Section O
Cross-cutting issues

The Neighbourhood Planning and Design Guide

Symbols at text boxes

More detailed information is provided about the issue under discussion

Important considerations to be aware of are highlighted

Relevant content from a complementing resource is presented

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human settlements

Department:
Human Settlements
REPUBLIC OF SOUTH AFRICA

Section O
Cross-cutting issues
The Neighbourhood Planning and Design Guide

Table of contents

O.1 Planning and designing safe communities

O.1.1 Crime and the physical environment

The physical (built) environment is often an important factor that contributes to the likelihood (or not) of a crime occurring in a particular location. Changing the physical environment could therefore either create challenges for certain types of crime to be committed or reduce incidents of crime and violence in a particular area. Crime Prevention through Environmental Design is a well-recognised and widely practised approach to crime prevention that is internationally most commonly known by its acronym, CPTED (pronounced sep-ted).

A definition of CPTED

CPTED is a multi-disciplinary approach to deterring criminal behaviour through environmental design. CPTED strategies rely upon the ability to influence offender decisions that precede criminal acts by affecting the built, social and administrative environment.

The International CPTED Association (ICA)[1]

O.1.2 CPTED in South Africa

O.1.2.1 Background

It is widely acknowledged that certain opportunities for criminal events to occur could be reduced by applying sound planning, design and management principles to the built environment. It is also accepted that the physical environment could play a significant role in influencing perceptions of safety.

In South Africa, the important role of planning, design and management in creating safe human settlements is acknowledged in the National Development Plan (NDP)[2] and the Integrated Urban Development Framework (IUDF).[3] Furthermore, the White Paper on Safety and Security[4] published in 2016 recognises "Safety through environmental design" as one of the six themes that inform crime and violence prevention.

O.1.2.2 The South African context

South Africa's particular spatial and socio-economic characteristics and the country's history of forced segregation have resulted in a distinct relationship between crime and the physical environment. Spatial patterns and the form and structure of South African cities and towns are the result of planning principles and approaches that were largely influenced by the country's apartheid ideology. The poorest communities are, for the most part, located on the urban periphery. This means that residents have to travel long distances, not only to and from their places of employment, but also to reach commercial, social, recreational, healthcare and other facilities. These neighbourhoods often lack adequate infrastructure (e.g. electricity, water, sanitation), recreational facilities and amenities (e.g. community halls and sports facilities), as well as safe public spaces (e.g. parks).

The conditions described above often encourage crime and result in environments where people feel unsafe. Factors such as the lack of adequate lighting in public spaces (especially streets), the absence of street names and house numbers, and the presence of informal (and often illegal) taverns further contribute to the creation of unsafe conditions. It is often difficult for the police to patrol or respond to calls in these areas due to the poor condition of streets or – in the case of informal settlements – the complete lack of vehicle access routes. Also, even though a large proportion of the South African population does not own a motor vehicle, most neighbourhoods have not been designed to accommodate pedestrians and cyclists, and public transport is not always effective, efficient, safe, reliable and affordable. People are especially vulnerable to crime and violence when they have to travel.

While poorer communities do not have access to basic security measures, more affluent residents have the resources to implement a whole range of such measures. In addition to alarm systems and armed response services, gated communities are becoming increasingly popular. These gated communities can take on various forms, including large security (lifestyle) estates, smaller security complexes, or enclosed neighbourhoods (road closures) where existing public streets are closed or boomed off.

The significant differences between the social and spatial contexts of different South African communities and neighbourhoods place a complex set of demands on crime prevention initiatives. Fortunately, CPTED interventions can often be implemented effectively in any of these contexts and can form part of a crime prevention strategy that suits the needs of any community.[5]

O.1.3 CPTED principles for South Africa

A number of principles guide the implementation of CPTED. These vary slightly between countries, depending on local interpretations. Five principles that were developed for the South African context are outlined in *Designing Safer Places - A Manual for Crime Prevention through Planning and Design*.[6] They provide guidance when decisions need to be made regarding the planning and design of the physical environment with safety and security in mind. These principles can be regarded as objectives to be achieved when developing or redeveloping spaces, and they relate to the following:

• Surveillance and visibility
• Territoriality
• Access and escape routes
• Image and aesthetics
• Target hardening

A more detailed description of each principle is provided below. More information is also available on the SaferSpaces website.[7]

Surveillance and visibility

Objective: Optimise visibility and maximise opportunities for observance of public and private areas by users or residents during the course of their normal activities (passive surveillance) and/or by police or other security personnel (active surveillance).

Factors that could play a role include uninterrupted lines of sight; levels and types of lighting; positioning and nature of windows, doors and other openings; building layout and the distances between buildings; the size of the public spaces; and the extent, degree and type of use of such spaces.

Figure O.1.1: The glass lobby increases visibility and the CCTV camera provides additional surveillance

Figure O.1.2: Mixed activities, layout and the positioning of facilities and windows improve surveillance

Passive surveillance is often referred to as the presence of 'protective eyes' or 'eyes on the street'. The extent of visual contact that people have with a space, together with the degree of their being visible to others, determines the extent to which they can intervene and whether the users feel safe. The zoning of areas of the city and the functionality of buildings are key elements in determining whether protective eyes are present day and night, or not.

Surveillance is improved if there is good visibility. Dark streets, alleys, entrances and doorways can act as havens for potential offenders and increase residents' and visitors' fear of crime. The way in which lighting is designed and positioned, and the way roads and paths are laid out, can obviate many of these problems and ensure that both the physical environments and the users are visible to others using the environment.

Territoriality

Objective: Encourage a sense of ownership of and responsibility for a space by employing mechanisms that will allow residents or users to identify with the space and experience it as legible.

A sense of ownership and responsibility for a particular environment improves the likelihood of passive observers intervening. Places should be designed and managed in ways that encourage owners/users to take responsibility for them and feel responsible for their use, upkeep and maintenance.

Figure O.1.3: Residents taking ownership of a public area in front of their house

Figure O.1.4: Plants are used to define public and semi-public spaces

Photo credit: Alexandra Renewal Project (L)

Public, semi-public and private spaces should be well defined, for instance through the use of fences, differences in levels, vegetation and landscaping, surface treatment (e.g. different types of paving), bollards, etc.

Access and escape routes

Objective: Limit opportunities for offenders to utilise access and escape routes such as vacant land, and enhance the level of ease with which potential victims could find and access escape routes.

Figure O.1.5: This green belt provides easy access and escape routes for offenders

Figure O.1.6: Once someone has entered this subway, opportunities to escape an offender are limited

Clear signposting of streets, buildings and exit routes are important ways of assisting potential victims. The design of elements such as subways also needs to be considered carefully to reduce perceptions that one will not be able to escape from an offender.

Image and aesthetics

Objective: Ensure that the physical appearance of an environment creates a positive image and instils feelings of safety in users.

The image of spaces and facilities can be improved by ensuring human scale in design, using attractive colours and/or materials and providing adequate lighting. Effective maintenance of the physical environment and infrastructure is a critical aspect of this principle.

Photo credits: Alexandra Renewal Project

Figure O.1.7: This unkempt area does not create the impression of it being a safe neighbourhood

Figure O.1.8: This clean area creates a positive image of the neighbourhood

Urban decay and its resultant degradation cause people who use these areas to feel unsafe. Often this reduces the number of users, which could further exacerbate the crime problem. The good design and the effective management of public spaces are necessary to prevent them from becoming actual or perceived 'hot spots' for crime. Vacant land that is not maintained, unoccupied buildings, as well as litter and the breakdown of services contribute to urban decay.

Target hardening

Objective: Reduce the attractiveness or vulnerability of potential targets by physically strengthening them and/or installing mechanisms that will increase the effort required to commit an offence.

Target hardening measures are often the first to be considered in response to real criminal events or perceived threats. Perimeter walls or fences, security gates, burglar bars and alarm systems are all mechanisms used to implement this principle.

Figure O.1.9: A fence provides opportunities for surveillance onto and from the street

Figure O.1.10: High walls reduce opportunities for surveillance

Care should be taken to ensure that other principles are not compromised when implementing target-hardening interventions. For instance, a solid high wall around a property (target hardening) violates the principle of surveillance and visibility.

O.1.4 Applying the principles

Employing these principles in combination may well reduce crime. However, none of the principles should be viewed in isolation and the context within which they are to be applied should be taken into account. When applying any one of the principles, the implications for any of the others must always be considered.

🏳 The importance of maintenance

A lack of maintenance of the physical environment and infrastructure could create opportunities for crime and be part of the reason why people do not feel safe in certain areas. For instance, if lighting has been provided to reduce crime in a park or along a pedestrian route, a lack of maintenance that results in the lights not working would mean that the intervention has no real effect.

A well-maintained environment can contribute to people developing a sense of pride in their neighbourhood and encourage them to take responsibility for it. This promotes a key CPTED objective, namely to encourage citizens to take ownership of their neighbourhoods.
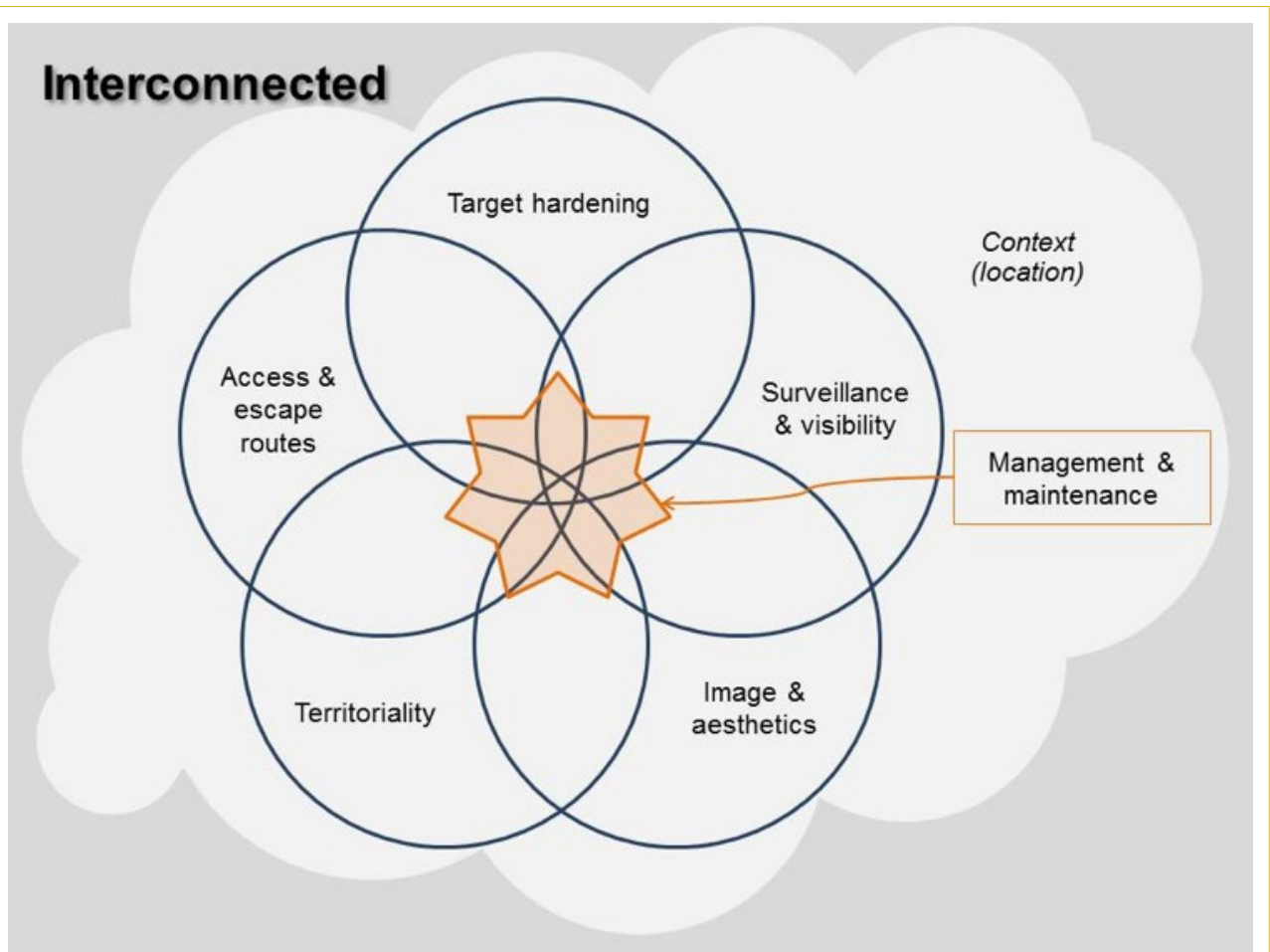

Figure O.1.11: CPTED principles, context, and management and maintenance

O.1.5 Implementing CPTED in South Africa

CPTED could play an important role in improving the sustainability of South African cities and towns.[8] CPTED initiatives would not only reduce crime in specific local places (micro-level), they could also contribute to the transformation of society in general through changes to the urban form (macro-level). Such macro-level interventions could be aimed

at addressing certain spatial characteristics and associated problems, including the following:

- The spatial dislocation of the poor, which results in long and costly commuting patterns and exposes commuters to victimisation.
- The separation of communities by vacant land (buffer strips used in the past to divide people), which provides many opportunities for criminal activity.
- The rigid mono-functional zoning of land, which leaves some areas deserted at night and others deserted during the day, thus increasing opportunities for crime.
- The effective exclusion of many city residents from the amenities and economic opportunities offered by the city.

In order to address these challenges effectively, CPTED needs to be implemented at the following levels:
- *Planning level* – physical urban planning approaches at strategic level, such as strategies to promote the reduction of vacant land, to encourage mixed land use and to support the integration of communities.
- *Design level* – detailed design of different urban elements, such as the transport system, roads, public open spaces, buildings and the spaces between them.
- *Management level* – managing the entire urban system and the precincts within it (e.g. infrastructure, maintenance and by-law enforcement), as well as managing and facilitating the implementation of CPTED initiatives.

O.1.6 Implementing CPTED in South Africa

CPTED could play a key role in reducing crime and creating safer communities. However, it should be remembered that CPTED interventions can only address specific types of crime in particular locations. Also, crime prevention measures that have worked in a particular situation may not be as effective under different conditions. It is therefore essential to develop responses to crime problems based on a thorough understanding of the local context, including the crime situation and the characteristics of the physical, social and institutional environments.

CPTED should ideally form part of a broader, integrated crime prevention initiative that involves other approaches, including law enforcement and social crime prevention initiatives. A community-based crime prevention strategy could assist in coordinating such interventions. The process to develop a local crime prevention strategy is described in *Making South Africa Safe – A Manual for Community-based Crime Prevention.*[9]

Figure O.1.12: CPTED interventions should be context specific and form part of broader crime prevention initiatives

O.2 Universal design

O.2.1 The concept of universal design

Neighbourhoods should, as far as possible, be accessible to all people, and everybody should be able to use and move between buildings, public open spaces and amenities safely and free from constraints. Therefore, special care has to be taken when structuring a neighbourhood and planning and designing its different components such as streets, pathways, parks, squares, and social facilities. To create universally accessible neighbourhoods, it is important to consider the principles of universal design outlined in this Section in conjunction with the guidance provided in Sections F to N of this Guide.

The universal design approach aims to support the development of neighbourhoods that meet the needs of the widest possible range of users regardless of age, height, weight and shape, and including people with illnesses or disabilities (temporary or permanent) that affect aspects such as their mobility, balance, sight, hearing, touch, memory, strength, stamina etc. It is clear that neighbourhoods developed in accordance with the principles of universal design will benefit all people and result in an environment that can be enjoyed by everyone.

Universal design is described by the Centre for Excellence in Universal Design as "...the design and composition of an environment so that it may be accessed, understood and used, to the greatest possible extent, by people of any age or size, regardless of any physical, sensory, mental health or intellectual ability or disability, in the most independent and natural manner possible".[10]

Universal design and universal access

The White Paper on the Rights of Persons with Disabilities, 2015[11] defines the concepts of universal design and universal access as follows:

"Universal access means the removal of cultural, physical, social and other barriers that prevent people with disabilities from entering, using or benefiting from the various systems of society that are available to other citizens and residents. The absence of accessibility or the denial of access is the loss of opportunities to take part in the community on an equal basis with others."

"Universal design is the design of products, environments, programmes and services to be usable by all persons to the greatest extent possible without the need for adaptation or specialised design. Assistive devices and technologies for particular groups of persons with disabilities where these are needed, must also respond to the principles of universal design. Universal design is therefore the most important tool to achieve universal access."

O.2.2 The principles of universal design

The following seven universal design principles, developed by the Centre for Universal Design[12], provide useful guidance when planning and designing neighbourhoods:

- Equitable use
- Flexibility in use
- Simple and intuitive use
- Perceptible information
- Tolerance for error
- Low physical effort
- Size and space for approach and use

The descriptions of the principles provided below were developed by the Centre for Universal Design and are reproduced without any alterations as required by the authors[13].

(i)   Equitable use

Definition
The design is useful and marketable to people with diverse abilities.

Guidelines
- Provide the same means of use for all users: identical whenever possible; equivalent when not.
- Avoid segregating or stigmatising any users.
- Provisions for privacy, security, and safety should be equally available to all users.
- Make the design appealing to all users.

(ii)   Flexibility in use

Definition
The design accommodates a wide range of individual preferences and abilities.

Guidelines
- Provide choice in methods of use.
- Accommodate right- or left-handed access and use.
- Facilitate the user's accuracy and precision.
- Provide adaptability to the user's pace.

(iii) Simple and intuitive use

Definition
The use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.

Guidelines
- Eliminate unnecessary complexity.
- Be consistent with user expectations and intuition.

- Accommodate a wide range of literacy and language skills.
- Arrange information consistent with its importance.
- Provide effective prompting and feedback during and after task completion.

(iv) Perceptible information

Definition
The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.

Guidelines
- Use different modes (pictorial, verbal, tactile) for redundant presentation of essential information.
- Provide adequate contrast between essential information and its surroundings.
- Maximise "legibility" of essential information.
- Differentiate elements in ways that can be described (i.e., make it easy to give instructions or directions).
- Provide compatibility with a variety of techniques or devices used by people with sensory limitations.

(v)   Tolerance for error

Definition
The design minimises hazards and the adverse consequences of accidental or unintended actions.

Guidelines
- Arrange elements to minimise hazards and errors: most used elements, most accessible; hazardous elements eliminated, isolated, or shielded.
- Provide warnings of hazards and errors.
- Provide fail safe features.
- Discourage unconscious action in tasks that require vigilance.

(vi) Low physical effort

Definition
The design can be used efficiently, comfortably, and with a minimum of fatigue.

Guidelines
- Allow user to maintain a neutral body position.
- Use reasonable operating forces.
- Minimise repetitive actions.
- Minimise sustained physical effort.

(vii) Size and space for approach and use

Definition
Appropriate size and space is provided for approach, reach, manipulation, and use, regardless of the user's body size, posture, or mobility.

Guidelines
- Provide a clear line of sight to important elements for any seated or standing user.
- Make reach to all components comfortable for any seated or standing user.
- Accommodate variations in hand and grip size.
- Provide adequate space for the use of assistive devices or personal assistance.

O.2.3 Applying the principles of universal design

The application of the principles of universal design should be based on a thorough understanding of the nature of the development, the features of the physical environment where the site is located, and the community that will be served. The principles provide a sound basis for making design decisions, but the decisions also have to be guided by local conditions, legislation, standards and regulations.[14]

O.2.3.1 The regulatory environment

A range of legislation, policies and strategies promote and prioritise the rights of persons with disabilities. A number of standards have also been issued to guide different design aspects in the built environment. Since they are not discussed in detail, it is vital to consult the relevant documents before commencing with the planning and design of a neighbourhood project.

The United Nations Convention on the Rights of Persons with Disabilities (UNCRPD)[15] was adopted in 2006 and South Africa is one of the signatories of the convention. The 2015 White Paper on the Rights of Persons with Disabilities (WPRPD) is the national response to the UNCRPD, explaining how the convention will be implemented in South Africa.

The White Paper on the Rights of Persons with Disabilities, 2015 is based on the 'social model to addressing disability'. According to the White Paper, the social model focuses on the abilities of persons with disabilities rather than their differences, fosters respect for inability and recognises persons with disabilities as equal citizens with full political, social, economic and human rights.

The White Paper states that the social model does not locate the "problem" within the person with impairment, but it emphasises that barriers in the environment disable the person with the impairment. The model is aimed at inclusion rather than exclusion of persons with disabilities from mainstream life.

Legislation that provide for the protection and promotion of the rights of persons with disabilities include a range of acts, of which the Promotion of Equality and Prevention of Unfair Discrimination Act (2000) is the most prominent. The act specifically determines that no person may unfairly discriminate against any person on the grounds of disability by

- denying or removing from any person who has a disability, any supporting or enabling facility necessary for their functioning in society,
- contravening the code of practice or regulations of the South African Bureau of Standards that govern environmental accessibility, and
- failing to eliminate obstacles that unfairly limit or restrict persons with disabilities from enjoying equal opportunities or failing to take steps to reasonably accommodate the needs of such persons[16].

Various standards and regulations are relevant to universal design, including the following:

- **SANS 10400-S**

  The application of the National Building Regulations Part S: Facilities for persons with disabilities. The regulations apply to public buildings and housing, and they include regulations regarding external pathways to buildings, ramps, disabled toilets, accessible routes and doorways, and signage. These regulations should always be considered in conjunction with the information provided in this Guide.

- **SANS 784: 2008**

  Design for access and mobility - tactile indicators

- **SANS 1545-4: 2015**

  Safety rules for the construction and installation of lifts Part 4: Lifts for persons with disabilities (vertical lifting platforms)

- **SANS 22411: 2009**

  Information technology – survey of icons and symbols that provide access to functions and facilities to improve the use of information technology products by the elderly and persons with disabilities

- **ISO 21542: 2011**

  Building Construction – Accessibility and Usability of the Built Environment

- **ISO 23600: 2007**

  Assistive products for persons with vision impairments and persons with vision and hearing impairments - Acoustic and tactile signals for pedestrian traffic lights

National Technical Requirements - NTR 1 and NTR 2

The Department of Transport has developed technical standards on the application of universal design principles and SANS 10400 Part S in relation to public transport and the design of public spaces. These documents are known as the National Technical Requirements (NTR), and they deal with the following:

NTR1: Pedestrian crossings[17]
NTR2: Public transport vehicles and stops[18]

These two documents provide useful information and should be consulted when applying this Guide.

O.2.3.2   Incorporating universal design into the neighbourhood development process

The process of developing a neighbourhood should be guided by the principles of universal design from the very start. These principles should be considered even when decisions are made during the planning phase of the project, and they should be integrated into the design of a neighbourhood from the outset. Universal design should not be regarded as a luxury, or as a few elements that can be added after the design has been completed. It could be very expensive to introduce changes at a late stage of the design process. Attempts to retro fit certain components to accommodate people with disabilities may be difficult and may not have the required result (see Figure O.2.1).
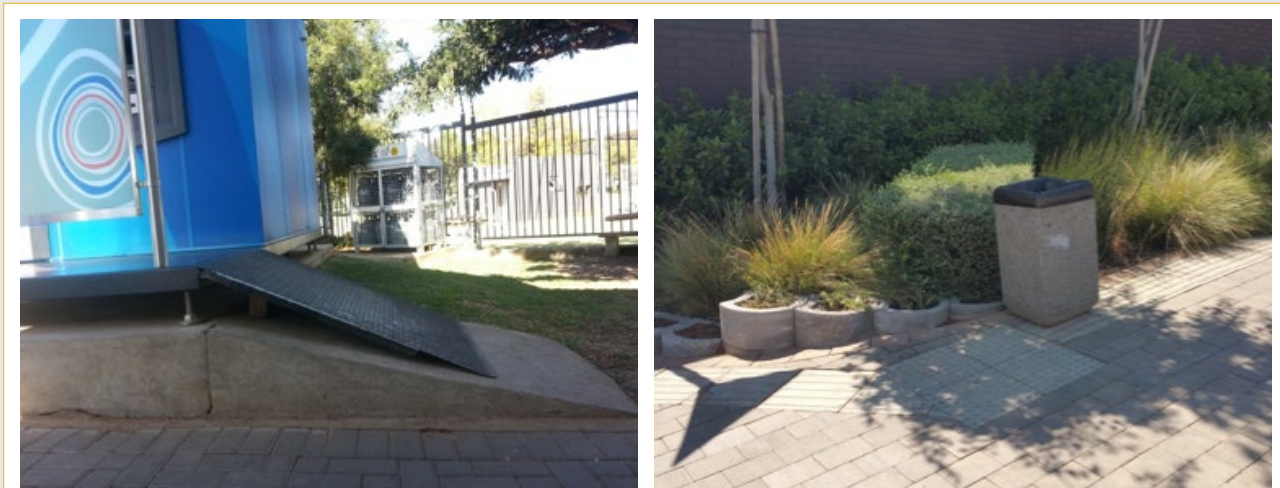
Figure O.2.1: If universal design principles are implemented as an afterthought they do not have the required results

Neighbourhood planning and design decisions need to be informed by a careful assessment of context and place. Characteristics such as the topography and natural features of the development site, existing infrastructure (e.g. streets, pathways and public open spaces) and the profile and composition of the potential residents have to be taken into account. However, when developing a new neighbourhood, it should not be assumed that there is no need for it to be accessible to all purely based on the current characteristics of the expected residents. For instance, there may not be people with disabilities, and elderly residents may not be expected to live in the community, but it does not mean that they will not visit the neighbourhood, or move in over time. It would therefore be useful to consult with a range of potential users to identify the most appropriate way of including universal design options in the neighbourhood.

According to the Commission for Architecture and the Built Environment[19] good design is inclusive:

"Good design should reflect the diversity of people who use it and not impose barriers of any kind. By designing and managing the environment inclusively, the frustration and hardship experienced by many – including disabled people, older people and families with small children – can be overcome. We all benefit from an environment designed in line with inclusive principles."

When applying the principles of universal design in practice, various factors need to be considered when making decisions regarding the design of public spaces such as sidewalks, pathways, squares, parks, and the open areas between buildings. Some of the factors are briefly outlined below. More information regarding these and other aspects that have to be considered is available in SANS 10400 Part S, NTR1, NTR2 and the *Non-Motorised Transport (NMT) Facility Guidelines* developed by the Department of Transport.[20]

(i) Wayfinding

Various mechanisms can be employed to make it relatively easy for everyone, including people with disabilities, to find their way around a neighbourhood. Tactile, visual and audio cues can be provided in a number of ways.

Tactile ground surface indicators (TGSIs), often referred to as tactile paving, could be very useful in assisting visually impaired people with wayfinding. It is used to provide guidance or to warn of potential hazards, for instance a change in level, or a pedestrian crossing. Different textures have particular meanings that convey specific information; therefore it is important to use the appropriate surface pattern (e.g. blister or corduroy) in the correct location and manner (layout) as specified in SANS 784: 2008 (Design for access and mobility - tactile indicators). More information regarding the use of TGSIs at pedestrian crossings is available in NTR1.

Photo credit: Department of Transport

Figure O.1.2: Tactile paving used at a bus stop (L) and at a pedestrian crossing (R)

Audible signals assist visually impaired people by providing them with information that allows them to cross a street safely at a pedestrian crossing. Signage that provides information to assist people with wayfinding should include braille symbols at a level where people in wheelchairs can reach it.

(ii) Pedestrian crossings

Everyone is vulnerable when crossing a street, but people with disabilities (in particular people who are deaf, hard of hearing, visually impaired or those with walking difficulties) are especially vulnerable. It is therefore critical that pedestrian crossings should be carefully designed in accordance with the specifications provided in NTR 1. Aspects to consider include the number of lines that can safely be crossed before a safe resting place is reached, kerb radii suitable for a particular intersection crossing and the siting of traffic light poles at crossings.

(iii) Pathways free of obstacles

Sidewalks, pathways and NMT routes through public open spaces should be free of obstacles, trip hazards and protrusions such as exposed tree roots, outward opening windows and doors, and street furniture (signage, public seating, lighting, bollards etc.). Specific attention should be paid to the placement of street furniture to ensure that an obvious line of travel is maintained. Certain elements such as benches, lighting, signage and dust bins should be grouped or positioned in a coordinated way in order to create a clear pathway that is easy to follow.

The design and placement of bollards should be carefully considered. They should be clearly visible and should never be linked with ropes or chains. Bollards should be positioned in such a way that they do not present a hazard or obstruction for wheelchair users, people pushing prams, visually impaired people, etc.

Special attention should be paid to the design of a stormwater drainage system that will ensure that water is effectively cleared from walkways, sidewalks, pedestrian crossings etc. (see **Section L**) Puddles of water present a hazard to pedestrians, cyclists, wheelchair users, people with walking difficulties, visually impaired people etc. Decisions regarding the gradient and surface levels required to accommodate stormwater drainage should be reconciled with the gradient specifications for ramps, pathways and pedestrian crossings provided in NTR and SANS 10400 Part S.

Manhole covers and access points to other underground services should not be placed in pathways, sidewalks or at pedestrian crossings. They present trip hazards and create obstacles that reduce the effective width available to users of the walkway, sidewalk etc. If their covers are removed (or stolen), it presents a very dangerous situation.


Figure O.2.3: Street furniture should be carefully positioned to maintain a clear pathway

(iv) Surface materials

The material used on horizontal surfaces should be chosen wisely to ensure that it is appropriate for the context and does not create a hazard or inconvenience some users. Pathway surfaces should be smooth but not slippery. Many people find uneven surfaces such as loose gravel or cobblestone paving uncomfortable. Some people, for instance the elderly, people with walking difficulties, wheelchair users and people with prams or wheeled luggage find it difficult, and even dangerous, to negotiate these types of surfaces.

Photo credit: Louis Smit (L) and Humphrey Muleba (R) on Unsplash
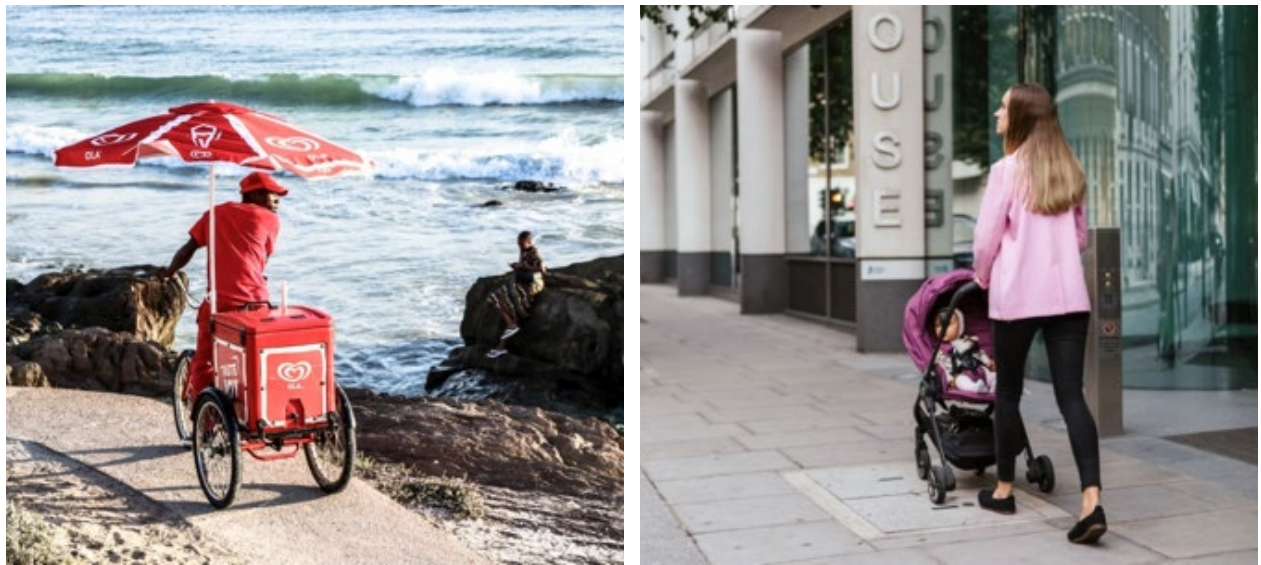
Figure O.2.4: Pathways and sidewalks with level, even and slip-resistant surfaces will benefit all users

If a pathway is on the same level as the area directly adjacent to it and the surfaces are flush, it is advisable to use different surface materials to demarcate the pathway and define its edge. By using different surface treatments, it will be easier for people, especially those who are visually impaired, to distinguish between the pathway and the adjacent area, e.g. a street with motor vehicles, or outdoor seating for a restaurant. The intention is to prevent people from wandering off the walkway causing them to get lost, or leading them into an area that may present hazards and obstacles. Care should be taken when introducing level differences or using raised kerbs to delineate a pathway, since it may be helpful to some but present a tripping hazard to others.

Photo credit: Chris Barbalis on Unsplash

Figure O.2.5: Use different surface materials to demarcate a pathway and define its edge

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Balancing different needs

In certain cases, a particular universal design option may be appropriate for some people but not for others. For instance, design elements such as raised kerbs may be useful to visually impaired people because they define the edge of a pathway or pavement. However, raised kerbs could inconvenience, or even be hazardous to others such as wheelchair users and people with walking difficulties. Well-designed dropped kerbs would therefore be required in carefully identified locations, taking into consideration the needs of all users.

(v) Ramps

In addition to steps, ramps should be provided where there is a change in level. Ramp gradients and the provision of landings should meet the specifications provided in SANS 10400 Part S. The positioning and design of ramps should be carefully considered to ensure that they are not too steep for people with wheelchairs and walking difficulties.
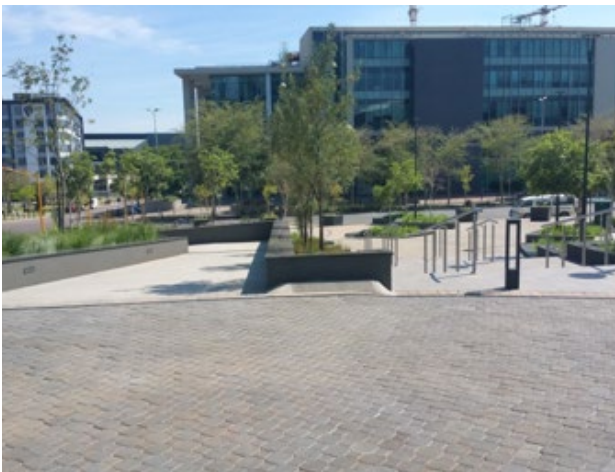

Figure O.2.6: Both stairs and ramps should be provided (L) and ramps should have landings at convenient intervals (R)

(vi) Pathways and sidewalks that can accommodate all users

Universal design supports the idea that most destinations in a neighbourhood should be reachable by walking, cycling and using public transport. Many people with disabilities find it difficult to walk long distances and walkable neighbourhoods have a number of benefits to all users and residents. See **Section F.4.2** for a discussion of walkable neighbourhoods.

Pedestrian routes should be continuous throughout a neighbourhood. This means that pathways and sidewalks should not be provided arbitrarily but they should be linked to provide an uninterrupted route to and from different destinations. Sidewalks with deliberate barriers or sidewalks that are taken over by restaurants force pedestrians to either use the roadway (which has safety implications) or select an alternative route (which can be inconvenient and time-consuming). Unnecessary fences and gates (often part of gated communities or security complexes) can also result in unnecessary long travel distances.

Figure O.2.7: A bus stop (L) and parking spaces (R) that can accommodate wheelchair users

O.2.4 Management and maintenance

Once an environment has been designed according to universal design principles, it is essential that the environment is managed and the infrastructure maintained. If an effective management and maintenance regime is not implemented, the environment may lose the features that were incorporated to assist people with disabilities. For instance, if cracked floor tiles or broken paving blocks are not replaced, they are not fit for purpose anymore and become hazards. Similarly, if street furniture components are added randomly, they may obstruct pathways and cause hazards. Therefore, universal access is the result of an ongoing process, not of a once-off design intervention.

Glossary, acronyms, abbreviations

Glossary

CPTED
According to the International CPTED Association, CPTED is a multi-disciplinary approach to deterring criminal behaviour through environmental design. CPTED strategies rely upon the ability to influence offender decisions that precede criminal acts by affecting the built, social and administrative environment.

Universal design
According to the White Paper on the Rights of Persons with Disabilities, universal design is the design of products, environments, programmes and services to be usable by all persons to the greatest extent possible without the need for adaptation or specialised design. Assistive devices and technologies for particular groups of persons with disabilities where these are needed, must also respond to the principles of universal design. Universal design is therefore the most important tool to achieve universal access.

Acronyms and abbreviations

CPTED	Crime Prevention through Environmental Design
SANS	South African National Standard
TGSI	Tactile Guidance Surface Indicators

Endnotes

1   The International CPTED Association (ICA) is an international organisation aimed at promoting the creation of safer environments and at improving the quality of life through the use of CPTED principles and strategies. http://www.cpted.net

2   National Planning Commission. 2012. *National Development Plan 2030: Our future - make it work (NDP)*. The Presidency, Pretoria.
http://www.poa.gov.za/news/Documents/NPC%20National%20Development%20Plan%20Vision%20 2030%20-lo-res.pdf

3   Cooperative Governance and Traditional Affairs (CoGTA). 2016. *Integrated Urban Development Framework (IUDF)*.
http://www.sacities.net/wp-content/uploads/2017/10/IUDF%202016_WEB-min.pdf

4   Civilian Secretariat for Police. 2016. *White Paper on Safety and Security*. Civilian Secretariat for Police, Republic of South Africa, Pretoria.

5   Tinus Kruger and Karina Landman. 2008. Crime and the physical environment in South Africa: Contextualizing international crime prevention experiences. In *Built Environment*, 34 (1), 75–87. Alexandrine Press, Marcham.

6   Tinus Kruger, Karina Landman, and Susan Liebermann. 2001. *Designing Safer Places: A Manual for Crime Prevention through Planning and Design*. South African Police Service & CSIR, Pretoria.

7   https://www.saferspaces.org.za/understand/entry/crime-prevention-through-environmental-design-cpted

8   Gregory Saville and Tinus Kruger. 2012. Designing cities to minimise crime. In *Sustainable Cities - Building cities for the future*. Green Media Ltd., London, UK.

9   Tinus Kruger, Lizette Lancaster, Karina Landman, Susan Liebermann, Antoinette Louw and Rory Robertshaw. 2016. *Making South Africa Safe: A Manual for Community-based Crime Prevention* (Revision 1). CSIR, Pretoria.

10   http://universaldesign.ie/What-is-Universal-Design

11   Department of Social Development. 2015. *White Paper on the Rights of Persons with Disabilities*.
http://www.dsd.gov.za/index.php?option=com_docman&task=cat_view&gid=33&Itemid=39

12   The Center for Universal Design. 1997. *The Principles of Universal Design, Version 2.0*. Raleigh, NC: North Carolina State University. https://projects.ncsu.edu/design/cud/about_ud/udprinciples.htm
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13   Copyright 1997 NC State University, The Center for Universal Design.

14   The Principles of Universal Design were conceived and developed by The Center for Universal Design at North Carolina State University. Use or application of the Principles in any form by an individual or organisation is separate and distinct from the Principles and does not constitute or imply acceptance or endorsement by The Center for Universal Design of the use or application.

15   United Nations Convention on the Rights of Persons with Disabilities (UNCRPD)
https://www.un.org/development/desa/disabilities/convention-on-the-rights-of-persons-with-disabilities.html

16   Promotion of Equality and Prevention of Unfair Discrimination Act, 2000
http://www.justice.gov.za/legislation/acts/2000-004.pdf

17   Department of Transport. NTR1: Pedestrian crossings.
http://www.transport.gov.za/documents/11623/53052/NTR1_Part1_ PedestrianCrossingsver6Nov2016FinalDraft.pdf/2b997650-8f89-4be1-9294-7eac32d8251b

18   Department of Transport. NTR2: Public transport vehicles and stops.
http://www.transport.gov.za/documents/11623/53052/NTR1_Part2_ PedestrianCrossingsver6Dec2016FinalDraft.pdf/cb4e6be2-dad2-41cb-9229-c76b5febc94c

19   The Commission for Architecture and the Built Environment (CABE). 2006. *The principles of inclusive design. (They include you).* CABE, London, UK.

20   Department of Transport. 2014. *Non-Motorised Transport (NMT) Facility Guidelines.* Department of Transport.