ANNEXURE B4:

FINAL MIDVAAL DENSITY POLICY REVIEW 2021

MIDVAAL
LOCAL MUNICIPALITY

Final Review of the Midvaal Density Policy

May
2021

Contents

Terms & Definitions

Additional Dwelling Unit	Means an additional dwelling unit which may be erected on the same cadastral land unit on which a dwelling unit exists or is in the process of being erected; Provided that: (a) In the case of land zoned for Residential Zone 1, only one additional *dwelling unit* shall be permitted; Provided that the cumulative area of the dwelling unit and the additional dwelling unit is within the permissible coverage limit and FAR applicable to the zone. (b) In the case of l*and* situated in Agriculture Zone and Rural Residential Zone, additional dwelling units shall be permitted on properties larger than 8565 m2 and shall be restricted to 250 m2 all-inclusive in extent, by written consent from the municipality. This excludes Agricultural Employee Accommodation. (c) Site development plan and building plans are approved by the municipality.
Coverage	Means the area of land, which may be covered by buildings, as seen vertically from above and is expressed as a percentage of the area of the property but excluding a structure without a roof or covered by hail net.
Density	Means the number of dwelling houses per hectare as prescribed in relation to a specific area in the development parameters and is a measure of the number of dwelling units per m2, and is calculated as follows: Density (expressed as units per hectare) = Total number of dwelling units in a specified area Extent of the specified area in hectares
Duplex	(As defined in this document to allow LUMS to utilise said definitions until Scheme is reviewed)
Dwelling House	Means a single and free-standing dwelling unit.
Dwelling Unit	Means an interconnected suite of rooms, designed for human habitation that shall contain a kitchen with or without an ancillary scullery and with the appropriate ablutions; irrespective of whether the dwelling unit is a single building or forms part of a building containing 2 or more dwelling units; provided that a second kitchen, which is to be used for religious purposes and which is physically connected with the first kitchen, may be provided to the satisfaction of the Municipality.
Flat	(As defined in this document to allow LUMS to utilise said definitions until Scheme is reviewed)
Floor Area	In relation to any building or structure means the sum of the gross area occupied in a building at the floor level of each storey; Provided that in the calculation of the floor area the following areas shall not be included: (a) Unroofed buildings, open roofs and areas occupied by external fire escapes. (b) Parking spaces for the occupants of the building.

	(c) Entrance passages and corridors (excluding entrance halls, porches and corridors in a dwelling unit or a residential building where such entrance halls, porches and corridors are not enclosed by outer walls or windows). (d) Accommodation for the lift motors and other mechanical or electrical equipment necessary for the proper use of the building. (e) A verandah or balcony in a building; - Provided that such verandah or balcony shall not be enclosed except by means of a parapet at most one (1) metre high or a wire gauze screen. (f) Areas reasonably used for the cleaning, maintenance and care of the building or buildings, except dwelling units for supervisors, cleaners and caretakers
Floor Area Ratio (FAR)	Means the ratio (expressed as a proportion of 1) which is prescribed for the calculation of the maximum floor area of a building or buildings permissible on a land unit; it is the maximum floor area as a proportion of the gross erf area and calculated as follows: FAR = Total Floor area of a building Total surface area of the land unit
Height	Means a vertical dimension of the structure from the natural ground level, to the wall plate or in the case of a pitched roof, the ridge of the roof or the highest point of a building if indicated as such, measured in metres; Provided that- (a) the height of a structure shall not include chimneys, flues, masts and antennae; and (b) elevator motor rooms, satellite dishes, ventilation shafts, water tanks, air conditioning plant and equipment on top of a building, shall be included to determine the height of a structure unless enclosed within the roof or hidden behind parapet walls, not exceeding 2 metres in height.
Residential Building	Means a building on an erf or site, excluding a dwelling house and/or dwelling unit, that contains habitable rooms, with or without common ablution-, kitchen-, dining- and/or lounge facilities. Such definition includes but is not restricted to hostels, hotels, dormitories, communes, boarding houses, guest houses (excluding converted dwelling houses and/or dwelling units), bed and breakfast and old age homes that may or may not include ancillary frail care facilities.
Storey	Means the space in a building between one floor level and the following floor level or ceiling or roof above.
Subdivision or subdivide	in relation to land, means to subdivide the land, whether by means of - (a) survey; (b) the allocation, with a view to the separate registration of properties, of undivided portions thereof in any manner, including the marketing and conclusion of contracts for the alienation, sale or exchange of portions of the land unit; and (c) the preparation thereof for subdivision.
Townhouses	means a group of separate and / or linked dwelling units -

	(a) which are planned, designed and built as a harmonious architectural entity with a number of unit types; (b) which are arranged in a varied and orderly fashion within or around a communal open space and with public and / or private access roads; (c) with a medium-density character; (d) with structures which may vary between single- and double storeys and cadastrally subdivided or not; and (e) of which every single residential unit has a ground floor; and a town house will have a similar meaning

1. Introduction

1.1. What is Density and Densification?

Density is a quantitative measure of the intensity with which land is occupied by either development or population. The relative distribution of development and population has major implications for the provision of infrastructure and amenities, such as public transport, municipal services infrastructure, and social facilities.

Densification is the process through which urban densities are achieved. In modern cities across the world, densification is largely pursued to curb urban sprawl, to protect environmental sensitive areas and high-potential agricultural soils, to enable the cost-effective provision of social amenities and municipal infrastructure, and to promote the efficient operation public transport systems. As such, densification is often directed towards areas that have sufficient infrastructure capacity, that have access to public transport networks, and have intrinsic characteristics that support higher densities, such as areas earmarked as Nodes.

1.2. Purpose of the Policy Review

The Midvaal Density Policy was initially prepared by Urban Dynamics in 2011 and revised in 2014. Since then, Midvaal Local Municipality has undergone varies legislative and physical change that warrants the revision of the Density Policy as changing circumstances deem necessary. The primary purpose of the Density Policy remains to provide a tool to manage spatial density within Midvaal, to ensure that appropriate urban densities are achieved that adhere to sound planning principles and sustainable urban development.

1.3. Aim of the Policy

The Aim of the Midvaal Density Policy is to focus on location-specific densification to achieve a sustainable and efficient urban structure. This approach will produce density targets at specified locations and will set minimum requirements for the densification of those locations. This will enable officials, planners, developers, and the public to make informed decisions for densification.

The Density Policy will be applied with discretion and local knowledge at local level to achieve a diverse range of densification outcomes to ensure individual living environments that cater for a diverse range of people.

The management of the higher densities proposed by this Density Policy will be of critical importance. Good management of development densities will not only create a sustainable and efficient urban environment, but it will also enhance the living condition and costs of the local population, if dealt with correctly. It is therefore important that the Density Policy be a co-operative venture between the public and private sectors in order to encourage developers and landowners to utilise their properties to its maximum potential. This co-operation will largely be achieved through the public participation process that will run concurrently with the compilation of the Midvaal Density Policy.

To ensure alignment the Midvaal Density Policy will be incorporated into the Midvaal Spatial Development Framework Review.

2. Locational & Policy Context

2.1. Location Context

Midvaal Local Municipality forms part of Sedibeng District Municipality within Gauteng Province. As depicted on Figure 1, the Study Area is situated directly south of City of Johannesburg and southeast of Ekurhuleni. The northern parts of the Study Area are largely centred on the R59 and R82, linking Midvaal to Ekurhuleni and Johannesburg in the north and Vereeniging in the south. The primary urban conglomeration is centred on Meyerton, which abuts the R59 freeway. Savanna City is a mega housing development located in the west of Midvaal Vaal Marina is largely a vacation settlement situated on the Vaal Dam, which is located on the southern boundary of the Study Area.

2.2. Policy Context

2.2.1. Spatial planning & Land Use Management Act (Act 16 of 2013)

The Spatial planning and Land Use Management Act (SPLUMA) Act 16 of 2013 is the newest in Town planning Legislation and replaces the former Development Facilitation Act, Act 67 of 1995. The Act is based on the following 5 principles;

- Principle of spatial justice
- Principle of spatial sustainability
- Principle of efficiency
- Principle of spatial resilience
- Principle of good administration

It is the principle of spatial sustainability that relates to density, best. It is the principle whereby- spatial planning and land use management systems must—

(i) promote land development that is within the fiscal, institutional and administrative means of the Republic;
(ii) ensure that special consideration is given to the protection of prime and unique agricultural land;
(iii) uphold consistency of land use measures in accordance with environmental management instruments;
(iv) promote and stimulate the effective and equitable functioning of land markets;
(v) consider all current and future costs to all parties for the provision of infrastructure and social services in land developments;
(vi) promote land development in locations that are sustainable and limit urban sprawl; and
(vii) result in communities that are viable;

To curb urban sprawl and promote compact urban areas requires a number of actions. These may include promoting smaller stand sizes, encouraging a range of higher-density housing typologies, such as walk-ups, and promoting urban infill, where urban growth is encouraged to occur within the existing urban boundary.

2.2.2. Gauteng Spatial Development Framework 2030

The Gauteng Spatial Development Framework 2030 was developed on 6 key policy directives. One of which is Urban Form outline to "Promote high-density mixed-use developments in nodes and corridors. Focus on urban renewal, clustering, densification and infill development."

This statement directly links to the aim of this policy to achieve sustainable urban densities in Midvaal.

3. Objectives & Key Issues

3.1. Objectives

Promoting higher urban densities primarily aims to restructure the urban environment in such a way that it becomes more efficient, more equitable and more convenient for its residents to live. The objectives of urban densification represented in this policy should be[1]:

Objective	Definition
Minimise the footprint of the urban area	Urban development often transforms greenfield areas into built-up areas, thus destroying the natural environment. This warrants a concerted effort to limit the impact of urban development on such areas by limiting urban sprawl through urban densification. Land should be seen as a scarce and limited resource and should be used in a manner which reflects the scarcity of land as a resource.
Prevent the destruction of agricultural land	Urban sprawl often destroys high-potential agricultural land located near urban markets. In many developing countries this also significantly impacts on agricultural employment and food security. This high-potential agricultural resource must be protected from urban sprawl through urban densification.
Improve the use of public transport	One of the primary ways of improving the use of public transport is by increasing residential densities in nodal areas and along public transport corridors. Inevitably, this has major implications for the way in which urban areas are developed.
Improve the efficiency of urban areas	A more compact urban area generally increases accessibility for local residents and reduces infrastructure development and maintenance costs for local government
Reducing Inequality	Greater density in urban areas ensures greater access to employment opportunities and social amenities, especially for lower-income groups. A fragmented and low-density urban environment usually does not achieve this.
Create structural identity	Densification should take place in a focussed manner, which can assist in transforming monotonous urban area into areas with an identifiable spatial logic and identity.
Ensure choice in housing options	A balanced and diverse range of housing options, densities and typologies usually serves the needs and income abilities of all the residents of an urban area.

[1] University of Pretoria, 2005. City of Tshwane: Compaction and Densification Strategy. City of Tshwane.

Accommodate diversity	Planning the densification of an urban area needs to recognise a multiplicity of users. A standardised, one-size fits-all approach to densification in different parts of an urban area usually does not accommodate diversity in an urban area.
Ensure high quality environments	Densification should bring about a positive change in the liveability of urban environments. Compact, well-planned cities tend to be more liveable than low-density sprawling cities. Aspects such as overcrowding, which can be the result of densification, can and should be prevented.
Provide social amenities	It is imperative that, through the process of densification, the need and provision of social amenities be addressed. Higher quality living environments cannot be achieved if higher densities are encouraged without adequately providing for basic social needs.
Protect environmentally sensitive areas	Environmentally sensitive areas need to be protected by limiting urban encroachment through densification. Environmentally sensitive areas should be treated as a resource which cannot easily be rehabilitated once it has been damaged. Strategic densification can effectively be used as a method of releasing pressure on environmentally sensitive areas.
Promote public transportation	An urban form that is designed around private vehicle usage, with limited public transport opportunities, needs to be remedied using densification. Public transport investment can only occur once commuter thresholds are achieved through densification. Densification should ideally occur around public transport stations and transport interchanges.
Protect low density areas	Not all areas are conducive to higher urban density due to the character and nature certain neighbourhoods, environmental considerations, geotechnical considerations, and infrastructure issues. In addition, certain areas should be preserved and protected for varying lifestyles. For example, lower density residential areas with larger stands are usually the choice location for families with young children. Such issues should also be considered when densifying an urban area.
Promote sustainability	In general, densification needs to be planned and implemented in such a manner that ensures that higher density developments are sustainable, that the natural environment is sustainable, that projects are financial sustainable, and that social amenities and municipal service infrastructure can be maintained and used sustainably.

3.2. Key Issues

Densification must be conducted in a manner that considers environmental, infrastructural and a number of other issues in order for it to be implemented properly and appropriately. Key issues that must be taken into account when preparing a Density Policy are as follows:

- Community resistance to change, including higher density living;
- Community perceptions that higher density developents are inferior to lower density developments
- The effect of Urban sprawl and the unsustainable cities it create;

- Encroachment onto Environmental and agricultural resources and the effect of urban sprawl on these resources;
- Social amenities need certain population thresholds, which can only be achieved through densification;
- Municipal services provision needs certain density thresholds and densification must therefore be linked to infrastructure planning;
- Densification requires the application of a wide range of housing and tenure options;
- The efficient use of transport and specifically public transport requires the support of higher-density residential and business areas.

4. Understanding Density

Before proceeding with proposals for the implementation of densities within Midvaal, it is necessary to briefly consider density and what it does and does not imply practically.

4.1. Density Misconceptions

A critical element in developing more sustainable urban areas is applying higher development densities than in the past. This has been necessitated by the past inefficiency and high costs of existing spatial patterns. However, density is often a controversial topic and is often misunderstood, which often hamper to application of higher densities. Some misconceptions regarding densities are:

- Firstly, it is often taken that low densities create high quality environments and high densities create low quality environments. However, high quality environments can be created at both low and high densities and depend more on design considerations than density. Instead, poor living conditions are more a cause of other factors, such as poor architectural design, a lack of infrastructure and public services, scarcity of open space, poor environmental conditions and poverty.
- Secondly, there is a misconception that only one housing type can be created at a certain density. In fact, a wide range of housing types can be provided at most densities, except at the lowest end of the density scale. For example, studies have shown that similar densities can be achieved by four storey buildings than can be achieved by high rise buildings for various technical reasons. Thus, a high-density environment does not necessarily mean a high-rise environment.
- Thirdly, the misconception exists that high densities are appropriate for low-income groups and low densities are only appropriate for high-income groups, because of the cost implications. Internationally, numerous examples exist where varying densities have been applied successfully to all income groups.
- Fourthly, the misconception may exist that higher densities are inappropriate in rural environments, such as Midvaal. On the contrary, higher densities are just as appropriate in rural areas as they area in urban area. Allowing excessively low densities in rural areas often allow relatively low residential population numbers to sprawl over large commercial agricultural areas, as is also often the case in the peripheral areas of larger urban areas. Also, low densities incur high municipal infrastructure costs, whether in urban or rural areas.

4.2. Theoretical Parameters

Densification is bound by several parameters. These parameters guide and influence urban development and densification.

- **Sustainable Neighbourhoods**
  Sustainable urban development needs to be a primary goal when developing urban areas. The Municipality and the community at large need to share a common goal to create more sustainable urban areas within Midvaal, which:
  - Prioritise walking and public transport and minimises the need to use private vehicles;
  - Deliver a quality of life and provide access to economic opportunities;
  - Provide a range of social amenities that are easily accessible;
  - Present an attractive and quality public realm that is easily maintained;
  - Promote the efficient use of land and energy;
  - Provide a mix of land uses to minimise transport and travel distances;
  - Promote social integration and provide accommodation for a diverse range of household types;
  - Enhance and protect the natural environment and biodiversity.

  The achievement of the sustainable development principles, outlined above, rely on successful implementation of density and the densification of urban areas. In other words, urban density needs to be applied in a manner that will enable the creation of sustainable urban environments.

  A sustainable urban environment or neighbourhood that effectively applies density to achieve sustainability requires specific criteria. Such a neighbourhood is limited in area and is structured around a defined centre or node (Diagram 1). The node is the higher-density part of the neighbourhood and it is the focus of the neighbourhood's public buildings, such as a post office, a community hall and a library, shops and workplaces. The density of the neighbourhood decreases with increasing distance from the nodal core of the neighbourhood. The outer edge of the neighbourhood may be assigned to very low-density residential use, such as golf estates, it can be designated for rural purposes, such as agricultural holdings, or it can be set aside for the conservation of ecological sensitive areas. A 20 minute walk or 2km drive delineates the outer ring of the neighbourhood.

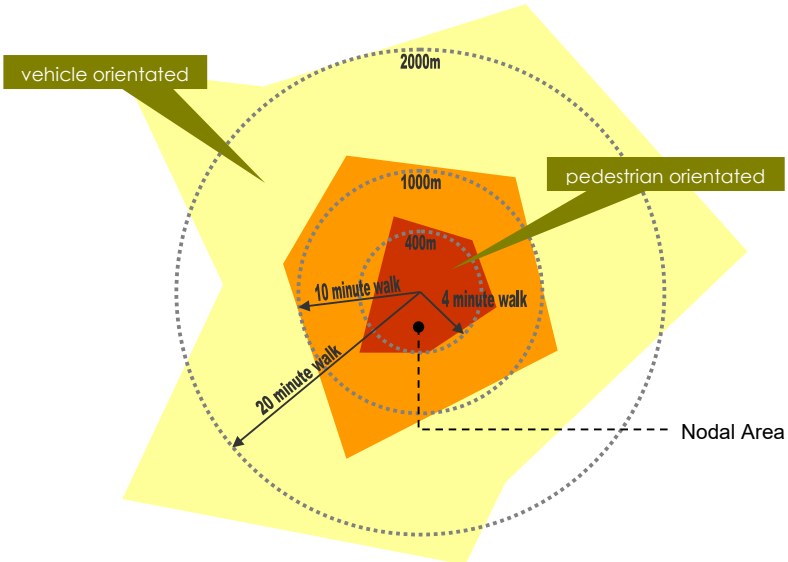

Diagram 1: Neighbourhood Configuration

- **Land Use and Transportation Integration**

  Land use and transportation integration forms the backbone of an efficient urban structure. It not only ensures the cost-effective operation of a city's public transportation system, but it also tends to limit urban sprawl by concentrating urban development at higher densities close to major transportation routes.

  The key to successful land use and transportation integration is obtaining higher land use densities at major intersections and public transit stations, such as bus stations, taxi ranks and commuter railway station. These are the points where access is obtained to the public transport systems and attempts should thus be made to optimally use these strategic locations.

  The integration of higher-density housing development and public transportation is of critical importance. On the one hand, higher-density housing units provide the necessary commuter thresholds to support public transport and, on the other hand, households that live in higher densities are typically more reliant upon affordable and efficient public transport to access employment opportunities.

  Housing densities exceeding 20 units per hectare should be encouraged at major transport intersections, with higher densities encouraged close to transit stations, such as bus stations, taxi ranks and commuter railway station. This will necessitate developing housing typologies that defer from conventional single dwelling units, towards higher-density housing typologies.

- **Urban Development Boundary**

  The Urban Development Boundaries (UDB) is a mechanism to contain urban sprawl and to define a line beyond which only limited municipal services are provided. An UDB also plays an important role in the protection of environmental areas and high-potential agricultural soils. Thus, an Urban Development Boundary to assist in controlling unsustainable urban growth and settlement development. In general, an Urban Development Boundary:

  - Limits an urban area's footprint and urban sprawl to prevent the excessive consumption of land.
  - Focuses on in-fill development and the redevelopment of brownfield areas.
  - Supports cost efficient infrastructure provision.
  - Encourages an urban form that supports the efficient use of public transport.
  - Protects environmentally sensitive areas.
  - Provides strategic direction in terms of capital investment, specifically investment in municipal infrastructure.

  An Urban Development Boundary needs to be used with other development strategies to ensure the densification in specific urban locations. Strategies might include promoting mixed-use developments to ensure better land use concentration, the improvement of infrastructure provision and the provision of public transport.

  An Urban Development Boundary does not necessarily prohibit development outside the demarcated boundary, but it does prohibit intensive, high-density development, which is more suited for urban environments, outside the boundary. As such, the demarcation of an Urban Development Boundary must be done with

urban density in mind. The Urban Development Boundary must enable the densification of strategic areas, such as areas that are located in close proximity to bulk infrastructure and social amenities. In turn, these higher densities will reduce the pressure for development on areas located beyond the Urban Development Boundary.

- **Infrastructure Services**

  Infrastructure availability or potential availability is a pre-requisite for densification. However, existing infrastructure alone should not dictate future areas for densification. The location criteria for densification, such as proximity to nodal areas, should also be used to determine appropriate locations for future densification and infrastructure provision. If a criteria-based approach is taken, infrastructure provision should follow densification and strategic investment in infrastructure should occur accordingly.

  It is imperative that bulk services contributions be maintained at a level that effectively contributes to the upgrading of bulk infrastructure in order to increase densities in strategic locations. This may result in higher bulk services contributions to fund infrastructure provision in certain localities that support urban densification.

- **Protection of Agricultural Land**

  Large parts of Midvaal comprise high-potential agricultural land, implying that many parts of Midvaal are not advisable for urban development from an agricultural point of view. In selected cases, the development of moderate-potential agriculture areas could be considered for urban development. This is especially relevant in areas where higher urban densities are required. For example, areas abutting public transportation spines or stations are often more suitable for higher-density development than for agricultural development. Developing such areas at higher densities will limit urban sprawl and lessen the pressure for urban development on peripheral, high-potential agricultural areas.

4.3. Housing Typologies & Density

A critical factor in developing cities into sustainable urban environments is the use of higher urban densities than in the past. Higher housing densities in particular can contribute to more sustainable urban environments. Higher densities are important for several reasons:

- Higher densities lead to a significant saving in land cost per unit, as less land is needed and land is used more efficiently.
- Efficient provision of infrastructure. Low urban densities translate into long infrastructure runs and therefore higher cost per consumer for the installation, operation and maintenance of infrastructure.
- Efficient public transport requires medium to high densities to be able to provide frequent and efficient public transport services. Low densities with long walking distances cannot support efficient public transport services.
- Community facilities, such as schools and health clinics, are difficult to reach for many people at lower densities.

Housing typologies are a critical factor influencing urban density, simply because certain housing typologies accommodate more units per hectare than other typologies. Housing types can be categorised according to level of attachment, which is closely related to the housing density that can be achieved. Level of attachment refers to the vertical and horizontal attachment of buildings. There is a tendency, when addressing housing demand, to provide freestanding units with little or no level of attachment. There is little exploration of the densification benefits of attached housing typologies, such walk-ups, row housing and semi-detached units.

The following discussion on typologies is not exhaustive, but rather focuses on housing types that achieve higher urban densities. Table 1 below provides an easy-reference summary of the attributes of the different housing typologies and how it compares with the attributes of other housing typologies.

Housing Typology	Nett Density	Building Height	Tenure Options
Cluster housing	25 u/ha	1 storey	Full title or sectional title
Duplex housing	60 u/ha	1-2 storey	Full title or sectional title
Walk-ups	80 u/ha	3 storeys	Rental or sectional title

Table 1: Housing Typologies and Densities
Source: Urban Dynamics Gauteng, 2011

- **Cluster housing**



Cluster housing developments are characterized by housing units located within a housing complex, which shares communal facilities and a perimeter security wall. These housing units can either be detached or attached to one another, thus sharing at least one wall of the unit. This housing type does not exclude a second and third storey. Ground access, a private garden and on-site parking is possible with the housing typology.

Custer houses are usually located on stands of a relatively small size. These smaller stand sizes are often achieved through the use of shared walls. Cluster housing yields a nett density of approximately 25u/ha. The smaller stand sizes translate to substantial infrastructure cost savings, making cluster housing more cost-effective than detached housing units. Shared walls also reduce the construction costs of the buildings, compared to detached housing units.

The smaller stand sizes and higher densities achieved by this housing typology, compared to that of detached housing units, make it more suitable as a public

transport related development. Although it does not create the desired densities that would significantly boost public transport patronage, it is a better option than detached units. In a sense, this housing typology creates a balance between creating a detached housing unit layout and achieving higher densities that are more transport related. This housing typology is best located along public transport routes.

- **Duplex housing**


Duplex housing comprises more than 2 housing units linked to one another, as opposed to cluster housing that can either be detached or semi-detached housing units. Duplex housing units can be attached horizontally and vertically and the number of units to be attached is not limited to a specific number. Usually, 4 attached units create a well-scaled building. Such a building configuration, combined with shared walls, reduces the construction costs of these units. It also allows relatively small stand sizes and this makes substantial infrastructure cost savings possible. Ground level units can have a private garden. On-site parking is possible.

Duplex housing can either be full title (individually registered stands) or sectional title. Duplex housing can only be sectional title if there is a vertical separation of units. The small stand sizes of duplex housing yield a nett density of up to 60u/ha. This density is the minimum density required to ensure the optimal operation of public transportation systems. Developing such housing types within walking distance of public transport stations would thus better serve public transport than lower density housing options, in particular commuter rail.

- **Walk-ups**



Walk-ups provide a low-rise, higher-density housing option. It is only this level of density that really becomes beneficial for public transportation and the cost-effective operation of public transport. With nett densities of approximately 80u/ha, this housing typology places enough commuters within walking distance of a public transportation station to ensure the viable operation of a public

transportation system. Also, residents living in walk-up apartments are usually of a household income bracket that uses public transport as their means of transport, which implies a mutually beneficial relationship between walk-up housing typologies and public transport.

This housing type involves individual housing units stacked on top of each other up to 3 storeys high. This housing configuration is located on a single stand, thus only making full title ownership is not possible. Walk-up units are either sold off as sectional title units or applied as rental units. What distinguishes walk-up from flats is the fact that walk-up units are accessed via a staircase, whereas lifts are mandatory in flats. The gardens surrounding the building are in communal ownership and use. On-site parking is possible in the form of a parking lot and garages.

Usually, this housing typology is cheaper to build than flats, because it does not require costly lifts and construction methods. In addition, the higher densities obtained makes substantial savings in infrastructure costs possible. This cost saving not only applies to municipal infrastructure (water, sanitation and electricity), but also to the provision of roads infrastructure.

4.4. Consequences of non-implementation

Control of density is a fundamental component of effective land use planning because the distribution of development and population has major implications for the provision of public infrastructure, such as transport, municipal services and social amenities. The lack of density in our cities has led to certain implications for the way in which our cities function. These consequences are as follows:

- Settlement patterns are distorted with residents often having to travel the long distances to access economic and social opportunities;
- Our cities are costly, because the long travel distances result in high costs in terms of time, energy and pollution spent;
- Provision of efficient and viable public transportation is almost impossible due to low residential densities and the dispersed location of economic activities;
- Installation and maintenance of municipal services infrastructure is costly, which impacts on the affordability of the services provided;
- Large tracts of land with agricultural potential or environmental sensitivity are being destroyed due to urban sprawl, which is a result the low urban densities;

It is therefore imperative that the following issues need to be addressed in the density policy:

- To ensure quality living environments for all residents;
- To ensure an appropriate balance between the residential density of an area and the capacity of the municipal services infrastructure to service this residential population;
- To align densification to areas where adequate social infrastructure is available;
- To maintain an efficient intensity of land use on a limited supply of developable land;
- To provide a variety in urban form and urban design and to satisfy the demands of different residential and business market sectors;

- To ensure development is of an appropriate scale that relates to its landscape setting;
- To create clear guidelines for higher density residential developments
- To introduce suitable housing options and typologies that support higher densities;
- To reduce pressure on conservation-worthy environmental areas;
- To place residential densification near economic and employment opportunities;
- To ensure effective and appropriate decision making in terms of density proposals.

5. Density in Midvaal - Status Quo

Midvaal is characterised by predominantly farms and agricultural holding that exhibit low residential densities. Densification is promoted in residential areas within the Urban Development Boundary. This mainly occurs along the R59, to the west of the R82 and Vaal Marin in the south. The areas earmarked for densification are Riversdale, Kliprivier (Kookrus), Meyerton, Meyerton Farms, Sicelo, part of De Deur Witkop (Daleside), Savanna City, Eye of Africa, Vaal Marina.

6. Density Principles

There are several general densification principles which need to be considered when planning for land use, public transport or municipal services infrastructure. Development densities can effectively be used to achieve an efficient urban environment that provides the necessary population thresholds to support social amenities, public transport and municipal services infrastructure, while meeting environmental objectives, such a limiting urban sprawl. The general densification principles are:

- There should be a hierarchy of residential densities to meet the need for a diversity of housing typologies;
- Densities should be in line with what the existing and planned municipal services infrastructure capacities can cope with
- Investment in infrastructure, open spaces and social facilities should ideally precede higher density developments;
- Higher density developments should be located near rail stations and major public transport interchanges, social amenities, and nodal areas;
- There should be a decreasing gradation of development densities from density focal points, to enable density interface with lower density areas;
- Careful consideration should be given to environmental planning to make sure environmental objectives are met when densifying an urban area;
- Retain open space and critical environmental areas near higher density areas;
- To avoid monotonous urban form and to achieve a more interesting urban environment, developments at different densities should be considered;
- A low residential density near environmentally sensitive areas would be more compatible and will help avoid human disturbance impact on these areas as far as possible;

- Densification must contribute to the overall structure and functionality of an urban area in that it takes place in a focussed and structured manner;
- Densification should concentrate around specific areas, such as nodal areas and transit stations;
- Densities should be linked to the characteristics of a particular part or neighbourhood within an urban area;
- Densification must be applied in such a way that the unique spatial characteristics of an urban area is maintained;
- Areas in need of restructuring can be identified as densification areas;
- Areas earmarked for densification must possess existing and future growth potential;
- Development should be promoted within the existing built-up area or Urban Development Boundary to limit urban sprawl into Greenfield areas;
- Densification should consider its impact on surrounding environments;
- An indiscriminate application of densification should be avoided to retain quality urban environments;
- High-density developments should promote safety and security by creating defensible spaces;
- Promote walking as a primary form of movement in densification areas;
- Densification areas should be well served by public transport or have the possibility to be well served by public transport in future;

7. Density Policy Guidelines

Density guidelines enable the establishment of a coherent framework for the application of density standards within a municipal area. Density guidelines are used to direct planning at all levels, from strategic planning to development control and they are applicable to all types of land development. However, density guidelines should be used flexibly to take account of varying local circumstances.

A primary purpose of density guidelines is to ensure that adequate municipal services infrastructure and social amenities are planned to serve the needs of the existing and future population and to indicate areas where densities may need to be restricted to achieve this.

7.1. Density Options

There are many benefits to higher density development, because higher-density development allows a higher concentration of people, which in turn deliver the population thresholds required to support community facilities and municipal services. In addition, higher density development can support existing or future public transport systems by providing enough commuters within walking distance of such systems. Building at higher residential densities also means that less land is needed for any given number of dwelling units.

Despite the above, higher densities are not appropriate in all locations and could, if inappropriately applied; result in an urban form that damages the character of an urban area. For example, large dwellings on generous stands that provide a rural lifestyle environment would not be possible if high densities were a requirement for every location within a municipal area. Thus, residential density is closely linked to its location and the quality of the building design. As a rule of thumb, the aim should be

to make the most efficient use of a site in terms of density without compromising the quality of the surrounding built-up environment. Based on the above, there are three possible density options that can be considered.

Option 1: A set density range that can be applied across the Municipal Area

One option could be to set an overall density range that would be suitable to be applied across the entire municipal area, with criteria as to when higher density development would be acceptable and when lower density would be acceptable. Higher densities would be provided on merit, such as the site's proximity to social facilities, public open space or public transport stations. To an extent, this approach would allow densities to vary in different parts of the municipal area, thus encouraging a varied urban form. However, this approach tends to focus on set standards that are applied to individual sites, and is it is therefore not a tool that can bring about large-scale changes in density.

Option 2: Different average densities for different areas based on an assessment of surrounding character and appearance

Another option could be to divide the municipal area into different areas based on similar characteristics and appearance; for example, identify areas with similar types of buildings and densities. An average density could be applied to these areas to reflect the location. For example, this approach could identify areas with high levels of public transport and then attribute development higher densities to these areas.

This approach would allow for the characteristics of an area to be taken into consideration. However, it is not necessarily the case that the density and design of existing developments should dictate that of a proposed development. A prescriptive policy approach could result in a replication of existing building typologies and densities and would not necessarily allow for change and innovative development.

Option 3: A criteria-based policy that enables the highest density that is compatible with the surrounding environment

This option would allow density to be a product of design and not to be a general standard that is uniformly applied across a municipal area. It would allow for individual site requirements to be taken into consideration and would be applied on a site-by-site basis and could form part of a set of criteria for each individual site. Appropriate densities would thus vary in different parts of the municipal area, according to their characteristics. The criteria could include, amongst others, context, density and built form, impact on social amenities, quality of public realm, and parking provision.

Any proposed development would need to prove that good living conditions could be achieved on site. Good design will prove a fundamental part of this type of approach. The drawback of this approach is that it requires a great deal of management and control, which the Municipality may not be able to exert. Without extensive guidance, this approach will not result in good quality development.

Using a blanket approach (Option 2) would not be appropriate in Midvaal, because it will result in Midvaal urbanising to the extent that it loses its rural character. The

criteria approach (Option 3) would not be suitable either, because the Midvaal Municipality in all likelihood does not have the capital and human resources to implement this approach. Option 1 would most probably be the best option to follow in Midvaal. The reason for this is the fact that this approach would only seek to densify critical and specific areas within Midvaal, such as nodes, next to public transportation stations and near community facilities, thus retaining the overall rural character within Midvaal. Despite the aforementioned, it also has to be acknowledged that Midvaal is gradually urbanising and that densities related to a more urban environment will increasingly become a factor in determining appropriate densities within Midvaal.

7.2. Appropriate Locations for Increased Density

Increased urban densities are more suited for particular locations within an urban area than for other location within the same urban area. It is the presence of certain factors that make the densification of certain location within an urban area suited for densification. For example, these factors include the availability of municipal services infrastructure capacity and the proximity of community facilities. In fact, certain locations may be completely unsuited for densification due to density-deterring factors, such as poor geotechnical conditions and environmental considerations. Based on the presence of densification factors, the following locations are deemed suitable for densification:

Nodal areas

The increase of the residential population within or near nodal areas with its range of employment, shopping and entertainment uses tends to curtail travel demand and therefore has the potential to create sustainable urban development patterns. Increased residential populations within or near nodal areas also assist in the regeneration of older nodal areas, makes more intensive use of existing infrastructure within nodal areas, supports local services and employment, and sustains alternative walking and public transport as modes of travel. The development of infill sites within nodal areas also contributes to the improvement of the built form, if it reinforces the existing street pattern and re-develops neglected parts of the nodal areas. It is important to protect the architectural and environmental quality of existing nodal areas that have an identifiable character. In order to maximise residential populations within nodal areas, higher residential densities must be encouraged within nodal areas, subject to the following:

- Compliance with the policies and standards of public open space adopted by the Spatial Development Framework.
- Avoidance of adverse impacts on the amenities of the nodal area and adjoining neighbourhoods.
- Conformity with the vision of the nodal area or town centre expressed in the Spatial Development Framework, particularly in relation to height or massing.
- Recognition of the desirability of preserving listed or protected buildings and their settings.
- Compliance with stand ratio and site coverage standards adopted in the Spatial Development Framework.

Brownfield sites

Brownfield sites can be defined as 'any land which has been subjected to land use for which it is no longer suitable', for example, a redundant industrial area or unused sites within residential areas. Where such significant sites exist and, in particular, where it is located near existing or future public transport corridors, the opportunity for the re-development of such sites to higher density residential uses should be encouraged. Brownfield residential densification is of particular significance in areas that have spare capacity in existing community facilities, such as libraries and clinics, because the increased residential densities would maximise the use of these community facilities.

Suburban infill

The provision of additional residential dwellings within suburban areas near existing or future public transport corridors, has the potential to revitalise suburban areas by better utilising the capacity of existing social and municipal services infrastructure within these suburban areas. Potential sites may range from small unused residential sites in suburban areas, to larger assembled sites within suburban areas. In suburban areas that have an established architectural character, a balance has to be struck between the reasonable protection of the established character and the need to provide residential infill and densification. Densification in suburban areas should be evaluated on merit, based on the following evaluation criteria :

- Proximity to economic centres: The closer residential areas are to nodal areas, the higher the residential densities that could be allowed.
- Considering surrounding areas, sites and developments: This relates to building design and the privacy of neighbouring landowners.
- Carrying capacity of the residential area: The densification of properties should be based on the demand for property and infrastructure availability within the residential area.

Greenfield development

Greenfield development can be defined as undeveloped land on the periphery of towns of cities, which will require the provision of new roads, municipal services infrastructure and community facilities. Typically, such areas are usually developed at low densities. However, low development densities should be avoided in areas where higher residential densities would be more appropriate. Development at densities less than 20 dwellings units per hectare should generally be discouraged in the interests of land efficiency on land that is located near existing or proposed public transport routes and nodal areas. As a rule of thumb, infill development within the Urban Development Boundary should be promoted, rather than opting for greenfield development on the peripheries of towns and cities.

Institutional properties

Typically, a considerable amount of land in cities, towns and suburban locations are owned by government institutions. Such properties are often characterised by large buildings set on large stands. In the event that the municipality or other governmental institutions permits the development of such properties for residential purposes, it should be done with cognisance of the existing open space function of these

properties. The objective should thus be to retain some of the open character of the properties, but this should be done in the context of the existing open space lattice in the area. The setting out of density yields should be considered in advance of the development of properties in institutional ownership.

Subdivision of properties

Subdivision of large stands to provide for smaller stands for residential dwellings without a dramatic alteration to the character of the surrounding area is achievable. In such areas, particularly those areas that are potentially served by public transport, the subdivision of such stands should be encouraged, subject to maintaining the general character of the area. The subdivision of residential properties is dealt with more extensively in a following section.

Previously disadvantaged areas

Considering the densification of previously disadvantaged areas is essentially and issue of placing people closer to employment opportunities. Such areas largely rely on public transportation to access employment opportunities and densification should thus be encouraged around transportation stations, such as bus and taxi ranks and commuter railway stations. The areas abutting public transit stations should be designed to enable the integration of land use and public transport according to the principles Transit Oriented Development (TOD). This involves the clustering of activities and the development of the necessary residential densities within TOD areas and gradually decreasing densities from the station area to allow an appropriate interface with neighbouring lower-density residential areas.

Transportation corridors

The concentration of transportation infrastructure (as in the case along the R59) in conjunction with potential development parcels located along such infrastructure; provides opportunities for land use intensification, resulting in corridor development. This provides opportunities, not only for land use intensification, but also to achieve a higher level of land use and transportation integration. The presence of a commuter railway further strengthens, such a transportation corridor, allowing additional land use intensification at its stations.

8. Density Proposals

The approach to be followed in this Density Policy is to set a base density that can be applied across the entire municipal area, with criteria stating when higher density development would be acceptable. ***The base density applied in this Density Policy is 20 units per ha for all single residential areas and 25 units per ha for sectional title developments, for development located within the Urban Development Boundary presented in the adopted Midvaal SDF.*** Higher residential densities are provided on merit, such as the proximity of a site's location to community facilities, public open space or public transport stations. To an extent, this approach would allow densities to vary in different parts of the municipal area, thus encouraging a varied urban form.

8.1. Residential Densities inside the UDB

This section sets out the criteria for residential densification within the Urban Development Boundary (UDB) of Midvaal as per the latest approved Midvaal Spatial Development Framework.

Nodes

Nodal areas are the primary structuring element within urban areas and are usually areas where both private and public sector development is concentrated. Usually, nodes are associated with a mix of land uses and higher residential densities. Nodes usually accommodate a range of urban activities, including economic activities, services, entertainment and housing on a relatively intense scale.

The clustering of activities at higher densities within nodal areas achieve economic and infrastructure efficiency. At the same time, nodal areas need to be of a pedestrian scale, which allows walking as be to the primary means of moving around within the nodal areas. Thus, as a rule of thumb, nodes should be small enough to enable a pedestrian to walk from end to end, but not so small that economies of scale cannot be achieved. Higher residential densities are a key means to achieving this balance within and around nodes, as is set out in the Midvaal Nodal Policy and revisions thereof.

A residential density of up to 10 units per ha for 'Residential 1';15 units per hectare for 'Residential 2' and 60 units per ha for 'Residential 3' can be added to the base residential density of a residential development if the residential development is:

- located within 400m of a nodal area;
- the nodal area was identified as the core area of the Central Business District in the Nodal Policy and/ or SDF/ RSDF; and
- the nodal area is located within the Urban Development Boundary.

A residential density of 10 units per ha for 'Residential 1'; 15 units for 'Residential 2' and 15 units for 'Residential 3' can be added to the base residential density of a residential development if the residential development is:

- Located within within 400m of a Transit stations (e.g. taxi rank, railway station, etc.) (TOD development);
- Adjacent to a Distributor (Class 3) or collector road.

Shopping centres

In modern-day urban areas that are vehicle-oriented, stand-alone shopping centres often function as nodal areas in themselves. Such shopping centres usually accommodate a range of business activities including retail, services and entertainment activities. Despite the fact that such shopping centres are typically inward-facing and therefore do not integrate well with neighbouring residential areas, the existence of the shopping centres need to be acknowledged. Amongst others, this involves creating higher residential densities near shopping centres to place people closer and within walking distances of such shopping centres.

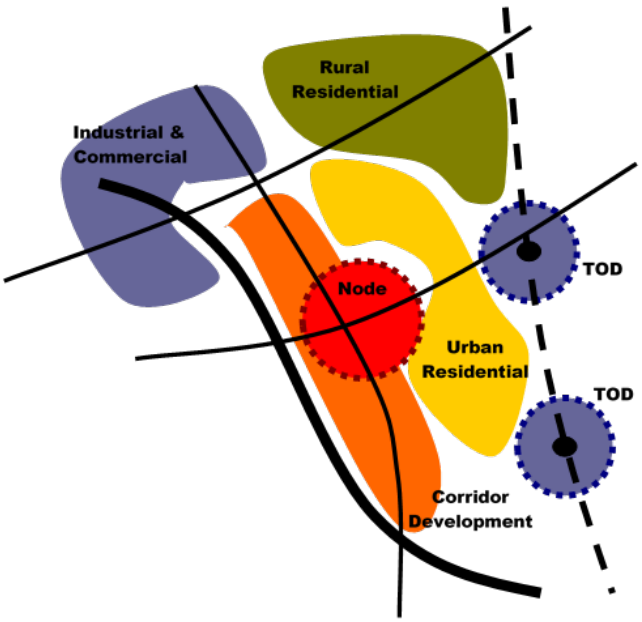

Diagram 2: Densification Areas

A residential density of 5 units per ha can be added to the base residential density of 'Residential 1' and 'Residential 2' development if the residential development is:

- located within 200 of a shopping centre.

Transit stations

Residential densification must be encouraged along public transportation routes to allow the viable operation of public transportation systems. Higher residential densities should especially be encouraged within close proximity of public transport stations to locate commuters within walking distance of such transport facilities. Intensified development around public transit stations are known and Transit Oriented Development (TOD). TOD tends to induce higher pedestrian volumes within walking distance of a transport facility, thus contributing to the viability of the public transportation network as whole.

The only fixed-line public transportation system operating within Midvaal is the commuter rail line running parallel to the R59 freeway. This commuter rail line has several stations that can become the focal points of Transit Oriented Development. Residential densification should be encouraged around railway stations, with the highest residential densities concentrated adjacent to a commuter railway station. Bus and taxi ranks can also be considered public transportation stations around which TOD development and residential densification can take place.

A residential density of 10 units per ha for 'Residential 1' and 25units per ha for 'Residential 2 and 'Residential 3' can be added to the base residential density of a residential development if the residential development is:

- located within 400m of commuter railway station, bus rank or taxi rank, or similar public transportation facility.

Development corridors

A development corridor refers to high activity areas that are located along major road transportation routes, such as a distributor roads or collector roads. Development corridors usually carry relatively high traffic volumes, which promotes the development of land use activity along these corridors. This usually leads to a high demand for residential, office and retail space along such corridors. Typical housing typologies that are often found within development corridors are townhouses, duplexes and walk-ups.

It is important to link development corridors to the road hierarchy. Typically, as in the case in Midvaal, the road network consists of roads functioning on 4 levels (see Diagram below). The first level contains freeways, consisting of national freeways and provincial PWV roads. These roads provide regional access, connecting an area to neighbouring cities and towns. The second level comprises distributor roads or K-routes, which aim to provide better intra-urban access between suburbs and activity areas. The third level comprises collector roads. These roads connect residential areas to the mentioned distributor road network. On the fourth level, internal streets provide direct access to land uses and link these land uses to the mentioned collector roads.

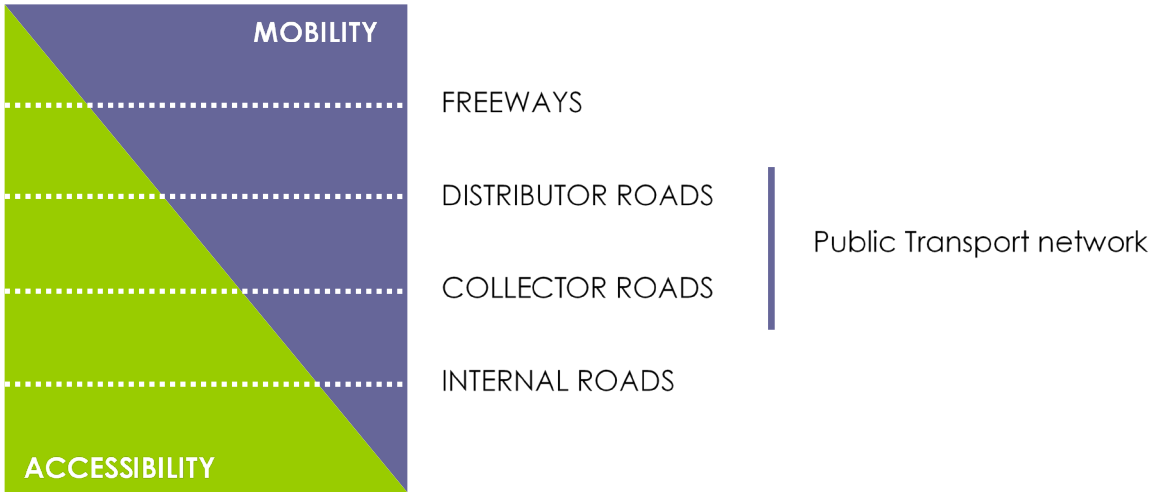

Diagram 3: Mobility-Accessibility Ratio

In essence, freeways and distributor roads are highly mobile and therefore aim to connect people over large distances to activity areas and neighbouring settlements. Collector roads and internal streets provide good accessibility and therefore aim to connect people and land uses to the more mobile roads. Road-based public transportation systems (taxis and busses) mostly use distributor roads and collector roads, as these provide an efficient balance between mobility and land use accessibility, thus making them good locations for residential densification and corridor development.

A residential density of 15 units per ha can be added to the base residential density of a 'Residential 2' and 3 development if the residential development is:

- located adjacent to a distributor road.

A residential density of 5 units per ha can be added to the base residential density of a 'Residential 2' and 3 development if the residential development is:

- located adjacent to a collector road

It is important to note that the concentration of higher density development along distributor and collector roads, instead of scattering this development along a large number of routes, will increase the feasibility of developing bus routes along these routes in future, should development within Midvaal reach the necessary thresholds. To this end, it is necessary that distributor and collector roads be identified that are suitable to function as public transport routes in future. These public transport routes must be identified proactively and strategic plans must be prepared for these public transport corridors in advance.

Social Amenities

Walking-distance access to community facilities, such as clinics, schools and public parks, is a fundamental requirement of sustainable urban development. To encourage the above, it is necessary to allow residential densification near community facilities, because this will increase the number of people living within walking distance of such facilities.

A residential density of 5 units per ha can be added to the base residential density of 'Residential 1' and 10 units per ha can be added to the base density of 'Residential 2' and 3 developments if the residential development is:

- located adjacent to a public open space; and
- located within 200m of a community facility, such as a school, clinic, library or sports facility.

A residential density of 20 units per ha can be added to the base residential density of 'Residential 1' and a residential density of 30 units per ha can be added to the base density of 'Residential 2' and 30 units can be added to the base of ;Residential 3' development if the residential development is:

- In terms of areas in the Human Settlement Plan.

An additional 5 units per ha can be added to the base density for 'Residential 2' developments as recommended by the Planners Permission Meeting.

Table 2: Residential 1 within the UDB

Category	Categories used as criteria for increased density	Maximum distance from facility	Number of units per ha to be added to base density
Residential 1 Base density is 20 units per ha (Properties located within UDB) The maximum density applicable in this use zone is 40du/ha			
1	Node identified as the core area of the Central Business District in the Nodal Policy and/or SDF/RSDF	Within 400m	+10
	Node as identified as Neighbourhood Node in Nodal Policy and/or SDF/RSDF	Within 200m	+5
	Shopping facility that is not part of a node	Within 200m	+5
2	Transit stations (e.g. taxi rank, railway station, etc.) (TOD development)	Within 400m	+10
3	Social facility (school, clinic, library, sports facility etc)	Within 200m	+5
4	Areas in terms of the Human Settlement Plan*		+20

Notes:

- Areas within category 4 are limited to an additional 20 du/ha and categories 1,2 and 3 are not applicable.
- Each application may use a specific category only once. The base density is not a primary right and has to be applied for in accordance with the standard procedures as approved by the Midvaal Local Municipality from time to time.
- Properties affected by dolomite may be subject to a dolomite stability report. However, any recommendation made in terms of the said dolomite stability report will not be considered if exceed the provisions of this policy. Notwithstanding, the provisions of the Midvaal Density Policy shall apply.

Table 3: Residential 2 within the UDB

Category	Categories used as criteria for increased density	Maximum distance from facility	Number of units per ha to be added to base density
Residential 2 Base density is 25 units per ha for sectional title developments (Properties located within UDB) The maximum density applicable in this use zone is 55du/ha.			
1	Node identified as the core area of the Central Business District in the Nodal Policy and/or SDF/RSDF	Within 400m	+15
	Node as identified as Neighbourhood Node in Nodal Policy and/or SDF/RSDF	Within 200m	+10
	Shopping facility that is not part of a node	Within 200m	+5
2	Transit stations (e.g. taxi rank, railway station, etc.) (TOD development)	Within 400m	+25
	Distributor road (Class 3 road)	Adjacent to	+15
	Collector road	Adjacent to	+5
3	Public open space	Adjacent to	+5
4	Social facility (school, clinic, library, sports facility etc)	Within 200m	+5
5	Special town planning merits (e.g. Transition Zone)	As considered by PPM	+5
6	Areas in terms of the Human Settlement Plan*		+30

Notes:

- *Areas within category 6 are limited to an additional 30 du/ha and categories 1,2,3,4 and 5 are not applicable.
- The Residential 2 table is only applicable to Erven in proclaimed townships.
- Each application may use a specific category only once. The base density is not a primary right and has to be applied for in accordance with the standard procedures as approved by the Midvaal Local Municipality from time to time.
- In the existence of a Precinct Plan, such densities as stipulated in the Precinct Plan shall be applicable and shall prevail for those areas to which the relevant Precinct Plan applies
- PPM: Planners Permission Meeting
- Subdivision of the property shall only be permitted on residential 2 under special circumstances to the satisfaction and discretion of the municipality in line with the Residential 1 table.

- Properties affected by dolomite may be subject to a dolomite stability report. However, any recommendation made in terms of the said dolomite stability report will not be considered if exceed the provisions of this policy. Notwithstanding, the provisions of the Midvaal Density Policy shall apply.

Table 4: Residential 3 within the UDB

Category	Categories used as criteria for increased density	Maximum distance from facility	Number of units per ha to be added to base density
Residential 3 Base density is 60 units per ha for sectional title developments (Properties located within UDB) The maximum density applicable in this use zone is 120du/ha.			
1	Node identified as the core area of the Central Business District in the Nodal Policy and/or SDF/RSDF	Within 400m	+60
	Node as identified as Neighbourhood Node in Nodal Policy and/or SDF/RSDF	Within 200m	+30
2	Transit stations (e.g. taxi rank, railway station, etc.) (TOD development)	Within 400m	+25
3	Areas in terms of the Human Settlement Plan*		+60

Notes:

- *Areas within category 3 are limited to an additional 60 du/ha and categories 1and 2 are not applicable.
- The Residential 3 table is only applicable to Erven in proclaimed townships.
- Each application may use a specific category only once. The base density is not a primary right and has to be applied for in accordance with the standard procedures as approved by the Midvaal Local Municipality from time to time.
- In the existence of a Precinct Plan, such densities as stipulated in the Precinct Plan shall be applicable and shall prevail for those areas to which the relevant Precinct Plan applies
- Subdivision of the property shall only be permitted on residential 2 under special circumstances to the satisfaction and discretion of the municipality in line with the Residential 1 table.
- Properties affected by dolomite may be subject to a dolomite stability report. However, any recommendation made in terms of the said dolomite stability report will not be considered if exceed the provisions of this policy. Notwithstanding, the provisions of the Midvaal Density Policy shall apply.

8.2. Residential Densities outside UDB

This section sets out the criteria for residential densification located outside the Urban Development Boundary or UDB of Midvaal.

Specific areas

Permissible densities for single residential and sectional title have been set for 4 existing residential areas within Midvaal that is outside the current Midvaal Urban Development Boundary. These residential areas are:

- Henley-on-Klip
- Highbury Ext 1
- De Deur

The residential densities applicable to these areas are set out in Table 4. Henley-on-Klip and Highbury Ext 1 has a maximum single residential density of 10 units/ha as well as a maximum sectional title density of 10 units/ha. De Deur has a maximum single residential density and a maximum sectional title density of 1,26 units/ha.

Agricultural holdings and small holdings

In rural residential areas, such as agricultural holdings and small holdings, residential densities need to be much lower than those in the urban areas, partly because of the limited capacity of rural roads and municipal services infrastructure to cater for densification. In many cases there is also the need to limit densification in order to protect the rural environment from urban encroachment and to provide a rural lifestyle for those families who wish to adopt such a lifestyle. Typically, agricultural holdings and small holdings have residential densities within the 1 to 0.4 units per ha range.

The subdivision of an agricultural holding and small holding to a maximum density of 1,16 units per ha or 1 unit per 8565m^2 will be permitted, subject to the following conditions:

- The owner can prove to have adequate water supply;
- that the subdivision will not pose any pollution problems related to sanitation,
- that the road infrastructure can handle the resulting increased traffic volumes, and
- that the relevant farm portion is not located on high-potential agricultural soils.

Farm portions

The primary aim of farm portions is for intensive and extensive commercial farming purposes to ensure national food security. Applying appropriate residential densities is key to maintaining this overarching function. Conventionally, 20 hectares is considered the minimum farm portion size that allows commercially viable farming practices. It is therefore not desirable to subdivide farm portions larger than 20 hectares in size. The subdivision of farm portions smaller than 20 hectares is justified in certain cases.

The subdivision of a farm portion smaller that 20 hectares to a farm portion with maximum densities of 1 unit per hectare is subject to the following conditions:

- Piped water is provided by the Water Authority, Intermediary or Provider as contemplated by the South African Constitution and/or the Water Services Act 9Act 108 of 1997);
- that the subdivision will not pose any pollution problems related to sanitation,
- that the road infrastructure can handle the resulting increased traffic volumes, and
- that the relevant farm portion is not located on high-potential agricultural soils.

The subdivision of a farm portion smaller than 20 hectares to a farm portion with a maximum density of 0.2 units per hectare or 1 unit per 5ha is subject to the following conditions:

- The owner can prove that the property is currently connected to a piped water reticulation network as supplied by a Water Services Authority, Intermediary or provider*that the subdivision will not pose any pollution problems related to sanitation,
- that the road infrastructure can handle the resulting increased traffic volumes; and
- that the relevant farm portion is not located on high-potential agricultural soils.

Table 5: Permissible Densities Outside UDB for Subdivision

Area		Permissible density for single residential	
Permissible Densities outside the UDB for Subdivision			
Specific Areas	Henley-on-Klip	10 units/ha	1 unit/ 1000 m^2
	Highbury Ext 1	10 units/ha	1 unit/ 1000 m^2
	The De Deur Estates Limited	1,26 units/ha	1 unit/ 7928 m^2
Agricultural holdings and small holdings connected to a piped water reticulation network as supplied by a Water Services Authority, Intermediary or provider*		1.16 units/ha	1 unit/ 8565 m^2
Farm portions smaller than 20ha connected to a piped water reticulation network as supplied by a Water Services Authority, Intermediary or provider*		1 unit/ha	1 unit/ 1ha
Farm portions smaller than 20ha not connected to a piped water reticulation network as supplied by a Water Services Authority, Intermediary or provider*		0,2 units/ha	1 unit/ 5ha

- Water Authority, Intermediary or Provider as contemplated by the South African Constitution and/or the Water Services Act 9Act 108 of 1997)
- Agricultural holdings and farm portions are subject to the provisions of the Division of Agricultural Policy, 2017.
- Properties affected by dolomite may be subject to a dolomite stability report. However, any recommendation made in terms of the said dolomite stability report will not be considered

if exceed the provisions of this policy. Notwithstanding, the provisions of the Midvaal Density Policy shall apply.

8.3. Non-Residential Densities

This section sets out the criteria for non-residential densification located within the Urban Development Boundary or UDB of Midvaal.

Nodes

Typically, nodes are associated with a mix of land uses and developed at relatively high densities, because space is at a premium within nodal areas. Nodes usually accommodate a range of urban activities including retail centres, office buildings and apartment blocks.

The clustering of activities at higher densities within nodal areas achieve economic and infrastructure efficiency and should therefore be promoted. Densification is a key means to achieving this and it logically requires the sensible application of density within nodal areas, which must adhere to the following criteria:

- In a Central Business District, a FAR of 3 is applicable which can be increase to 4 by written consent and 80% coverage is allowed for non-residential uses and 60% for residential uses in terms of 'Business 1'.
- In a Neighbourhood node a maximum FAR of 2 at 60% coverage is allowed in terms of 'Business 2'.
- A residential density of 40 units per ha is applicable for 'Business 1' and 'Business 2' zoned properties located within the nodal boundaries delineated in the Midvaal Nodal Policy and amendments or the Midvaal SDF.

Commercial and Industrial

Commercial areas provide space for commercial and light industrial activities, such as distribution centres, storage, wholesale and warehousing, and industrial areas provide space for heavy and noxious industrial activities. In Midvaal:

- Industrial areas are allowed a maximum FAR of 1.5 at 75% coverage; subject to
- the commercial and/ or industrial area being located within the Urban Development Boundary.
- Density is not applicable on 'Industrial' zoned properties.

In addition, stringent development controls must be implemented within commercial and industrial areas to ensure an acceptable interface between these commercial and industrial areas and neighbouring residential areas. Logically, this requires the sensible application of density within commercial and industrial areas.

Table 6: Permissible Densities for Non-Residential Areas

Area	Maximum FAR	Maximum Coverage	Maximum Height	Density
Business 1	3 or 4 with written consent	80%	4 storeys	40 units/ha
Business 2	2	60%	3 storeys	40 units/ha
Industrial areas	1.5	75%	3 storeys	N/A

Notes:

- Midvaal Local Municipality may at its discretion require an application for increased density to taper down the Coverage and FAR of a proposed development in order to achieve a suitable density interface between the Central Business District core area and neighbouring residential areas, as proposed in the Midvaal Nodal Policy.

8.4. Controls and Safeguards

As was mention previously, densification should occur in areas where municipal services infrastructure capacity is available, densification must occur within acceptable environmental limits, and densification must aim to increase commuter intensity near public transport stations. To achieve this, densification criteria have been proposed in the previous section of this report. However, these criteria are largely quantitative and thus pose the risk of not being able to address the qualitative aspects of densification. To address this, the following controls and safeguards are proposed to supplement the densification criteria proposed.

8.4.1. General Safeguards

The following general safeguards should be considered when assessing applications for higher residential and non-residential densities:

- Higher densities should be considered for all stand sizes but is usually more appropriate for larger stands.
- Proximity to nodal areas and existing or planned public transport routes are appropriate for higher densities.
- The quality of the architectural design must be paramount when allowing higher densities.
- All development proposals on large stands should be encouraged to have a variety of dwelling types.
- Stands earmarked for higher residential densities should have access to a range of community facilities, shopping facilities and employment opportunities.
- Detailed landscape proposals should be included in all applications for higher-density developments.
- The provision of pedestrian linkages between higher-density developments and to open spaces and community facilities should be required.
- Levels of privacy should be maintained, and this has to do with the relationship of buildings to one another, potential overlooking, and the use of screening.

- Proposals for traffic calming should form part of a densification application to ensure the safety of the increased pedestrian numbers that are a result of the densification.

8.4.2. Overlooking and Overshadowing

Overlooking and overshadowing is critical issues related to higher residential densities. It is essential that residential dwellings are not subject to undue observation by neighbouring dwellings and that no undue loss of sunlight is caused by overshadowing from adjoining, higher buildings. This applies to all dwellings, whether they are located in new or established residential area.

- Overlooking: With the evolution of more innovative residential layouts and the incorporation of a wider variety of dwelling types, standards regarding overlooking may have to be used flexibly. Flexibility must be employed in the assessment of the overlooking aspects in residential design. However, this flexibility must not be abused.
- Overshadowing: Overshadowing will generally only cause problems where buildings of significant height are involved or where new buildings are located close to adjoining buildings. As a result, buildings that are significantly higher than neighbouring developments may be inappropriate for such a location and can on such grounds be refuted. Higher buildings may be appropriate close to a public open space or in a nodal area.

8.4.3. Public Open Space

Public open space is a key element in defining the quality of a residential and nodal environment. The achievement of higher residential and non-residential densities must therefore be coupled with the provision of public open space. Emphasis should be placed on the quality of open space to be provided. The objective should be to create well designed open spaces that are accessible higher-density housing development within residential areas and non-residential buildings within nodal areas.

8.5. Conditions for Additional Dwelling

Provisions of the Midvaal Land Use Scheme:

"Additional Dwelling Unit**"** means an additional dwelling unit which may be erected on the same cadastral land unit on which a dwelling unit exists or is in the process of being erected; Provided that:

(d) In the case of land zoned for Residential Zone 1, only one additional *dwelling unit* shall be permitted; Provided that the cumulative area of the dwelling unit and the additional dwelling unit is within the permissible coverage limit and FAR applicable to the zone.

(e) In the case of l*and* situated in Agriculture Zone and Rural Residential Zone, additional dwelling units shall be permitted on properties larger than 8565 m2 and shall be restricted to 250 m2 all-inclusive in extent, by written consent from the municipality. This excludes Agricultural Employee Accommodation.

Clause 36: Conditions Applicable to the Erection of an Additional Dwelling Unit on Agricultural Zones and Land Zoned Rural Residential.

(1) Any development in agricultural use zone shall be subjected to the provisions of the municipality's Agricultural Policy, 2010.
(2) An additional dwelling unit can be erected on agricultural land or on land zoned rural residential with consent from the municipality.
(3) Erection of an additional dwelling unit on agricultural land shall only be permitted on properties in extent of 8565m2 and larger and shall be restricted to 250m2 in extent (all inclusive).
(4) New access roads that could impact negatively on natural processes, the fragmentation of land units and visual amenity shall not be permitted.

This section describes the policy for 'dual occupancy' or 'an additional dwelling unit', which is the use of a single residential stand for the purpose of two dwelling units. Dual occupancy essentially allows for the densification of an urban area, but can also be allied to rural residential areas, such as small holdings.

Midvaal has the potential for the increased occupancy of residential areas, largely due to the large residential stand sizes that exist within Midvaal. Due to these large stand sizes, residents within Midvaal do not have many opportunities to move into smaller dwelling units in the same neighbourhood if the need arises. Allowing additional dwellings to be established on existing properties would be responding to the need to:

- increase the supply of rental accommodation within residential areas;
- provide a wider housing choice in terms of type and location;
- encourage the better use of existing open space, services and municipal services; and
- provide more housing opportunities for special housing groups, such as the aged.

Normally, addressing the above would involve the demolition of existing housing stock before new, higher-density housing stock can be constructed. Dual occupancy would allow for a more intensive use of buildings and stands without requiring the demolition of existing housing units. Encouraging dual occupancy in the residential areas of Midvaal will inevitably provide additional housing units in these residential neighbourhoods that are smaller in size, thus also diversifying the range of housing sizes provided within these residential areas.

However, densification through dual occupancy must be subject to the availability of the necessary community facilities, municipal services and open space to serve the increased population numbers. Without the proper control, the impact of additional dwelling units on existing residential areas could lead to reduced residential amenity. In response to this concern, this policy outlines the conditions which are intended to control the development of additional dwelling units.

Generally, it is intended that any development under this policy would conform to the single-family dwelling house character of a residential area and that reasonable levels of amenity would be retained. It is also the intention of this policy that a dual occupancy development remains on the original stand and that such a development is not separately titled. This is because:

- Single titles will assist in the maintenance of the character of a residential area
- Single titles will encourage the provision of rental accommodation
- A separate title would encourage the different treatment of the two dwellings in design terms
- Future redevelopment of the area may require land assembly, and this would be impeded by unnecessary stand fragmentation.

8.5.1. General Conditions pertaining to Additional Dwelling Units

The objectives of this policy on dual occupancy are:

- To supplement the existing supply of housing, particularly rental accommodation
- To encourage better use of existing municipal services and facilities in established residential areas
- To encourage a greater variety of housing typologies
- To enable existing residents to remain in their current neighbourhood in housing more suited to their needs if their needs change
- To ensure that conversions to dual occupancy do not produce undesirable planning, environmental or other consequences in residential areas.

This policy applies to all detached housing stands within Midvaal however, the size of the stand is not on its own sufficient reason to approve an additional dwelling. In some cases a stand may not be suitable to accommodate an additional dwelling unit because of its unusual shape, its exposed boundaries, its topography, geotechnical conditions, flood lines, etc. Thus, applications for dual occupancy must be assessed on individual merit to determine whether the policy should be applied. The policy allows for:

- The development of an additional dwelling on a stand
- The conversion of an existing dwelling into two dwellings
- The demolition of an existing dwelling and its replacement by two dwellings

The additional dwelling may be either detached from the original dwelling or attached to it. In most cases, an attached additional dwelling would provide a more attractive and effective solution for small stands. Where the additional dwelling is detached, sensitive integration of the two dwellings will be required.

8.5.2. Specific Conditions

In assessing applications for the development of an additional dwelling on a stand, several circumstances in relation to each individual case and its merits need to be considered. These must include:

- Whether the proposal would be consistent with the general planning and development intentions for the area concerned, and specific policy plans and development plans for areas where these have been prepared
- The effect that the proposed development may have on the social amenities of the relevant neighbourhood
- Whether the proposed development could be accommodated within the existing municipal services capacity of the neighbourhood

- Whether the traffic likely to be generated by the proposed development could be accommodated adequately on the road network and whether adequate provision is made for parking
- Whether the proposed development would adversely affect conservation areas or the natural environment.

Based on the above, the following specific condition are set for the approval of an additional dwelling unit:

a. Setbacks and interface
Minimum setbacks will be required and determined based on the existing setbacks for the existing detached house. However, greater setbacks may be required in some cases in order to ensure that neighbouring interfacing dwellings are private and retain sufficient daylight.
Applications for an additional dwelling unit must be required to show what impact building or demolition proposals will have on adjacent properties. In particular, vehicle access and parking areas will need to be related to adjacent developments.

b. Community involvement
Prior to consideration of an application for dual occupancy, adjoining neighbours will need to have been informed of the proposal. Neighbours for this purpose are considered having a mutual boundary with the subject stand. Where comments are received from neighbours, these comments must be used to determine whether or not the conditions (set out in this policy) for the development of an additional dwelling unit are satisfied and to establish conditions of approval so that the intentions of the policy regarding dual occupancy can be met. The invitation to comment must apply to the design and positioning of buildings and not to the applicant's opportunity to develop an additional dwelling.

c. Architectural character
The character of a residential neighbourhood is made up of the architectural design of the houses and the landscape setting. The addition of an extra dwelling unit will need to be assessed in relation to the neighbourhood character, in particular the existing house on the stand. Development of an additional dwelling must be harmonious in scale, materials, form and character with the existing detached house on the site and with other dwellings in the neighbourhood, Property owners must endeavour to build second dwelling units that will enhance the overall building design and appearance of the area through the choice of architectural style and building material..

d. Height
The impact of an additional dwelling unit may be most apparent in the addition of an extra storey. It is therefore considered important to limit building height to the conditions that neighbours could have expected under the existing design and positioning conditions of the title deed of the stand in question. The maximum height, where an additional dwelling is to be attached to an existing detached house, shall be two storeys. Where an additional dwelling is to be detached from the existing house, single storey development is preferred.

e. Parking
Vehicle parking to be provided in terms of Clause 15 of the Midvaal Land Use Scheme, 2017 and amendments at a ratio of spaces are required to be provided at the rates depicted by the Table below. The construction of a carport or garage must comply with the design and positioning conditions of the title deed of the stand in question. Car parking spaces are to be located behind the minimum building line and at least two spaces are to have unimpeded access.

Table 7: Parking Requirements for an Additional Dwelling Units

Land Use	On-site parking spaces
Additional dwelling unit	1 space per additional dwelling unit.
Dwelling House	One space on-site per unit.

Unless parking is controlled it will have an adverse impact on the existing residential character of a residential area. It will therefore be a condition of approval that the area in front of the house is landscaped and not simply converted into a 'car park'.

f. Landscaping
The quality of a residential environment is largely determined by the street landscape (e.g. tree-lined streets), which is reinforced by the front gardens of residential properties. It is essential that in the application for an additional dwelling unit, the area between the building and the front property boundary does not deteriorate. Deterioration could occur through the introduction of an additional vehicular access, parking in front of the building or through a lack of significant planting.

Applications for an additional dwelling unit should be encouraged to take access from a single driveway, in the interests of preserving the existing streetscape. Existing street trees are to be retained where possible, especially existing mature trees on the stand. In order to achieve this, the Council can require the submission of an acceptable landscape design. Screening by using landscaping may be required to prevent overlooking of neighbouring property.

g. Garden
An additional dwelling unit must have access to at least 50m2 of useable garden to provide a private outdoor living area. Useable garden space must have a minimum dimension of 3m. Screening by landscaping or walls may be required to prevent overlooking and ensure privacy of each dwelling and its garden area. In exceptional circumstances, joint use of garden space may be permitted.

h. Municipal services
The requirements of Midvaal for access to municipal services capacity must apply. The cost of any augmentation of municipal services infrastructure and the cost of service connections will be borne by the applicant for a additional dwelling unit.

9. Densification Management

The administrative context for the management of residential density in Midvaal must be based on statutory powers, as well as on administrative measures. This policy provides the statutory powers, which explicitly sets density criteria and provides for its enforcement. The administrative measures can include a range of incentives and disincentives to encourage densification in a spatially desirable manner.

9.1. Incentives and Disincentives Guidelines

It is imperative that higher densities be sought throughout Midvaal in strategic locations to ensure a more sustainable urban structure, but also to ensure that Midvaal can accommodate future population growth rates within the municipal area. To this end, residents and developers should be encouraged to develop at higher densities within Midvaal. The following incentivises and disincentives[2] that encourage higher density development can be considered:

a. Incentives

The following incentives can be explored to encourage densification:

- Bulk service contribution reductions can be provided for development application that aims to densify a property in a suitable area and complies with the densification criteria.
- Special provisions can be made by Midvaal for the fast-tracking of land-use applications that aims to densify a property in a suitable area and complies with the densification criteria.
- Special municipal rates or property taxes can be used to stimulate the development of properties in suitable areas and comply with the densification criteria.

b. Disincentives

- Midvaal could place a moratorium on the approval of higher-density land use rights in areas that are unsuitable for higher urban densities. Such a moratorium could be taken up in the IDP and Spatial Development Framework and given effect through the Land Use Management System.
- Parking control can be used to encourage the use of public transport and the development of higher densities near public transportation routes.
- Suspending infrastructure provision in peripheral areas can be used as an urban containment measure that functions in a similar manner than the Urban Development Boundary does, thus forcing developers to invest inward rather than outward.

9.2. Direct Public Investment

In order to achieve an urban environment that is conducive to densification, Midvaal will have to invest in aspects such as:

- the provision of community facilities and open space in areas earmarked for higher densities

[2] University of Pretoria, 2005. City of Tshwane: Compaction and Densification Strategy. City of Tshwane.

- the provision of an efficient, high-quality public transport network over the long run to coincide with the urbanization of Midvaal
- the provision of municipal services infrastructure to support higher densities

Investment by Midvaal as set out above is essential to provide the appropriate environment for private investment in higher-density development. The practical way of doing this is through the IDP, which aligns the municipal budget to encourage higher density development in appropriate areas of Midvaal.

9.3. Targets and Timeframes

Densification in Midvaal is not a short-term initiative but will only be achieved over the longer term. It is therefore important to structure the process of densification in such a way that certain targets can be met within certain shorter-term timeframes, which allows each smaller target achieved to contribute to the ultimate, long-term goal of densification.

Short term targets should focus on the existing municipal infrastructure capacity, the availability of community facilities and open space, the existing public transport network (even if only a taxi and provincial bus system), and budget constraints. These short-term targets must endeavour to create some densification within the existing current constraints. Longer term targets can be based on the assumption that Midvaal will eventually develop into a larger urban area, which is integrated with Johannesburg and Ekurhuleni, and which will be able to support higher densities and a more permanent public transport network.