development corridors. For example, the Wetton-Landsdowne Road and the Klipfontein corridors in Cape Town have been planned in this way. Methods to reinforce such corridors include:
  - Promoting the location of high-order social infrastructure (such as district hospitals, courts, and tertiary educational institutions) along these corridors, especially where such facilities cannot be located in the township.
  - Promoting the location of higher-density and mixed-income residential development near the corridors.

Such interventions will help to mitigate peripheral location, reduce lengthy commuting times, increase the range of opportunities accessible to township residents and cut down on unidirectional traffic flows.

The types of public-sector interventions needed to establish corridors of this type include:
  - city spatial planning frameworks, growth management strategies and development control instruments
  - public-sector capital investment instruments (discussed in Module 4)
  - inclusionary housing instruments and policies.

Strategy 2: Improve transport linkages

As noted above, inadequate public transport inhibits choice and economic opportunity for township residents and enterprises. A strategy to address these constraints should seek to achieve some combination of the following four factors:

1. Increasing the number and capacity of movement links between the

township and surrounding areas (particularly nodes).

2. Increasing the number of connections between the township and the regional movement systems through additional off-ramps, intersections, public transport stops and so on.

3. Ensuring that mass-based transport innovation (such as bus rapid transit systems or high-occupancy vehicle [HOV] lanes) is applied in ways that enhance the mobility of township residents and enterprises (e.g. the HOV lane between Khayelitsha and Cape Town CBD)

4. Improving the safety, reliability, affordability and extent of the existing public transport network.

The types of public-sector interventions required to secure such enhancement to the transport network include:

- public transport planning and systems development
- roads planning and design
- intersection planning and design
- public transport management and coordination.

3.3 IMPROVING THE BUILT ENVIRONMENT AND PUBLIC SPACES

COMMON PROBLEMS

Dispersed and restricted movement

Township suburbs have often been developed as residential 'cells'. These cells are frequently surrounded by big freeways, industrial areas and/or vacant land, and access is often limited to one or two roads. The movement structure and road network within townships is often illogical and hard to follow. Roads loop around or suddenly reach a dead end and visitors can easily get lost. In such a pattern, to walk between homes, schools, shops and public transport nodes means following a very specific, familiar route.

Low-density built form and overcrowding

The overall population density of many townships is low, despite the small size of residential plots. This is the result of the combination of many large, unused open spaces (the result of inappropriate planning) and the absence of a range of available housing types (such as row-housing).

Lack of range and quality of social facilities

Townships are characterised by poor-quality social facilities, typically located at the geographical 'centre' of a neighbourhood. This means they are not easily visible and often located away from the main roads or routes, restricting both community access and choices between facilities (e.g. schools). High-order social facilities designed to serve areas wider than the township itself (such as tertiary education facilities, magistrate's courts) are frequently developed outside townships because of concerns about their accessibility to users from other areas.

Limited range of economic infrastructure and services

Townships are characterised by home-based and low-order informal trading

enterprises. In recent years more high-order retail centres (e.g. Khayelitsha and Soweto) have emerged. Between these two extremes, there are limited retail, commercial and light industrial facilities, even where demand would appear to justify their development. This lag is partly the result of factors such as crime or land availability – as well as regulatory constraints, which are discussed in Module 4. It also reflects the consequences of dispersed movement patterns that reduce the concentration of demand.

Limited range of residential choice

A standard housing type has been applied in townships since their inception, from '51/9s' to the typical 'RDP house' (houses associated with government's Reconstruction and Development Programme). As a result townships comprise predominantly the same housing type (interspersed with hostels, backyard rental and informal settlement). Along with the lack of investment in the public environment, this contributes to a monotonous landscape. This form of development does not accommodate upwardly mobile groups, household splitting and lifecycle changes.

Insecure or unsafe space

Township public spaces were not designed with public safety in mind. Frequently, no one can see what is happening in such spaces, barring those who occupy them at a given moment. There is no surveillance of public areas. Open space is not managed or looked after. There are no facilities along movement routes to generate high levels and long hours of public usage, which would help to make them safe throughout the day and night.

Lack of identity and 'sense of place'

Because of the standard size and design of houses, townships often lack immediate distinguishing physical characteristics. It is quite easy to confuse one area with another, or even one township with another. The challenge is to create something special and unique about each community, reinforcing civic pride, helping each area to develop an identity or 'sense of place'. Planners talk about the importance of structure, differentiation and 'legibility', meaning the importance of locating and making buildings in a way that people know where they are and how to find their way around.

STRATEGIES FOR IMPROVING THE BUILT ENVIRONMENT

In townships, the key focus is to create a physical environment that will support economic growth and development. In doing so the objectives are to:

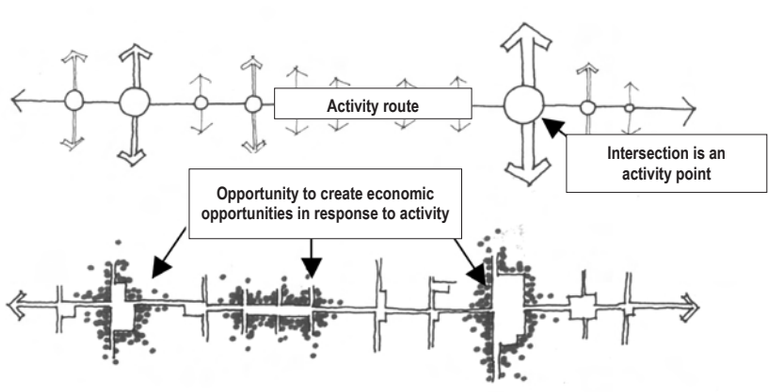
- enhance the ease of movement within the township, and between township and town
- extend the mix and improve the concentration of land uses and activities that can be accommodated in the township
- improve the capacity of land, infrastructure and buildings to adapt to different uses over time.

The following five types of intervention aim to realise these objectives.

Strategy 1: Identify, plan and promote activity routes

In recent years urban planning has focused on how to effectively integrate townships into the mainstream of city economies, to promote both access to the opportunities that exist in core areas and investment in townships. One of the key ideas that has emerged is the notion of using the integrating power of a movement route as a restructuring element. The

Activity routes



(Source: MCA Planners for TTRI)

An activity route is a continuous route that connects main nodes or centres, and along which public transport runs. Along its length it will be intersected by other routes. At these intersection points opportunities exist for nodes to develop in response to the stopping and starting of traffic, and the higher traffic volumes at the intersection.

term activity route is used to describe the reinforcing relationship between a route (and public transport) and adjacent land uses.
There is a symbiotic relationship between a movement route and the land uses along it. Wherever there are people travelling, there is a need for goods and services. By designing movement routes in a way that recognises this relationship, people will be able to access shops and other businesses. Having shops, goods and services along a route also implies that people have choices about where they can start and stop travel as it suits them. This is the idea behind an activity route.

The road hierarchy[1] takes into account the link status and place status of a street. The link status refers to the street's 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. In other words, a road with a bus lane will stay that way along its length (link status), but along the way there may be more shops and businesses in some areas – for example where another bus route crosses – creating place status change.

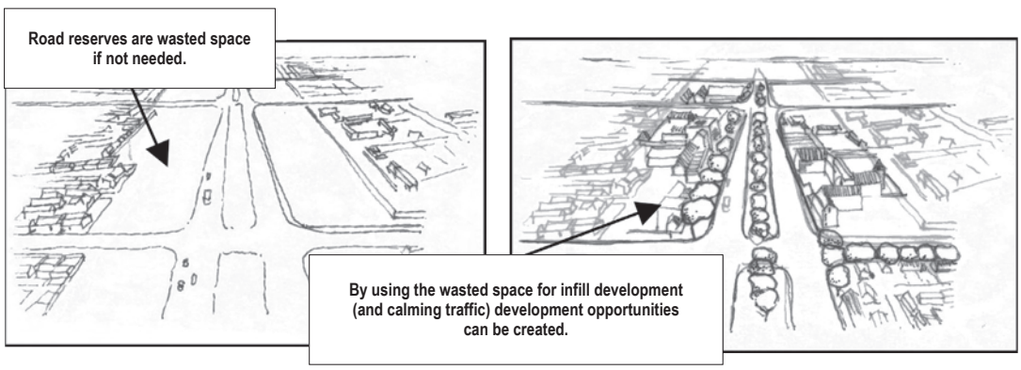
The following types of public-sector interventions are required to develop activity routes:

- Rationalisation of road reserves: The wide spaces frequently kept open alongside township roads need to be eliminated. These spaces were built into planning – the roads were 'over-scaled' to accommodate future growth. This extra space, however, is rarely used (or used for dumping), and contributes to poor road safety. Cars and taxis often speed along these routes, resulting in a high number of accidents causing injury or death to pedestrians. Calmer streets, with opportunities for economic development, are needed.
  This can be achieved through the development of infill housing, pedestrian-oriented spaces and businesses on the open land next to the routes, creating better-quality, safer environments. This is illustrated on the next page.

- Redesign of roads within the road reserves: Townships are commonly over-scaled and designed to favour mobility (vehicles) over accessibility (pedestrians). To create the preconditions for an activity route, sections of the road, particularly within existing and emerging nodes, may need to be redesigned, prioritising the development of pedestrian

[1] *Based on the hierarchy established by Stephen Marshall in Building on Buchanan: Evolving Road Hierarchy for Today's Streets-Oriented Design Agenda*

Filling in open land along road reserves



(Source: MCA Planners for TTRI)

infrastructure (e.g. traffic-calming measures such as road narrowing and changes in paving levels, wider pavements for pedestrians, bicycle paths).

- Landscaping and 'street furniture': Landscaping performs a dual role. First, it makes the physical environment look better, which in turn improves the potential for investment. Second, it improves legibility by highlighting higher-order streets through a common theme or urban language, such as planting the same type of tree or, or using the same paving along the routes.

- Public transport: Public transport should run along activity routes. This may require investment in public transport infrastructure and facilities (e.g. dedicated bus lanes and bus stops). Higher-order public transport facilities should be concentrated at areas with the highest level of accessibility (nodes and intersections).

Strategy 2: Establish a hierarchy of nodes associated with activity routes

Urban nodes are points of concentrated activity and land use. They include commercial developments (retail, offices), housing developments (often higher density), public space and facilities. They are usually best located at points of the highest accessibility, where many different routes and types of transport come together, and along the activity routes described above.

These nodes should be well serviced by public transport and easy to get to. Improvements in access (e.g. better taxi ranks, improved bus terminuses) can result in more opportunities for businesses, leading to greater activity, which in turn attracts more people. In short, they can promote a positive cycle of growth and investment.

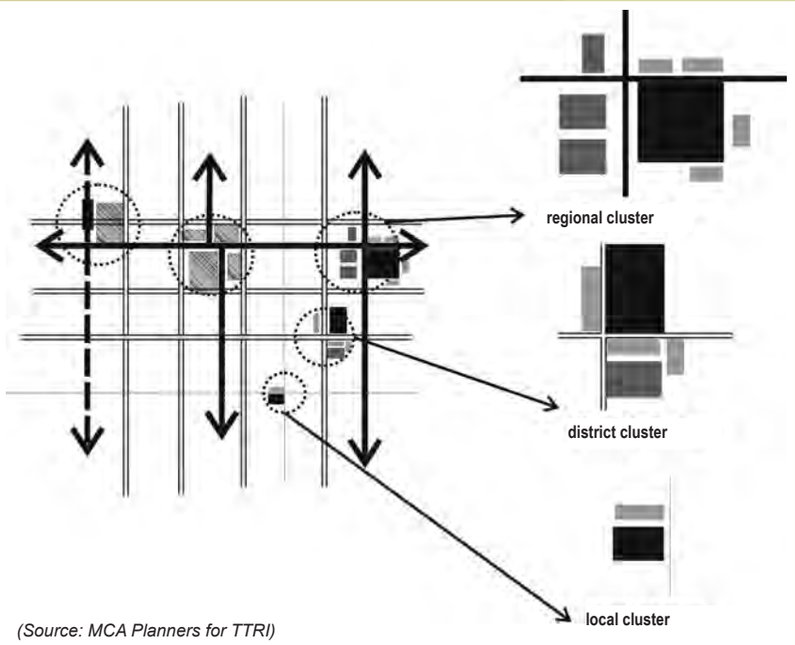
The size of a node (planned or existing) depends on its location and accessibility. Studying the location of an area relative to transport routes provides clues on where to locate social facilities, types of housing, public spaces and private-sector investment. Businesses or activities that need many people to support them (high threshold) will want to be in the best locations to 'catch' them (and will be prepared to pay higher prices to do so). These will be the larger nodes with the higher-order activities (magistrate's courts or major supermarkets, for example). Not all nodes can be higher-order nodes, and not all businesses need lots of people – just fewer people

Planned activity route

(Source: NDP, courtesy of Nelson Mandela Bay metropolitan municipality, Fountain Road, 2007)

making regular purchases, like buying bread. A range of different-sized nodes will evolve along an activity route depending on locational advantages and development opportunities.

Clustering public facilities



(Source: MCA Planners for TTRI)

One of the biggest challenges in developing an activity route is to make the land accessible to businesses through a fair and formalised system. This requires a planning framework. The framework should look at land availability and provide guidance on how the land can be developed. Doing this and encouraging the hierarchy of nodes to develop would:

- Extend the range and quality of social facilities and public places.
- Address the problem of low-density built form by providing a wider mix of housing types, focusing higher-density development in higher-order nodes and along activity streets.
- Support development of economic infrastructure and services by expanding investment opportunities for local businesses, in conjunction with releasing public land for this purpose.
- Contribute to safer public spaces by promoting continuous activity along activity routes.
- Develop 'sense of place' through investment in the public environment and encouraging variety in built forms.

The public-sector interventions required to establish nodes within township systems typically include:

- Transportation-related interventions: The use of modal split points (places where people change from one type of transport to another), intersections and terminuses (where main public transport routes end and/or turn around – such as the town centre).
- Clustering public facilities: Grouping such facilities by category can assist in planning. The categories depend on the size of the area that a facility serves and the degree of exposure or accessibility that they require. Rather than providing numerous single facilities, social facilities should be clustered at activity nodes, near associated public transport and in areas of strong pedestrian movement. (See diagram above)
- Reinforcing nodes with high-density residential development: Higher-density housing types should be used to reinforce nodes and activity streets. This creates a sense of enclosure and thresholds to support public transport and enhance economic potential. (See diagram on page 58)

- Reinforcing the node with appropriate economic infrastructure: The identification and planning of the node should be done in consultation with the relevant government departments (e.g. transport, health, home affairs, social services). Over time, they should be encouraged to locate their facilities in the nodes and along the routes. This will build the economic infrastructure. Land should also be released for the private sector to invest in and develop.

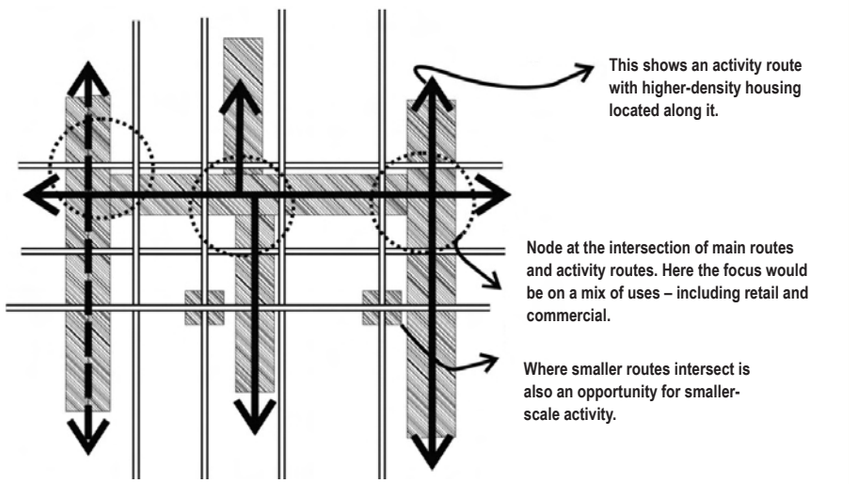
- Public space infrastructure provision: Municipalities need to plan and budget for investment in nodes and activity streets. Such funding is typically provided through the Neighbourhood Development Partnership Programme, and covers such things as street lighting, greening and landscaping, street furniture, public ablutions and public spaces. This leads to the next strategy.

Strategy 3: Improve the quality of public spaces

There has been little investment to create new public, open spaces in townships. Moreover, existing open spaces have not been adequately maintained, with the justification that this is neither affordable nor as important as the provision of basic services.

Yet urban public spaces (streets, squares, promenades and green spaces) act as an extension of the housing unit, providing space for social and economic activity, especially for people living in over-crowded conditions and when the housing unit is too small for all the household's needs. When the quality of public spaces is good, it gives a sense of confidence and permanence; when poor, it creates a sterile environment, regardless of the quality of individual buildings.

Reinforcing nodes



(Source: MCA Planners for TTRI)

The types of public-sector interventions required to establish functional open space systems include:

- Establishing an integrated open space system: Open space needs to form part of a broader system. The development of isolated pockets of open space should be avoided. As a broad guideline, open space should be located in areas where there is substantial public investment in community facilities, environmental upgrade and public transport; in areas of high-intensity formal or informal commercial activity; and be integrated with community facilities through interventions such as taking down fences and walls.

- Establishing a hierarchy of spaces: Public spaces should be part of a citywide network or hierarchy of spaces, concentrated in strategic focus areas defined in the spatial development framework, or identified in the analysis of the township. The strategic focus areas are areas of substantial public/private investment and high-intensity

Open space system

A system of open space linking the station to schools and sports facilities, thereby providing a visible, safe pedestrian route.
(Source: City of Cape Town: Presentation of Harare, Khayelitsha, Site C)

informal/formal commercial activity. Higher-order public spaces should be located in highly exposed, accessible areas of the city.

- Applying key design principles: The basic design principles of scale and enclosure must be applied 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.

Strategy 4: Promote residential infill

A strategy of promoting residential infill with different housing and tenure types can be applied in areas of vacant or under-utilised land, in existing residential areas with redevelopment potential, and in areas no longer required for public purposes. This strategy can:

- Attract and retain middle- and upper-income residents by providing quality and variety of housing.
- Create inward property investment opportunities for township residents and enterprises.
- Promote community safety by eliminating dead spaces and promoting surveillance.
- Improve thresholds for economic and social services.

Public-sector interventions typically associated with strategies of this type include:

- Providing a range of housing types: The Department of Human Settlements *Breaking New Ground* policy document states: '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.)' Alternative housing types should be developed to create identity and diversity in the residential environment, and to meet the varying needs of township residents.
- Releasing land for development by the private sector: One of the main hindrances to private-sector investment in townships is the fact that most land is publicly owned and not available for private development. By identifying land that is not required for other purposes, and having it surveyed and (if necessary) subdivided, it can then be released through a tender process. Private investors can purchase and develop this land.

Strategy 5: Crime prevention through environmental design

The cookie-cutter approach to township housing layout and

design has resulted in a sterile built environment without many distinguishing features. In many cases, these environments create the preconditions to protect criminal activity. Such features include:

- Narrow sidewalks and pathways with little or no surveillance.
- Wide open spaces or undeveloped sites, often hidden from the view of surrounding areas.
- Bushes or recesses that obscure the line of sight.
- Vacant and abandoned facilities.

Public-sector interventions typically associated with addressing the safety of the township built environment include:

- Urban design interventions that promote passive surveillance, ensuring that there are 'eyes on the street' and ensuring a direct line of sight.
- Promoting functional public spaces, eliminating vacant or underused spaces and developing spaces for frequent, all-day use.
- Installing lighting to reduce opportunities for crime.
- Promoting pedestrian-friendly neighbourhoods that increase security by virtue of greater foot traffic.

3.4 CONCLUSION

This module has discussed the two categories of broad intervention to support township development and integration.

The first category is things that can be done to improve the advantages of townships relative to the economic system in which they are located. Key interventions include better transport linkages to economic centres, infill development, and promoting new economic development in close proximity to the township.

The second category is things that can be done within the township to improve the built environment and make it work better to support economic and human activity. Here the module focused on activity routes, nodes, infill development, quality of urban spaces, improving design to create safer areas and steps to enhance the uniqueness of the township.

The broad principles discussed above would apply to a township in a large metropolitan area as well as a township in a rural location. The nature and scale of the interventions would change, but not the underlying principles.

There are, however, no quick fixes to township development. Change in the built environment takes time. Urban development practitioners must be patient. In this context, a clear and well motivated development framework can act as a guide over the long term to ensure that decisions continue to reinforce earlier development directions. Urban management is critical, and this is the subject of Module 5.

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