



Final Panfontein/Greater Bantu Bonke Agri-village Precinct Plan

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EXECUTIVE SUMMARY

This document provides an in-depth policy and structural analysis of the Bantu Bonke village in the Midvaal Local Municipality (Gauteng). It identifies spatial options for the future development of the agri-village together with a preliminary implementation framework.

Bantu Bonke was established in 2000. The recipients of the land donation were registered as the Bantu Bonke Communal Property Association which, to this day, remains the guardian of community development initiatives. Following improvements to basic services, a hydroponics farm was established. The intention was to provide job opportunities in the village on land previously earmarked for mining.

The settlement is strategically located near Three Rivers, close to the confluence of the Suikerbosrand, Klip and Vaal Rivers. It is in close vicinity of the large urban conurbations in the southern parts of Gauteng which surround Midvaal.

This report analyses the factors why the intended hydroponic project never gained traction. Current observations show that the infrastructure is not utilised for commercial farming, as intended, and that little to no jobs have been generated.

The document notes the policy and regulatory framework within which future development within Bantu Bonke should be located. It highlights relevant aspects within national and Gauteng provincial strategies as well as the Sedibeng and Midvaal Spatial Development Frameworks. It then summarises the policy implications of these strategies for Bantu Bonke.

A detailed spatial analysis provides context to the distinct characteristics of the precinct. It notes its strategic location and the development opportunities that are presented by the topography, its access to surrounding economic activities and the availability of agricultural skills that still reside among residents. It also points to key issues that must be resolved – in areas such as the environment, road access, and tenure reform – before a viable agri-village can be established.

The report is sustained by a stakeholder consultation process between Cadre, as the lead service provider, the Midvaal Local Municipality, the Department of Agriculture, Land Reform and Rural Development and private sector interests in the region. Proposals and options were stress-tested through regular interactions with key decisionmakers. Representatives from the Bantu Bonke Communal Property Association provided inputs that reflected their opinions and expectations.

In addition, a comprehensive household survey was conducted to capture qualitative data on the existing situation within Bantu Bonke as well as the opinions of residents. The data gained through this process assisted in the defining of the land use proposals contained in this report.

The conclusion is that the vision and objective should be to develop the Panfontein/Greater Bantu Bonke as “a self-sustainable agri-village, highly pedestrianised, and a productive heart of the rural economy in Midvaal.”

It sets out in great detail how this objective can be achieved and provides comprehensive spatial proposals and options that will accommodate future economic activity and population growth in the area. It highlights key elements for the land use framework to institute the development of a sustainable agri-village. The plan makes use of an Agri-village Overlay Zone to identify special development interventions in the remote village. To affect this overlay zone, the plan proposes the improvement of the Midvaal Land Use Scheme to make provisions for development activities in these agri-villages.

It defines an implementation framework and suggests specific roles and responsibilities for consideration by both public and private sector stakeholders. It concludes with a guide to the implementation process to support decision-making, and clear recommendations on the interventions that are required to deliver on the project.



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1 BANTU BONKE OVERVIEW

1.1 Introduction

Bantu Bonke is a Comprehensive Rural Development Programme (CRDP) focus area which hosts a hydroponics farm, intended as a pilot project, in the southern part of the Midvaal Local Municipality (MLM). The hydroponics project was supported by the Midvaal's Local Economic Development department and Magidi Agriculture Development, with 5 out of 15 tunnels being constructed in 2007 (Mathoho, et al., 2010). The hydroponics plant intended to provide job opportunities for about 40 people at implementation. As of March 2022, the 'tunnels' were mostly found derelict and underutilised. At its prime, the farm sold fresh produce for the Johannesburg, Tshwane, Vereeniging, and Springs markets.

New phases for agricultural produce were planned for the Greater Bantu Bonke. These phases intended to accommodate poultry farming and piggery. The Department of Agriculture, Land Reform and Rural Development (DALRRD) acquired land around Bantu Bonke through the Pro-Active Land Acquisition Strategy (PLAS) in 2015, to further agriculture-based projects. Most recently, the land was allocated to Kwasomnandi Farming to produce grain at commercial scales.

The wider study area is rich with coal deposits of the Vryheid geological formation. An open cast coal mine exists about 2 km west of Bantu Bonke, and supplies coal for Eskom's Lethabo power generation in the Metsimaholo Local Municipality. Proposals for further mining operations in the area surrounding Bantu Bonke are being championed by Exxaro.

Portion 7 of the farm Panfontein 437 IR has been identified for the construction of an agri-village by the Midvaal Human Settlement Plan. The village would accommodate 500 units to provide housing opportunities for Bantu Bonke's backyard dwellers. The informal dwellers in the neighbouring informal settlements such as Makokong and Kudung are to receive housing opportunities in the agri-village. This document contains proposals for the systematic advancement of the strategies to guide the development of the agri-village.

1.2 Background

Bantu Bonke was established in the year 2000. This occurred when Anglo American Farms Limited (AAF) donated approximately 23 hectares of Portion 8 of Panfontein Farm 437, with 87 existing housing units of the former Uitvlucht Village. Families of Anglo American's former farm employees who were in good standing at the time, were given ownership and security of tenure of 45 housing units. The remaining housing units were transferred to the existing residents. About 6.3 hectares, mainly embodying these units, is controlled communally by the Bantu Bonke Communal Property Association. Refer to **Figure 74: Portion 8 of Farm Panfontein 437 (SG 9515/2000)**.

The remaining ~16.7 hectares were vested in the local authority and dedicated to agriculture, sewer treatment, and educational facilities (Deed of Donation, 2000). The then Department of Education would later acquire a proportion of Portion 8 of Panfontein Farm 437. The subdivided Portion 9 of Panfontein Farm 437 would be used to build the Panfontein Primary School.

Prior to the donation of the property, conditions were put to the members of the community, represented by the then Department of Land Affairs, the Department of Education, and the Uitvlucht Community Association. The following conditions were set out on acceptance of the donation for Portion 8 of Panfontein Farm 437:

1. The village should not extend beyond its current boundaries. This condition accommodated Anglo American's possible future exploitation of the coal reserves in the area. This provision had been declared prior to the vesting of Mineral Rights to the government of the Republic of South Africa.
2. The two parcels of land which accommodate the hydroponics and the multi-purpose centre today were allocated for agricultural purposes in terms of which they may not be re-zoned for residential purposes.
3. Small-scale farming is permitted including poultry farming. Other livestock farming is prohibited.
4. The two land parcels identified for agricultural purposes may provide for cemetery, drainage, and sewage facilities.

5. Ownership of the two parcels of land is vested in the local authority.
(Mathoho, et al., 2010)

The community as represented, agreed to the title restrictions in the acceptance of the donation. When the land donation was finalised, the community was officially registered as the Bantu Bonke Communal Property Association (CPA) in terms of the Communal Property Associations Act, 1996. To this day, the Bantu Bonke CPA remains the guardian of all the Bantu Bonke community development initiatives.

1.3 The setting

The Midvaal Local Municipality is situated within the Sedibeng district in Gauteng. The Sedibeng district is identified as the Southern Development Corridor by the Gauteng Spatial Development Framework (GSDF). The district is seen as an incubator for new industrial developments that should advance the agricultural sector and the development of new urban areas.

Large urban agglomerations surround Midvaal – on its western border by the Vanderbijlpark- Vereeniging, Evaton-Sebokeng (Emfuleni), and Orange Farm (Johannesburg) residential complexes. On the northern border of the municipality, sits another major industrial and residential complex in Ekurhuleni, including Alberton, Katlehong, Thokoza and Vosloorus (Kathorus). On the southern border, the Fezile Dabi district in the Free State hosts Sasolburg cluster settlements that have strong ties with villages in the south of Midvaal. These villages include Mamello and Bantu Bonke.

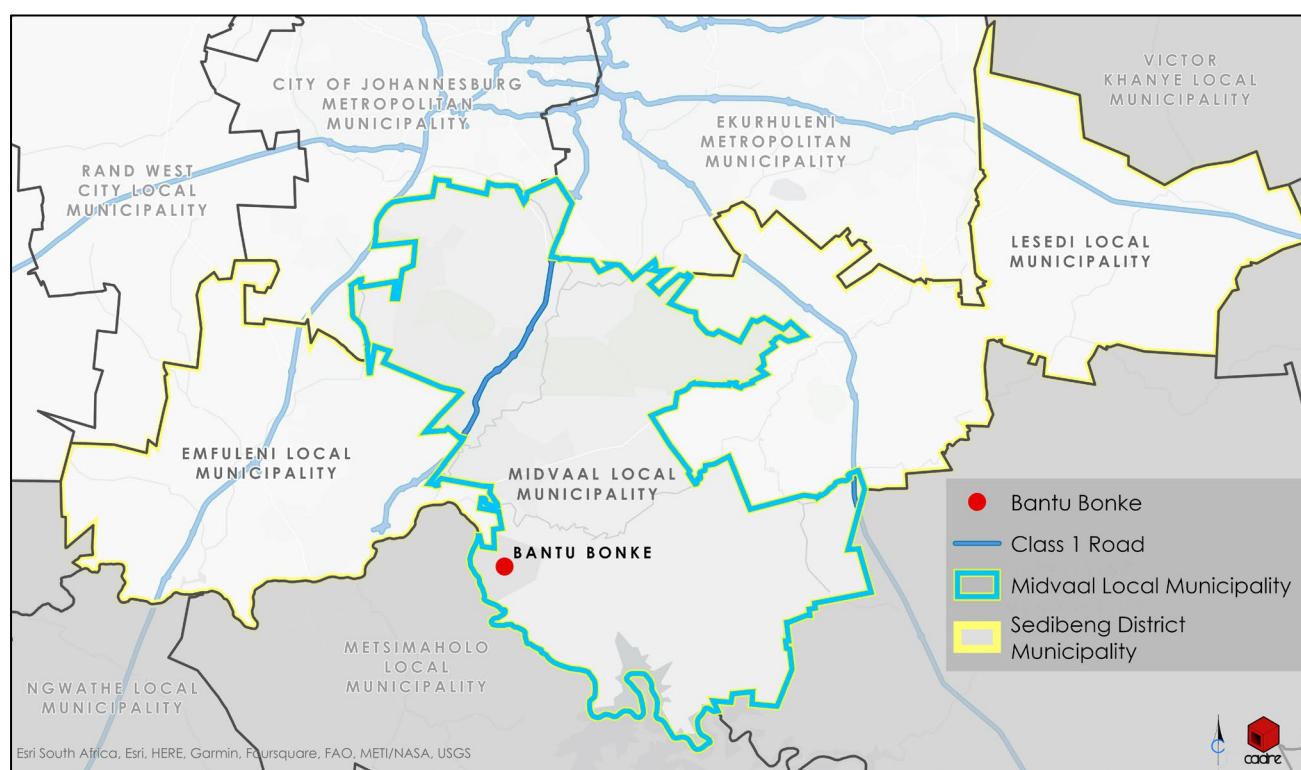


Figure 1: Bantu Bonke in the Sedibeng district context

1.4 The place

1.4.1 Wider study area

Bantu Bonke is a small settlement situated in the southwestern parts of Midvaal. The settlement sits about 8km southeast of Three Rivers in Emfuleni. Three Rivers is where the Suikerbosrand River and Klip River drain into the Vaal River which flows in a westerly direction towards Emfuleni. The settlement is an agricultural village with its service centres located at Three Rivers (8km north) and Vaal Marina (27km south).



Major land uses surrounding this micro rural settlement include:

1. Rand Water's water purification plant and sediment disposal site to the immediate north and east respectively.
2. Large scale sand mining takes place south of the village operated by Sky Sand.
3. The Vaal River meanders northerly about 2km west of the village.
4. A 7m-wide, high-velocity water canal traverses the broader village area on the east from the Vaal Dam to the purification plant.
5. Commercial crop farming operated by one of the village cooperatives, takes place on the immediate north of the village settlement.
6. Across the Vaal River, in the Free State, lies Eskom's Lethabo power station supported by large scale open cast coal mining.

There are proposals by Exxaro for further mining in the area near Bantu Bonke and feasibility studies are ongoing. Anglo American Farms previously considered exploiting potential coal reserves in and around Bantu Bonke. Prime agricultural land in and around the village would continue to experience development pressure from these mining activities. In the household surveys community members expressed their views about the pressure Bantu Bonke is subjected to by potential mining in the area.

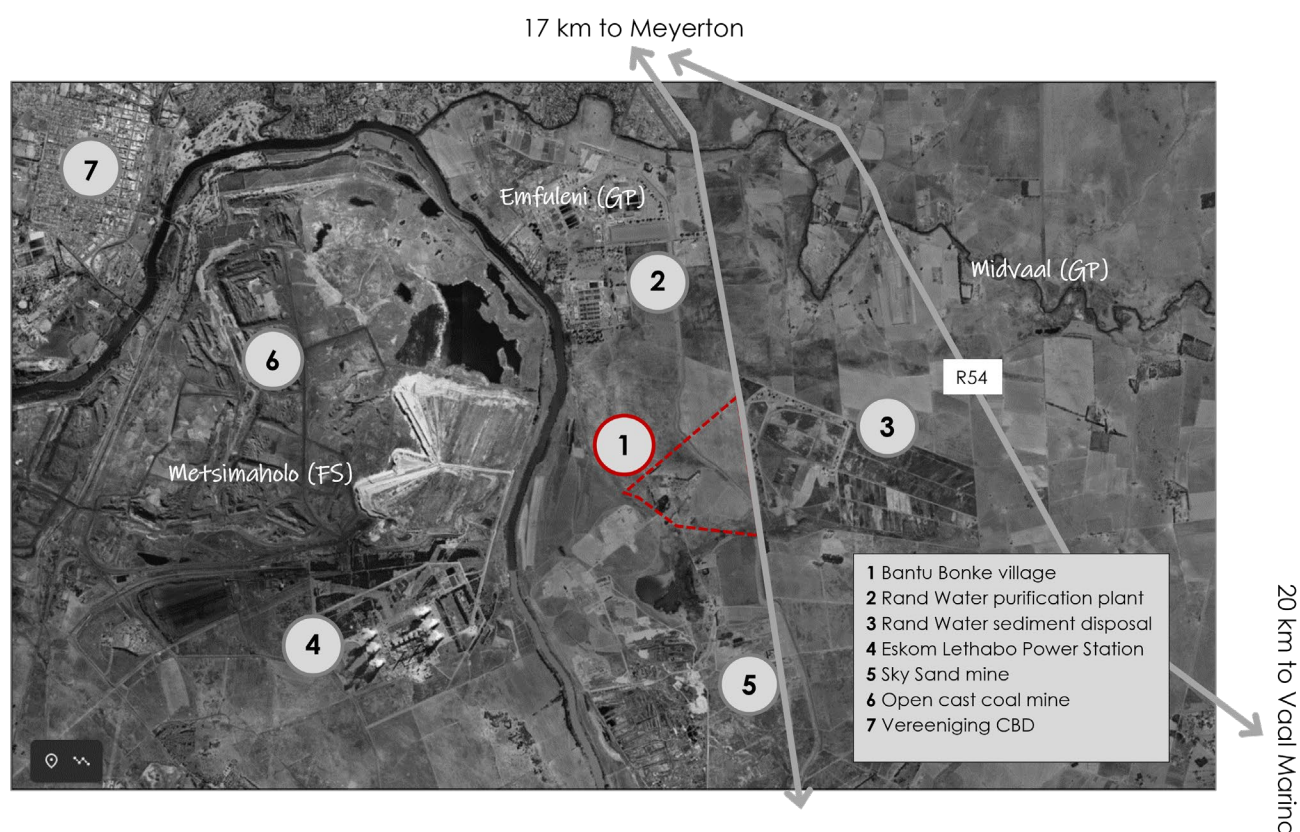


Figure 2: Panfontein/Greater Bantu Bonke (wider study area)

1.4.2 Bantu Bonke village (focused study area)

The settlement has seen significant infrastructure improvements since 2000 when the property was registered under the CPA. The municipality has played a key role in implementing the infrastructure improvements which include:

- Piped water for each household
- Conventional sewer system (with micro sewer treatment plant)
- Multi-purpose centre that houses:
 - Community healthcare centre/clinic
 - Library



- Community hall
- Sports field
- Primary school

Population growth that is attributed to both immigration and natural household growth, mandates improvements to facilities to continue adequate access to social infrastructure. These include learning and healthcare facilities.

1.4.3 Agricultural projects and programmes

A case study conducted by Planact in 2010, notes that Bantu Bonke was given a six-year grant by the Rand Water Foundation (RWF) to the value of R2,75 million. The Midvaal Local Municipality and Magidi Agricultural Development applied for this funding to establish a hydroponics project in the village. RWF considered this as an opportunity to engage in community development in terms of its founding mandate. RWF is a socio-economic change agent for Rand Water.

Hydroponics is described as a technique to grow vegetables without the use of soil as in conventional agriculture methods. It is a high-yield production method that uses less water than normal agricultural production. It utilises tunnels that protect the produce from pests and frost and allows the agricultural activities to be extended to longer seasons compared to conventional spring and summer farming. In embracing the establishment of this project, key goals could be achieved including the tackling of poverty through sustainable job creation and entrepreneurial development.

The hydroponics project was modelled to create about 40 jobs. The recent observations, however, show dysfunctionality of the facility. About 80% of the dedicated production tunnels are dilapidated and overgrown with weeds. The workers in the "tunnels," as they call it, consider themselves as volunteers. The little produce is shared amongst these volunteers for self-consumption. The hydroponics project represented the first phase of the three-phase business proposal made to RWF. The second phase focused on poultry farming which was modelled to create about 20 jobs.

The third phase focused on commercial fish farming. This phase was estimated to create about 130 job opportunities. To affect this project, other stakeholders were pulled in to contribute including:

- Rand Water Foundation
- National Development Agency
- Department of Science and Technology
- New Partnership for African Development (assist in establishing international markets for the fish).

The Bantu Bonke Farm Project Partners Development Committee (PPDC) was established as a monitoring and advisory body. The PPDC would be responsible for the development of the project, infrastructure support, capacity building and marketing of the business plan. Stakeholder disintegration and financial mismanagement were among the key reasons for the failure of the first phase of the business plan, its subsequent phases and the PPDC.



Figure 3: Project Partners Development Committee

Agricultural projects and programmes in Bantu Bonke are due for re-modelling and rejuvenation for sustained rural functionality. This would require bespoke programmes and capital implements to revive agricultural activity in the rural node.

1.5 Precinct context

1.5.1 Land use character (wider study area)

Panfontein/Bantu Bonke sits approximately 10km southeast of the Vereeniging Central Business District (CBD). Vereeniging in Emfuleni is the highest order urban complex in the Sedibeng district. The study area is located along the R54 regional road which is the only major link between Meyerton (the socio-economic heartland of Midvaal) and the only southern urban complex in Vaal Marina along the Vaal Dam. The wider study area is bordered by the Vaal River draining northerly on its western boundary.

Large pockets of land in and around the study area are owned by Rand Water and Lonsa Everite. Rand Water draws water from the Vaal Dam through a 20km long, high velocity canal that cuts through the wider study area to the adjacent water purification plant. The purified water is then distributed to water authorities in and around Gauteng including Midvaal.

The process used to purify water is mainly through sedimentation. This water purification method makes use of chemical agents that densify suspended particles in raw water. The densified particles settle at the bottom of the collection tanks which are then pumped to the sludge disposal site, to the immediate east of Bantu Bonke village.

The associated hydrological impacts of the sludge disposal in the area, has encouraged Rand Water to consider better management of the facility. The latter would be advanced through beneficiating the sludge with brickmaking. The usage of the sludge for building materials would trigger both economic activity and better environmental management in the area.

The second major land use adjacent to the Bantu Bonke village includes the large-scale sand mining. The study area is largely underlain by volcanic rocks, sedimentary rocks and aeolian sand in ascending order. The sand found on site is fine-to medium-grained and has a high erodibility index. Near the wetland, thick clays are found. According to the latest aerial photography, mining operations are observed to be expanding northerly towards Bantu Bonke. Coal deposits of the Vryheid geological formation are found in the study area and its surroundings. Coal mining on the western side of the river is done by New Vaal Colliery, operated by Anglo American.

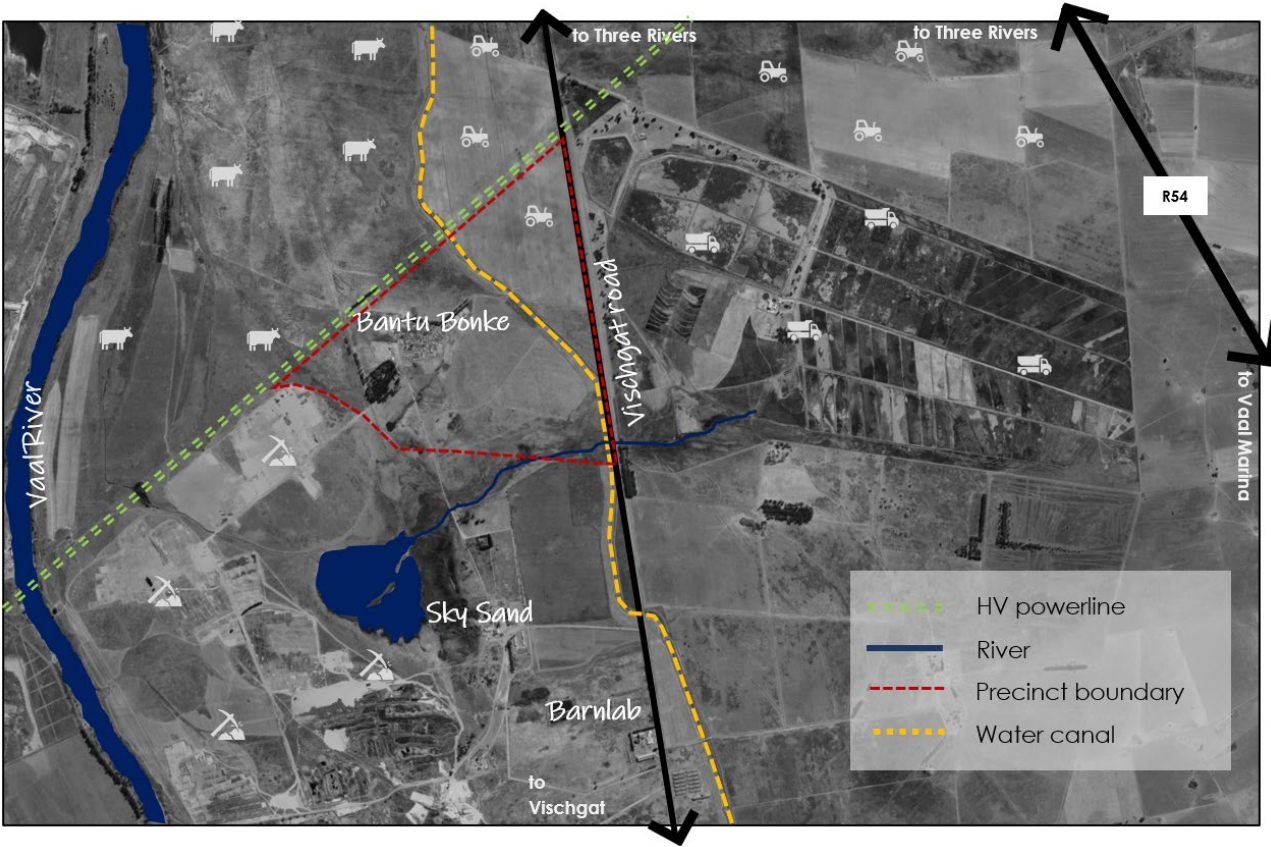


Figure 4: Focussed study area

Figure 5 navigates on the properties affected by the precinct boundary extending about 290ha overlaying (1) Portion 8 (2) Portion 9 (3) Portion 11 and (4) the Remaining Extent of Panfontein Farm 437 IR.

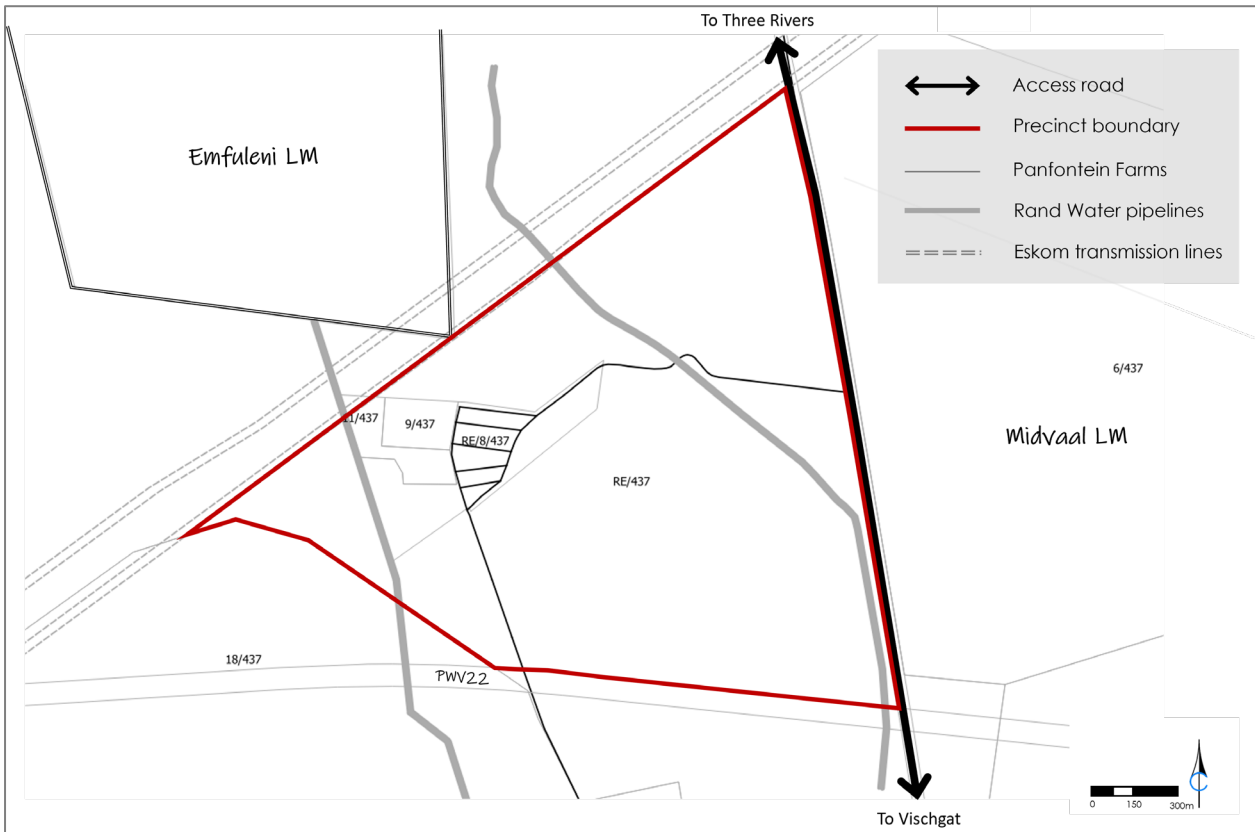


Figure 5: Properties affected by precinct boundary

The expansion of production and housing opportunities in Bantu Bonke are likely to see robust inputs from the potential coal mining expansions.

The Midvaal Nodal Policy identifies Bantu Bonke as a rural node which should promote an integration of community facilities. These community facilities are envisioned to be clustered around the main entrance of the village and would be supported by increased economic activities within the node. Increased quarrying activities in the surrounding area are also envisioned to benefit from secondary production activities such as brickmaking. The rejuvenation and remodelling of the hydroponics plant has potential to support agri-processing and packaging, done on site, to absorb more people into employment.

Vast pockets of land in and around the study area are vacant and undisturbed. This provides opportunities for the expansion of much-needed residential housing, community facilities and production units. The precinct-focused study area envisions a functional rural node with the extensive participation and cooperation of stakeholders present within the wider study area.

1.5.2 Land use character (focused study area)

The focused study area (**Figure 4** and **Figure 5**) is approximately 290 hectares in extent and intends to provide sufficient spatial opportunities for a self-sustainable agri-village. Provision would be made for appropriate infrastructure planning such as pedestrian walkways and public transport facilities. Physical restrictions noted in the precinct include:

- High Voltage powerline servitude on the northern border of the precinct,
- Large scale sand mining and agriculture,
- The traversing high velocity water canal, and
- The Class 1 PWV22 road reserve immediately south of the Bantu Bonke village.

The above attributes limit vast expansions of the precinct to accommodate adequate housing units. The identification of the expansion areas would capitalise on the current infrastructure and social facilities. The vision for the expansion of the agri-village would promote the integration of the existing households and reinforce the socio-economic prospects of the village. To facilitate the growth of a self-sustainable and functional agri-village, the following spatial elements would be considered:

1. Centralised community facilities
2. Facilities for the trading of produce
3. Walkable and safe neighbourhood
4. Accessible public transport
5. One Home One Garden – install tenure security and adequate even space for subsistence farming to ensure food security, similar to One household One hectare programme of the DALRRD at reduced scale.
6. Low-to-medium density housing model to limit expansions on:
 - Workable land
 - Cultural and heritage sites
 - Rural ecological areas
 - Agricultural land.
7. Improve access to land and other natural resources
8. Diverse economic activities (shopping facilities and work plants)
9. Increased access to basic engineering services and communication technology.

The overall modelling of the precinct would promote improved quality of life and the economic well-being of the Panfontein/Greater Bantu Bonke Agri-village. The Gauteng Rural Development Plan, 2014 (GRDP) identifies Transit-Oriented Rural Developments (TORDs) as catalysts of socio-economic improvements in rural areas.

TORDs are mainly established along provincial routes to spark activity in rural landscapes that would be supported by the market growth brought on by public transport commuters. Train stations attract a significant number of potential customers for both formal and informal traders. In Bantu Bonke, due to low population distribution, bus and minibus taxi facilities would work best.



1.6 The people

1.6.1 Social character

The community of Bantu Bonke is mainly comprised of first, second, and third generation beneficiaries of Anglo's housing donation. These housing units were mainly duet structures mixed with single standing units. The title conditions indicated in the Deed of Donation – including restrictions on the physical expansion of the village and other socio-economic factors – contributed to an inter-generational poverty cycle observed through household over-crowding and lack of new housing opportunities.

Studies on understanding the emergence of informal settlements reveal that these settlements are mainly comprised of younger individuals or families trapped in socio-economic hardships. Informal housing and backyard rental dwellings offer them the only affordable housing solutions. The survey results contained in this study support these findings and the qualitative responses of participants on this aspect were captured.

Bantu Bonke has a strong historical identity which resonates mainly amongst its senior residents, the first- and second-generation beneficiaries of the communal land and the top structures.



Figure 6: Recreation and children of Bantu Bonke

1.6.2 Economic profile

The locational advantages of Bantu Bonke are attracting foreign residents into the village settlement for job opportunities.

Many individuals who are able to secure low and semi-skilled work from Rand Water and Sky Sand operations, find affordable shelter in the village. Most of the households in Bantu Bonke earn an income from these informal backyard rentals.

There are CPA members who do not fully agree with the village disintegration by immigrant dwellers; however, many households have shifted their dependence on agriculture to backyard rentals for sustenance.



Figure 7: Sky Sand mine operations

These migrants come from as far as Sasolburg in the Free State, Eastern Cape, KwaZulu-Natal, North West, Lesotho, and Mozambique. The main beneficiaries of the land indicated that they were relocated mainly from the farms near Vishgat in Midvaal and Heidelberg in Lesedi around the 1970s.

Although faced with overcrowded household conditions, the residents of Bantu Bonke were generally satisfied with the basic services available in the community, including water, sanitation, and electricity. The CPA is regarded as a representative oversight organisation for the community of Bantu Bonke. The association manages the village's common property, registered to be 6.3 hectares by the DALRRD.



In 2007, Bantu Bonke had about **400** residents with an average household size of 4,9. Individuals younger than 35 years old constituted about 70% of the total residents (Mathoho, et al., 2010).

Currently, the community survey conducted in February 2022, reveals that Bantu Bonke houses about **500** residents. This accounts for less than 1% of the average household growth annually. The Midvaal LED Strategy 2022 shows the employment profile to be between 90 - 100% in the broader rural region. In Bantu Bonke, more than 50% of the total households have an average of two members employed by Barnlab, Rand Water, Sky Sand and/or Community Worker Programme.

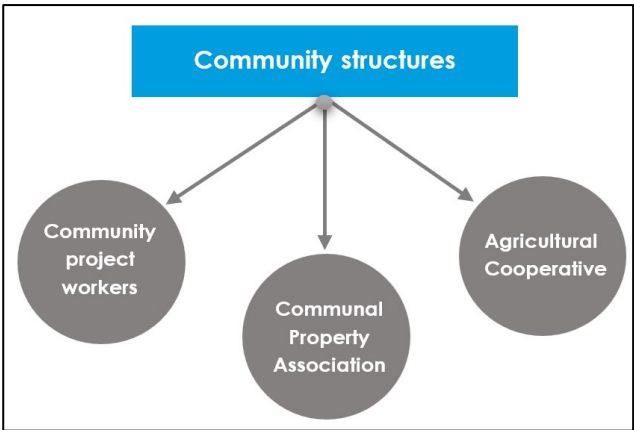


Figure 8: Bantu Bonke community structures

Social safety nets contribute the bulk of the total household income in Bantu Bonke. Agriculture has not been a significant contributor to household income over the recent past as recounted by the residents.

2 INSTITUTIONAL, POLICY AND STRATEGY CONTEXT SUMMARY

This section captures higher order policy and legislative strategies that are embraced in the development of the Panfontein/Greater Bantu Bonke Agri-village Precinct Plan.

2.1 Spatial Planning and Land Use Management Act, 2013

The Spatial Planning and Land Use Management Act, 2013 (SPLUMA) is a legislative provision that guides all spatial planning and land use management in South Africa. Its central agenda is to establish robust spatial transformation to inspire better socio-economic outcomes anchored in the National Development Plan, Vision 2030 (NDP).

SPLUMA integrates principles of sustainable development into planning and land use regulatory tools. Section 21(l) of SPLUMA disseminates this mandate and provisions that municipal spatial development frameworks can follow to “identify the designation of areas in which – (i) more detailed local plans must be developed”. Also referred to as precinct plans, the identification and prioritisation of socio-spatial and socio-economic interventions are engaged at a community level.

Precinct plans are guiding policy instruments which local authorities can employ to bring much-needed transformation in communities. This includes spearheading social and economic renewal programmes through city district and rural town regeneration directives.

The principal mandate of precinct plans is the execution of socio-spatial and socio-economic objectives captured in higher-order plans. SPLUMA pursues consistency and promotes integrated decision-making across all three spheres of spatial planning and land use management. Chapter 2, Section 7 of the Act identifies development principles that must be anchored in all spatial planning and land use instruments. The land use and land development must promote:

1. **Spatial Justice** — to redress development imbalances through improved access to land.
2. **Spatial Sustainability** — to protect food security, natural elements, and effect viable communities.
3. **Efficiency** — less use of resources to provide more socio-economic and socio-spatial opportunities.
4. **Resilience** — to effect plans and policies that will contribute to economically and environmentally shock-resistant communities.
5. **Good Administration** — all spheres of government to promote integrated efforts for the implementation of the principles, norms and standards set out.

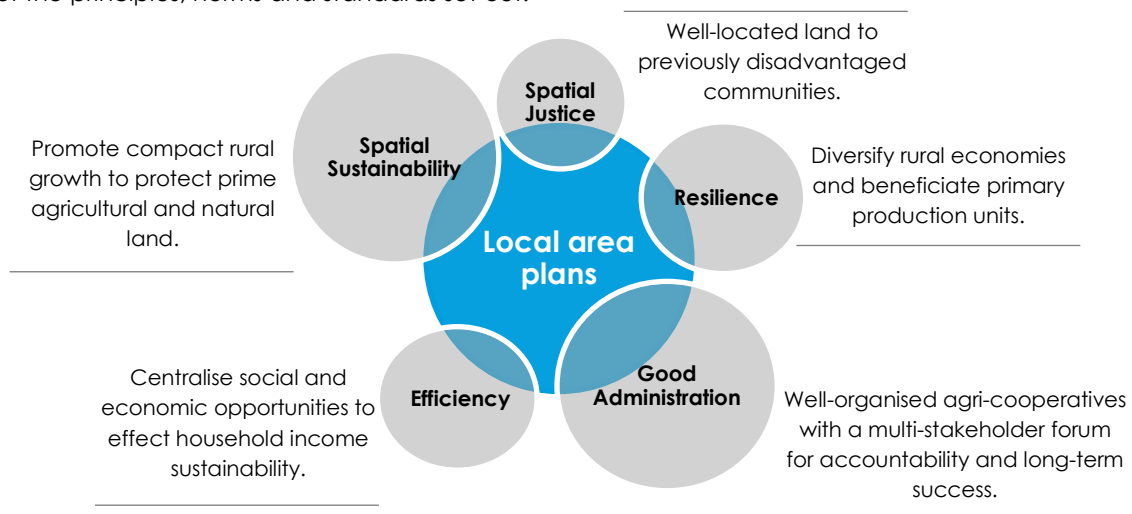


Figure 9: SPLUMA Development Principles

2.2 Comprehensive Rural Development Programme, 2009

The Comprehensive Rural Development Programme (CRDP) identifies rural development as an intervention that enables rural communities to take charge of their own resources. The national programme considers the optimal usage and management of natural resources as effective ways to do away with poverty in rural areas. The strategy to achieve this directive identifies (1) agrarian transformation (2) rural development and (3) improved land reform as the supporting pillars of this programme. These pillars are described as follows:

AGRARIAN TRANSFORMATION

1. Build rural and agri-industrial, cooperatives, cultural initiatives, and vibrant local markets.
2. Increase production and sustainable use of natural resources including land and water.
3. Use innovative technology and indigenous knowledge systems to improve quality of life for households.

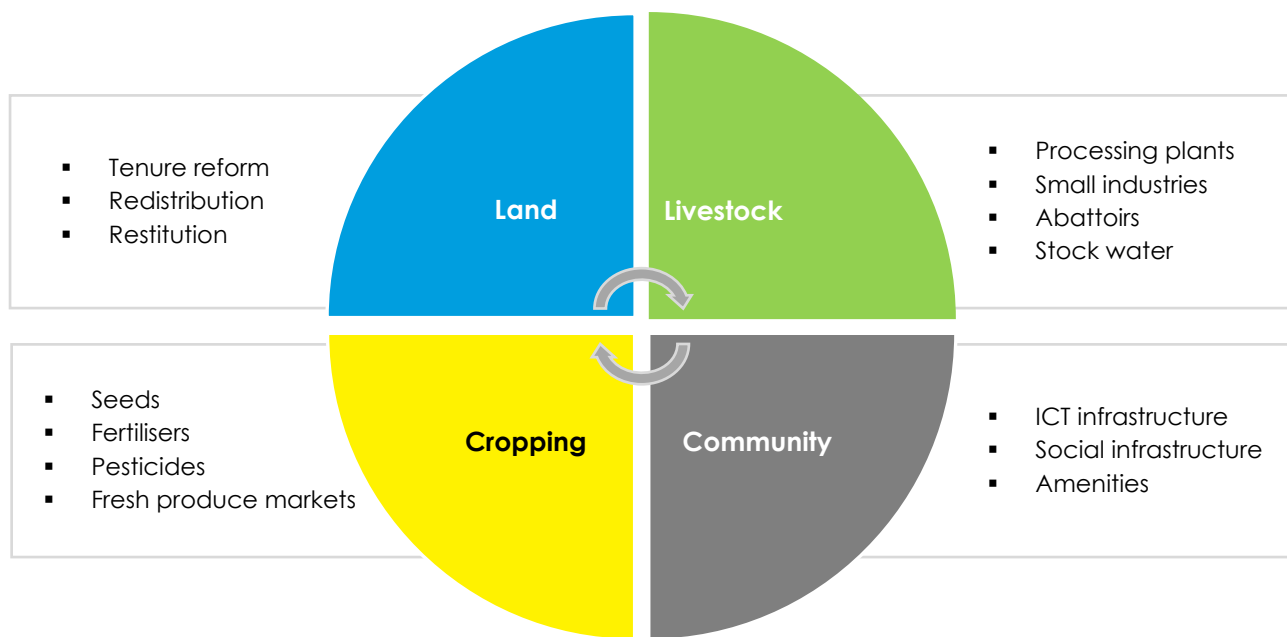


Figure 10: Approach to agrarian transformation

RURAL DEVELOPMENT

Involves the improvement of economic infrastructure including:

- Roads and distribution networks
- Community gardens and produce stalls
- Storage warehouses
- Communication networks
- Irrigation schemes for small scale farmers
- Rural shopping centres or nodes.

Improvement of social infrastructure by establishing:

- Savings club and agri-cooperatives.
- Sports and recreational facilities.
- Proper sanitation and health care.
- Libraries and skills development centres.

LAND REFORM

The land reform pilot programme, aims to accelerate land redistribution by:

- Increase access to land for the previously disadvantaged communities.
- Protect land rights of farm workers and create decent jobs on farms.
- Establish agri-villages for local economic development on farms.
- Provide basic services for farm dwellers including water, sanitation, electricity, and adequate human settlements (housing).

The CRDP promotes efficient and productive rural regions through the provision of reliable and efficient property or deeds registration systems. This includes modernising and digitising the cadastral information.

2.3 Gauteng Spatial Development Framework, 2030

The Growing Gauteng Together 2030 (GGT2030) identifies Gauteng as one of the wealthiest regions in Africa inundated by extreme cases of inequality, poverty, and unemployment. The functionality of the Gauteng City Region (GCR) is established beyond the provincial borders. It has its strongest socio-economic linkages with cities and towns including Rustenburg (North West), Sasolburg (Free State), and Emalahleni (Mpumalanga).

The GGT2030 constitutes the provincial action plan that was introduced to solidify and advance the national transformation agenda. The action plan organises socio-spatial integration of the city and rural regions of the province—to double economic production and the subsequent socio-spatial development and transformation. (Re)positioning and (re)structuring socio-economic consequences of apartheid geography, remains an imperative developmental agenda for the GGT2030.

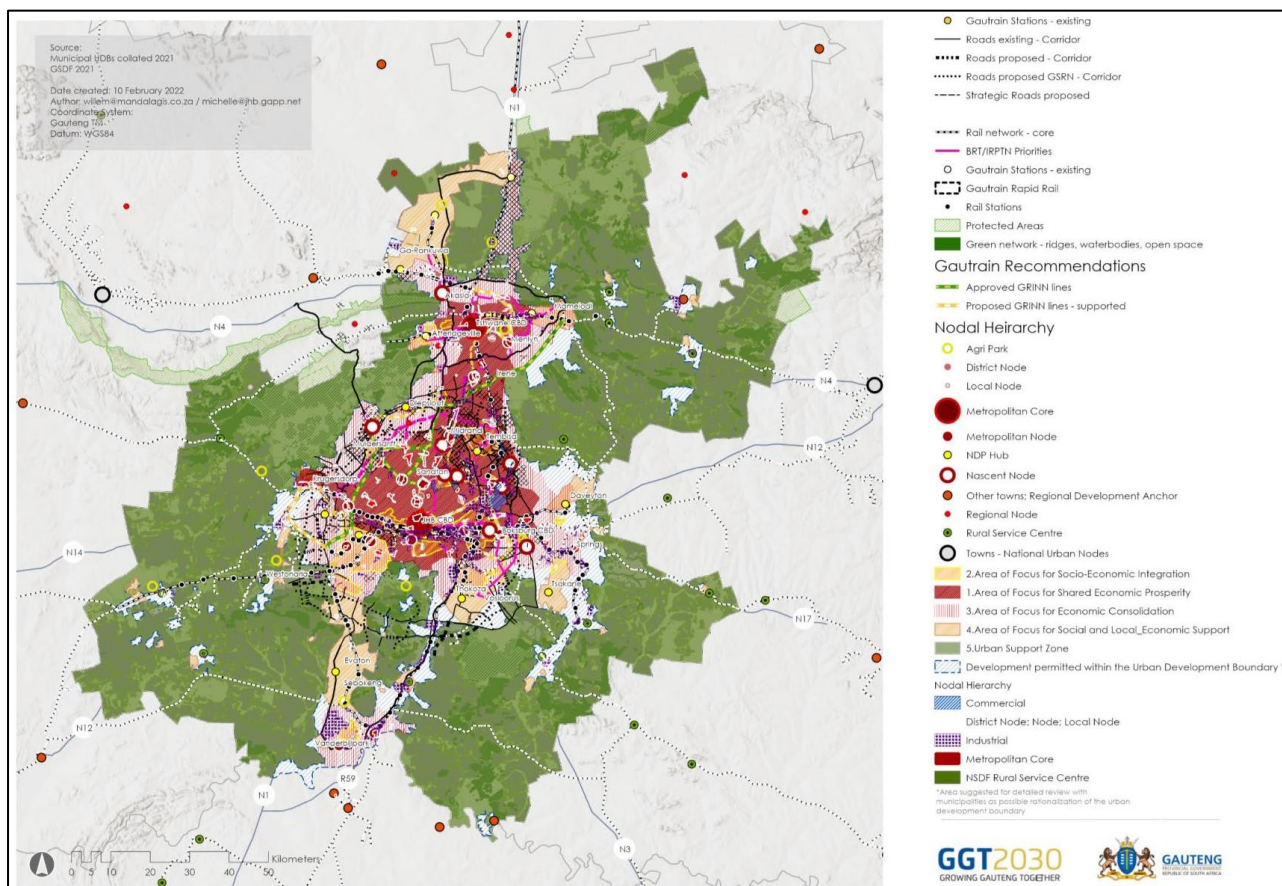


Figure 11: Draft Review: Gauteng Spatial Development Framework, 2030

Through the draft review of the Gauteng Spatial Development Framework 2030 (GSDF) the Gauteng Provincial Government (GPG) has centralised efforts to facilitate the development of integrated and sustainable human settlements. Emphasis is put on the development of quality living spaces through the provision of adequate and affordable housing in spaces of socio-economic opportunities.

The revitalisation of 'township' economies through establishing economic hubs, forms a central engagement in spatial interventions. The strong focus of the draft review of GSDF, is to limit the expansion of urban development boundaries at local level. The latter intends to promote brownfields developments or inner-city regeneration, intensification, and densification to protect the provincial rural ecology, natural, and agricultural land. The framework encourages agri -processing, tourism, small enterprise, and trade development to support rural livelihoods and improve food security (GSDF, 2022).

2.4 Gauteng Rural Development Plan, 2014

The Gauteng Rural Development Plan, 2014 (GRDP) embraces the economic opportunities that exist in rural areas which can be explored to steer job creation and better the quality of life of the rural residents. An opportunity-centred approach is recommended for rural interventions and employs the following rural development concepts:

1. Functional regional rural zones
2. Rural design
3. Transit-oriented rural development (TORD).

These concepts ought to be explored by transforming rural nodes to be catalysts for socio-economic services and regional development. Socio-economic development can be achieved through expanding small-scale farming and supporting small-scale farmers and the associated agri-processing activities. Enhanced regional development requires advocacy for transit-oriented rural development along sustainable provincial routes.

Nine Functional Rural Regions were identified in Gauteng. These regions would form implementation sites of rural development strategies, plans, frameworks, programmes, and projects developed by national and provincial governments. **Figure 12** depicts the Midvaal Functional Rural Region 5.

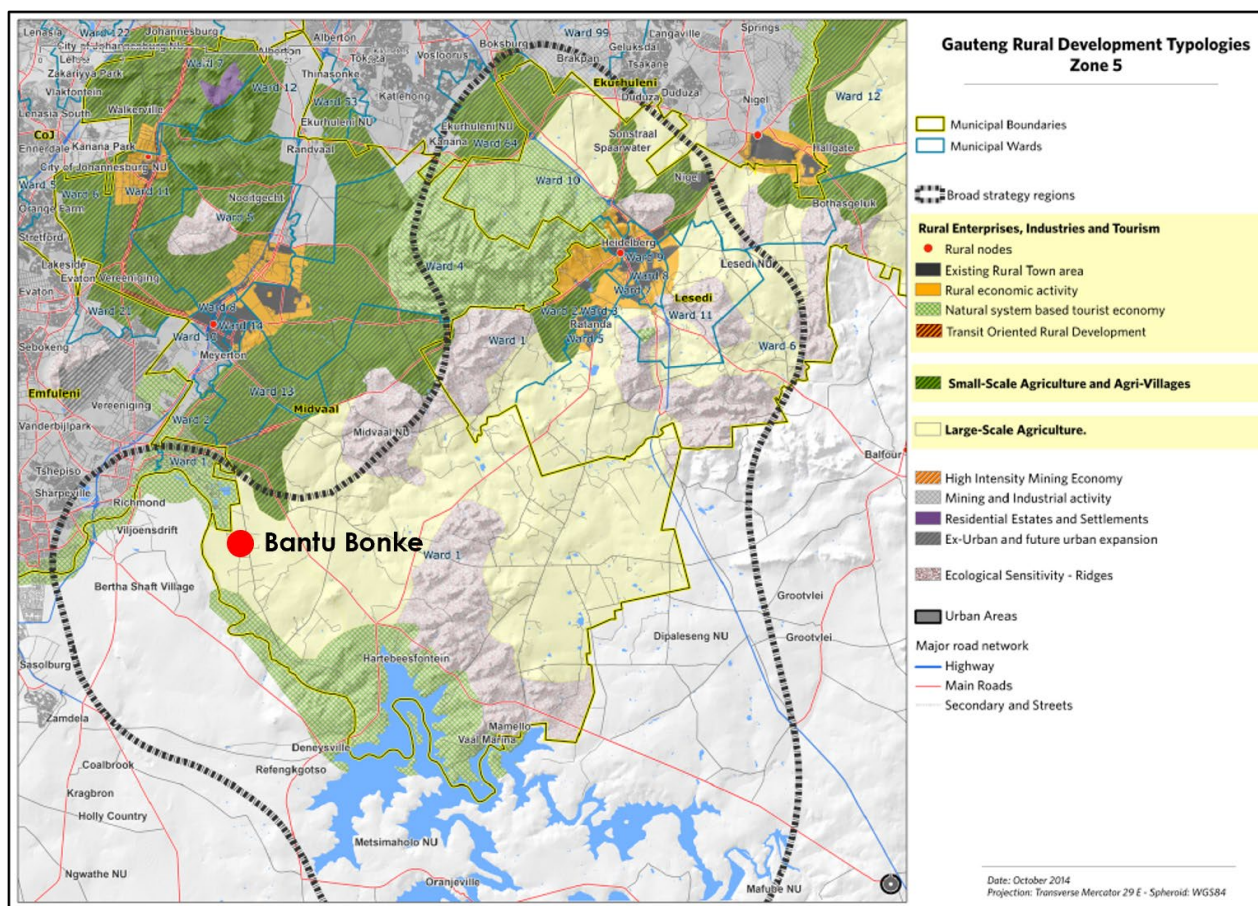


Figure 12: Gauteng Rural Development Plan (Midvaal Zone 5)

The GRDP allocates large-scale agriculture for the bulk of the southern Midvaal region, including Panfontein/Greater Bantu Bonke. The identified Functional Regions which are functionally tied, intend to facilitate the materialisation of Outcome 7, to institute “vibrant, equitable and sustainable rural communities with food security.” The intent is to transform rural nodes into high-potency, catalytic regional rural development anchors and rural service centres. Expanded small scale farming and associated agricultural industrialisation are priorities of the plan.

2.5 Sedibeng DM Spatial Development Framework, 2019

The Sedibeng District Municipality SDF intends to be responsive to the national and provincial policy parameters. The spatial directives consider the unique character of the municipal space economy across all three local authorities. The SDF aims to achieve the following objectives:

1. Address rural development issues such as the integration with urban areas.
2. Provision of social facilities and infrastructure to rural communities.
3. Accommodate the growing housing needs and service different markets including gap housing, social housing, and subsidy housing.

Rural intervention areas

Panfontein/Greater Bantu Bonke is classified as a rural intervention area by the district SDF. Rural intervention areas are to promote the following aspects at community level:

- Agricultural production with specific focus on emerging farmers and land reform.
- Commercial farming activities.
- Farm worker housing assistance
- Upgrading of informal settlements.

Additionally, the district SDF has identified Priority Human Settlements and Housing Development Areas to support the delivery of affordable housing across the district. Panfontein/Greater Bantu Bonke is identified as a strategic rural intervention area by the SDF in which agricultural development and beneficiation are priority interventions.

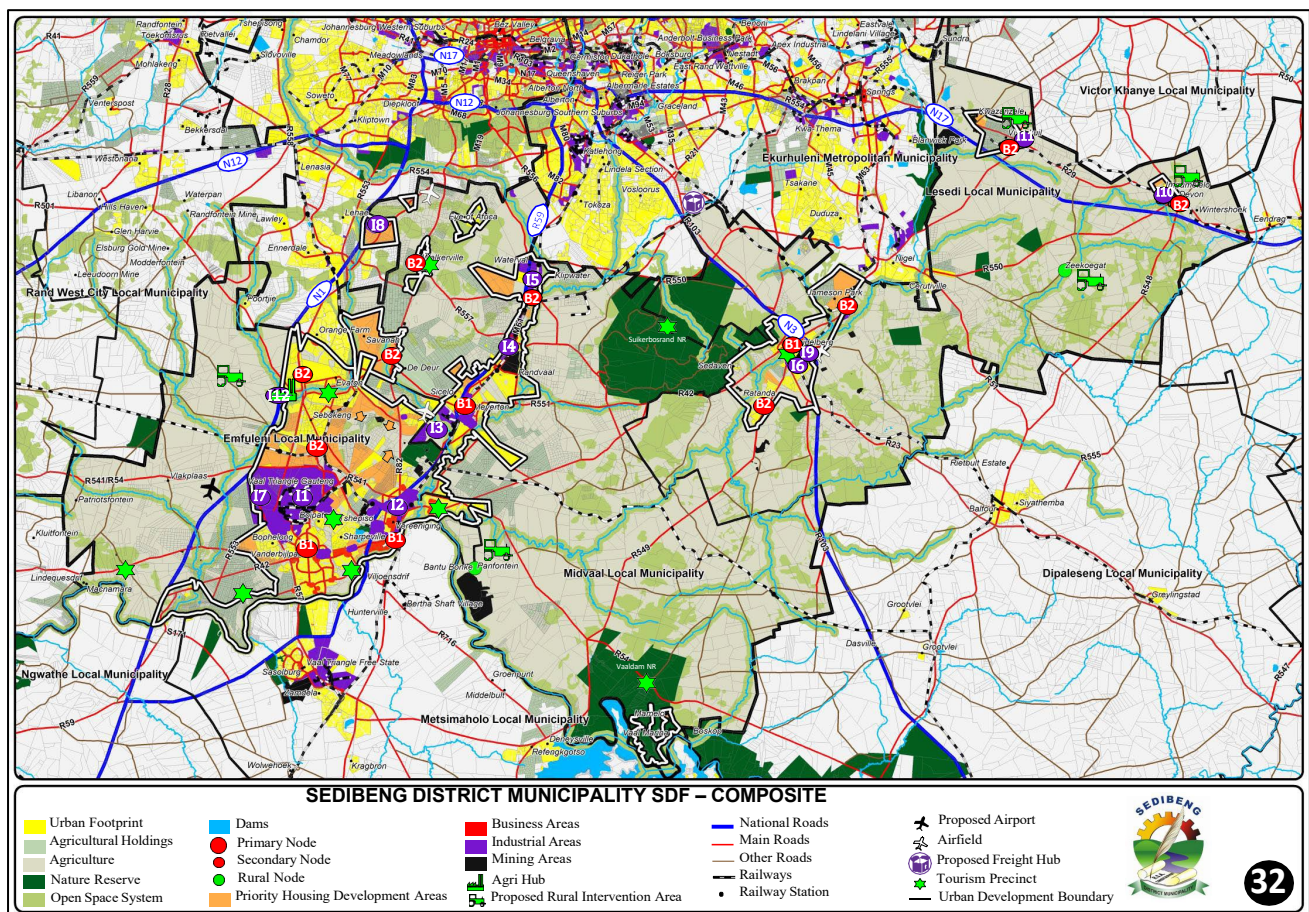


Figure 13: Sedibeng District Municipality SDF

2.5.1 Midvaal Spatial Development Framework 2022

The Midvaal Spatial Development Framework 2022 reinforces the concept of spatial visioning that encompasses social resilience, spatial sustainability, and economic productivity. The SDF employs infill-development, densification, and intensification to achieve an inter-dependent, efficient, and productive rural region.

The SDF employs the 11 development drivers to guide future development and investment focus in the municipal region. These development drivers encourage (1) ecological sustainability (2) productive and vibrant rural communities (3) the protection and beneficiation of prime agricultural land, and (4) effective public transport and clean energy.

TABLE 1: MIDVAAL SDF SPATIAL DIRECTIVES		
Development drivers		Spatial proposal
1	Strive towards consolidated compact urban areas	Maintain the Urban Development Boundary (UDB) and manage urban-rural cross-over zones to promote compact urban development, support the integrity of rural residential areas, protect high potential agricultural land, and conserve critical biodiversity areas and valuable ecosystems.
2	Pursue alternative clean energy and reduce the cost to industrial and commercial consumers	Tackle the shortage of energy by partnering with renewable energy service providers and participate in initiatives to generate local power, and aid economic diversification along the R59 Corridor, industrial and commercial zones and the urban nodes through public-private partnerships.
3	Implement and manage corridor and spine development initiatives	Plan, design, and facilitate development along the R59 Corridor, the R82 mobility spine and secondary east-west spines by means of appropriate developments and responsive township layouts in line with the spatial vision and relevant precinct plan proposals.
4	Encourage agricultural production and processing	Protect all land earmarked for agriculture to facilitate and enhance agricultural production. Support innovative small-scale farming in agricultural areas and cross-over zones, and support agri-processing in cross-over zones and in corridors and spines.
5	Stimulate tourism	Protect tourism resources, heritage assets, and unique precincts by stimulating relevant tourism-related activities and appropriate developments in the ridges, in unique precincts, around Bass Lake, in Suikerbosrand Nature Reserve, and along the Vaal Dam.
6	Foster walkable nodes and transit-oriented development (TODs)	Promote transit-oriented development (TODs) and the creation of compact, walkable, pedestrian-oriented, mixed-use communities centred around all public transit facilities (train stations, taxi ranks, rapid bus systems). Facilitate the development of walkable urban nodes, rather than suburban shopping centres for reduced dependence on a car for mobility and survival.
7	Ensure connectivity by means of a considered movement network	Capitalise on existing regional links to promote development and utilise the internal movement network to support public transport networks and services. Prioritise strategic roads identified in the SDF for enhanced continuity and consider alignment of proposed roads carefully to prevent further fragmentation of precincts, and unnecessary sterilisation of potential land for development.
8	Support quality human settlement development	Promote integrated human settlements through varying housing typologies, income models and densification, and prioritise the expansion of the gap market. Plan and implement for the integration of social facilities and commercial activities as an integral part of any housing development.
9	Prioritise environmental management	Protect and manage the natural environment by administering the urban development boundary (UDB) to ensure an equilibrium between agriculture, tourism, industrial, and urbanisation activities.
10	Streamline targeted engineering infrastructure investment	Prioritise short to medium term upgrading of engineering services in priority strategic development areas (SDAs) and ensure that engineering services are available before township establishment processes are finalised.
11	Implement local area plans (precinct plans)	Undertake precinct plans to give effect to the intentions of the broader strategic direction in the SDF and make proposals on a detailed level. Proposals should not only be focused on land use and transport but should also provide practical spatial proposals and urban design guidelines to ensure appropriate spatial form in support of design principles, such as walkability.



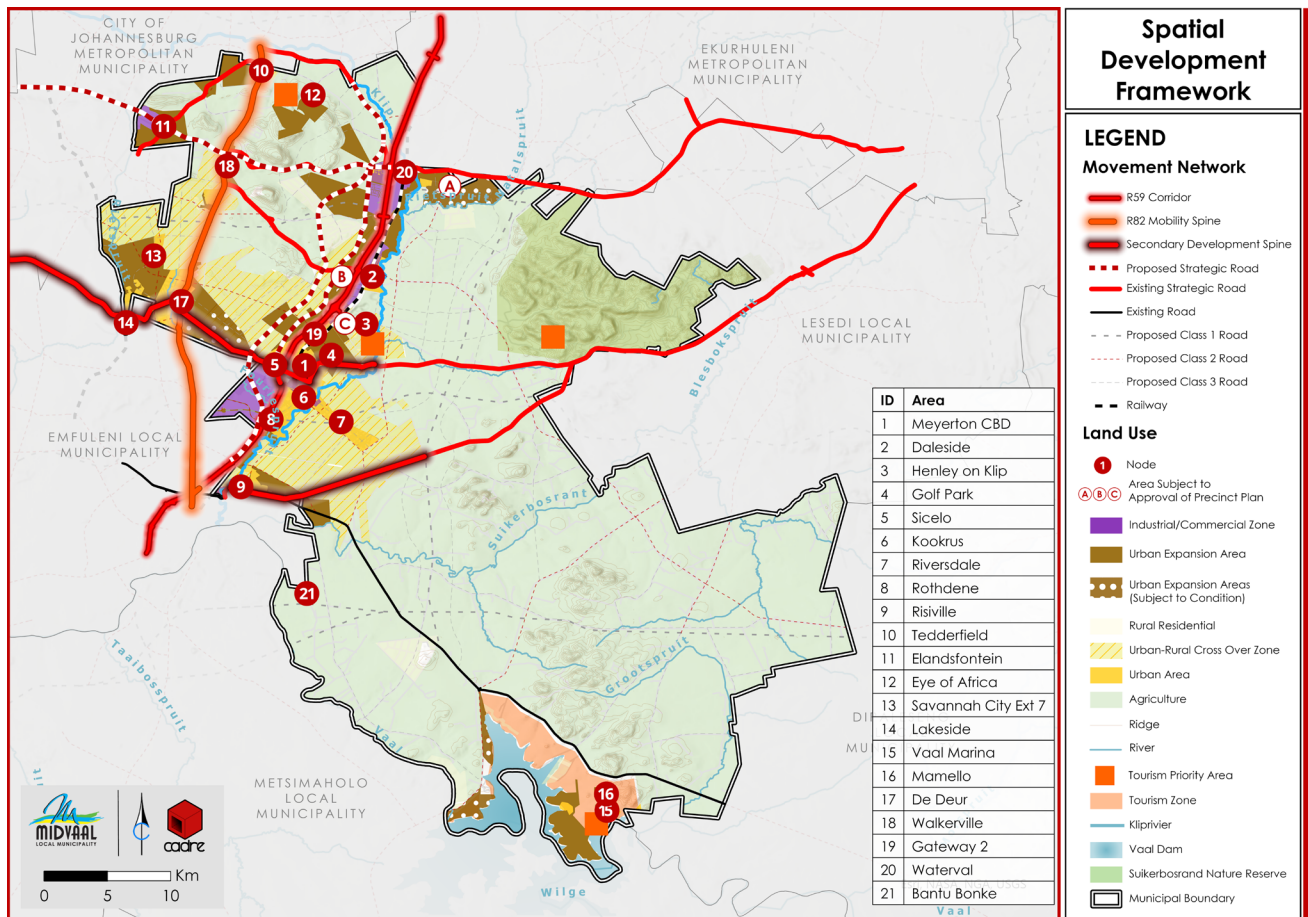


Figure 14: Midvaal Spatial Development Framework (composite map)

The SDF directives are centred around nodal and spine developments. Categorically identified nodes are provisioned for spatial targeting of socio-economic and infrastructure investments. Panfontein/Greater Bantu Bonke (21) is identified as a rural neighbourhood node where public transport, walkability, social infrastructure, and agriculture-focused production is encouraged.

The spatial directives intend to promote a focused way to engage sustainable urbanism and rural development as two distinct and independent entities.

The overarching spatial theme pursues social cohesion, sustainable physical development, rapid economic recovery and re-industrialisation, and the preservation of natural and agricultural land. These are provisioned with the same level of urgency to sustain the rural and semi-rural identity of the municipal region, and to create an enabling environment for socio-economic shock-resilience.

2.6 Midvaal Nodal Policy 2021

The Midvaal Nodal Policy categorises Bantu Bonke as a rural node at settlement level. The nodal policy notes that Bantu Bonke hosts a very small population. Directives for the node provides for the integration of economic activities in the village with the future community facilities, to establish a larger population – expressed as reaching 'critical mass'.

Quarrying activities around the village are identified for beneficiation in the form of brickmaking. The latter would drive differentiated sustainable jobs in the area that would assist households to afford basic services associated with subsidy housing developments

Figure 15 indicates different types of nodes identified by the nodal policy. Bantu Bonke is the only rural node identified in the municipality and has its closest relationship with Vereeniging and Three Rivers in Emfuleni. The



nodal policy maintains the rural character of the Bantu Bonke node, where agriculture, agri-processing, and community facilities should be the focus. **TABLE 2** summarises the range of land uses (according to the Midvaal Land Use Scheme) that should be promoted in different nodes across the municipal region.

In addition to agricultural development, the nodal policy has made recommendations to promote Industrial 1 and Industrial 2 land uses in Bantu Bonke. The policy identifies quarrying activities and beneficiation through brickmaking as spatial opportunities to establish a solid economic base that would supplement agriculture. In reaching a solid and varied economic base, the nodal policy considers Residential 1 as applicable for future usage of land in Bantu Bonke. Refer to **TABLE 2: MIDVAAL NODAL POLICY: USE ZONES PER TYPE OF NODE**.

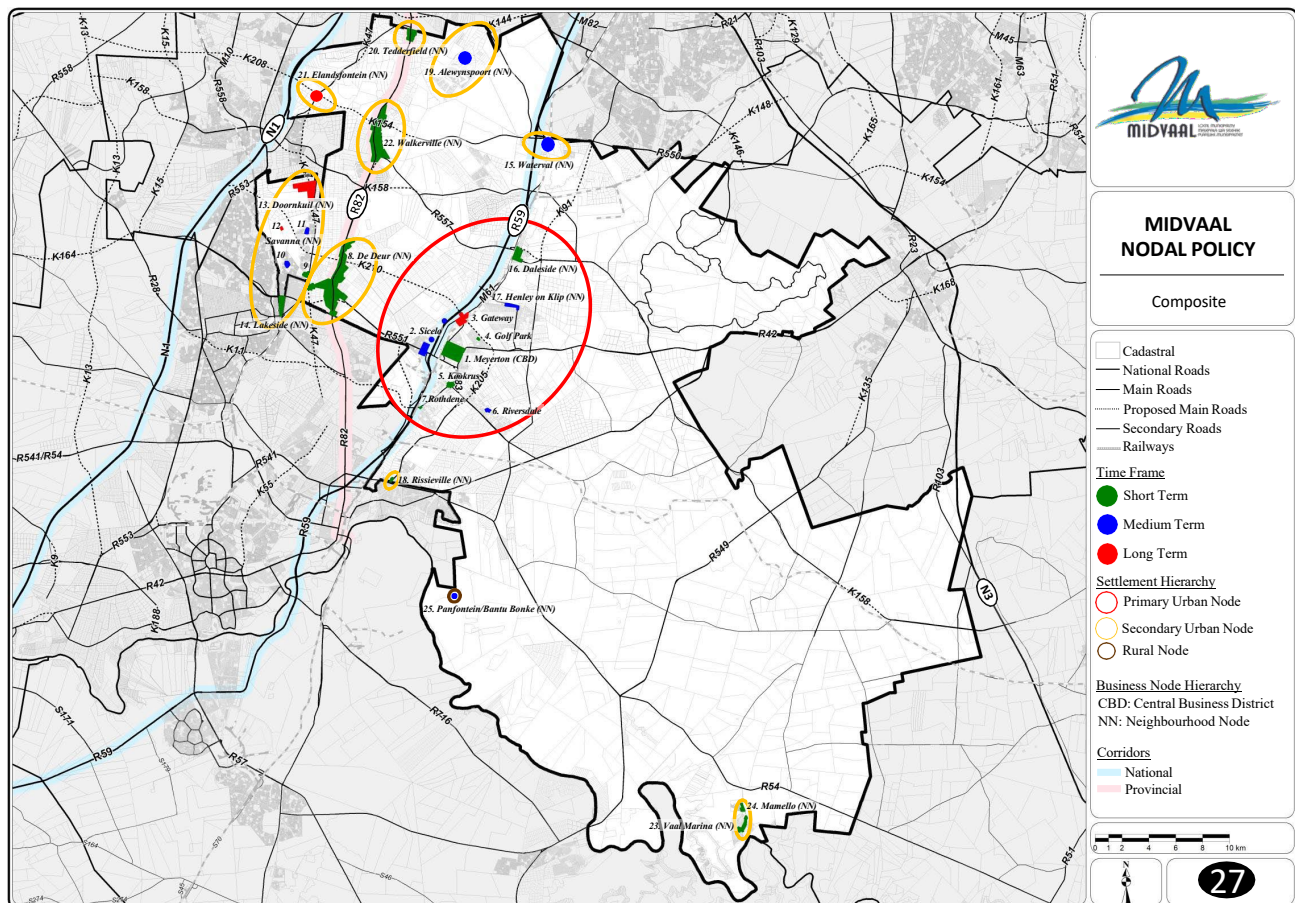


Figure 15: Midvaal Nodal Policy 2021

TABLE 2: MIDVAAL NODAL POLICY: USE ZONES PER TYPE OF NODE

Settlement Hierarchy	Business Node Hierarchy	Map Reference number	LAND USE SCHEME: USE ZONES (Applicable to Future Usage of Land)																				Nodal Priority		
			1. Residential 1	2. Residential 2	3. Residential 3	4. Transitional Residential	5. Rural Residential	6. Business 1	7. Business 2	8. Institutional	9. Municipal Use	10. Industrial 1	11. Industrial 2	12. Agriculture	13. Open Space	14. Transport	15. Mining	16. Recreation	17. Cemetery	18. Conservation	19. Utilities	Informal Trade			
			Short Term	Medium Term	Long Term																				
1. Primary Urban Node:																									
Meyerton Town	Central Business District	1		✓	✓				✓	✓	○	✓			✓	✓		✓			✓	*			
	Sicelo Neighbourhood Node (EDC)	2	✓	✓	✓	✓				✓	●	✓	✓		✓	✓		✓			✓	*			
	Gateway Neighbourhood Node	3		✓	✓					✓	●	✓		✓	✓		✓				✓	*			
	Golf Park Neighbourhood Node	4	✓	✓						✓					✓	✓		✓			✓	*			
	Kookrus / Kliprivier Neighbourhood Node	5		✓	✓					✓	●	✓		✓	✓		✓				✓	*			
	Rothdene Neighbourhood Node	6		✓	✓					✓	●	✓			✓	✓		✓			✓	*			
	Riversdale Neighbourhood Node	7		✓	✓					✓	●	✓			✓	✓		✓			✓	*			
2. Secondary Urban Node:																									
De Deur (Future CBD)	De Deur Neighbourhood Node (EDC)	8		✓	✓				✓	✓	○	✓			✓	✓		✓			✓	*			
Savanna City	Savanna Extension 3	9		✓	✓					✓	●	✓			✓	✓		✓			✓	*			
	Savanna Extension 4	10		✓	✓					✓	●	✓			✓	✓		✓			✓	*			
	Savanna Extension 7	11		✓	✓					✓	●	✓			✓	✓		✓			✓	*			
	Savanna Extension 8	12		✓	✓					✓	●	✓			✓	✓					✓	*			
	Doornkuil	13								✓	●	✓		✓	✓	✓			✓		✓	*			
	Lakeside Neighbourhood Node (EDC)	14		✓	✓					✓	●	✓			✓	✓					✓	*			
Waterval (Future CBD)	Waterval Neighbourhood Node (EDC)	15		✓	✓				✓	✓	○	✓	✓	✓	✓	✓		✓			✓	*			
Daleside	Daleside Neighbourhood Node	16		✓	✓					✓	●	✓	✓	✓	✓	✓		✓			✓	*			
Henley on Klip	Henley on Klip Neighbourhood Node	17		✓	✓					✓	●	✓			✓	✓		✓			✓	*			
Risiville	Risiville Neighbourhood Node	18		✓	✓					✓	●	✓			✓	✓		✓			✓	*			
Eye of Africa	Alewynspoort Neighbourhood Node	19		✓	✓					✓	●	✓			✓	✓		✓			✓	*			
Tedderfield	Tedderfield Neighbourhood Node	20		✓	✓					✓	●	✓	✓	✓	✓	✓		✓			✓	*			
Elandsfontein	Elandsfontein Neighbourhood Node	21	✓	✓	✓					✓	●	✓	✓	✓	✓	✓		✓			✓	*			
Walkerville	Walkerville Neighbourhood Node	22	✓	✓						✓	●	✓			✓	✓		✓			✓	*			
Vaal Marina	Vaal Marina Neighbourhood Node	23	✓	✓	✓					✓	●	✓			✓	✓		✓			✓	*			
Mamello	Mamello Neighbourhood Node (EDC)	24	✓	✓	✓	✓				✓	●	✓		✓	✓	✓		✓			✓	*			
3. Rural Node																									
Bantu Bonke	Bantu Bonke Neighbourhood Node	25	✓				✓				◊	✓		✓	✓		✓				✓	*			
Note:	✓ Allowed	○	Higher Order		*	Subject to Bylaw on Informal Trade:		Designated Area Demarcation																	
		●	Middle Order			Adopted Trading Plan																			
		◊	Lower Order			Informal Trading Permit																			

2.7 National human settlements

2.7.1 Human settlements policy and programmes

The Constitution of the Republic of South Africa, 1996 is the primary and defining document for the provision of housing in South Africa. Section 26 of the Constitution states that:

- (1) Everyone has the right to have access to adequate housing.
- (2) The state must take reasonable legislative and other measures, within its available resources, to achieve the progressive realisation of this right.
- (3) No one may be evicted from their home, or have their home demolished, without an order of court made after considering all the relevant circumstances. No legislation may permit arbitrary evictions.

Therefore, government is mandated to implement laws, programmes, and other initiatives or systems to ensure the progressive realisation of this right. Following from the Constitution, The Housing Act of 1997 mandates government to intervene in efforts to accelerate the delivery of housing.

The NDP sets out a mandate for the administration to achieve transformed human settlements in South Africa. The national Department of Human Settlements (DHS) is entrusted to spearhead the project of coordinating spatial planning systems that will drive the (re)structuring and (re)positioning of the South African city and rural regions that carry the apartheid spatial legacy. Regions should be transformed into equitable and efficient spaces where communities are housed in better-serviced environments, with adequate socio-economic opportunities.

The DHS is mandated by policy to engage robustly on the weaknesses of human settlements which are still characterised by socio-spatial and socio-economic inequalities. Going forward, the planning and development of human settlements must be done in a deliberate fashion that will pursue the normative stance to create sustainable, inclusive, and efficient human settlements.

The DHS has several key operational programmes that facilitate resources to deliver on its mandate. These include:

HUMAN SETTLEMENTS POLICY, STRATEGY, AND PLANNING

The purpose of the programme is to manage the development and compliance of human settlements sector delivery and inter-governmental relations frameworks.

Additional objectives include oversight on strategic and planning services of human settlements.

The programme's strategic goals are:

- To develop evidence-based policies and programmes, and
- To establish partnerships to support the delivery of human settlements sector priorities.

MONITORING AND DELIVERY SUPPORT

The purpose of the monitoring and delivery support programme is to support the implementation of projects and to manage skills dispensation in the sector. Outlined strategic objectives include:

- Implementation support on the delivery of sustainable human settlements,
- Enhanced monitoring and evaluation in the human settlements sector, and
- Improved support and capacity for the human settlements sector.

HOUSING DEVELOPMENT FINANCE

The main purpose of the programme is to fund the delivery of housing and human settlements and manage all matters related to improving access to housing finance and developing partnerships with the financial sector. The programme's strategic objective comprises:

- Efficient and effective utilisation of human settlements grants. (DHS, 2020-21)



The human settlements development grants are transferred to municipalities to facilitate tenure security, basic services, and social amenities in a structured manner. These grants are allocated through specific human settlements programmes chosen in the planning stages.

2.7.2 Bantu Bonke human settlements intervention

The Gauteng Department of Human Settlements (GDHS) identified human settlements need for both Mamello and Bantu Bonke villages in the Midvaal southern region. The provision of adequate housing opportunities for Bantu Bonke backyard dwellers would also assist informal dwellers in Makokong and Kudung villages nearby.

Accordingly, the GDHS commissioned a feasibility study for the placement of 500 low-cost dwelling units to assist these households. The absence of bulk sewer in the Panfontein area, limited a solid recommendation on the most feasible site. The feasibility study identified the demarcated lease unit number 002 on the Remainder of Panfontein Farm 437 IR that extends about 371ha. The study area is severely impacted by utility servitudes including Eskom's high voltage transmission lines and Rand Water's open water channel.

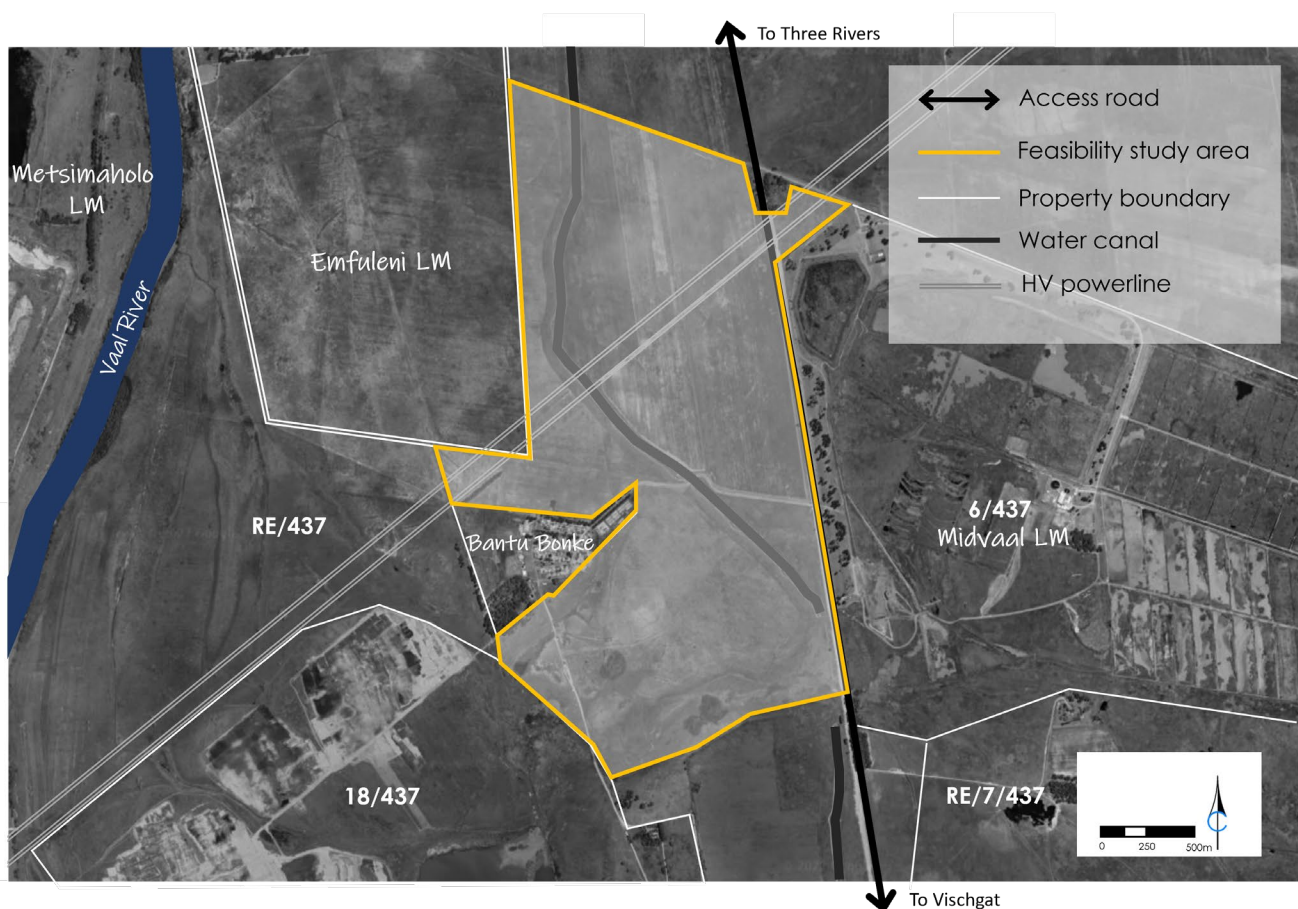


Figure 16: Agri-village feasibility study area

Preliminary feasibility report stage 1

Preliminary feasibility results for this study area indicated that the development of 500 units is feasible. The study alluded to the availability of adequate infrastructure capacity within the vicinity of the proposed development. These include electrical services supplied by Eskom, piped water and conventional sewer services supplied by the local Council.

Preliminary feasibility report stage 2

The development that is recommended for the demarcated study area is advised to be carried out as an agri-village. The purpose of an agri-village would not only be to accommodate and formalise the residential need, but to provide for local economic development to promote job creation and enhance the sustainability of the community.

The feasibility study recommended the development of an agri-village concept with supporting Environmental Impact Assessment and other specialist studies including a floodline study. The proposed development should prompt the upgrading of existing bulk services to increase the carrying capacity for the new development. **Figure 17** depicts the feasible development zones identified by the study for the agri-village development.

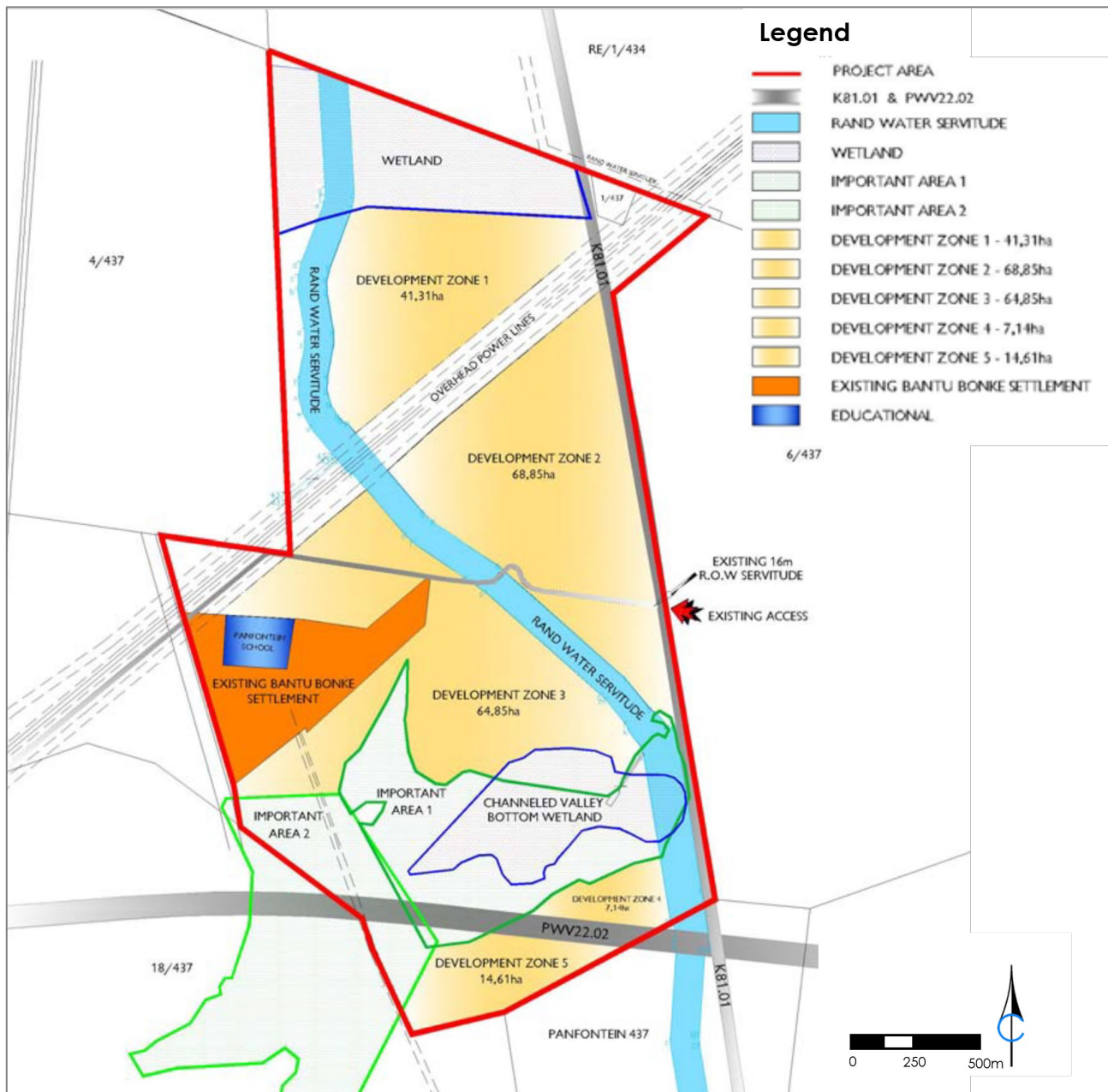


Figure 17: Panfontein/Greater Bantu Bonke framework plan (Cadre adapted)

Following the development framework for the agri-village, the feasibility study made technical recommendations following preliminary geological and environmental assessments. These are provided as follows:

1. Soil raft foundations or stiffened cellular raft foundations may be considered for the construction of proposed rigid masonry residential structures.
2. No problems should be experienced to remove the site soils down to a depth of at least 2m below surface using conventional earth moving machines.
3. The upper sandy site soils should be suitable for use as backfill underneath surface beds (G7 quality) whereas the underlying clay will be totally unsuitable for use.

The study area for the proposed development of the 500 units falls outside the development and services priority areas for the local Council. The study initially directed to relocate the backyard dwellers in Bantu Bonke to Lakeside Estate Extension 1. Cautioning against customer rejection due to the relocation, the study recommended a development area within the vicinity of the Bantu Bonke village to continue the spatial convenience and to maintain the social fabric of the village.

To preserve the rural and agricultural integrity of the area around Bantu Bonke the development need is advised to be along the lines of an agri-village development. This development would facilitate resources to offer local economic development and adequate shelter for long term sustainability of the village. For strategic purposes, the precinct plan defines an agri-village as:

"an agriculture-focussed settlement that promotes the provision of cost-effective social and engineering services, including secure title ownership to residential and food production plots in underdeveloped and/or remote villages."

The village's flexible land use arrangements promote the modernisation and beneficiation of agriculture productive capital to create self-sustaining rural households and develop emerging farmers to participate in the mainstream markets for long term rural success."

The GDHS requested the DALRRD, as the titleholder of the identified land, to transfer 30ha for human settlements development. A signed memorandum by the Minister of DALRRD was produced to commit the transfer of land for the purposes of human settlements development at no cost. Provisioning for an agri-village development would require the introduction of agriculture-intensive capital and beneficiation initiatives to facilitate local economic development. In addition to the 30ha of land dedicated to residential stands, the allocation of land for agriculture productive capital would be necessary to institute jobs and productivity of the agri-village.

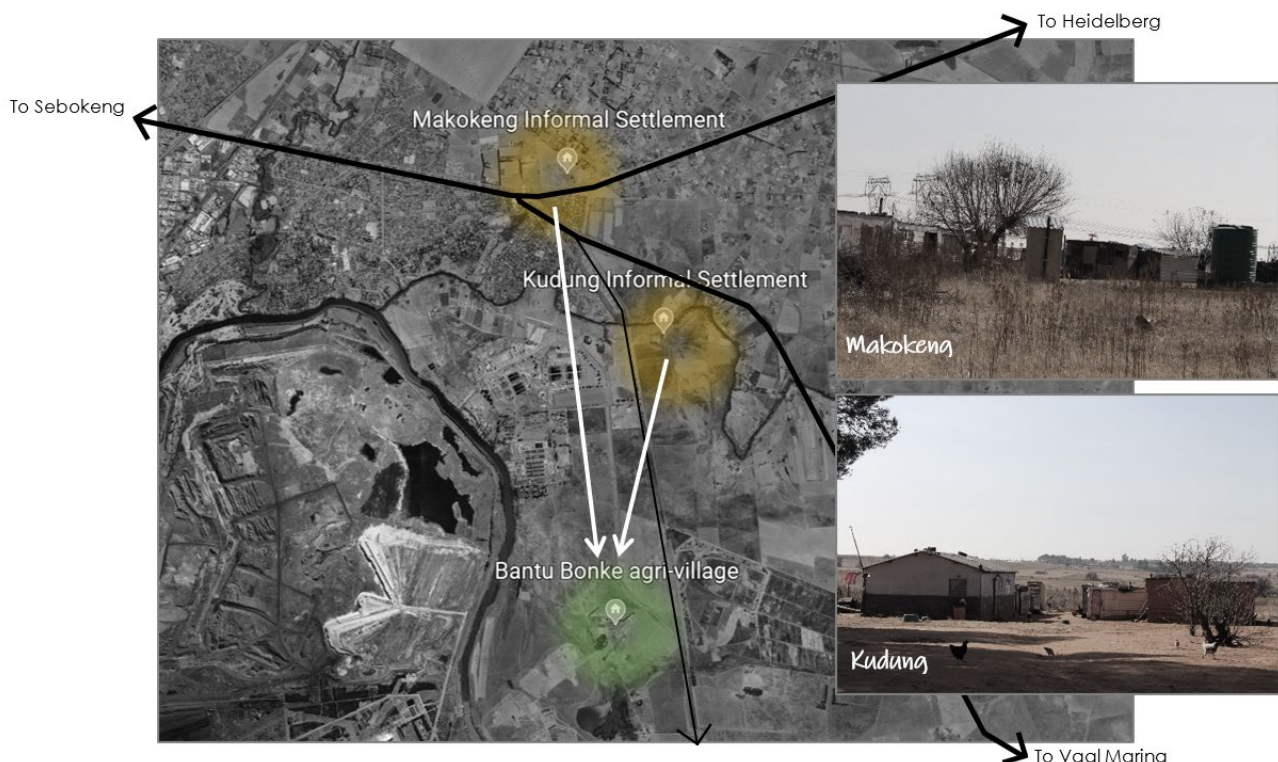


Figure 18: Settlements identified for incremental interventions

Figure 18 demonstrates the recommended interventions by the feasibility to (1) cause agri-village development within the vicinity of Bantu Bonke village and (2) relocate the informal dwellers in Makokong and Kudung to benefit BNG subsidy units. A brief analysis of these settlements is given to navigate the reader on the conditions.

In Bantu Bonke, the donation of the communal property by Anglo American Farms (AAF) was done in terms of the Extension of Security of Tenure Act, 1997 (ESTA). The then Department of Land Affairs intervened to facilitate long-term security of tenure for the former workers of AAF, since it was abandoning operations in the area. Through ESTA, the Minister could grant subsidies to enable former occupiers and other persons who need long-term security of tenure, to acquire land or land rights.

The Minister has authority in terms of ESTA to grant subsidies through an agreement with provincial, municipal government, a body, or a person. This report deduces that the donation made to the community of Bantu Bonke by AAF, was a state-assisted intervention. It is probable that the main beneficiaries of the communal property would be disqualified for the sought housing subsidies. Their immediate descendants are the ones who are more likely to qualify for the housing subsidies – also considering their income brackets (DHS, 2009).

The GDHS (Sedibeng Central Region) is keen to prioritise households established in informal backyard structures in Bantu Bonke, and informal dwellers in Makokong and Kudung. The subsidy administration would automatically reject households that are registered under the CPA. A political motivation would be essential to ensure the provision of adequate housing opportunities.

Deducing from the evidence gathered in the community survey, each backyard represents a household unit led by (1) a young couple with children and (2) single individuals in their late 20s. These households are mainly direct descendants of the former AAF workers who became CPA members. A smaller proportion of the individuals who migrated into the settlement was recorded. These are mainly male individuals who secured low and semi-skilled work from Rand Water and Sky Sand.

Following the recommendations of the GDHS to assist backyard dwellers, the estimated number of 'qualifying' households in Bantu Bonke, Makokong and Kudung sits at about **230**. The **164** backyard households in Bantu Bonke are mainly comprised of extended family members established in the main units, and a smaller proportion being migrant workers. Makokong and Kudung have about two formal units located on farm portions. Backyard shacks or households in these two villages are estimated to be at **44** and **22** respectively. The backyard households in these three villages would be accommodated in the agri-village development as advised by the feasibility study.



Figure 19: Bantu Bonke residential structures



Figure 20: Kudung residential structures



Figure 21: Makokong residential structures

This section evaluates the most viable human settlements tool to facilitate the construction of the 500 low-cost dwelling units.

2.7.2.1 Upgrading of Informal Settlements Programme

The National Upgrading Support Programme (NUSP) was established by the DHS to support the implementation of the Upgrading of Informal Settlement Programme (UISP). The purpose of the UISP is to promote the incremental upgrading of informal settlements in line with Part 3 of the National Housing Code. Part 3 details the process and procedures for in-situ upgrading of informal settlements. The code also reflects the provision of grants to the municipality to carry out the upgrading of the informal settlements.

The key objective of the UISP is to promote structured incremental in-situ upgrading of informal settlements, as opposed to relocation, to:

- Formalise tenure rights and reinforce citizenship.
- Promote healthy and secure living environments
- Focus on community empowerment by addressing socio-economic exclusion.

POLICY PRINCIPLES

A HOLISTIC APPROACH

This involves a community-wide focus, promoting holistic development of the settlement with minimum disruption of existing, fragile community networks and support structures. The engagement between community members and their local authorities is mandatory and a crucial step.

RELOCATION REQUIREMENTS

Where relocation is required, the community should agree to such arrangements. The relocation site must be secured in an area identified for settlement purposes by the municipal spatial development framework.

QUALIFICATION FOR BENEFITS

The programme provides benefits for all the inhabitants of an informal settlement including persons currently excluded from the benefits of the Housing Subsidy Scheme.

HOUSING CONSOLIDATION

Beneficiaries of this programme will only receive access to land, basic municipal engineering services and social amenities and services. To qualify for housing assistance benefits, such as registered ownership and consolidation subsidy, beneficiaries need to comply to the requirements of the relevant programmes.

2.7.2.2 Integrated Residential Development Programme

The precinct plan identifies the Integrated Residential Development Programme (IRDP) as the most relevant housing programme to support the construction of the Panfontein/Greater Bantu Bonke Agri-village. The nature of the programme will facilitate the establishment of agri-economic interests by DALRRD and other sectoral departments.

Additionally, the programme makes provision for different income household categories and tenure status in Bantu Bonke, Makokong and Kudung. The programme is chosen specifically to facilitate community vibrancy and sustainability by promoting the depolarisation of income groups and economic activities.

Initially, the programme would focus on low-income housing provision to address the pressing needs of the community. In the longer term, following economic upliftment through agri-industrialisation, finance-linked and/or self-help human settlements would be constructed for the qualifying households.

POLICY INTENT

The IRDP intends to provide for the settlement planning that integrates different income household types supported by various commercial and social amenities. The programme does not identify the recipients up-front, and it makes provision for:

- Subsidised housing



- Finance-linked housing
- Social and rental housing
- Commercial uses
- Institutional uses.

Inclusionary housing is achieved through the provision of both bonded and subsidised housing. Projects are planned and developed in two phases. The first phase includes the acquisition of land, planning and township establishment processes. The provisioned erven would then be sold to commercial and other interests. The second phase includes the construction of low-cost housing units for the qualifying housing beneficiaries, and the sale of stands to the non-qualifying beneficiaries.

QUALIFYING BENEFICIARIES

The programme has a range of benefits for recipients of residential properties with different economic statuses. The basic qualification criteria for the assistance of the programme are centred around the regulations of the housing subsidy scheme. Affordability, nationality, and the history of state-assisted subsidies are amongst the critical elements used to determine qualifying beneficiaries.

2.8 Midvaal Human Settlements Plan 2022-2027

Midvaal Human Settlement Plan (HSP) identifies and coordinates priority actions to ensure adequate human settlements delivery. The HSP commits the municipality to identify and designate land for human settlement development. Key objectives of the plan are to (1) provide practical methods to prioritise human settlements projects and (2) assist with budget preparation for human settlements provision and related projects.

The HSP captures human settlements projects that are in the planning phase within Midvaal. To eradicate the human settlements backlog within the municipality, the plan prioritises projects for implementation between 3-5 years. Human settlements intervention in Bantu Bonke is indicated as follows:

TABLE 3: MIDVAAL HUMAN SETTLEMENTS PLAN DIRECTIVES					
Land parcel	Development type	Owner	Beneficiaries	Number of units	Project status
Portion 7 of Panfontein 437	Agri-village	DALRRD	Bantu Bonke, Kudung, Uitvlucht and neighbouring informal settlements	500	Feasibility and cost benefit analysis study completed. Awaiting the GDHS to include project in business plans and undertake the necessary planning studies.

The most efficient method to address the human settlements backlog is by deploying more administration capacity. The HSP notes challenges that limit the adequate provision of human settlements in the municipality. These include the availability of well-located land and the non-accreditation of the municipality to deliver human settlements. The acquisition of land and subsidy administration processes are identified as the bottlenecks to meet the human settlements demand within the municipality.

Accordingly, the plan recommends level 1 accreditation of the municipality by 2027 to administer beneficiary management and subsidy allocation. Level 2 accreditation would see the municipality coordinate full programme management and administration of all housing programmes. To install an effective human settlements delivery system the municipality would plan and facilitate human settlements development in partnership with the GDHS and other sectoral role players.

2.9 Draft Framework: Midvaal Local Economic Development Strategy 2022

The Local Economic Development Strategy (LEDS) is a target-specific development approach to broaden the local economic base of the municipality. The strategy intends to (1) build local production capacity (2) create a conducive investment environment and (3) improve local linkages and support, amongst others. To achieve

these local economic development pillars the strategy details guiding principles to anchor economic development directives including:

- Prioritising job creation and poverty alleviation.
- Create a conducive business environment
- Promote skills development and training for community members
- Encourage healthy local competition and trading collaborations
- Ensure better life for all.

The strategy identifies economic strengths within the municipality and lists key sectors for focused investments. Manufacturing and government services are identified as the current strengths of the municipal economic base. In addition, the agriculture, business, and communication sectors are identified as high priority retention target sectors. Agriculture is considered an important sector, with maize and red meat production and agri-processing considered to be the future of the municipality's economic strength. The LEDS focuses resource development of small-scale farmers to contribute towards the region's agricultural production.

The LED framework establishes five economic development thrusts and their supporting programmes and key actions. The following table summarises these thrusts.

TABLE 4: LOCAL ECONOMIC DEVELOPMENT THRUSTS			
LED thrust	LED programme	Programme objectives	Identified projects
Agriculture development, support and value adding	Sustainable and diversified Agricultural development.	Diversifying the sector by proposing alternative agriculture activities.	Promote small-scale vegetable farmers and encourage commercialisation.
	Emerging farmer support and skills development		Develop a central mentorship programme for emerging farmers.
	Agri-processing & niche produce development.		Investigate the expansion of the Bantu-Bonke Hydroponic project. Identify agri-processing opportunities such as the manufacturing of juices and achar.
	Market development & creating an enabling environment.		Assist upcoming farmers with packaging, quality management and marketing of produce.
Tourism and green-economy development and promotion	Tourism industry growth & development	Promote economic development through tourism.	Develop day visitor facilities and recreational infrastructure aimed at promoting local tourism.
	Tourism marketing, promotion & awareness.		Undertake tourism market demand and trends analysis of the local and surrounding areas.
	Green-economy and ecotourism development and promotion.		Revive interest amongst the agricultural community to allow tourists to visit farms and other places.
Business development, support, and promotion	Business support & capacitation & entrepreneurial development.	Stimulate small, micro, and medium Enterprises (SMMEs)	Develop a partnership with businesses to establish a skills transfer.
	SMME development & integration of the informal economy.		Establish a local youth small business development centre in partnership with local FET, SEDA, TIL, linked to career guidance with high-schools, entrepreneurship development, sponsored computers.
	Promotion of industrial, trade & construction activities.		Provide rate incentives for developments that are in demand, according to government policies
	Marketing & information technology platforms.		Undertake a feasibility study for the creation of Wi-Fi zones in strategic places in Meyerton and other nodes where individuals can log onto the internet at a reduced cost



TABLE 4: LOCAL ECONOMIC DEVELOPMENT THRUSTS

LED thrust	LED programme	Programme objectives	Identified projects
Township and informal economy revitalisation	Provision of an adequate regulatory and policy environment.	Achieve a more conducive, innovative, and developmentally oriented regulatory environment.	Develop an Informal Sector Plan to assist the sector to access amenities and opportunities for growth.
	Economic infrastructure.		Develop the necessary infrastructure to empower local entrepreneurs in rural and township areas to establish more localised economic activities, specifically Sicelo, Bantu Bonke and Mamello. Provide and upgrade lockable storage facilities for traders at taxi ranks.
	Business skills development & entrepreneurship.		Conduct training in essential business skills.
	Provision of market support and business linkages through partnerships and collaboration.		Incorporate youth business owners in local business forum engagements.
Business retention and investment attraction	Existing business retention and expansion.	Economic recovery and growth acceleration.	Beautification and landscaping of main streets to give the main centres in Midvaal a facelift.
	New business and investment attraction.		Develop a Development Incentives Policy outlining development incentives as a discretionary reward system aimed at influencing and encouraging business development in the Midvaal area.



2.10 Summary of policy implications for Bantu Bonke

TABLE 5: POLICY AND STRATEGY SUMMARY		
Policy		Directives
Gauteng SOPA 2022		1. Smart re-industrialisation along the Vaal River.
NDP Vision 2030		1. Provide housing for people closer to their workplaces . 2. Provide better quality public transport. 3. Provide medium-to-high density integrated human settlements.
Draft NSDF 2050		1. Upgrade all informal settlements on suitable and well-located land. 2. Prioritise agricultural and rural development along mobility corridors. 3. Identify non-agricultural opportunities such as tourism.
Draft GSDF 2030 (2022 review)		Protect prime agricultural land through discouraging investments outside existing urban development boundaries
GGT 2030		Focus on building a new economy in the Vaal River.
Sedibeng DM SDF 2019		Bantu Bonke as a Priority Housing Development Area in Midvaal.
Midvaal LM SDF 2022		Develop Bantu Bonke as an agri-investment destination.
CRDP 2009		Focus on agrarian transformation through: ▪ Tenure reform ▪ Land redistribution and restitution ▪ Agricultural implements (harvesters, seeds, fertilisers, and pesticides) ▪ Agri-processing plants ▪ ICT infrastructure ▪ Social infrastructure: ▫ Clinics ▫ Libraries ▫ Schools ▫ Post office ▫ Police station
GRDP 2014		Functional Rural Region 5 in Midvaal to focus on large scale agriculture.
Midvaal Nodal Policy 2021		Integrate community facilities and economic activities to support population growth in and around the village.
Midvaal Human Settlements Plan 2022-2027		Construct 500 dwelling units for Bantu Bonke, Uitvlucht, Kudung and the surrounding informal settlements.
Midvaal Draft LED Strategy 2022		Identify agri-processing opportunities such as the manufacturing of juices and achar in Bantu Bonke.
Human Settlements	UISP	1. Relocation of households must be done on approval of informal dwellers. 2. Identified relocation site must be a designated human settlement area in terms of MSDF.
	IRDP	Phase 1: land acquisition, township establishment and the provision of serviced residential and other land use stands. Phase 2: Housing construction for qualifying housing subsidy beneficiaries and sale of stands to non-qualifying beneficiaries and to commercial interests



3 SPATIAL ANALYSIS

3.1 Biophysical analysis

3.1.1 Geology and soil

The images depicted in **Figure 22** show that the geology of the wider study area around Bantu Bonke is predominantly stable bed rocks, mostly shale and fine-coarse grained sandstones. These rocks, together with the coal seams, indicate that the historical landscape was mostly inundated by water (an inland sea). Sedimentary rocks are known to be stable for physical development and do not pose human settlement risks as compared to dolomitic rocks which develop cavities over time.

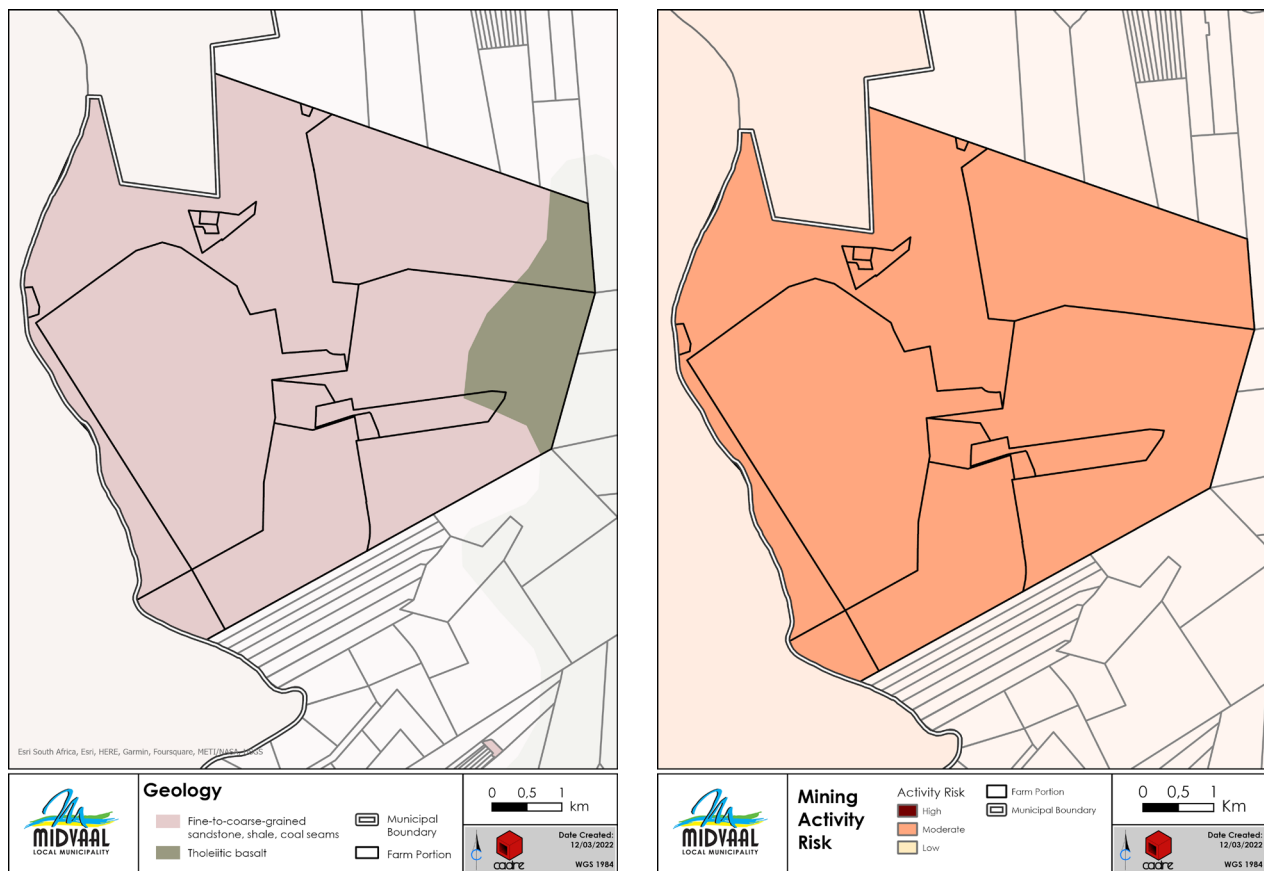


Figure 22: Geology and mineral deposits

The existence of coal deposits, which are already exploited on the western side of the Vaal River, creates a high potential for the expansion of mine operations in the area. Prior to the donation of Portion 8 of Panfontein Farm 437 Anglo American introduced physical restrictions on the Bantu Bonke village expansion considering prospective exploitation of the coal deposits. However, Mineral Rights have since been vested in the Government of the Republic of South Africa.

3.1.2 Hydrology

The Vaal River is the predominant hydrological system near Bantu Bonke village. The Suikerbosrand River flowing westerly and the Klip River flowing southerly, drain into the Vaal River at Three Rivers, 8km north of northwest of Bantu Bonke.

All three rivers are perennial rivers which flow continuously all year round. Southwest of the village sits the body of water almost the size of the settlement itself. During the rainfall season, the dense vegetation, the gentle relief, thick ground clay and poor drainage facilities contribute to water clogging in the area.



Figure 23: Wetland southwest of Bantu Bonke

Residents noted that crop farming used to take place in the area by one of the village cooperatives. The hydrological properties of the broader Panfontein show that drainage takes place westerly towards the Vaal River. The vegetation is advantageous for the ecological systems in the area; however, it presents challenges for human settlements. Residents noted that the area is mainly wet, and the construction of buildings is prolonged to stabilise the ground conditions.

The Rand Water sludge disposal site is recorded together with the hydrology of the area. The disposal site is vast and contains large scale disposal pools of sludge from the sedimentation process used in water purification. About 1 300 tons of sludge are produced every day during the purification process. The deposits contain mainly calcium carbonate and complex silicates containing aluminium and iron (Rand Water, 2022). The leakages of the disposal pools seap into the fresh water pan located at the centre of the sand mining operations (south west of the village).

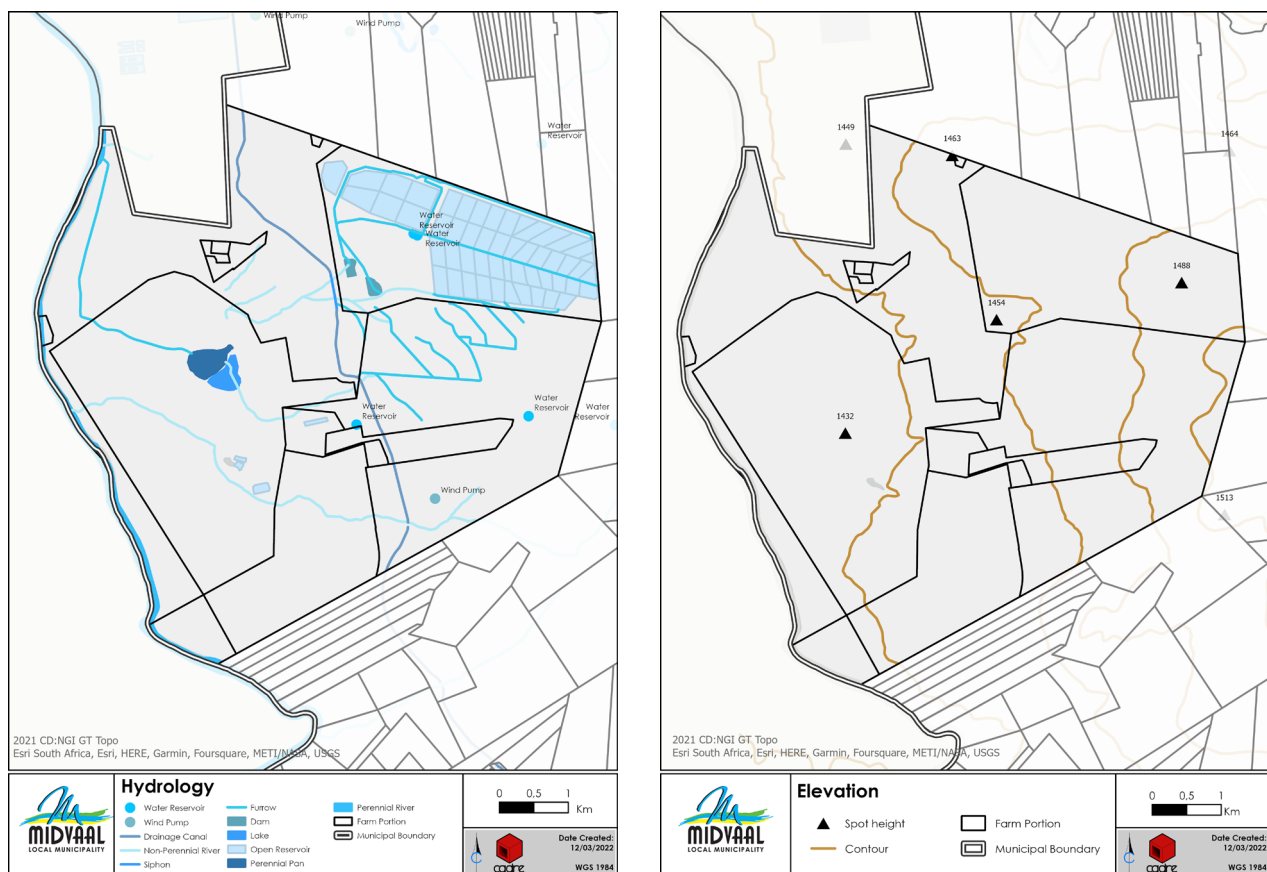


Figure 24: Hydrology and drainage properties of the area around Bantu Bonke

3.1.3 Protected and sensitive areas

The southern half of the municipal region is almost inundated by Critical Biodiversity Areas (CBA) 1 and 2. These are areas that need ecological support such as regeneration, especially along the Vaal River. A balance between enhancing economic activity in the region and conserving ecology is paramount. (SANBI, 2018).

The ecology around Bantu Bonke is mainly declared as areas needing environmental support. This entails protective interventions such as restricting any type of development and /or disturbance in the identified wetland south of the village.

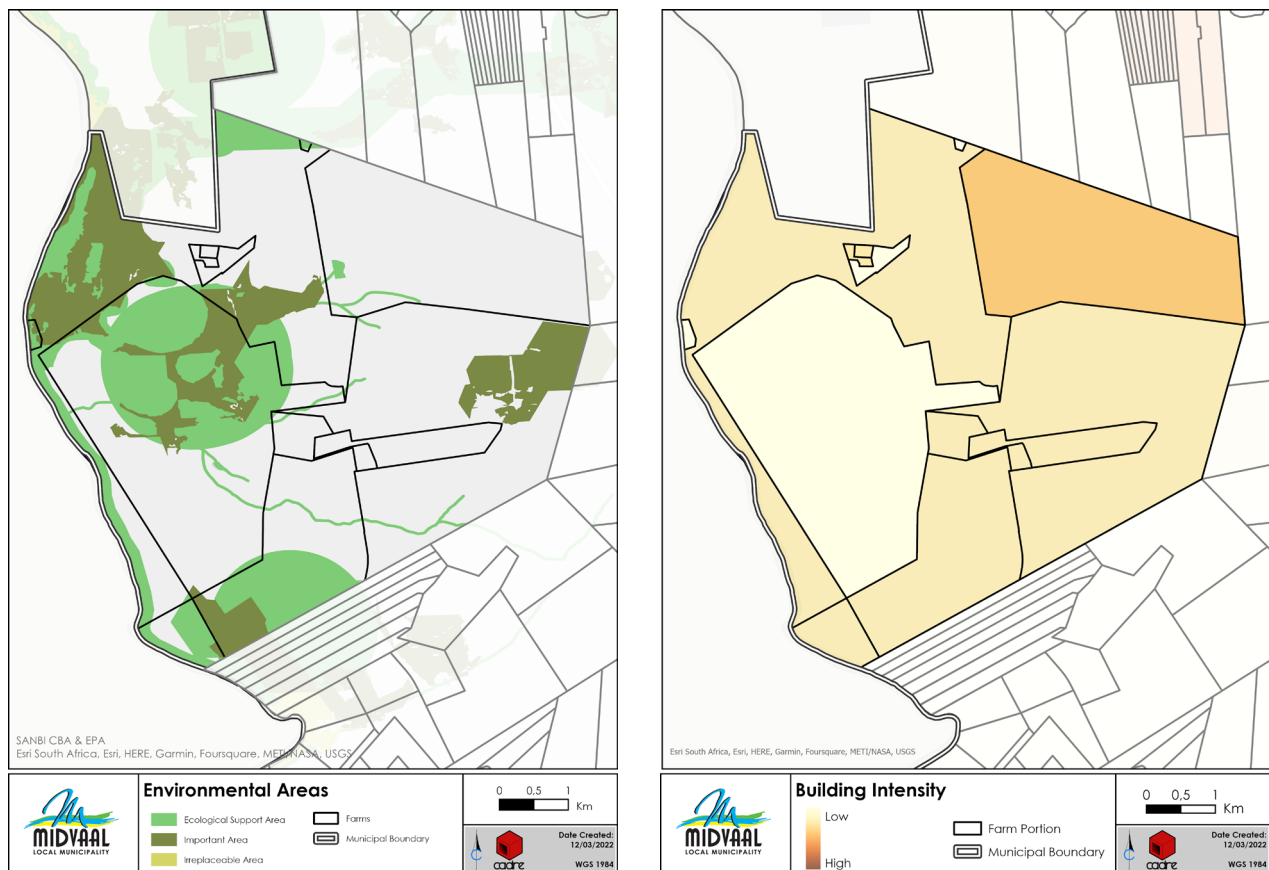


Figure 25: Critical biodiversity areas and human activities

Panfontein has scattered industrial activities which have major land use impact, including the sludge disposal site (east of Bantu Bonke) and sand mining (south of Bantu Bonke). The envisioned expansion of the village could be accommodated on its western and north-eastern boundaries, where there are no declared CBAs. Expansion towards the north would be limited by the traversing water canal, high voltage transmission lines and large-scale cropping operated by the one of the village cooperatives.



3.1.4 Scenario matrix

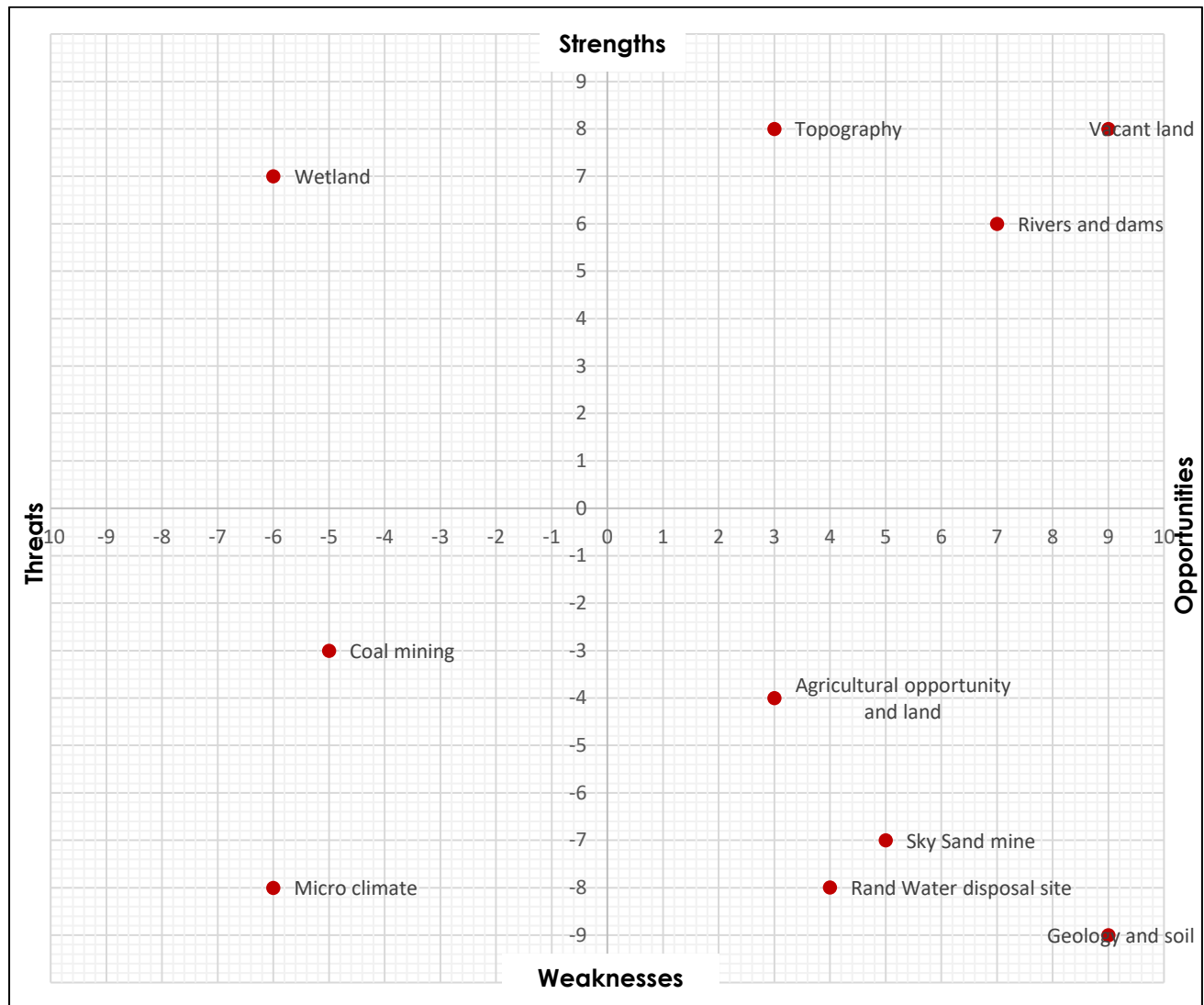


Figure 26: Biophysical SWOT analysis matrix

The biophysical elements in the greater Panfontein present virtual wealth for the area. Interventions that do not consider their long-term consequences can gradually lead to spatial and social threats for the area. Coal deposits present a virtual wealth in the region and its host community of Bantu Bonke, for as long as they remain untapped.

The exploitation of these coal deposits are critical to the current energy sector; however they present a direct threat to the agricultural ecology of the region. Agricultural land is the strongest opportunity factor for the area and the community of Bantu Bonke. The disintegration of agricultural land will likely manifest in social and spatial weaknesses for long-term community sustainability and success.

3.3 Built environment analysis

3.3.1 Spatial structure

The wider study area has six distinct characteristics. **Figure 27** depicts different land uses that are predominant in the wider Panfontein farm. These include:

1. Residential 1 and 2 settlement with supporting social facilities.
2. Animal feed production and sand processing plants.
3. Sand quarrying.
4. Large scale crop farming.
5. Sediment or residue disposal.
6. Livestock farming.

The wider study area has vast vacant land that is situated between these predominant land uses. Vacant land presents expansion opportunities for (1) desired housing provision and (2) supporting beneficiation of existing economic activities including brickmaking and agri-processing. The physical expansion of the village settlement is limited by the water canal that traverses the demarcated precinct boundary in the north.

The R54 is the only higher order route running north-south on the eastern boundary of the Panfontein Farm 437. The link connects Midvaal's heartland (Meyerton) with the southern urban complex at Vaal Marina. Direct access to the precinct is provided by the Vischgat road that traverses the Panfontein Farm 437 in the middle. This road is mainly a gravel road that is used by:

1. Heavy motor-vehicles transporting sand and livestock from the piggery to hardware stores and/or construction sites and abattoirs respectively.
2. Bantu Bonke residents to access service centres and workplaces in Three Rivers and nearby towns.

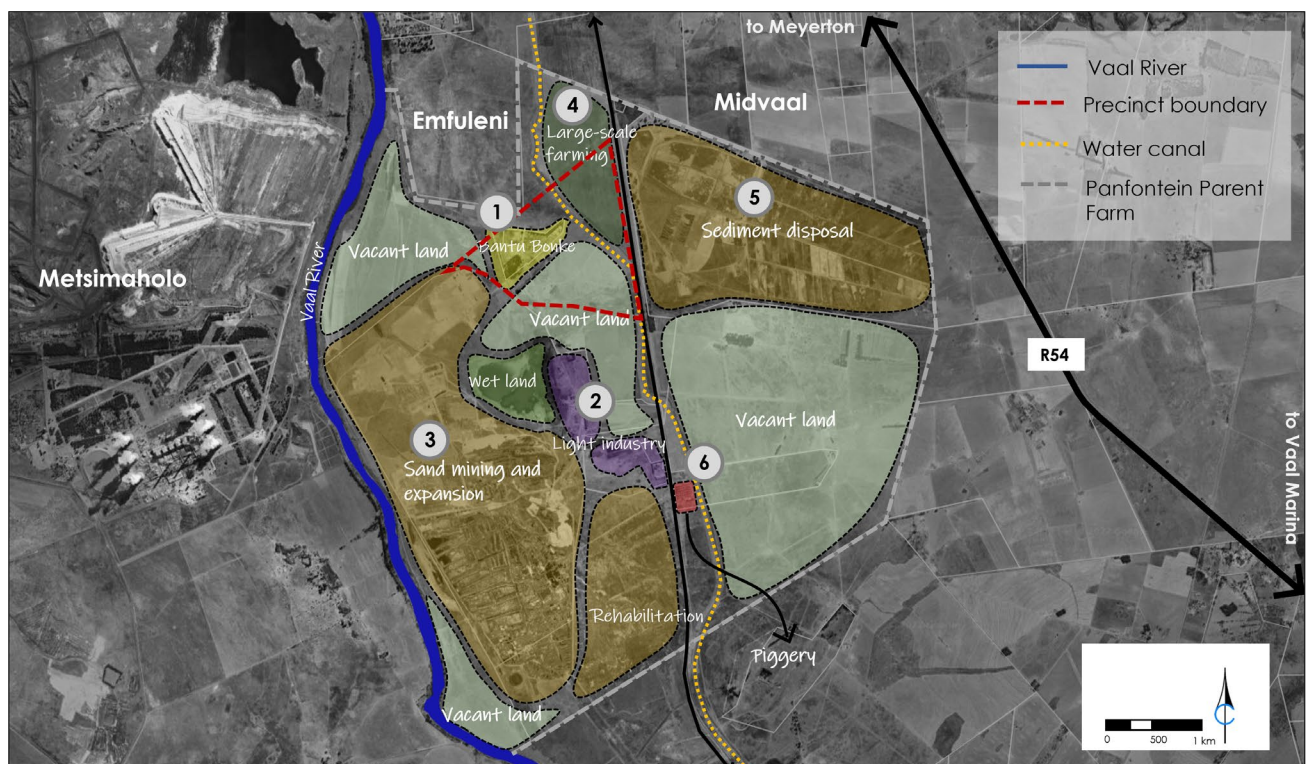


Figure 27: Panfontein/Greater Bantu Bonke spatial structure (wider context)



Figure 28: Panfontein/Greater Bantu Bonke spatial structure (zoomed in)

Bantu Bonke agri-village is the only residential compound in the entire Panfontein parent farm. The heat map (**Figure 30**) demonstrates high residential density at the centre of the village. These are mainly duet houses retrofitted with informal backyard structures. The current sewage network would be affected should the settlement population and structures increase without proper improvement and upgrades made to these utilities.

Bantu Bonke has a well-defined grid-like street layout. The streets are easy to navigate and are walkable. The street layout creates an opportunity to establish food gardens and/or public parks between rows of current housing structures. Access to the village is through a gravel road running south to the east of the village. The road is currently a gravel road and is mainly used by heavy vehicles transporting livestock, animal feed, and sand to markets in main towns. This forms the only public transport route servicing the community of Bantu Bonke.



Figure 29: Bantu Bonke communal property (spatial structure)



Figure 30: Human settlements and access roads (heat map)

Class 1 PWV22 road reserve runs in the west-east direction positioned about 600m south of the village. The PWV22 road reserve, together with the high-velocity water canal on the eastern side of the village, restrict expansions in easterly and southerly directions. The CRDP promotes TORDs along main roads in rural areas. It is a priority to develop strategies to integrate the village more meaningfully with the roads. The northern side of the village is also restricted by high voltage transmission lines. **Figure 31** depicts the PWV22 road reserve running across the Panfontein Farm 437.

The proposed PWV22 road presents both constraints and opportunities for the growth and development of the agri-hub around Bantu Bonke. In the longer term, the road would facilitate the distribution of economic units to main markets across Gauteng, Free State and Mpumalanga. Noting the provisions made by the Midvaal Human Settlement Plan – constructing the agri-village with supporting 500 dwelling units on Portion 7 of Panfontein Farm 437 (south of the PWV22) – would disintegrate the existing social fabric and human settlements' comparative advantages in the current village.

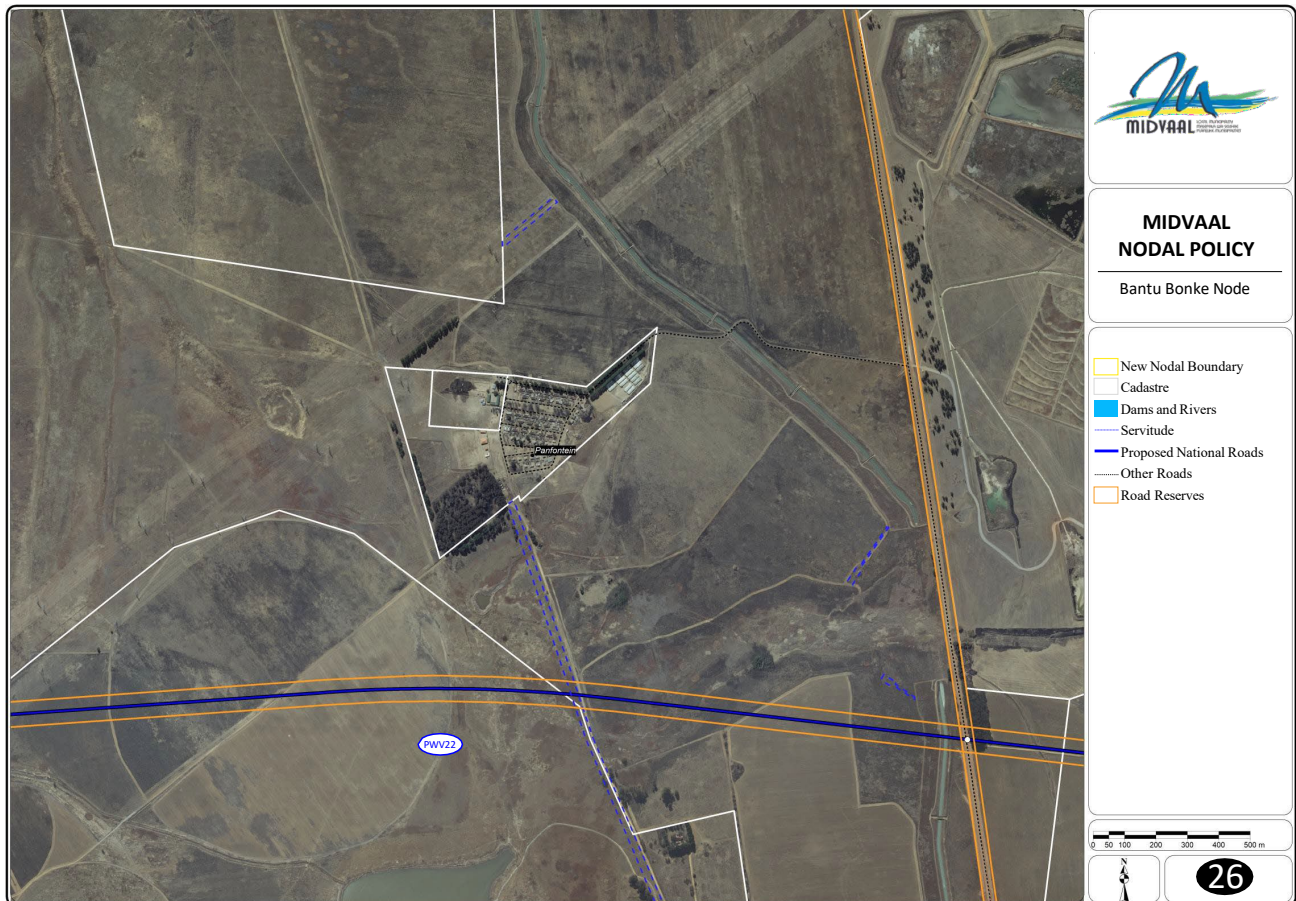


Figure 31: Road reserves in Panfontein/Greater Bantu Bonke (Midvaal Nodal Policy, 2021)

In efforts to stimulate demand in the economy and institute rapid economic recovery post the Covid-19 pandemic, the Gauteng Department of Roads and Transport has committed about R8-billion for transport infrastructure in the province. Some of the pipeline projects include the construction of the new interchange and access road on the R42 in Vereeniging. The Gauteng freeway improvement projects could see the construction of the PWV22 in the longer term. Spatial provisions for the Panfontein/Greater Bantu Bonke Agri-village would capitalise on the opportunities brought by the movement network.

3.3.2 Zoning and land use

Panfontein Farm 437 IR is mainly zoned for large scale agriculture. Utilities is the predominant zoning following agriculture. Rand Water uses Portion 6 of Panfontein Farm 437 for sludge disposal. The Remainder of Panfontein Farm 437 IR is also zoned for agriculture.

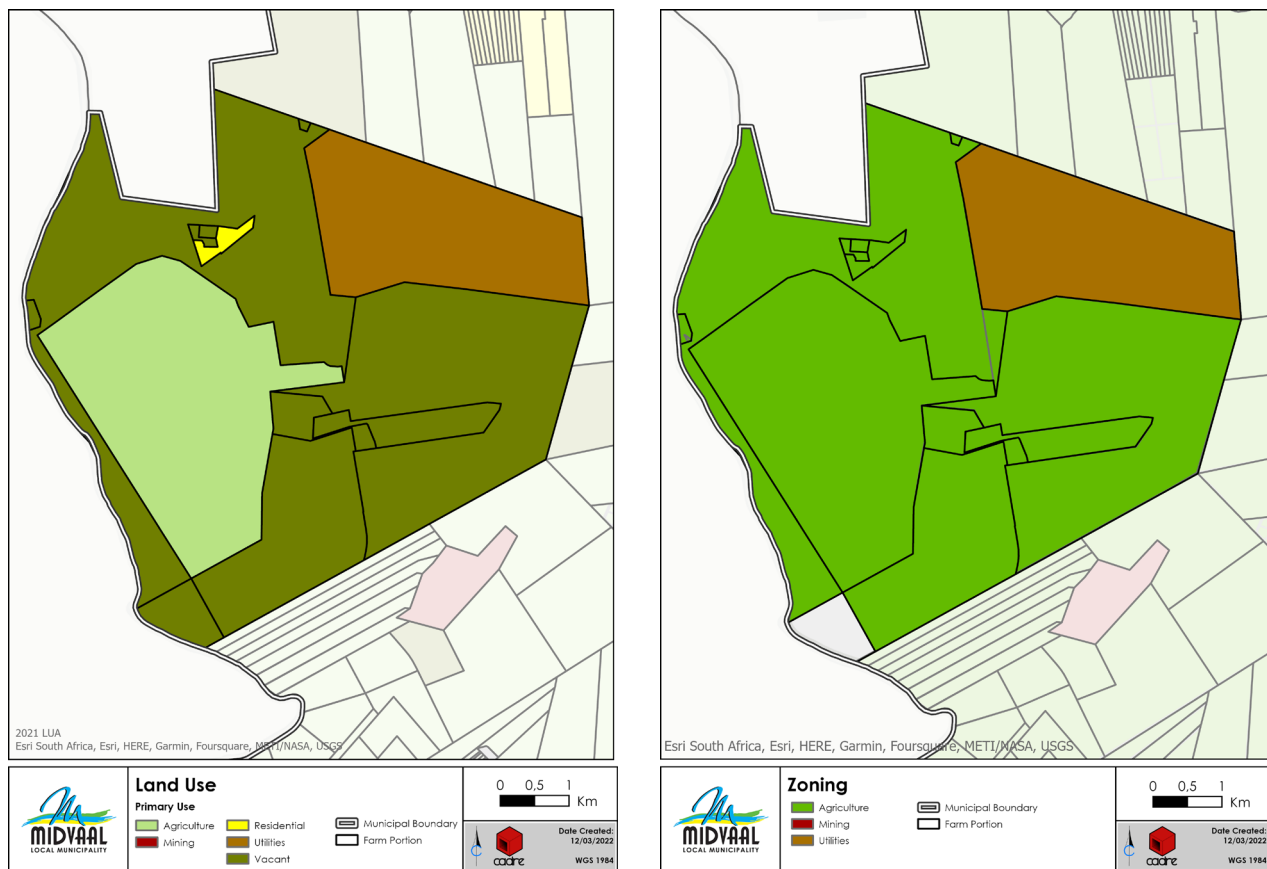


Figure 32: Zoning and land uses

Sand mining operations have been expanding towards the north, near Bantu Bonke. The Environmental Impact Assessment conducted for Sky Sand notes that the sand mined here, is mainly sold to customers directly, primarily to hardware stores. Stockpiling of sand is also done on site for further processing at a nearby plant for large scale construction projects. The land use data shows that the bulk of the Bantu Bonke village is recorded as residential.

At settlement level, there are educational facilities, a healthcare centre, a library, and a hydroponics plant. Currently an Early Childhood Development (ECD) centre is being constructed in the village. The Remainder of Panfontein Farm 437 is vacant with limited significant use (high voltage powerlines). Portion 7 of Panfontein Farm 437 is cultivated and is earmarked for the construction of the agri-village units by the Midvaal Human Settlements Plan. The DALRRD has allocated land on Portion 7 and Remainder of Farm 437 to small and emerging farmers for grain production amongst others.

3.3.4 Engineering services

POTABLE WATER

According to the Midvaal SDF 2022, 65% of Midvaal households had access to piped water in their dwelling units and 18% within their yards outside dwelling units. 13% of households accessed water from communal taps whereas 4% had no access to piped water. Bantu Bonke has conventional water and sanitation systems with all units individually serviced with piped water. The backyard structures in the village share these facilities with the main units.

Bulk water is supplied to Midvaal by Rand Water with much of the redistribution taking place in central parts of the municipality in the Meyerton complex. Outside the central parts of the municipal region, water reticulations are designed to service low-intensity land uses including agricultural holdings in De Deur and Walkerville.

The current reticulation capacity is limited to accommodate significant land use changes such as the construction of 500 units in the Panfontein/Greater Bantu Bonke in the medium and longer term. Large scale upgrading of the reticulation network is needed in the low intensity use zones envisioned for densification and intensification. The latter includes the Bantu Bonke/Panfontein area.

PROPER SANITATION

The Meyerton complex is largely serviced by conventional waterborne sewer. The outer settlements, including Savanna City and Walkerville, are connected to the grid in limited reticulations. About 82% of the households in Midvaal had flushing toilets including Bantu Bonke. The sanitation backlog in the whole municipal area is estimated to be at 18% or 5 598 households, assuming that the areas that are not serviced by the conventional sewer system use non-ventilated pit latrines (Midvaal, 2022).

The conventional sanitation system is supported by three waste water treatment works (WWTW) in the municipality including Ohenimuri, Vaal Marina, and Meyerton. Meyerton WWTW is the main regional facility in the municipality.



Figure 33: Waste water treatment plant in Bantu Bonke

Bantu Bonke has an off-grid micro waste water treatment plant servicing the village that is operated by the municipality. The envisioned expansion of the village with additional community facilities and dwelling units would require a capacity upgrade of the treatment plant and/or the establishment of a new connection to the main sewer network.

ELECTRICITY

About 79% of the households in Midvaal receive electricity from the local authority. These households are largely serviced in urban and semi-urban areas in the municipality including Savanna City, Eye of Africa, Vaal Marina, Risiville, and the greater Meyerton area (Midvaal, 2022). The remainder of the municipal area, which is largely rural and agriculture-based, is serviced directly by Eskom Distribution.

Bantu Bonke is serviced by Eskom by means of low voltage lines. The upgrading of the supply network would be imperative to accommodate the human settlement and agri-industrial expansions.

The expansion of the settlement would prioritise a hybrid electrification system that would see clean energy for households. The provision of solar geysers, photovoltaic panels for households and street lighting would assist in reducing the pressure on the fossil fuel-dependent grid system. Collaboration between the human settlements and energy departments is required to assist the municipality in implementing clean energy facilities for low-cost housing in Bantu Bonke.

3.4 Issues and constraints

It is crucial to analyse the immediate surroundings of the precinct to understand the impact of physical features on the growth and development of the Greater Bantu Bonke. Major physical constraints identified include:

- High voltage transmission lines (northern border of the village).
- Class 1 road reserve 600m south of the village.
- High velocity water canal traversing 200m from the northeast corner of the village.
- Sand mining operations to the immediate south of the village.

Despite the evidence of constraints in the study area, there are elements that present an opportunity for the well-coordinated development of the Greater Bantu Bonke. The gravel road running north-south along the eastern border of the precinct presents an opportunity for public transport to support the expansion of the village. With proper upgrading, the road would provide logistics support for the southern industries (sand quarrying, animal feed and piggery). Access and mobility to markets would become easier and support enterprise growth in the rural node.

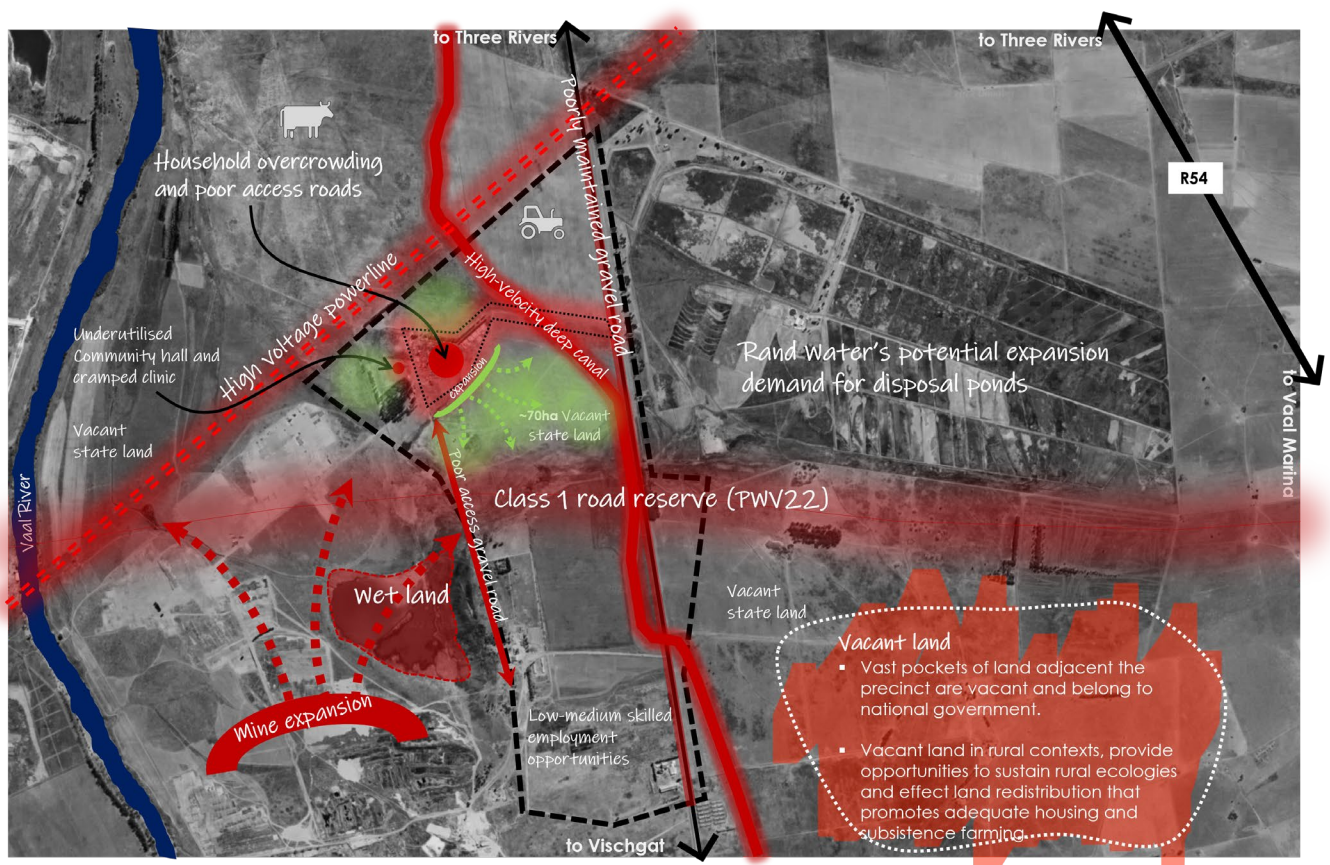


Figure 34: Constraints and opportunities

Light industrial operations in the Panfontein area, are the main employers of the residents of Bantu Bonke. These include Rand Water sludge disposal east of the precinct, Sky Sand mining and Barnlab animal feed production in the south. The residents depend on walking to travel to their workplaces. A priority intervention in the precinct plan is, thus, to establish a pedestrian network to make it easier to travel between home and work.



The vacant land located immediately south-east of the village border presents an opportunity for human settlements expansion. The land is owned by national government and is about 70ha in extent considering the road reserve, wet land and canal servitude. The construction of 500 dwelling units in the medium term would be accommodated, provided a gross density of 20 units/ha is utilised for the township layout. A supporting public transport facility with formal and informal market facilities would be allocated along the main access road and adjacent to the settlement.

The expansion of the settlement would prioritise the provision of community facilities that are currently constricted.

The adjacent northern parts and western parts of the village borders are identified for the expansion of community facilities including cemetery, clinic expansions, and secondary school.



Figure 35: Vacant land identified for settlement expansion in Bantu Bonke

In the southern parts of the precinct, beyond the road reserve, industrial expansion is identified to take place including brick-making. The layout of the precinct ought to prioritise pedestrian connectivity and mobility. The latter would be achieved through a grid-like layout with dedicated pedestrian pavements, with rows of trees to promote walking and enhance the quality of the precinct.

In the longer term, the construction of the PWV22 road would traverse the R54 going south. Transit-oriented rural development which is promoted along provincial routes by the GRDP can be established where the PWV22 meets the R54 road. The wider precinct context has potential to grow and diversify in agri-industrial beneficiation.

More work opportunities in the identified agri-hub would require more demand for human settlements.

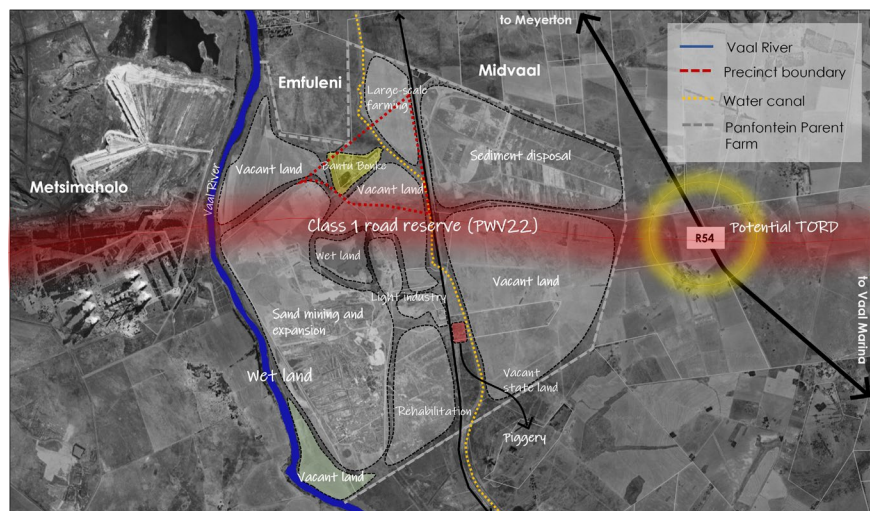


Figure 36: Long term potential TORD near the precinct

It is crucial to apply rural design to prevent the urbanisation of the precinct. Rural design promotes interventions that delegate rural residents to manage and organise their landscapes by promoting agriculture, recreation, economic development and ecological sustainability. Key areas to prioritise in the interventions include promoting (1) integration of small scale farming with commercial farming (2) promoting green infrastructure such as solar energy (3) accommodating the cultural values and spiritual connections of local residents with the land.

3.4.1 Land ownership and interventions

The Midvaal Human Settlement Plan identifies Portion 7 of Panfontein Farm 437 for the construction of 500 dwelling units. These units are envisioned to service the residents of Bantu Bonke backyard dwellers and the neighbouring informal settlements including Makokong and Kudung.



Portion 7 of Panfontein Farm 437 is **876.13 ha** in extent. The farm portion is registered under the National Government of the Republic of South Africa with the Deeds Office. The Remaining Extent of Panfontein Farm 437 is also registered under the National Government of the Republic of South Africa, and it is **890.96 ha** in extent.

Expansion opportunities are identified on the Remainder of Panfontein Farm 437 by the precinct plan to integrate the new settlement with the existing households and community facilities. The latter intends to maximise resource efficiency and sustainable human settlements.

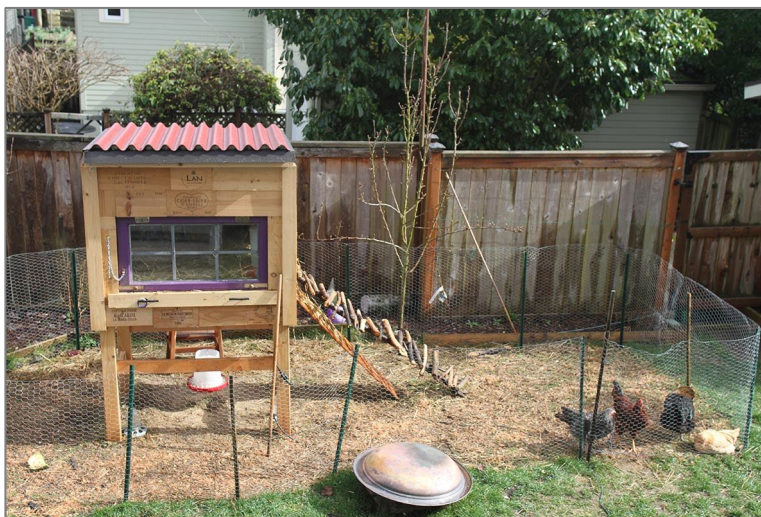


Figure 37: Chicken coop accommodated in individual households

Using a gross density of 20 units per hectare (20 du/ha), the provision of 500 units with a net density of 250m² stands, requires about **25 ha** of land. Public parks, social facilities and roads are excluded.

The One Home One Garden approach to human settlements expansion requires a garden size of 20m². Crops such as maize, spinach, carrots and onion can be produced for self-consumption and seasonal trading. The garden size can also accommodate a chicken coop with an average of ten chickens that each produce about eight eggs per day (Casidra, 2018). **Figure 37** demonstrates the chicken coops that can be built by rural households for subsistence farming, following a directive to have adequate space by the community.

The precinct plan makes a counterproposal to the HSP directives to provide human settlements on the Remainder of the Panfontein Farm 437. Constructing the new agri-village in portion 7 of the Farm 437 would disintegrate the existing social networks and the usage of critical social facilities already in place in Bantu Bonke. The planned class 1 road would further displace the two settlements and deprive the intended socio-economic cluster of facilities. The intent is to intensify growth and build capacity of the existing socio-economic facilities, promote social relationships, and protect agricultural ecology as advised by the human settlements feasibility study.

The Remainder and Portion 7 of Panfontein Farm 437 were acquired by the then Department of Rural Development and Land Reform (DRDLR) through the Pro-Active Land Acquisition Strategy (PLAS) in 2015. The two farms were allocated to Kwasomnandi Farming and other small farmers under the PLAS programme. A land development support project to the value of about R8-million, was allocated for grain production (Masiangoako, 2022). The DALRRD intends to use these two parcels mainly for grain and livestock production. The project is at implementation stages and agricultural implements, including tractors, were procured in 2021. Infrastructure support includes fencing, borehole, shed and worker dwelling units that amounts to R2 435 000.

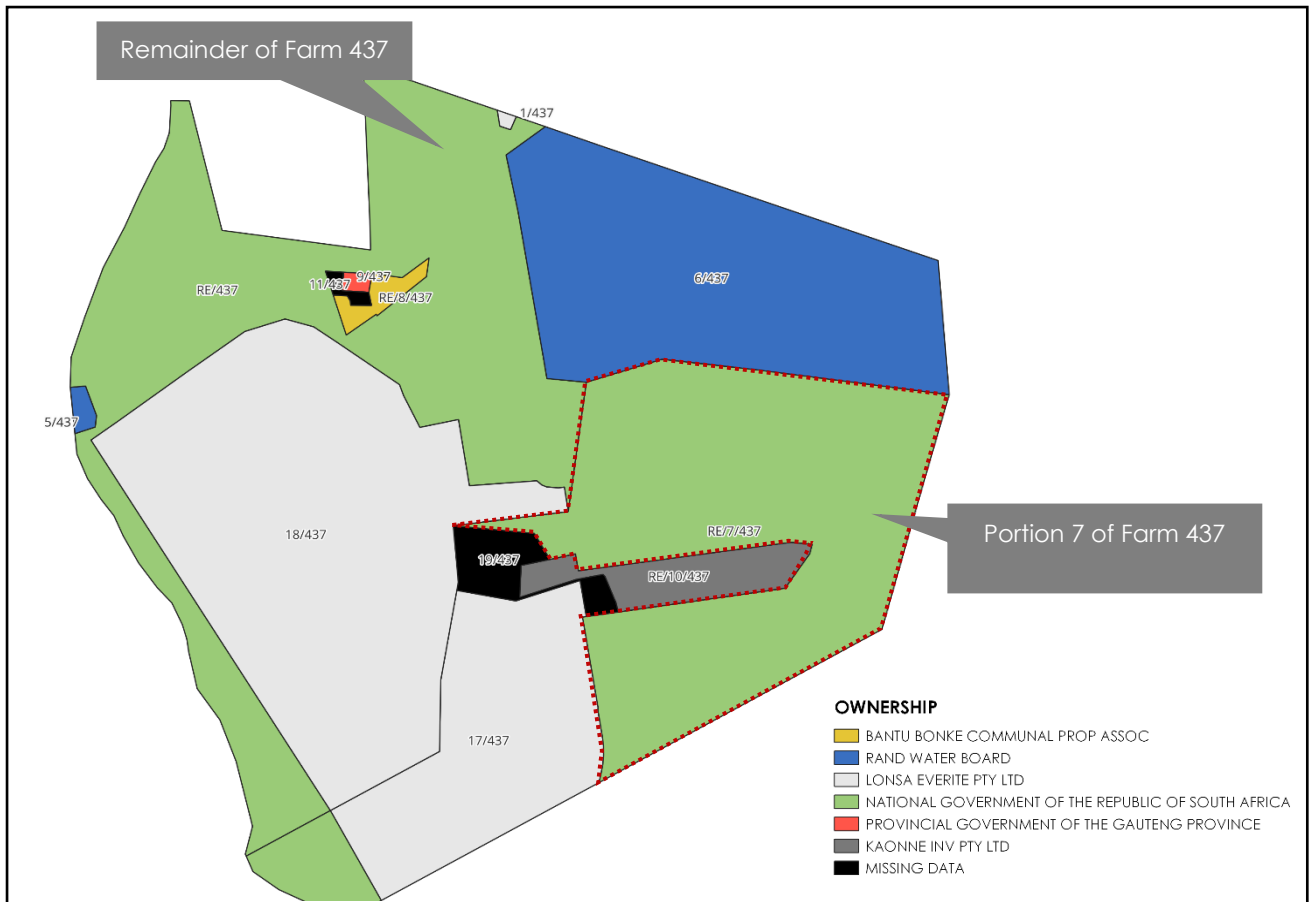


Figure 38: Land ownership in and around Bantu Bonke (Surveyor General, 2022)

The expansion plan intends to continue community integration and expand current opportunities. The expansion concept plan would efficiently utilise the agricultural land through sustainable intensification. Utilising the land belonging to the state, with existing infrastructure services makes it easier for township establishment when considering human settlements development programmes. The functionality of human settlements is also important, post-construction.

The implementation of the phase 2 of the business plan submitted for funding to RWF would also be promoted in this parcel. This includes spatial provision for broiler production. Phase 1 of the project, which is the hydroponics plant, needs remodelling to return to intended functionality. These agricultural facilities are to be integrated with the village to institute functionality and reduce expansion costs.



3.4.2 Scenario matrix

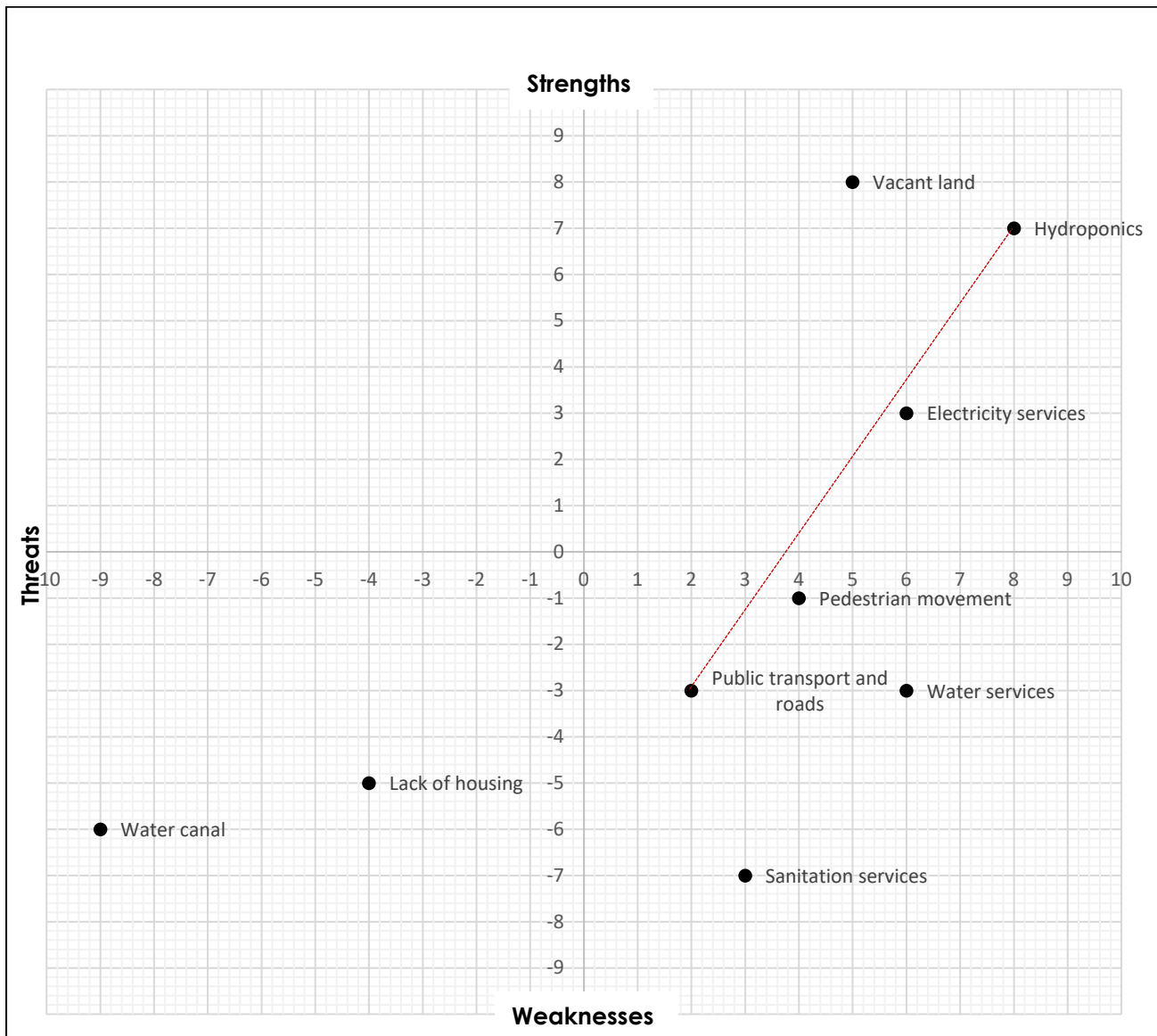


Figure 39: Built environment SWOT analysis matrix

Bantu Bonke village has strong infrastructure elements that have been implemented since the year 2000. The community of Bantu Bonke is relatively satisfied with the functionality of basic infrastructure services and social services. The building of the hydroponics plant injected socio-economic strength in the village. The rejuvenation of the plant to its full production capacity and beneficiary activities can drive a programme to deal effectively with household poverty and institute higher quality of life. Social and economic opportunities are fundamental elements to be strengthened in human settlements interventions for long-term success.

3.5 Strengths, Weaknesses, Opportunities, and Threats

STRENGTHS	WEAKNESSES
- Settlement strategically located between large industrial activities which are the main employers. - The plain topography with vacant land belonging to the state makes it feasible to develop low-cost housing. - Existing piggery presents agglomeration benefits and sharing of infrastructure to support the envisioned commercial poultry farming in the area. - The Vischgat road presents an opportunity to establish a direct link for public transport facilities and associated formal and informal markets with produce from the village. - The agriculture skills available in the village can be supported through establishing packaging facilities to beneficiate the hydroponics plant and expand job opportunities in the agri-village. - Vast vacant land gives opportunity for grazing and sustaining rural ecological systems that are valuable to the community. - Vaal River is a significant water feature passing the precinct.	- Road network makes it difficult to move goods and services in the region, and between the settlement and outer towns. - Eskom's Lethabo power station, the Rand Water evaporation ponds and the canal contribute to high humidity levels in the area which is not suitable for certain crops. - Need to upgrade connector road to facilitate easy transportation of goods and commuters to and from the precinct. - Usage of the clinic and the primary schools is beyond their carrying capacities. - Tenure restrictions prohibit natural growth of activities and households of the settlement; the battle for space squeezes out subsistence farming. - Tenure reform and subsidy provision is subject to political resistance and bureaucratic restrictions. This could go against the housing arrangements envisaged by the residents. - Settlement bordered by large scale earth works which threat agricultural ecology.
OPPORTUNITIES	THREATS
- Strong linkage between the settlement and Three Rivers (Emfuleni). - The Vaal River presents an opportunity to establish a small-scale fishing economy in the area. - Rand Water infrastructure (canal and sludge disposal) dominate the landscape. - Sand mining in the area presents opportunities for beneficiation to expand job opportunities through commercial scale brickmaking. - Settlement largely surrounded by vacant land and agricultural land. - Identity elements defined by the Lethabo power station present unique scenery for the region. Tourism can be anchored around this vista. - Sludge disposal could be beneficiated to brickmaking to further expand job opportunities within the rural node. - The existing agricultural skills, cooperatives, and sectoral investments in the area—present an opportunity to revive and modernise agriculture at the local level for the entire Gauteng region.	- Existence of coal reserves in the area present a challenge to expand the settlement. The exploitation of these coal reserves is likely to displace the community of Bantu Bonke and emerging farmers in the area. - The water canal is a safety threat to children and livestock. Structural failure and flooding are possible should maintenance be reduced. - The class 1 road reserve to the south of the village will act as a physical barrier between the bulk of the residential zone and the economic zone. In the long run connectivity between the two zones should be integrated through vehicle and pedestrian bridges to accommodate the constructed road. - Dust emissions from Anglo Coal Vaal operations, and Sky Sand mining adjacent to the precinct contribute to poor air quality. This poses a long-term health threat to the residents. - Landscape has a flat gradient with dense vegetation; there is poor drainage of water in the area. - High voltage power line bound the northern side of the settlement. - The sludge containment could collapse and contaminate vast agriculture-rich soils in the area. - Clustered rural housing with high population density and lack of economic opportunities could result in social degeneration, crime and grime, and overall instability.



3.5.1 Synthesis matrix

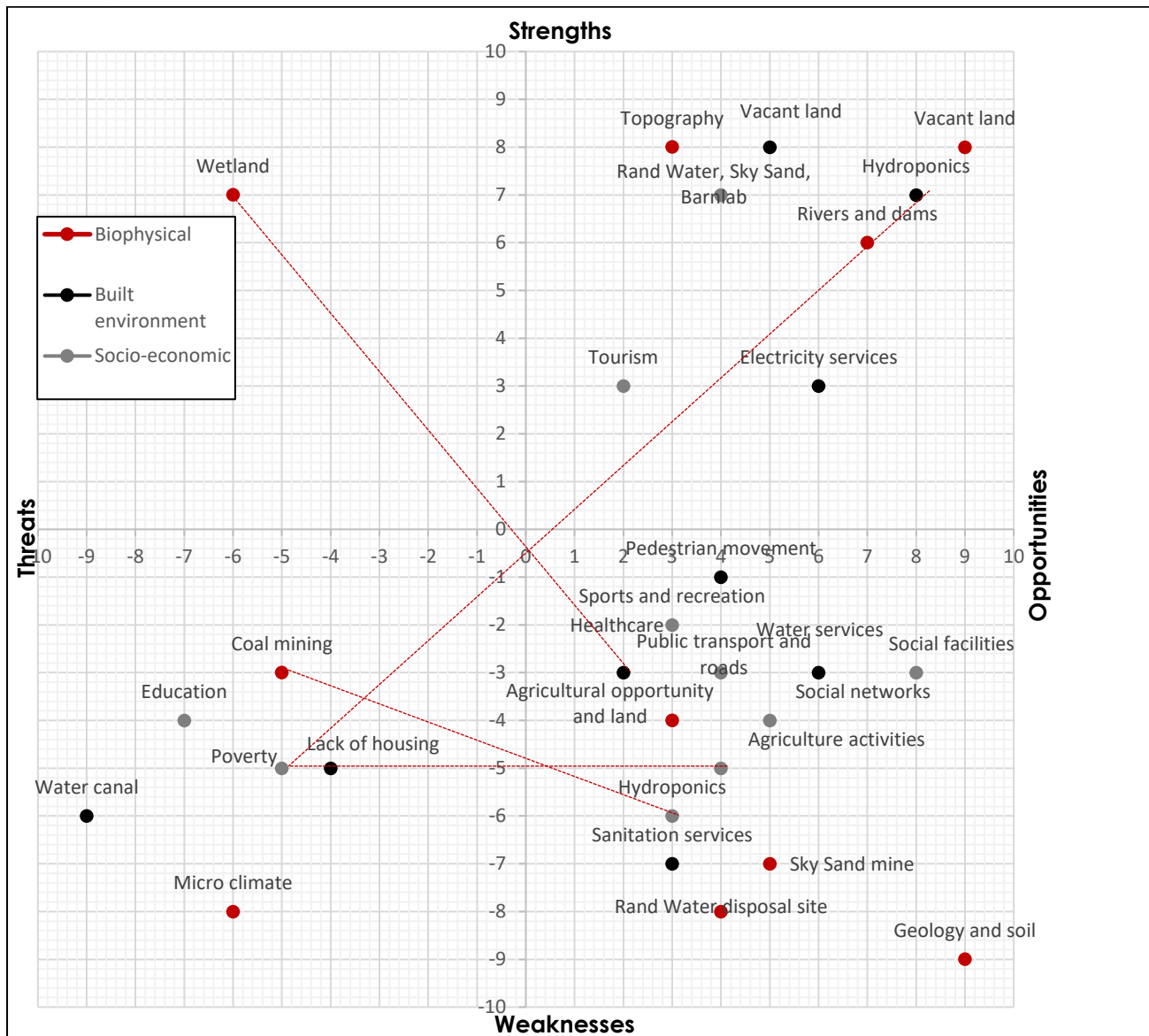


Figure 40: Synthesis SWOT analysis matrix

The cross-sectoral analysis of Panfontein/Greater Bantu Bonke depicts the existence of opportunity factors that can either lead the future of the village to total degeneration or material rural success. The future trajectory of the village depends on the type of interventions highlighted by the research and proposed in this document. The current opportunity factors: hydroponics, labour force, agricultural land, social networks, and facilities, should be strengthened to decisively address intergenerational poverty in the village households.

There are threatening elements to the ecology of the area; these include large scale earthworks in the area. Potential coal mining, current sand mining and residue deposit activities are an immediate threat to the rural ecology, agricultural land, economic potential, as well as social cohesion in the area. There are more opportunities in the Panfontein/Greater Bantu Bonke that can be coordinated to bring joint rural success. These include the existing social fabric, community facilities, agriculture skills, land, and infrastructure services.

4 STAKEHOLDER CONSULTATIONS

4.1 Research method

This chapter briefly describes the research methodology employed to acquire detailed information on the plans, programmes that exist, and those envisioned for the Panfontein/Greater Bantu Bonke. Mixed methods research was used to interview sectoral department representatives as well as discourse (document) analysis. Mixed methods research involves both qualitative and quantitative research methods. Engagement through this form of research provides a better understanding of a complex research question (Wagner, et al., 2012).

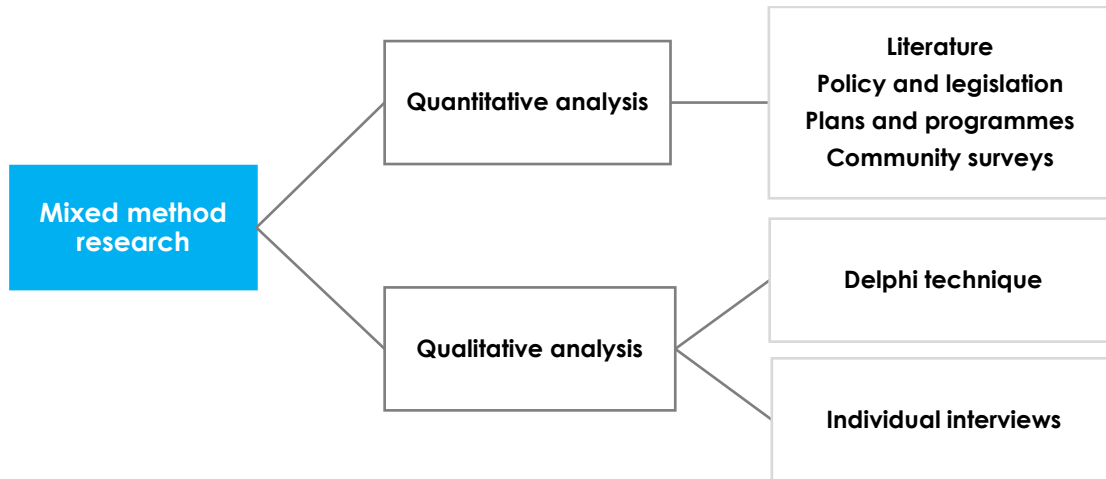


Figure 41: Research approach

Document analysis focused on available case studies, surveys, project plans, and other reports mainly supplied by the DALRRD. Higher order plans and legislative provisions were also analysed for specific interventions such as abattoir regulations. These materials contributed to the formation of intervention strategies for Bantu Bonke and emerging problem statements that would require further investigations. Community surveys constitute the first set of raw data to inform the precinct plan.

The study proceeded to utilise the Delphi technique, where representatives of the DALRRD, Lonsa Everite, Sedibeng DM, Emfuleni LM, Midvaal LM, and the CPA were engaged separately through a roundtable discussion to stress-test the problem statement and spatial proposals. The roundtable discussions were mainly physical and virtual. This technique facilitates a group interaction to systematically collect and record ideas and opinions of the subject experts, in this case the Panfontein/Greater Bantu Bonke (Yousuf, 2007).

Representatives from various constituencies including DALRRD directorates and RWF, and GDHS were engaged through individual interviews. These engagements provided first-hand information which aided the resolutions of the precinct plan. The qualitative accounts were triangulated against existing document evidence. These include social and labour plans, grain production business plan, Deed of Donation, SDFs, memorandum of understanding and feasibility studies.

Discussion points are recorded in **Annexure 1** with detailed transcripts. The responses are presented anonymously to protect participants; the latter encourages future research studies to saturate information without any fear of retribution. Additionally, this research approach contributed to a richer understanding of the ground status, sectoral objectives, and plans and implementation strategies of the precinct plan.

4.2 Household surveys

Public engagement started with an introductory community engagement meeting to introduce the project and explain the purpose and rollout of household surveys to be conducted.

Various stakeholders and role-players attended the meeting, including representatives from the Midvaal Development and Planning Department officials, Ward 1 Councillor and the MMC for Development and Planning.

The main objective of the meeting was to inform the community of the upcoming household surveys. These surveys would be the main informant to the status quo analysis and the spatial proposals for the agri-village precinct plan.



Figure 42: MMC: Development and Planning (Midvaal LM) addresses the Bantu Bonke community

4.2.1 Methodology

The household surveys intended to capture both qualitative and quantitative data from the community. This forms the most recent basic data pool available for decision-making purposes. It must be noted that all data captured and stored are Protection of Personal Information Act, 2013 (POPIA) compliant and would be correctly disposed of on handover of the project.

Two researchers were deployed to the field and successfully accessed each household. This exercise followed all Covid-19 safety protocols to ensure the researchers and communities stayed safe during the survey period.

Participants were briefed about the project objectives and the rationale for the surveys. The researchers proceeded to inform participants verbally, explained the methodology to capture individual household data and ensured that they were comfortable. The respondents understood the benefit of the engagement; in turn, this encouraged free expression about the current challenges and the desired future for Bantu Bonke.

The household surveys focused on elements ranging from affordability, involvement in agriculture, household composition, current challenges, and desired interventions in the village. The researchers utilised Statistics South Africa's (StatsSA) household definition to establish a working model and framework for the survey. StatsSA defines 'households' as "a group of people who share resources."

Households that exclusively function on their own within the same "property boundaries" were regarded as individual households and captured separately. The latter includes many backyard dwellers from which the formal household units generate income.

Some households accommodated various family members in backyard structures. Participants noted that they shared economic resources, which falls within the StatsSA definition of sharing resources and, thus, function as one household. The researchers relied on the available members of the households, mainly heads of the family, to account for every individual in their household. See **ADDENDUM 1: HOUSEHOLD SURVEY** for the full questionnaire used during the survey period. The study uses the research results as the anchor points for interventions. These results are summarised in section **4.4**.

4.3 Stakeholder engagement discussions

4.3.1 Local governing bodies

This section captures key inputs made on the developed spatial proposals by (1) Sedibeng DM (3) Emfuleni LM (2) Midvaal LM officials and the (3) Bantu Bonke CPA executive committee. Other sectoral stakeholder inputs are summarised in **TABLE 6**, expanded in **ANNEXURE 1**.

EMFULENI LOCAL MUNICIPALITY planning and development officials were virtually engaged on 26 July 2022 on the issues of cross-border relations. This follows the spatial options that are allocated to the adjacent Klipplaadrfi which is immediately north of the precinct boundary. The Emfuleni SDF 2021/2022 identifies the area adjacent to the precinct as low-density housing development. See **Figure 43**.

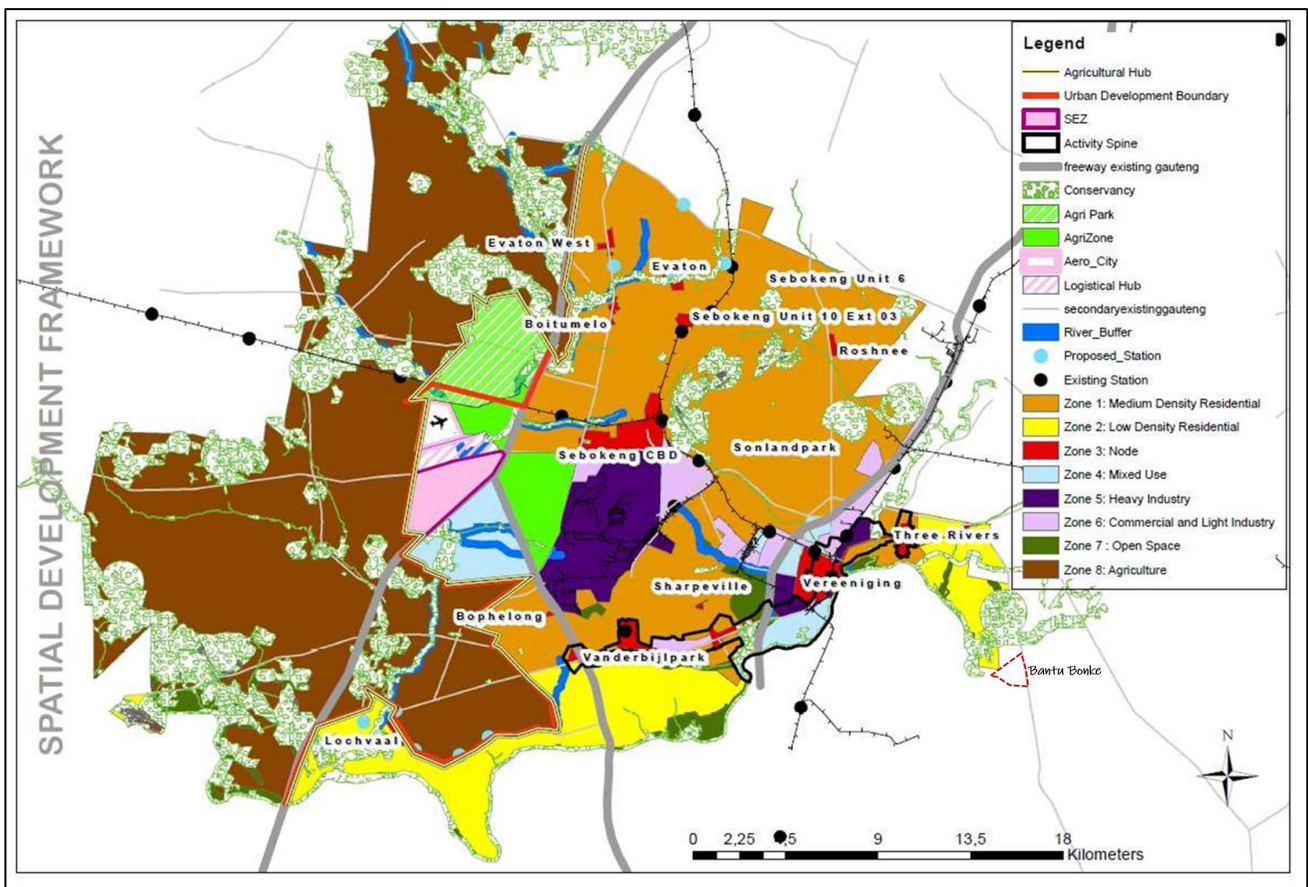


Figure 43: Emfuleni SDF (composite map)

Emfuleni officials acknowledged the spatial proposals presented and considered the concept plans for future development in the area. This follows the recognition of the high agricultural potential of the area, utility restrictions and pressing human settlements need. Officials committed to provide more detailed comments and reviews on the precinct plan document.

SEDIBENG DISTRICT MUNICIPALITY LED officials raised concerns with the issue of land ownership; who will be responsible for the subdivision of properties in the linear approach concept? What will happen when the individual is no longer interested in the agricultural component of the plot? Clarity was sought with regards to the transfer of land to GDHS or MLM.

The GDHS has advanced a feasibility study for the development of the agri-village. Roles and responsibilities would be identified in the implementation section for all identified stakeholders to begin talking and assist where capacity allows in capital investments required for the agri-village development.

The district officials expressed support for the agri-village development in the area. In addition, the district requested more information and involvement on the process plan of the precinct plan. The officials requested to be part of the project management committee for strategy alignment purposes. This follows a pilot solar project that is envisioned to take effect around Bantu Bonke village.

MIDVAAL LOCAL MUNICIPALITY officials expressed concerns about the density allocation proposed for the human settlements' expansion in Bantu Bonke. The officials noted that the implementation of the 20-30du/ha gross density of low-income residential development in Bantu Bonke falls outside the provisions of the current land use scheme. The study area falls outside the declared Urban Development Boundary and the Council service delivery priority area.

Given the unique development conditions in Bantu Bonke, it would be beneficial to expand on the elements that could improve the current land use scheme and other council spatial planning tools to cater for agri-village developments that intend to address underdevelopment in remote areas within the municipal region.

BANTU BONKE COMMUNAL PROPERTY ASSOCIATION executive committee pleaded to be recognised as the principal representatives of the Bantu Bonke community (CPA and non-CPA members). Following a comprehensive presentation, the spatial proposals were embraced by the executives, subject to the following condition:

1. Property boundaries of the CPA jurisdiction should be confirmed by DALRRD officials to address future misunderstandings and unnecessary resistance to progressive development initiatives.

The DALRRD officials committed to visit the acquisition files dating back to the early 2000s when the CPA was registered. In the discussions held with the Bantu Bonke cooperatives on 06 October 2022, DALLRD officials confirmed to assist the association and the cooperatives to enlighten the members on the property boundaries.

Given the emergence of the solar power plant project facilitated by the Sedibeng DM LED department, the cooperatives and the association members acknowledged that the project would enable them to satisfy their council duties and pay rates and taxes. The nature of the project was initially intended to be of commercial scale. This would have implications on rural development initiatives prioritised in the area. The cooperatives and the association members were advised to regroup with the rest of the community members to decide on **(1)** continuing with the agri-village development model or **(2)** pursue commercial power production.

The precinct plan makes provision for the solar farm at a village scale to support household usage, social facilities, and agri-industrial activities in the agri-village concept development. The establishment of the commercial power production plant could still be explored outside the provisions of the agri-village designation. The latter makes provision for a separate and independent process that would require bespoke statutory processes and implementation factors.



4.3.2 Sectoral departments and landowners

TABLE 6 captures priority interventions of the concerned public and private sector entities and highlights key recommendations made. **ANNEXURE 1: STAKEHOLDER CONSULTATIONS** expands on detailed accounts made by organisational representatives.

TABLE 6: ENGAGEMENT SUMMARY			
Key identified stakeholder	Priority interventions	Primary points of discussion	Key comments and contributions
Sedibeng Central Region 		1. Human settlement development. 2. Feasibility studies. 3. Subsidy administration. 4. Human settlement (housing) model.	1. Special application to MEC for subsidy units to CPA members who are backyard dwellers. 2. Single dwelling units a preferred human settlement model 3. Consider drawing water from the canal for agriculture purposes.
Rand Water Foundation 		1. Hydroponics. 2. Pipeline servitudes. 3. Food security. 4. Sludge beneficiation.	1. Linear settlement design is supported for the facilitation of the food security programme. 2. Need for an immediate stakeholder relationship for the existing projects and programmes. 3. Rand Water operations must comment on pipeline risks.
Lonsa Everite/Sky Sand 		1. Social and labour plans (LED). 2. Future mining operations. 3. Key pipelines. 4. Stakeholder engagements.	1. SLP projects include computer facilities, entrepreneurial training, high mast lights and fencing of the cemetery. 2. Need for stakeholder collaboration for the construction of roads. 3. Mining operations will not expand beyond current property concerned.
		1. Lease agreements. 2. Human settlement development. 3. Infrastructure grant funding. 4. Title restrictions.	1. 30ha of suitable land will be transferred to the municipality for human settlement development. 2. Consult Anglo American Operations to obtain consent. 3. Potential funding from Rural Development to provision for rural human settlements and supporting services.

4.4 Household survey results

The analysis and presentation method for the qualitative data captured uses a thematic analysis strategy. The responses of the participants are emphasised in the analysis according to the frequency of the emerging data trends. All qualitative data formed crucial data elements that will assist in the defining of the land use proposals in the precinct.

Quantitative data is easier to represent graphically; the electronic data set (available on request) examines the data inputs and presents the data without any data manipulations. This data will assist to contextualise the household socio-economic status quo of Bantu Bonke. As a departure point in discussing the data, the results show that Bantu Bonke has an average household size of **5.1**. In comparison the average household size for the following areas is (StatsSA, 2016):

1. Gauteng: **2.7**
2. Sedibeng: **2.9**
3. Midvaal: **2.9**

The comparison with the provincial and municipal household size depicts a household situation which is outside of the norms in Bantu Bonke.

The following are other key data outcomes derived from the household surveys:

4.4.1 Employment

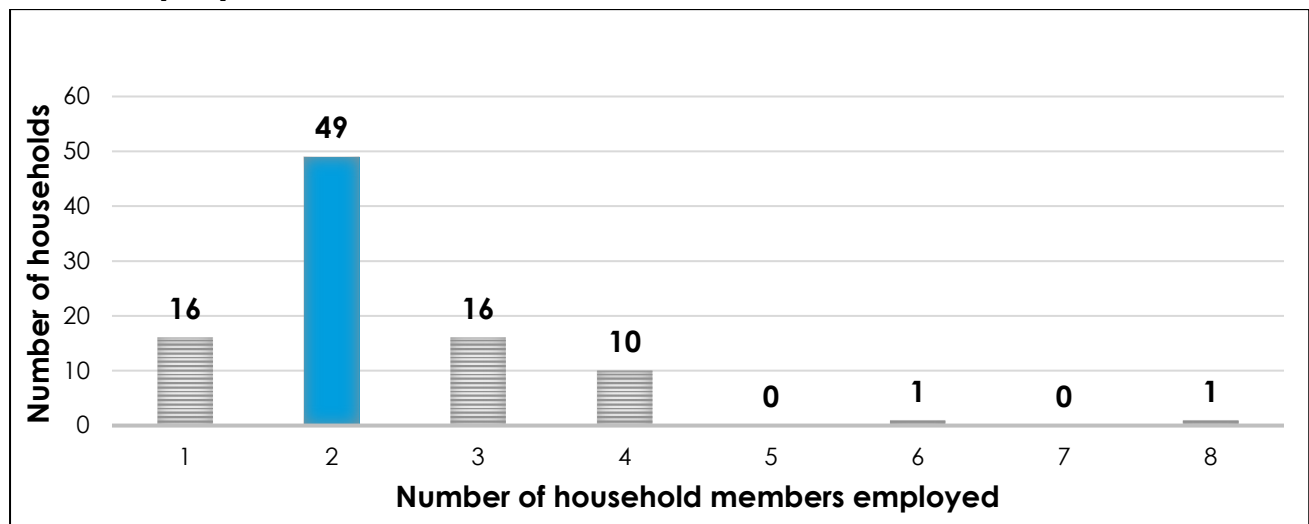


Figure 44: Employment

The graph depicts that more than 50% of the households have on average two members that are employed. The main employers include Rand Water, Barnlab, and Sky Sand. Community Work Programme (CWP) and the multipurpose centre were also observed to be main employers within the village.

Some participants emphasised that their current employment status was part-time arrangements. This demonstrated the dire need for sustainable, full-time jobs in the community. Those employed by Barnlab, Rand Water and Sky Sand, seemed satisfied with their employment arrangements.

4.4.2 Residents of Bantu Bonke

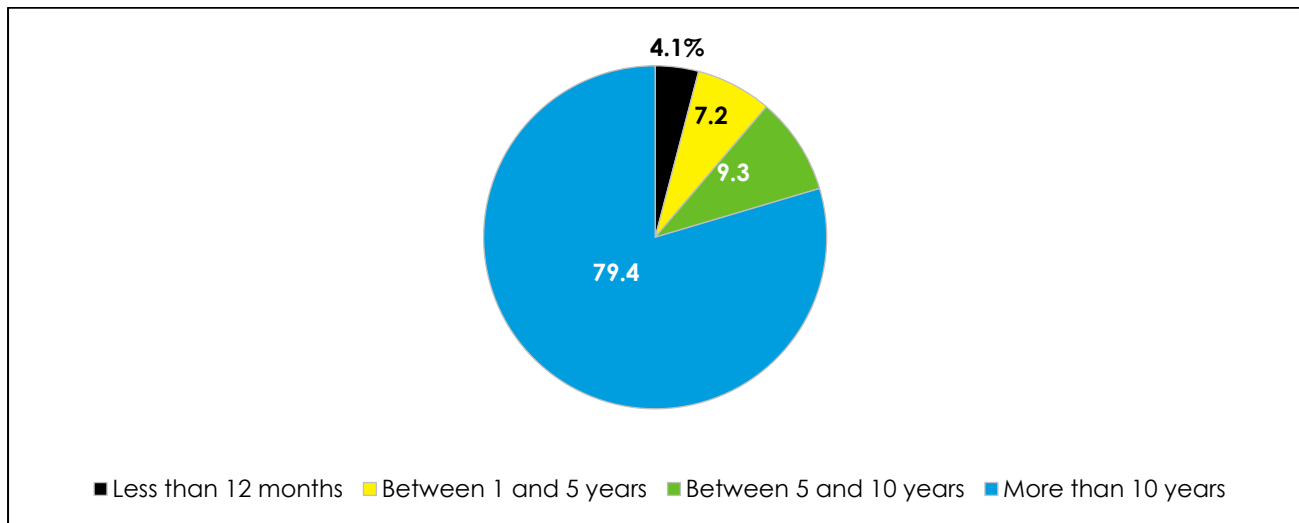


Figure 45: Number of years living in Bantu Bonke

Approximately 80% of the participants recounted that they have been living in Bantu Bonke for more than 10 years. These are families of the former AAF employees who were relocated from areas including Heidelberg in Lesedi. About 10% of the residents have been living in Bantu Bonke between 5 and 10 years. These are mainly individuals who are renting in the backyard structures and employed within, and around, Bantu Bonke. These individuals are originally from areas including Sasolburg, Sebokeng, Eastern Cape, Lesotho, and Mozambique.

The foreign nationals in the community are insignificant in numbers; about 96% of the residents are South African citizens.

4.4.3 Hydroponics project

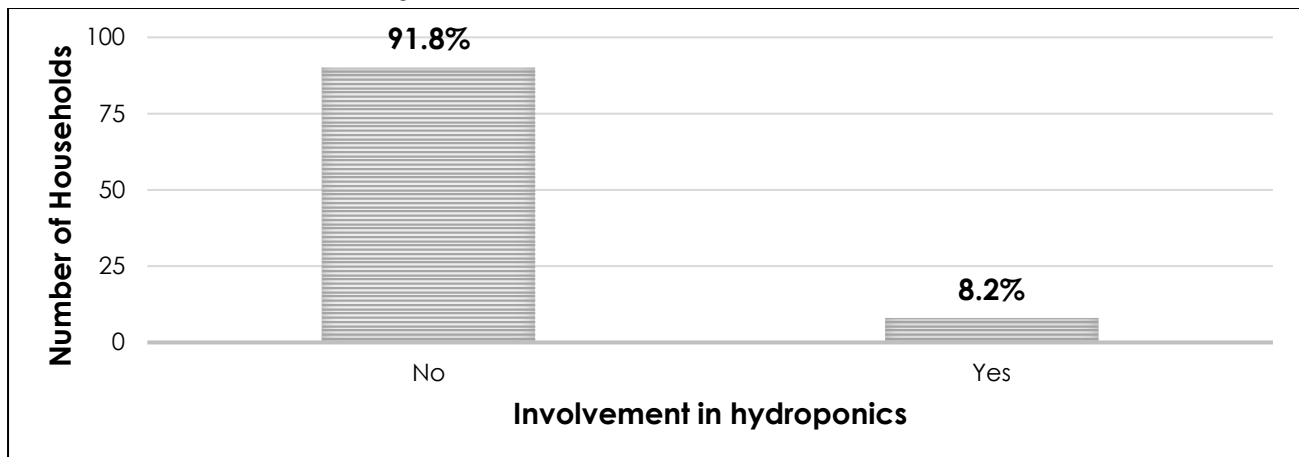


Figure 46: Hydroponics

A central objective was to understand the impact of the hydroponics project on the community, and this was raised during the introductory engagement even prior to the survey period.

Observations show that the hydroponic tunnels were underutilised with about 80% of the production tunnels overgrown with weeds and disintegrating infrastructure. About 90% of the participants responded that they are not involved in the hydroponic tunnel project and have, indeed, never been involved. The participants who are involved in the hydroponics remarked that the produce from the tunnels is for self-consumption and have no commercial purpose. The workers considered themselves as volunteers. These were senior individuals who were mainly involved in the Community Work Programme. The survey results and researcher observations did not record younger residents being involved in the project and this may be attributed to the current underutilisation.

Participants noted in confidence that there are suspicions that the funds to operate the hydroponics plant were mismanaged.

4.4.4 Agriculture

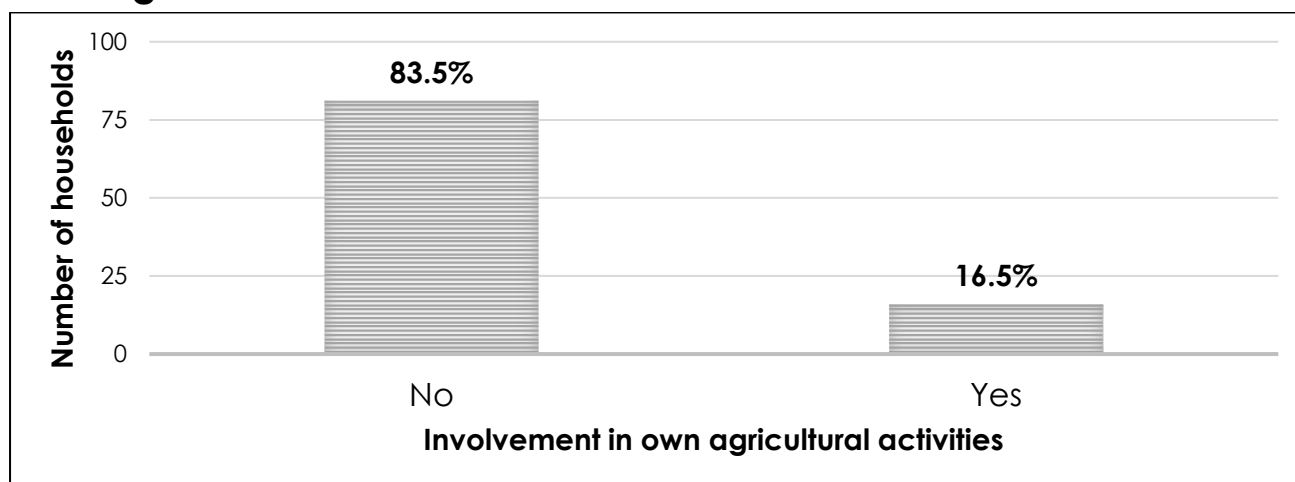


Figure 47: Agriculture

Agricultural activities in the Bantu Bonke village are declining. This is mainly attributed to households headed by the second-generation beneficiaries. About 80% of the participants noted that they are not involved in agricultural activities of their own. 16% of the participants who said they are involved in subsistence farming were mainly found among the senior residents of the community. Many of these households grow tomatoes, corn, and chicken farming at household level.

The participants who are not involved in subsistence farming indicated that the current title conditions and space restrictions are preventing them from practicing subsistence farming. Most of the participants expressed that they need land or bigger residential stands to be able to have (1) community vegetable gardens and (2) private vegetable gardens. Suggestions were made that the community can even trade within the community as there are potential customers and a sufficient demand for food.

The table below summarises the support needed for specific subsistence farming activities. The main support needed by individuals who are not involved in subsistence farming is space and seeds. Those who have livestock and small gardens prioritise proper agricultural handling infrastructure and working equipment.

TABLE 7: SUBSISTENCE FARMING		
Subsistence farming	Support required	Agricultural activities
Yes	Enterprise support Veterinary services Handling infrastructure Better equipment	Cattle farming Sheep and goat farming Poultry Tomatoes Corn
No	Skills development Space Seeds	Poultry farming (desired) Vegetable farming (desired)



4.4.5 Education

A major challenge noted by participants is high illiteracy levels amongst the youth in the community. Most of the senior residents have a very basic level of education. About 22% of the senior residents are trained in crop farming. This makes sense since they were employees of the AAF. The challenge is observed in the younger category where about 40% of younger individuals end their schooling at grade 11 after failing in their grade 12 final examinations. Concerned participants suggested tutorial programmes and information dissemination to emphasise that post-school qualifications are crucial in personal advancement.

Skills level in the community is mainly concentrated in the semi-skilled category as identified by the Statistics South Africa definition. Most of these employed individuals are plant operators, machine operators and general construction workers. Individuals who are employed within Bantu Bonke are part of the Community Works Programme and are employed at the multi-purpose centre as security guards, caretakers, or office administration.

Of significance is the number of unemployed youth and middle-aged individuals in the community. The data does not show the total number of unemployed individuals in the community but that of participants involved.

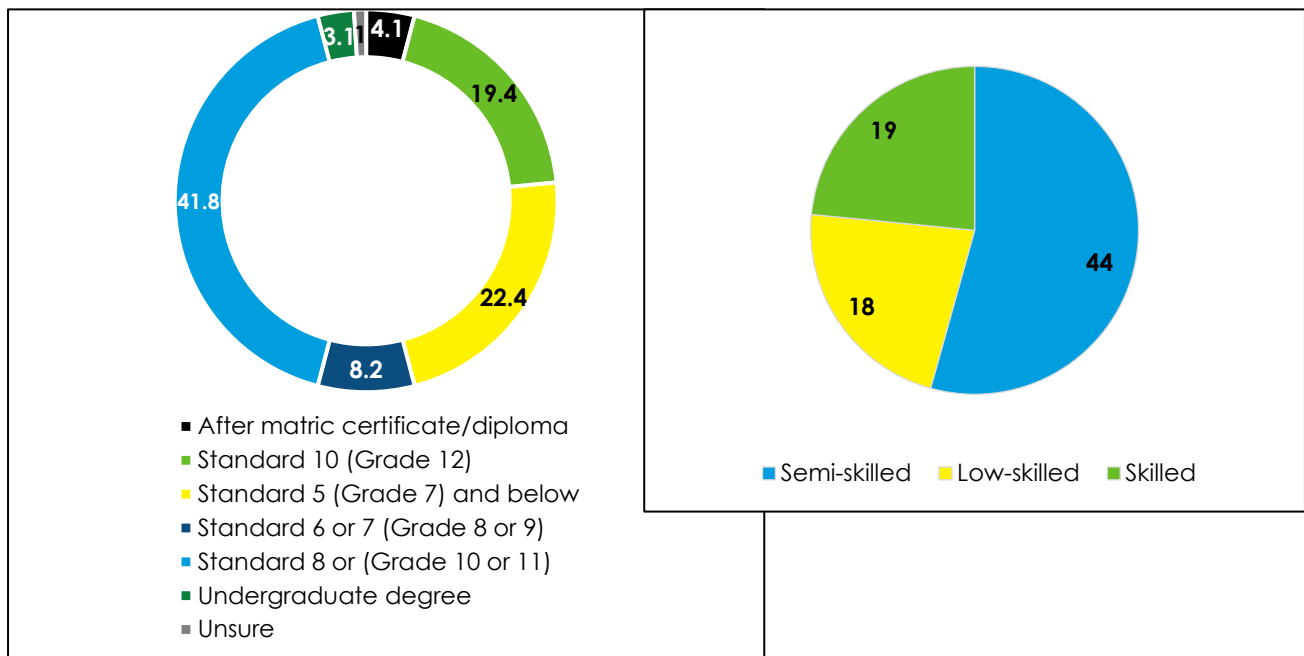


Figure 48: Level of skills and education in Bantu Bonke

TABLE 8: SKILLS AVAILABLE		
Skilled	Semi-skilled	Low-skilled
Managers Professionals Technicians	Clerks Sales and services Skilled agriculture Craft Machine operators	Elementary Domestic workers

4.4.6 Occupation

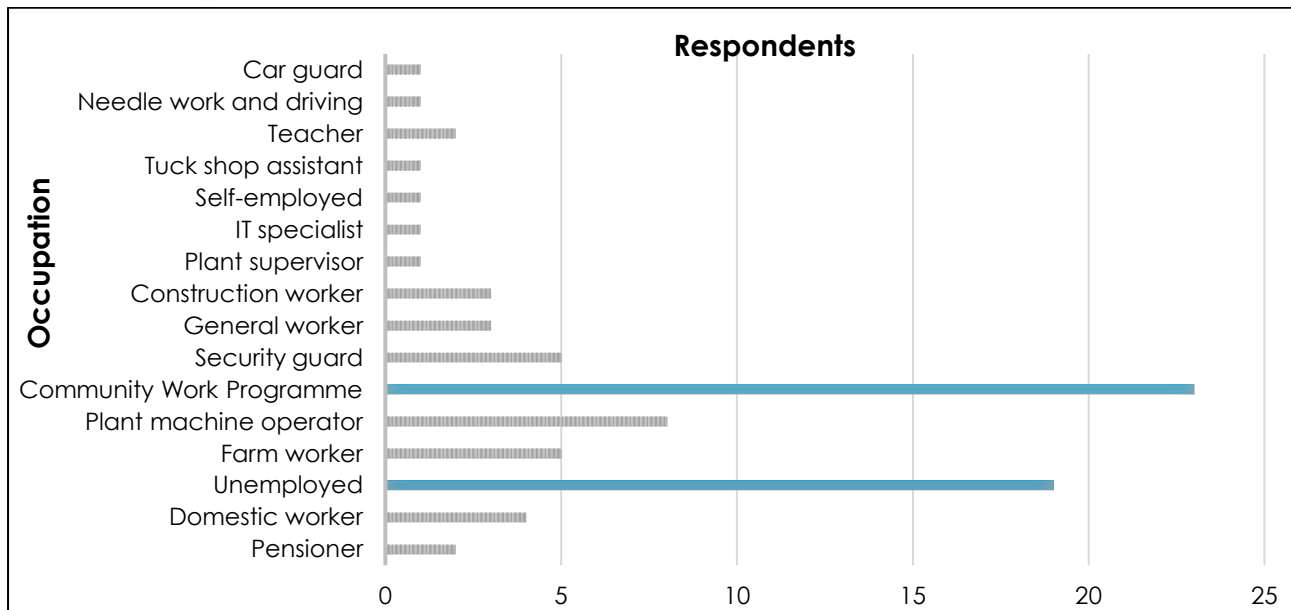


Figure 49: Occupation

The Community Work Programme is the largest absorber of the unemployed individuals in Bantu Bonke. Scattered and varied types of occupation are secured in urban areas such as Three Rivers and Meyerton. Participants noted that the availability of work elsewhere is limited by the skills and level of education they possess. There is on average a fair number of individuals who are pensioners, unemployed, farm workers, security guards and construction general workers.

4.4.7 Predominant mode of transport

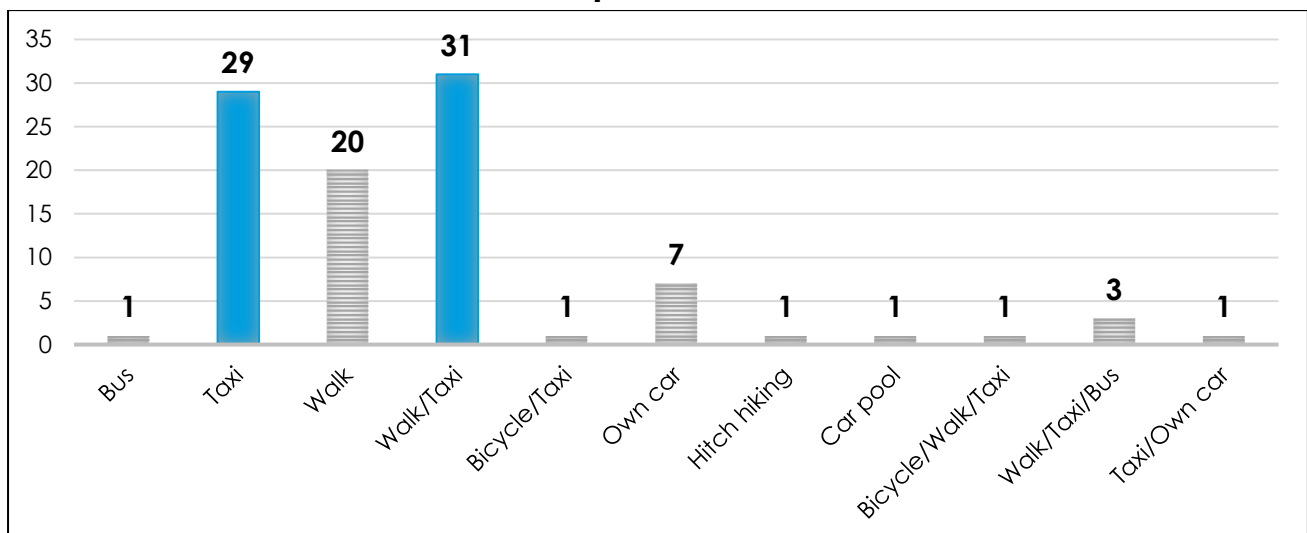


Figure 50: Predominant mode of transport

Bantu Bonke currently does not have flexible public transport services available. This is mainly attributed to the reduced demand for movement between the village and its service centres. Individuals who are employed in areas such as Three Rivers, Vereeniging and Meyerton use a minibus taxi. The participants do not see a problem with the current operational model of their transport. Minibus taxi operators would be flexible to meet the demand if individuals were to be employed by large numbers outside the settlement or have a greater need to access shopping facilities.

Individuals who are employed in the greater Panfontein area (around Bantu Bonke) prefer to walk. These are elements which the precinct plan should explore in detail, to ensure that access roads facilitate better movement to promote walking and usage of public transport.

An insignificant number of individuals own vehicles in the village and the buses that access the village are mainly to transport school children who reside in the neighbouring village settlements.

4.4.8 Subsidy housing



Figure 51: Subsidy housing

Almost 80% of the participants consider Bantu Bonke as a stable home that they prefer to live in permanently. They prefer this because the majority of the residents see Bantu Bonke as a peaceful and safe alternative to the traditional townships such as Sicelo, Sebokeng and Sasolburg. Additionally, the participants who are employed or hoping to be employed, perceive Bantu Bonke as being close to job opportunities and other service centres.

4.4.9 Community perceptions about Bantu Bonke

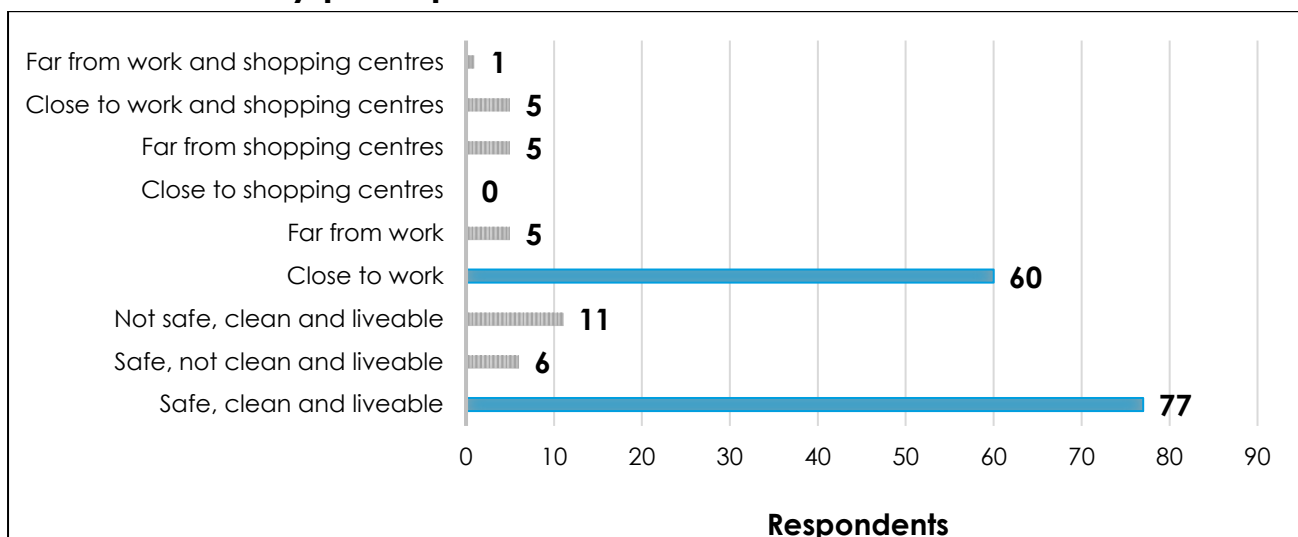


Figure 52: Community perception about Bantu Bonke

4.4.10 Community challenges and issues

Many members of the community of Bantu Bonke aspire to a very basic lifestyle. The participants did state that they live in this village because it is different to conventional settlements. The key issues that the community require

urgent interventions include basic infrastructure improvements, upgrading and development. These challenges are categorised by priority levels in the community as observed by the researchers.

TABLE 9: CHALLENGES IN THE COMMUNITY		
Younger residents	Senior residents	Pressing challenges
Lack of skills development Lack of sustainable jobs Loss of confidence in CPA Lack of public transport No challenges Lack of parks Poor roads Overcrowding	Overcrowding Safety threats by the water canal Lack of proper stormwater drainage Crime Dark streets Lack of sustainable jobs Dilapidated housing Poor roads Lack of privacy at the clinic	Housing Access roads Clinic capacity Employment

4.4.11 Access to basic services

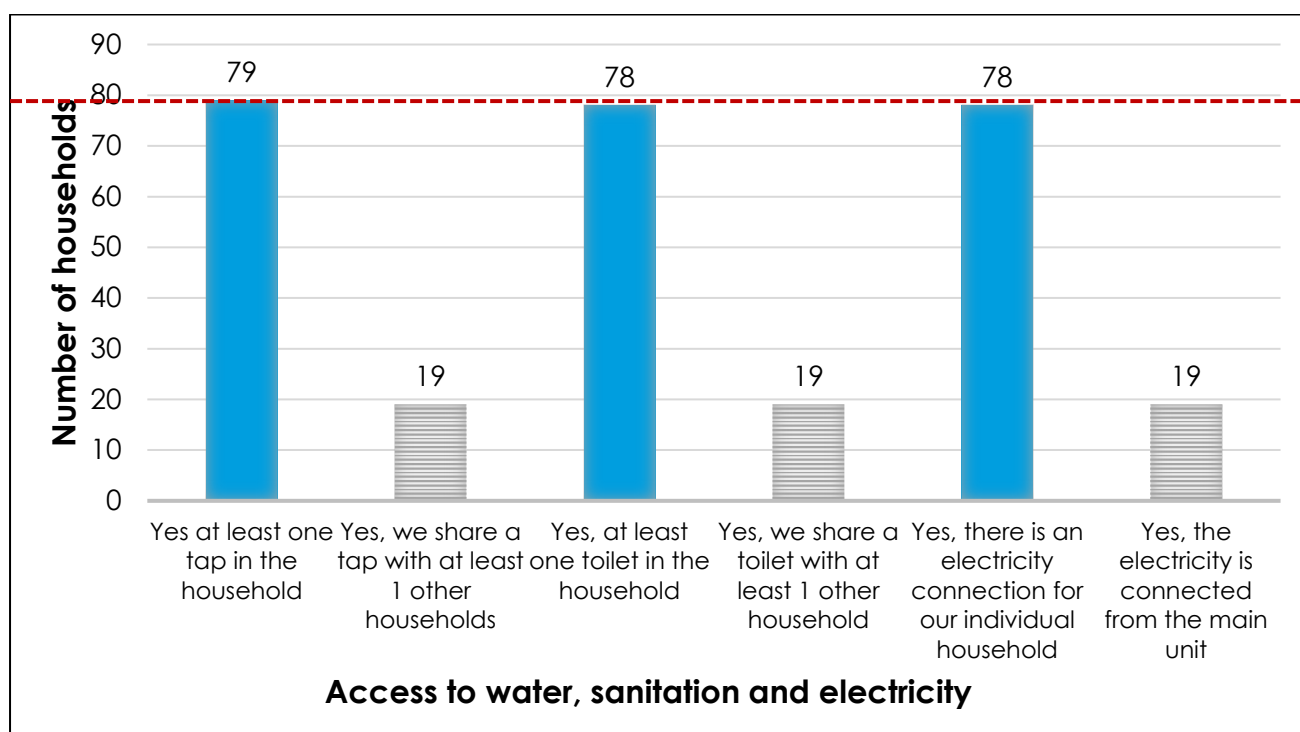


Figure 53: Access to basic services

The residents of Bantu Bonke were predominantly content with the basic services they receive since their installations. Main units in the village all have access to piped water, flushing toilets and electricity connections. The residents expressed views that their initial arrangement to pay for these services was unsuccessful as many households do not earn enough income to contribute to the joint municipal account. The latter has plunged the municipal account of the CPA into arrears as indicated by the local authorities.

The informal backyard units, however, are forced to share sanitation and electricity with the main units. The residents did not express concerns about sharing their facilities with backyard dwellers.

Considering the more than normal household sizes in Bantu Bonke, the younger residents called for the provision of subsidised housing. The participants responded that they are open to be relocated in the nearby farm portion or adjacent to the village. 90% of participants preferred to have their own freehold titles. A significant number of individuals were also open to alternative housing models such as duplex units.

Participants were open to consider receiving a serviced stand through the Gauteng Rapid Land Release Programme. Residents expressed the view that, in the presence of better economic prospects, they would build their own units should they be given the opportunity to access land beyond the village. The GDHS has expressed administrative concerns associated with this type of intervention for low-income communities such as Bantu Bonke. In the longer term, households are unable to submit building plans for approval to local authorities. Since the programme only allows brick and mortar structures, land lies idle for longer periods.

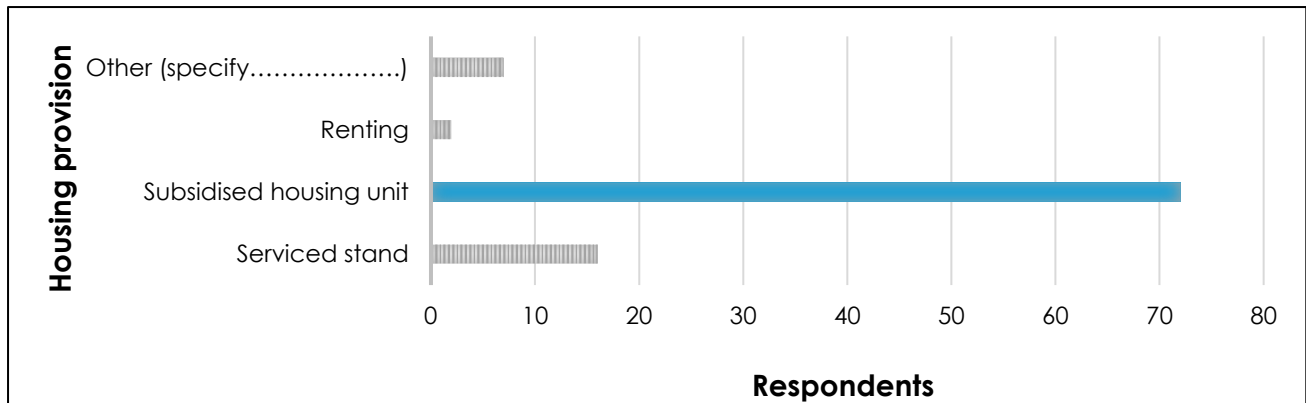


Figure 54: Housing provision

4.4.12 Social safety nets

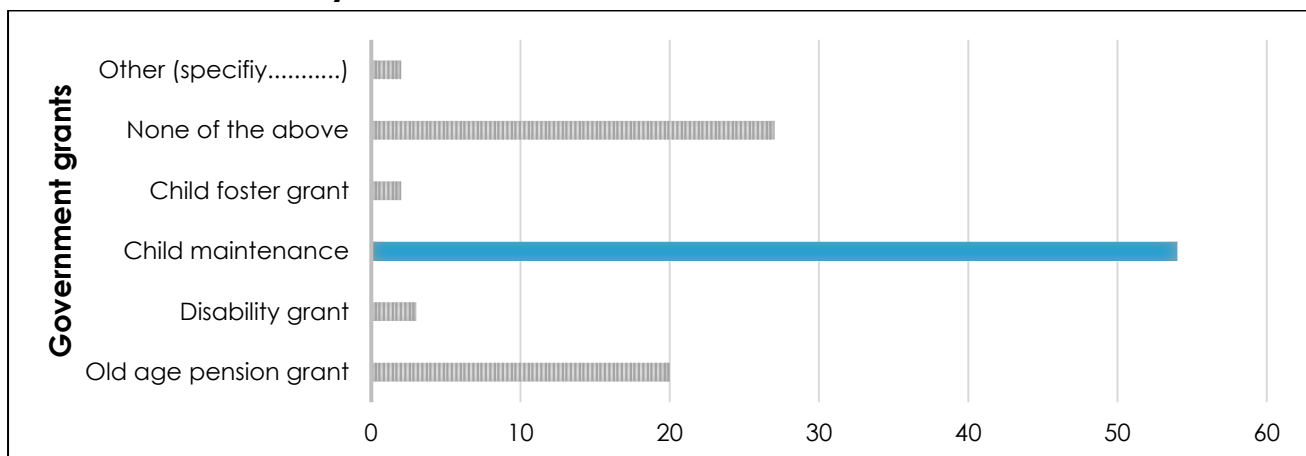


Figure 55: Social safety nets

4.4.13 Income and expenditure

The income bracket for most households in Bantu Bonke sits around the Upper Bound Poverty Line of R1 227, calculated in 2019 prices. About 40% of the households earn a total monthly income below R2 500. The majority of these households do not receive transfers from other family members. The income sources are mainly child support grants, old-age pension grants and the stipend received from the CWP.

15% of the households have a total income ranging from R7 000 to R15 000. As observed, this would be the combined income shared amongst four or more family members. The households that receive R2 500 and less, noted that they are unable to save money. Their expenditure patterns leave no room for monthly savings. 44% of the households have no credit record; about 38% of the households have lower credit access established through clothing credit accounts.

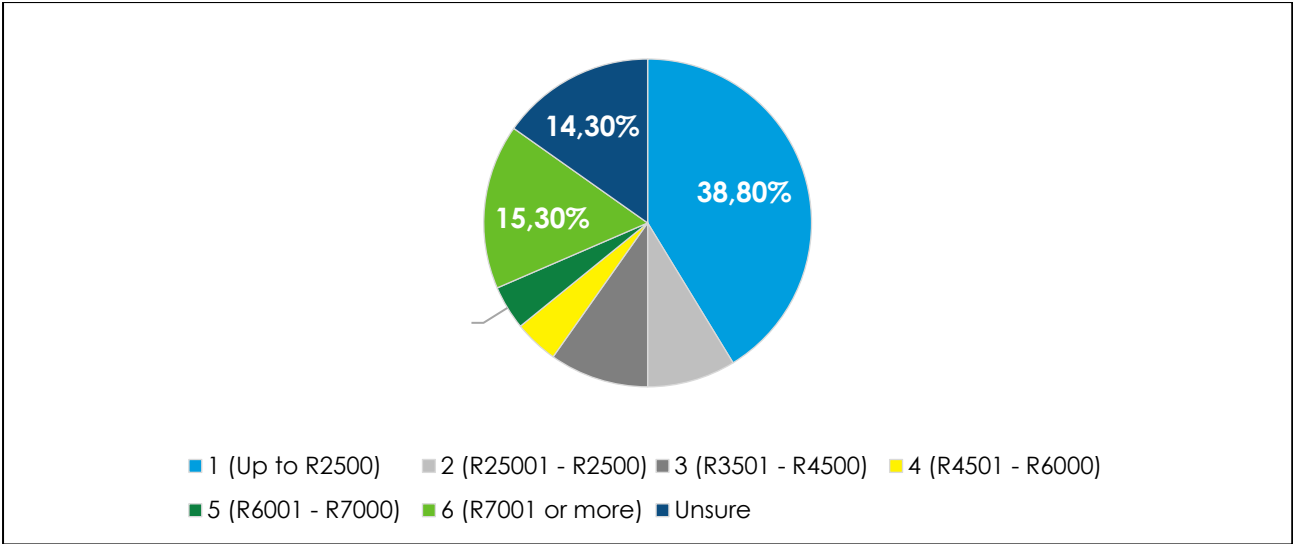


Figure 56: Total household income

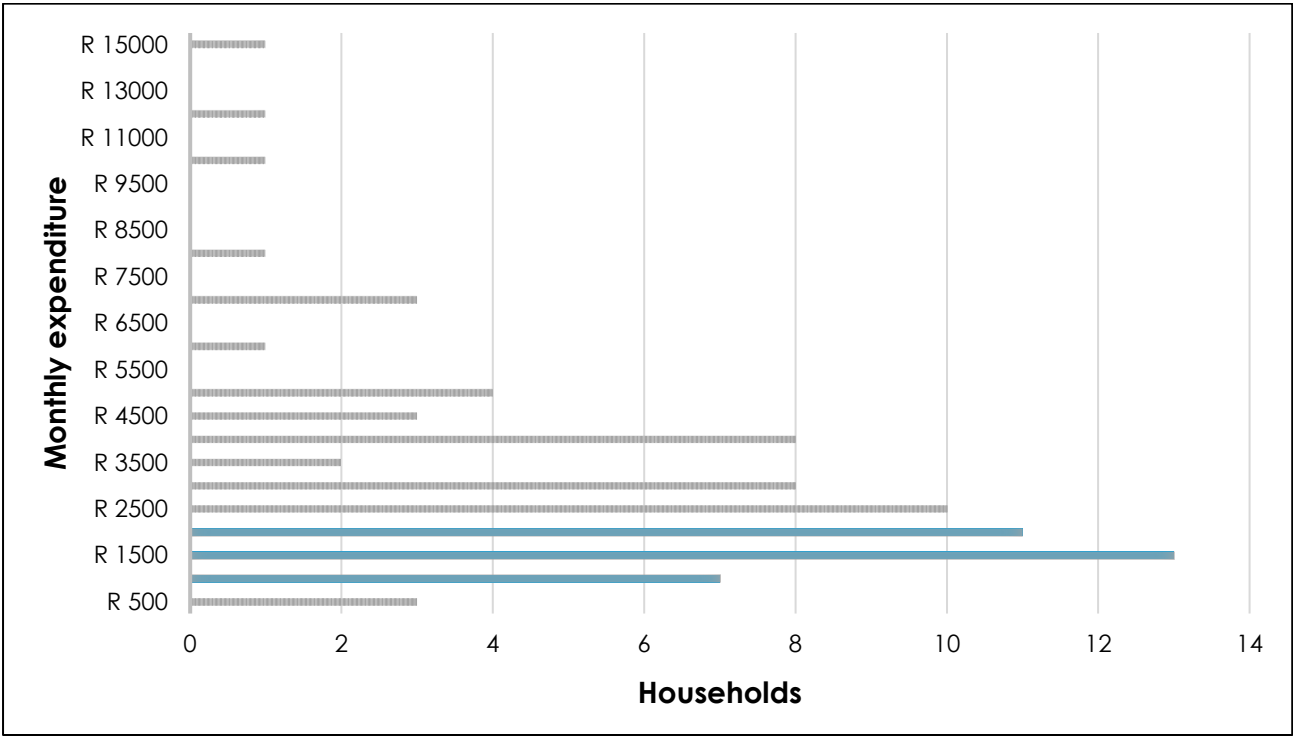


Figure 57: Household expenditure

4.6 Desired interventions

The table below captures the responses of the participants on projects and programmes they desire for their village. These are categorised according to the frequency of the responses by participants. Priority intervention in the community includes subsidy housing and road upgrading.

TABLE 10: PRIORITY PROJECTS		
High priority	Medium priority	Low priority
Subsidy housing Road upgrading Clinic extension Sustainable jobs	Conversion to freehold ownership Solar geysers/panels Skills development Streetlights Secondary school Upgrade existing housing Shopping centre Revive hydroponics Adult Basic Education and Training (ABET) Transport Extend primary school Subsistence farming support	Rental housing Close off water canal

The household survey provided critical quantitative and qualitative data that assisted in understanding the households of Bantu-Bonke. It also provides guidance to the prioritisation of the interventions required in the area - which is housing and local economic development.

4.7 Development feasibility of Panfontein/Greater Bantu Bonke

4.7.1 National transformation agenda

In the recent decade, the human settlements sector has reconstructed its constitutional and operational mandate to centralise and solidify socio-cultural, economic, and spatial sustainability of human settlements in South Africa. Central to achieving the latter involves sensible diagnoses and planning of the human settlements need in communities of interest.

Key challenges facing state-funded human settlements development include inadequate return of investment on capital projects. Incremental upgrading interventions are prone to customer rejection due to the inadequate spatial convenience of human settlements and the lack of supporting soft services. The latter would perpetuate the manifestation of informal settlements despite substantial capital injections in public housing by the state. In addition, the socio-spatial reconstruction anchored in the national transformation agenda is met with constrictions.

The NDP's human settlement targets, as set out in Chapter 8, focuses on transforming human settlements and the national space economy. The plan expands on the administration's focus to enable support programmes that would drive:

1. More people to live closer to their workplaces.
2. Better quality public transport.
3. and more jobs in proximity to historical black townships.

The above directives intend to take work where people are, as an intervention to undo the ingrained apartheid spatial legacy. This directive intends to alleviate the pressure of daily migration to historical city centres, opening-up the opportunity to have (1) functional and self-sufficient communities and (2) efficient transportation of economic units (commuters, goods, and services). The latter leads to the achievement of greater economic productivity across all municipal regions, to redistribute spatial opportunities to the marginalised communities.

4.7.2 Interventions for Bantu Bonke

4.7.2.1 Agriculture and cooperatives

Historical interventions in Bantu Bonke demonstrate multi-sectoral efforts of the state to address issues of tenure security and broader social, economic, and cultural matters. Pilot capital investments in education, health, agriculture, and adequate basic services in Bantu Bonke demonstrate concerted efforts by both the state and non-governmental organisations to restore the dignity and institute quality of life for the residents.

The registration of the Bantu Bonke CPA in terms of the Communal Property Associations Act, 1996 was the first practical intervention to begin addressing issues of tenure security and restoring dignity to the households. The Act intends to address these social issues through land redistribution to encourage rural communities to use the land productively. Since 2004, the then DRDLR had registered about 1 500 CPAs (DRDLR, 2016/17). The DRDLR had reported that many of these CPAs do not comply with their reporting obligations and demonstrated high prevalence of dysfunctionality.

The qualitative accounts from the community members mentioned that internal conflicts and lack of transparency among ordinary members of the CPA established dysfunctionality on some of their cooperatives. Political infightings in agricultural cooperatives have been pinpointed as the leading cause of the unsustainability of capital injections directed in Bantu Bonke. The hydroponics project was regarded as previously successful and an innovative LED initiative for Bantu Bonke. Today, the plant has delivered insignificant return on investment to the state and the community.

The Communal Property Associations Act Amendment Bill was deemed necessary to address the gaps of the Act and offer long-term sustainability of CPAs. Key improvements to the Act include the protection of rights of ordinary CPA members and labour tenants. Despite the erosion of trust amongst the community and limited infrastructure funding, the DALRRD intends to continue supporting the cooperatives in Bantu Bonke to be compliant and profitable for long-term success. The cooperatives include the Bakubung Piggery, Bantu Bonke Women Poultry and Bantu Bonke Livestock.

4.7.2.2 Communal property and housing

In the recent past, the human settlements sector has shifted away from perceiving top structures as the end goal to fulfilling the mandate of the Constitution and the National Housing Act, 1997. The rapidly emerging concept of urbanisation of poverty introduced the notion of human settlements interventions that would see quality of life as the end goal for the human settlements sector.

In efforts to expand the state's capital investments through the Reconstruction and Development Programme, monofunctional residential neighbourhoods were established and perpetuated the apartheid geography. Houses were delivered with economic opportunities still detached spatially and institutionally from the previously disadvantaged communities. The latter would result in unsustainable trends with households still entrapped in cyclical poverty and unable to maintain their municipal accounts despite heavy subsidies by the state.

The phenomenon is not foreign to Bantu Bonke, with the local authorities concerned about the sustainability of the (1) communal tenure arrangements and (2) further human settlements capital investments. The current Bantu Bonke municipal account is reported to be in arrears and individual households who would qualify for indigent registration are restricted by the current communal tenure arrangements. Instituting new order rights through township establishment of the communal property would allow these indigent households to benefit accordingly.

Bantu Bonke CPA is faced with compliance issues to satisfy its reporting obligations to the Department. The association is also experiencing challenges to contribute to the municipal water and sanitation account as required. Property associations registered under the banner of land redistribution and restitution programmes are exempted to pay rates and taxes for a certain period to establish financial muscle through working the land. Outside the grace period, the associations are obligated to keep their municipal accounts up to date. Bantu Bonke has exhausted this grace period according to the officials of the Department.

Section 13(1) of the Communal Property Associations Act, 1996 provides measures in which the Magistrate's Court within its jurisdiction, may, on application made by the Director-General, place an association under administration or grant a liquidation order should it be unable to pay its debts.

Human settlements need in Bantu Bonke merits decision-making that ought to resonate with the principles, norms and standards anchored in SPLUMA; to act in the public interest and support the constitutional transformation imperatives. Human settlements development and improvements would be a feasible undertaking by instituting low-cost engineering services and establishing a solid business plan for the agri-village. Capital implements in the Panfontein/Greater Bantu Bonke ought to revolve around the creation of diverse and sustainable production units.

Cooperatives should be supported through capital implements and soft skills to be functional and profitable. Households should be aided with adequate shelter and encouraged to be productive through spatial provisions and access to information and be able to contribute to the economic expansion of the municipal region. The existing social fabric and amenities would subsidise and anchor a comprehensive approach to the integrated and sustainable human settlements intervention desired by policy. **Figure 58** depicts socio-spatial and socio-economic opportunities and constraints that can be engineered for the betterment of the village residents.

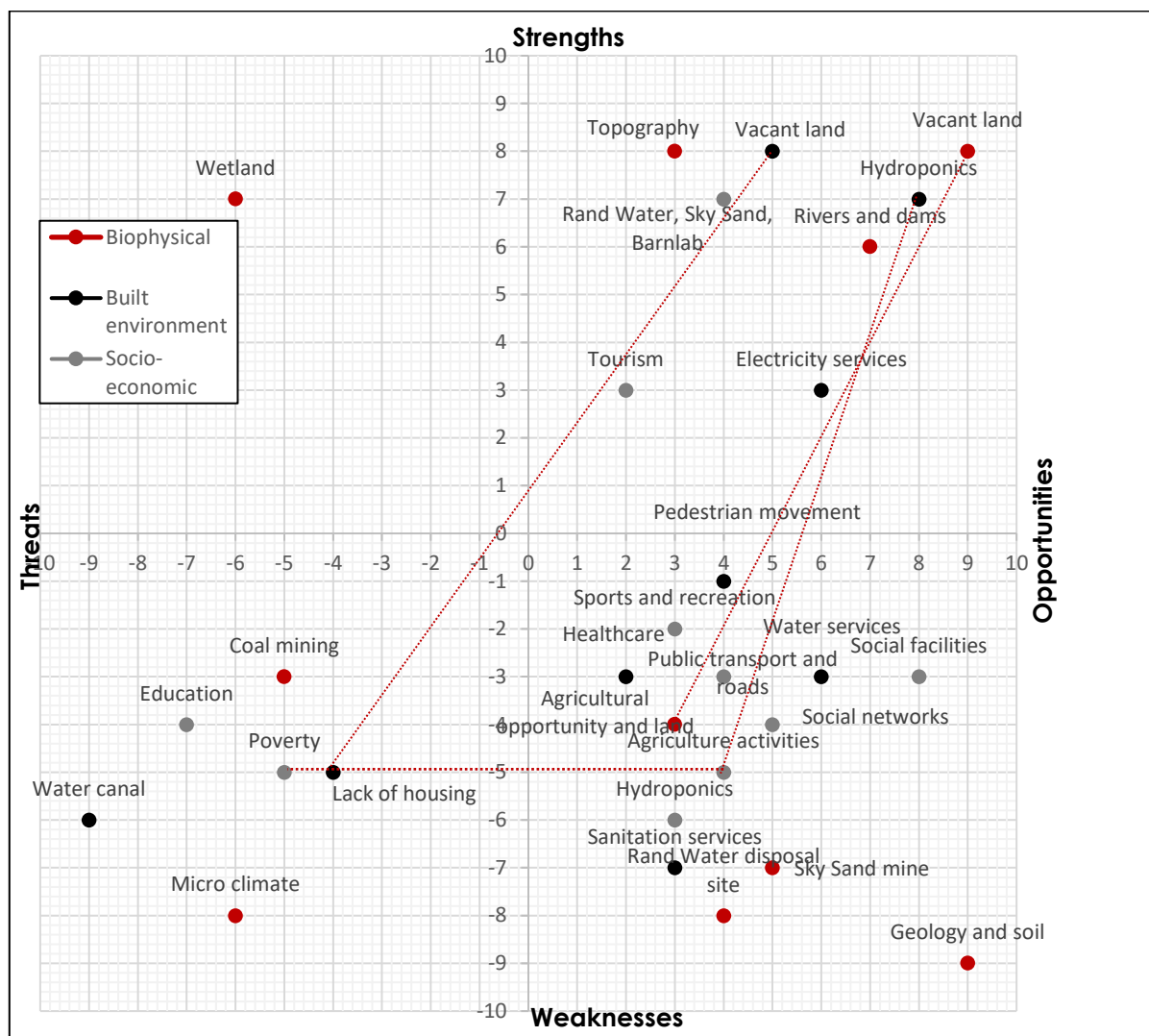


Figure 58: Panfontein developmental potential

Strengths and opportunities in a form of vacant state land, industrial production units and agricultural ecology are elements that could be capitalised upon to establish a working rural node that induces livelihoods and advance rural sustainability.

The existence of capital infrastructure in Bantu Bonke including **(1)** primary school **(2)** clinic **(3)** library **(4)** micro wastewater treatment plant **(5)** the ECD centre (under construction) and **(6)** the hydroponics plant presents a spatial opportunity in which incremental upgrading interventions in the village could leverage from financially, and further strengthen the social and economic fabric of the node.

Reaching a critical mass for a successful local economy would be key to drive a self-sustainable agri-village with adequate shelter, jobs, and social amenities. Embracing and maintaining the existing social networks and socio-spatial relations would anchor the community's sense of belonging and acceptance of human settlements interventions. These are elements that are fundamental in achieving integrated and sustainable human settlements in line with the national developmental transformation agenda.

4.7.2.3 Land, people, and legislation

In recent decades, the allocation of housing subsidy units in spaces far away from socio-economic opportunities has generated socio-political criticism. The Breaking New Ground policy prioritises adequate shelter, social amenities, economic opportunities, and cultural needs to institute functional neighbourhoods.

The fundamental resolution highlighted in the *High-Level Panel on Assessment of Key Legislation and the Acceleration of Fundamental Change* is that access to land needs robust engagement and fundamental structural reforms. The exclusionary nature of the property market and legislation, in which informality is constantly protesting, presents a dilemma in the provisioning of adequate housing for the poor, particularly in rural areas.

A key strategy to reconstruct and reposition the socio-economic status of the marginalised and previously disadvantaged communities such as Bantu Bonke would entail redirecting social and economic opportunities to the community to induce long-term rural success. Addressing past spatial imbalances through improved access to land and optimal use of existing resource and infrastructure, form key developmental principles provisioned by SPLUMA.

Given the difficulty to engage land redistribution and rural improvement at a desired pace there are two case studies that demonstrate the practicality to establish adequate shelter, land redistribution and local economic development in remote areas amid legislation bottlenecks. The utilisation of **(1)** Upgrading of Land Tenure Rights Act, 1991 as amended by Act No.04 of 2011 and Act No.06 of 2021 **(2)** Provision of Land and Assistance Act, 1993 as amended by Act No.26 of 1998, Act No.11 of 2000, Act No.58 of 2008 and Act No.04 of 2011 made it possible to effect tenure reform, and human settlements development for remote villages such as Bantu Bonke.

This section contextualises the work done in Jabulani Agricultural Village in Mkhondo Local Municipality (Mpumalanga) and Tokolohong Agricultural Village in Lesedi Local Municipality (Gauteng). Lessons learnt from these case studies would form key directives to resolve township establishment bottlenecks and the limited provisions for agri-villages in the current land use scheme.

Jabulani agricultural village

Jabulani is a CRDP focus area which sits on forestry land belonging to Mondi located in the Gert Sibande District Municipality. Mondi is a paper and packaging company with operations in 56 countries globally. It operates two facilities in South Africa, a pulp mill in Richards Bay and a paper factory in eThekweni. Mondi manages extensive forestry holdings in Mpumalanga. The timber harvested in these forests is shipped by rail to Mondi's Richards Bay mill for processing.

Sixty-one settlements are located on Mondi-operated holdings in Mkhondo. These settlements accommodate about 10 000 people in approximately 2 700 households. About 90% of these households do not have an employment relationship with Mondi. However, Mondi had developed concerns with the poor living conditions and underdevelopment of these villages in their territory.

In 2007, Mondi initiated a comprehensive programme called the Mondi Mkhondo Development Partnership (MMDP). This programme sought to address the developmental needs of these village communities in

partnership with government and the communities. The Jabulani Agri-village project is one of the projects piloted under the MMDP.

Agri-village implementation approach

The CRDP model to establish Jabulani was presented to the Mpumalanga Department of Agriculture, Rural Development and Land Administration. The Department instructed that two sites in the Mkhondo municipal area be identified for the pilot implementation of the proposed agri-village through the CRDP. A comprehensive site identification assessment tool was developed to assess the suitability of potential agri-village sites. The tool assessed a broad set of (1) economic potential (2) infrastructure social services and (3) bio-physical advantages. Jabulani together with Watersmeed were found to be highly suitable sites for the establishment of agricultural villages.

The intention of the Jabulani Agri-village pilot project was to pioneer and test a development approach which can be shaped as a land reform and rural development model across the Mkhondo region. In 2009, a public-private partnership to promote rural development in Mkhondo was established. The partnership involved the Department of Human Settlements, the then Department of Rural Development and Land Reform, Gert Sibande District Municipality, Mondi, and Iswepe Farmers Association. These role players were tasked to develop a model that will apply the objectives of the CRDP in privately owned land in the Mkhondo region.

The model plan proposed the provision of 80 BNG housing subsidies, a primary school, mixed use community centre, business facility, church and a creche. The total 110 Jabulani Agri-village beneficiary households each have **freehold title ownership of 2500m² residential and food production plots**. Title deed restrictions, particularly over the sale of the property are included in the title deed in favour of the state and the Jabulani CPA. Each title deed specifies the rights to graze and a specific number of livestock units in the agri-village.



Figure 59: Agri-village freehold title ownership in Jabulani (Mkhondo LM)

The formalisation of the partnership between Mpumalanga Provincial Government, Mkhondo LM, Gert Sibande DM and Mondi, was undertaken. This process involved the clarification of the roles and responsibilities of the parties and the development of mechanisms to manage the partnership. This process concluded in the signing of a Memorandum of Understanding amongst the parties.

Spatial planning instruments and Financing

The Mkhondo Local Municipality Spatial Development Framework sets out a thorough set of guidelines for the development of agri-villages in the municipal region. The Jabulani Agri-village had been designed to comply with the guidelines of the Jabulani Implementation and Management Plan. The new Mkhondo SDF makes provision for agri-villages at settlement level.

The financing of the implementation of the various components of the Jabulani Agri-village involved coordinated capital investments by different sectoral departments and Mondi. These investments were coordinated under the CRDP umbrella programme in Mkhondo.



TABLE 11: JABULANI AGRI-VILLAGE INFRASTRUCTURE FUNDING

Capital Implements	Responsible entity
Housing and internal services	DHS through CRDP funds and the BNG subsidy
Bulk engineering infrastructure and sanitation	Mkhondo LM and Gert Sibande DM
Agri-infrastructure (fencing, irrigation, equipment)	Mpumalanga Department of Agriculture, Land Reform and Land Administration
Educational infrastructure	Mpumalanga Department of Basic Education
Land Acquisition	Department of Rural Development and Land Reform
Land donation	Mondi
Tourism	Private sector investment partners

TOKOLOHONG AGRICULTURAL VILLAGE

Tokolohong is situated in Ward 3 on the outskirts of Ratanda in Lesedi Local Municipality. The Tokolohong Communal Property Association was founded through a social investment initiative by Karan Beef for its employees. The Karan Beef feedlot, located in Lesedi, is the biggest cattle feedlot in the southern hemisphere.

The project was envisioned to build 290 dwelling units. Following the approval of the general plan and Environmental Impact Assessment report these units were completed and are currently occupied (Lesedi, 2021/22)

The association was established to organise, build, and manage the community. The village settlement layout is made up of larger stands compared to the typical BNG subsidy unit stands in the area (see **Figure 61**). The residents use their backyards to grow vegetables for self-consumption and local trading.

The township application to undertake land subdivision in terms of the **Provision of Land and Assistance Act, 1993** was submitted to the Lesedi Local Municipality and the then Department of Rural Development and Land Reform in 2011 for approval. The Council approved the application.

Community facilities such as the library, police station, municipal offices and a secondary school are located about 5km away from the agri-village. The agri-village also contains communal areas dedicated to cropping and maintaining livestock to institute progressive livelihoods and to build a self-sufficient agri-village.



Figure 60: Karan Beef cattle feedlot (Lesedi LM)

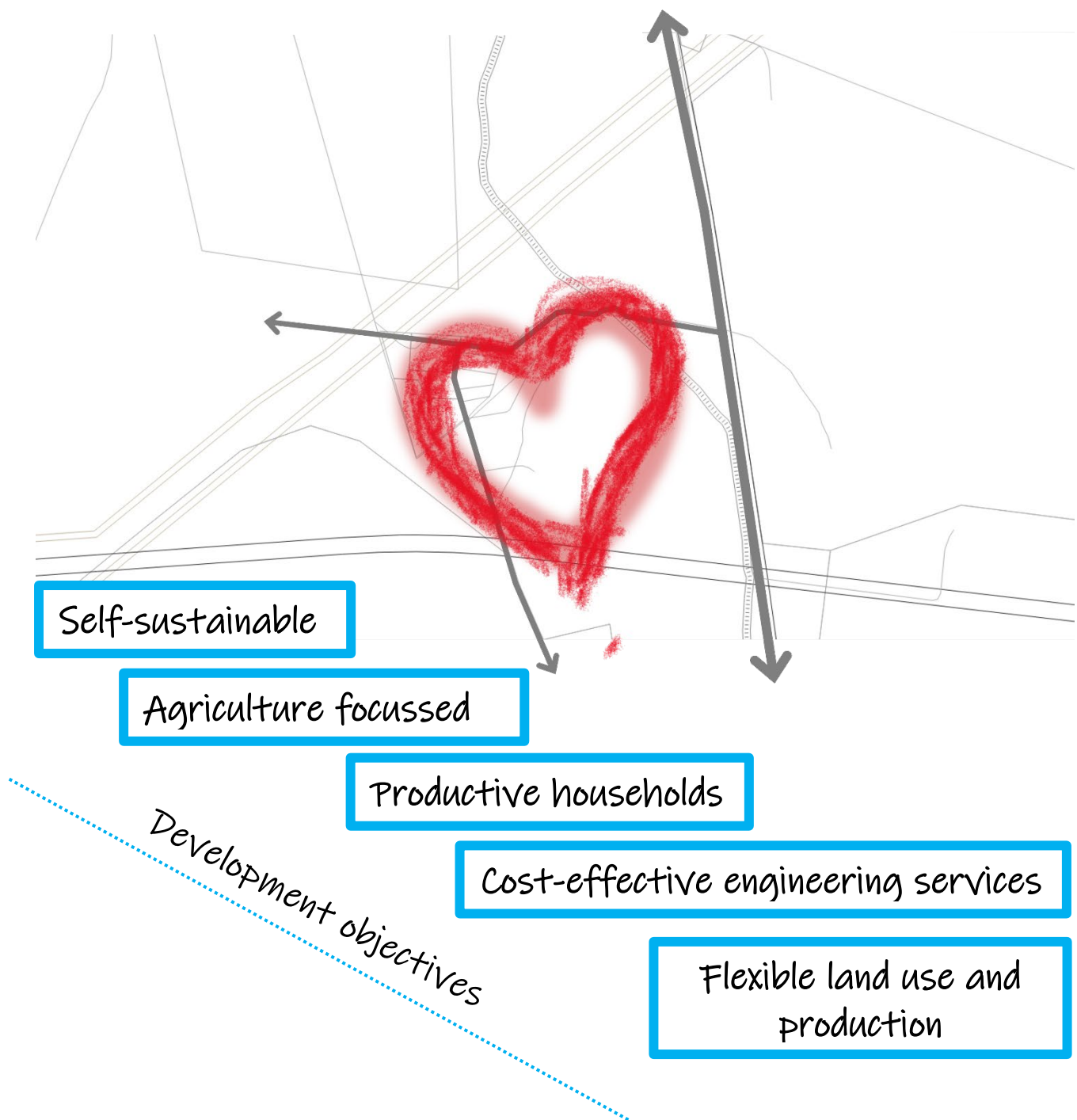


Figure 61: Tokolohong Agricultural Village (Lesedi LM)

5 CONCEPTUALISATION

5.1 Vision and objectives

"The Panfontein/Greater Bantu Bonke is a **self-sustainable** agri-village, **highly pedestrianised** and a **productive heart** of the rural economy in Midvaal"



5.2 Development objectives

OBJECTIVE 1: SELF-SUSTAINABLE

The notion of a self-sustainable Panfontein/Greater Bantu Bonke is the answer to meet the need for the protection and the enhancement of its rural ecology and human settlements. Human settlement needs in the village are engaged with the same level of urgency as the rural and agricultural ecology. The concept of a self-sustainable community is centred around the notion of self-sufficient households. Self-sufficient households experience quality housing conditions are well-fed and have enhanced access to social and economic opportunities and natural resources such as land.



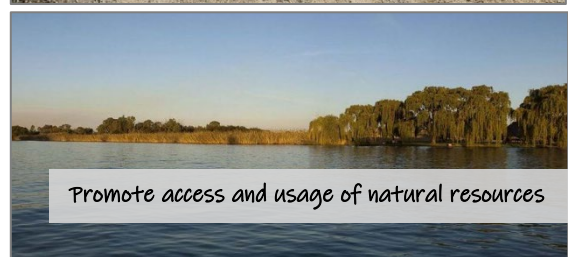
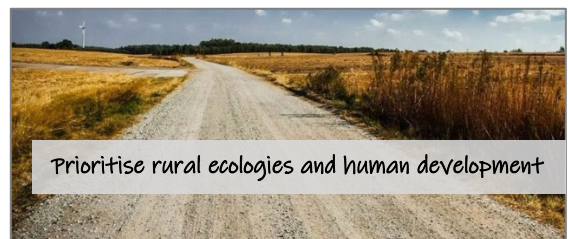
The community of Bantu Bonke is envisioned to have households that will have sustainable livelihoods, adequate housing, and social facilities. The rural design strategies allow the community to engage in agriculture for self-consumption or market opportunities. These are interventions that seek to decisively deal with food poverty and to open-up a platform to partake in the rural agri-economy. People can live comfortably, have meaningful jobs, and work the land in Bantu Bonke under the banner of a self-sustainable agri-village



OBJECTIVE 2: AGRICULTURE FOCUSED

Rural ecologies are critical for the survival and well-being of rural communities, through the preservation of their heritage, culture and natural resources. These ecologies give a sense of pride and belonging to the rural communities. Interventions promote access to the natural resources of the rural community. It is important that the communities benefit sustainably from their natural resources for continued rural success and liveability.

Panfontein/Greater Bantu Bonke has ecological wealth such as rich cropping and grazing land. The rural ecology supports the settlement and livelihoods of the community of Bantu Bonke. The sustainability and stability of these resources (water and land) will sustain the stability of the rural community. The disruption of these resources threatens to lead to rural exodus and, subsequently, rural decline.



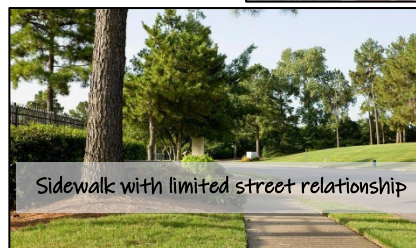
The proposed interventions are centred around limiting the physical expansion of human activity to preserve the natural and agriculture-intensive land. Infrastructure development targets natural resources spatially to promote access and enjoyment of the rural landscape. Exterior rural roads should best be built with G4 gravel to ensure good connectivity and maintain the rural landscape.

OBJECTIVE 3: COST-EFFECTIVE ENGINEERING SERVICES

Most of the residents in Bantu Bonke depend on walking and the usage of a minibus taxi to access workplaces and services in town. Interventions focus on pedestrianisation of the village and its surroundings to the places where people work. Planning for the new settlement extension in the village, mandates the prioritisation of pedestrians and public transport facilities. Extensions will lead to more pedestrian traffic and demand for public transport facilities.

The rural design requires non-motorised transport (NMT) planning to continue to promote walking, which also has health benefits and preserve the rural ecology. The interventions intend to limit urbanisation of the village and focus rather on enhancements of critical infrastructure for mobility and connectivity.

The plan introduces concept designs that will usher in cost-effective reticulation of roads, sewer, and the introduction of renewable energy utilities. The road reserves are key points of investing in good movement networks as well as utility services. Engineering costs associated with long-spanning tar roads, countless sewer manholes and other complex water and electricity reticulations are avoided.



Walkability increases

OBJECTIVE 4: PRODUCTIVE HOUSEHOLDS

Rural settlements have different typologies which are proportionally linked to their functionality and safety. The proposed settlement patterns intend to reserve significant portions of land to agricultural productivity. The human settlements development is organised to encourage either smallholding with adequate access to land and tenure security, as well as communal farming for commercial purposes.

The advantage of housing units being closer together in rural areas are linked to the safety and comfort of communities. There are more social advantages than economic ones. Economic advantages are explored further in the next normative anchor. Some of the advantages brought by both linear and nucleated rural settlement concepts include **(1)** increased socialisation **(2)** rural safety and security **(3)** sharing of agriculture ideas, costs, space, and equipment in the backyard for successful cropping.

The following land uses are encouraged to promote liveability and safety in Bantu Bonke:

- Market place
- Place of worship
- Adequate housing
- Recreation.

Agriculture is a substantial land use in desired rural settlements. This is explained further in the development objective on 'flexible land use and production arrangements.



OBJECTIVE 5: FLEXIBLE LAND USE AND PRODUCTION ARRANGEMENTS

Key interventions following agrarian transformation are centred around the building of rural agri-industrial, cooperatives, cultural links, and vibrant local markets. Diversifying rural economic models through innovation and indigenous knowledge, creates long-term rural success. Panfontein/Greater Bantu Bonke is envisaged to be a highly productive agri-village that will generate knowledge systems through basic education and utilise local agriculture skills to establish a complete agriculture value chain. The intent is to create exciting new economic opportunities other than in conventional agriculture.

Small industries are incorporated in the settlement design to diversify economic activity and establish movement in the settlement. Vibrancy and productivity lead to a solid community with better prospects. Designing vibrant communities requires connectivity to the rest of the world. For these communities to thrive, they must be digitally connected to others, and they must be resilient to social and economic shocks introduced by pandemics, such as Covid-19.



Transport and communication infrastructure form priority interventions for a better-connected Panfontein/Greater Bantu Bonke Agri-village. To institute a resilient rural community, the economic fibre of the agri-village should be able to be adapted to continue trade and livelihoods in harsh economic climates.

Encouraging different economic interests in the village anchors economic vibrancy through creating jobs that the youth would prefer, other than primary agriculture. The intent is to create options and to prevent a rural exodus.



5.3 Spatial structuring elements

Spatial interventions for the Panfontein/Greater Bantu Bonke are built around four spatial structuring elements. These are:

1. **Social node** - Provisioning for the upgrading of the community healthcare centre, burial site, primary school, and the establishment of an agri-tech secondary school.
2. **Market node** - Making provisions for the diversification of economic activities including micro-shopping centre with supporting facilities such as a taxi rank, post office, informal trading stalls, small-scale storage, processing, and packaging facilities.
3. **Movement network** - This is critical for market facilitation and public transport. The upgrades are to cater primarily for pedestrians to ensure walkability and increased vehicle movements in the settlement.
4. **Rural settlement expansion** - The expansion concept intends to promote individual tenure security and communal agricultural cooperation. Other non-agricultural activities such as public open spaces and commercial uses are to be promoted here.

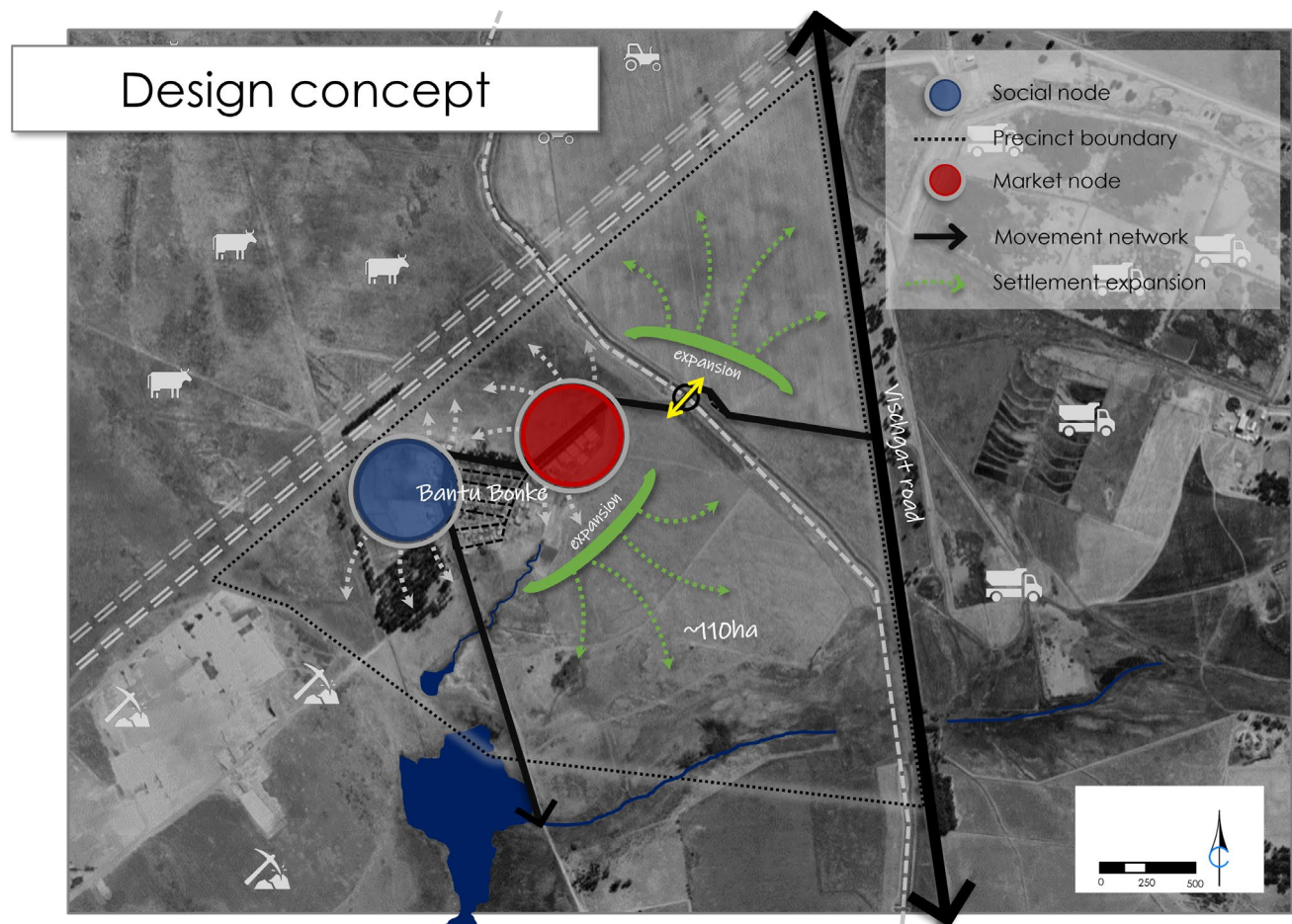


Figure 62: Structuring elements

The proposed precinct boundary does not define an urban development boundary (UDB). In the current provisions of the Midvaal SDF areas outside the UDB include rural transition zones where the natural environment and agriculture are promoted. The rural design approach proposed for Panfontein/Greater Bantu Bonke does not introduce urbanisation or higher density urban development that impacts on the ecological areas. The enhancement of the rural node does not necessitate the expansion of the UDB for Bantu Bonke.

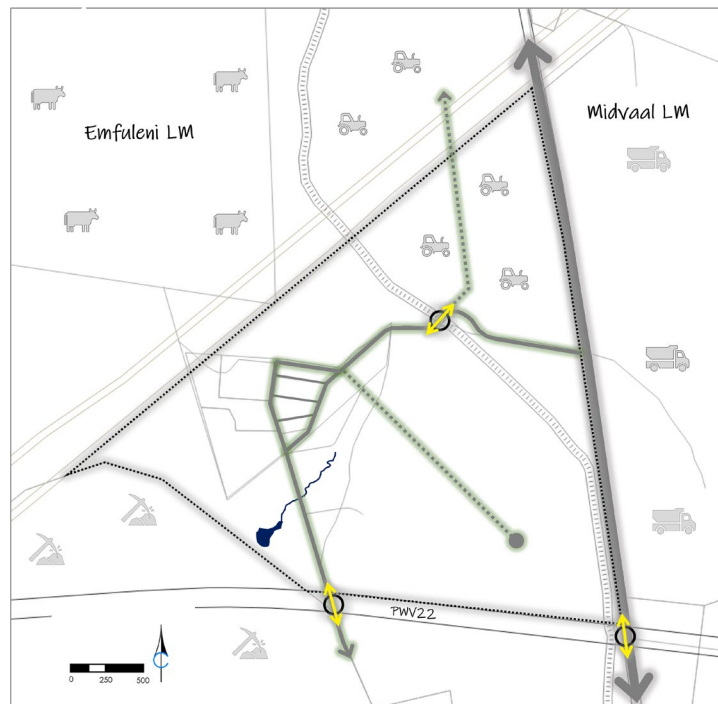
5.4 Spatial proposals and options

MOVEMENT NETWORK

The expansion of the agri-village will see a growth in pedestrian population given that a large proportion of the housing model is low-cost housing. Pedestrian boulevards form the main structuring element for the precinct to facilitate easy access to social facilities and workplaces within and outside the village by foot.

Pedestrian infrastructure, including quality pavements, refuse bins, sitting benches and rows of trees are prioritised along these routes. The latter intends to introduce comfort for pedestrians and encourage a walking community. Motor-vehicles are provisioned for limitedly, to discourage fast moving vehicles in the settlement.

These streets are seen as public open spaces where there is increased interaction and socialisation, including supporting local traders.



Along these streets, adjacent properties are encouraged to have visible interfaces with buildings closer to the street to promote passive surveillance. These elements induce safety and comfort for people who walk. A well-designed, enclosed, pedestrian-priority bridge is proposed, to also induce the identity of the Panfontein/Greater Bantu Bonke Agri-village.

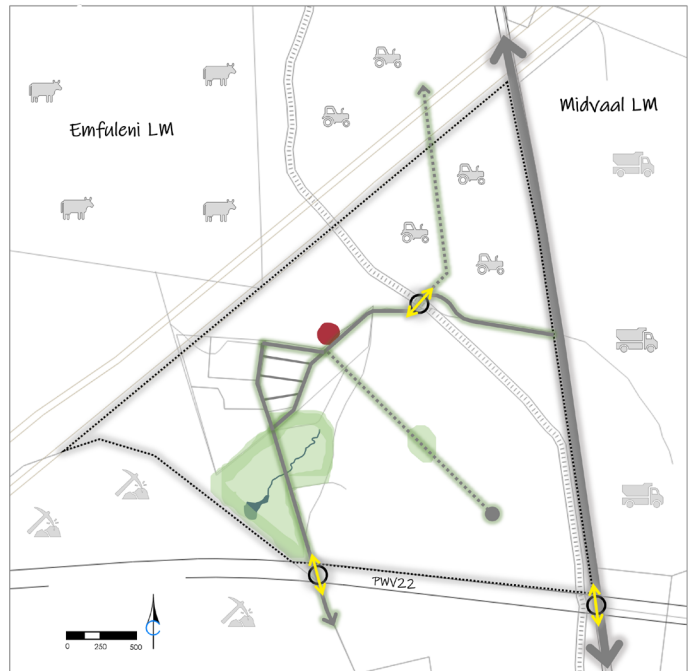
The Gauteng Department of Transport (Gautrans) has started with a series of integrated road network construction projects to support the Aerotropolis and the Tambo Springs Intermodal Gateway. In a longer-term, provision is made for pedestrian priority bridges crossing PWV22 when Gautrans implements the construction of the PWV22.

SOFT AND HARD PUBLIC OPEN SPACES

Public open spaces are critical assets for neighbourhoods. Open spaces have psychological benefits for residents; they offer recreational opportunity and socialisation of the community. These spaces induce vibrancy in neighbourhoods. It is important that they are provisioned for in convenient locations for easy access and maximal usage.

A hard open space (square) is suggested where a rural marketplace is proposed, to encourage visiting and create a new vibrant space for the village. Wi-fi and comfortable sitting areas are prioritised to enhance community vibrancy. This subsidises users of the library Wi-Fi without dedicated public infrastructure.

Periodic markets can be organised monthly to service residents by the outsiders.



A soft open space is proposed near the wetland, southwest of the precinct. The open space is supported by connecting pedestrian boulevards for convenient and exciting access to facilities. The open space intends to institute a beautified transition from the rural settlement activities and the ecological spaces.

RURAL MARKET CENTRE

Bantu Bonke needs a rural market centre to support the community for everyday goods and services such as bread and cash services. This will alleviate household costs of commuting to Three Rivers for quick services such as small grocery baskets. The proposed rural market centre located adjacent to the hydroponics farm, hosts a small supermarket, automated teller machines, fast food outlet, and a pharmacy, amongst others.

The market can cater for the essential needs for the planned settlement expansion. The small supermarket should be encouraged to maximise its shelf space with the produce coming directly from the community agriculture cooperatives. The produce to be prioritised include cabbage, spinach, cucumber, lettuce, corn, and eggs.

The reprogramming and rejuvenation of the hydroponics plant will also contribute to the market meeting basic agricultural produce for the settlement. The establishment of a packaging facility will take advantage of the hydroponic plant facilities to have package-ready goods to the local supermarket for direct procurement and sales. Backyard vegetable farmers will also have opportunities to



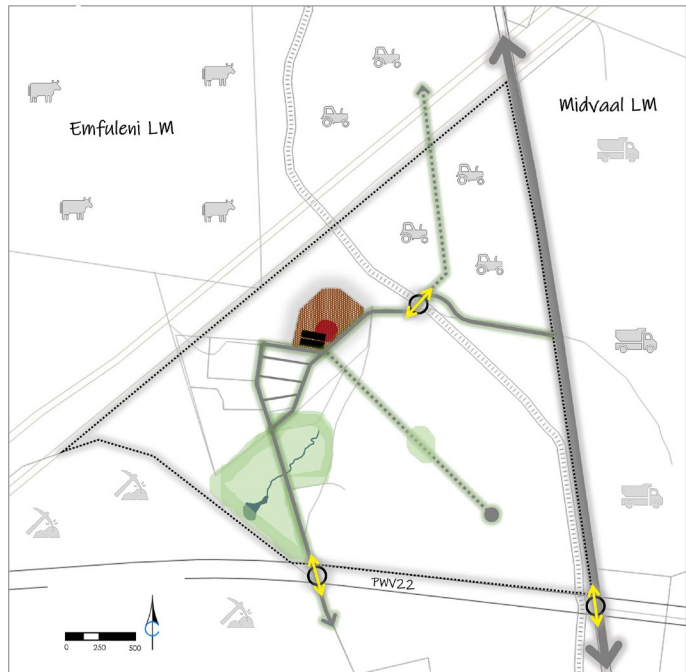
trade their small produce for extra income. The expansion of the human settlements intends to constitute sufficient market for such entrepreneurs and agricultural cooperatives. Provision is made for informal trading stalls to be incorporated as a design integral of the rural market centre; this adds vibrancy and livelihoods for the community.

MINI-BUS TAXI FACILITY

Mini-bus taxi is the most common mode of transport after walking in Bantu Bonke. The planned expansion will require more public transport capacity between the agri-village and surrounding service centres. Rural transit-oriented development is mainly conceptualised around major transport networks including rail.

In the longer term, Bantu Bonke is not expected to grow to urban population sizes. Its population saturation will be inadequate for the viability of rural bus rapid transport. A mini-bus taxi facility is logical for the provision of about 1 000 households in the longer term. This expands the opportunity for the taxi operators in the area.

The taxi facility is incorporated with the rural market centre to cluster activity and support informal trading. Public transport facilities bring a good market for both formal and informal traders. The latter is critical to the local economic development strategy of a sustainable agri-village.



ACTIVITY AND IDENTITY ELEMENTS

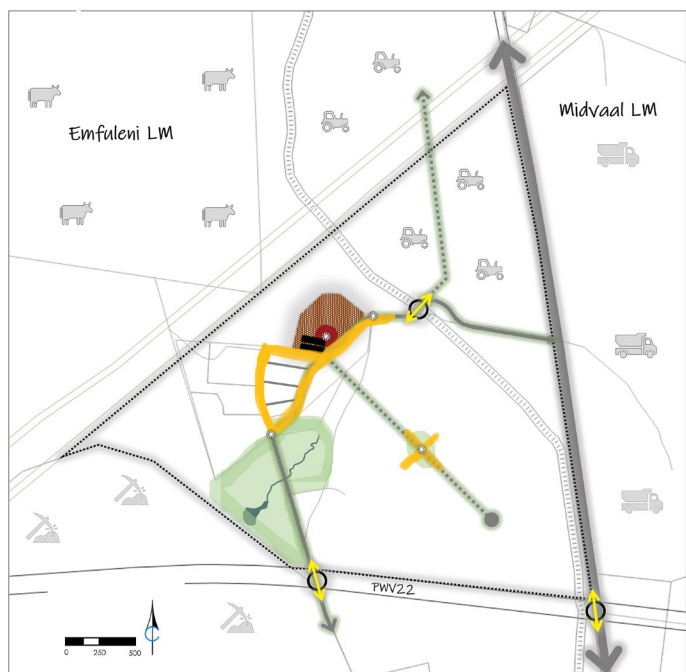
The rows of trees in Bantu Bonke give the settlement its identity and a continued rural ecology. Constructed identity elements are encouraged at central meeting points and access points of the settlement.

This will continue the beautification of the village and create interactive public art and facilities along pedestrian boulevards and public spaces.

The public art displayed across the village should promote the continuation of the history and knowledge of the settlement for visitors and the younger residents.

These identity elements will enrich the physical environment and streetscapes and bring land uses and buildings in the village to life.

This enhances the morale of the residents and, subsequently, build good neighbourhoods.



Public identity elements have a potential to establish tourism opportunities. Functional rural villages attract visitors who can use the settlement for stop breaks.

Public and identity elements can boost the visitors' interaction with the village and establish new opportunities for small scale traders. These elements can be spaces to disseminate the history and culture of the village and even encourage informal play areas for young people and adults. The intent is to spark the vibrancy and identity of the settlement.

AGRICULTURAL-TECHNOLOGY SECONDARY SCHOOL

Panfontein/Greater Bantu Bonke is envisioned to be a self-sustainable agri-village that will rely on its own knowledge systems, skills, and resources for human development. A complete agricultural value chain is promoted within the settlement for long-term rural success. In efforts to institute long-term rural success, a continuous advancement in agricultural technology and knowledge systems is promoted. A resilient community has knowledge development as its main community development initiatives; to find alternatives during a change in external factors. These include climate and markets, amongst others.

The Gauteng Department of Basic Education is encouraged to invest in an agriculture and technology-based educational facility in Bantu Bonke.



The village has comparative advantages ranging from skilled agriculture personnel, agricultural land, and ongoing agriculture capital projects invested in by the DALRRD. The secondary school is envisioned to absorb learners interested in agricultural technology and further their higher education studies to contribute knowledge to community cooperatives such as those in Bantu Bonke.

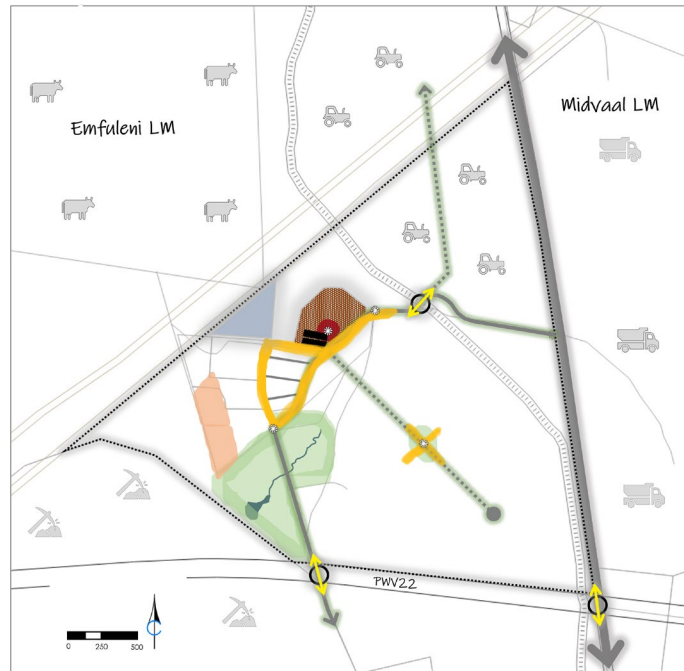
The school should have dormitories to accommodate learners from other regions. The intervention introduces hospitality-related jobs for the residents.

The success of rural systems and agriculture today rely heavily on the utilisation of information and communication technology; to advance efficient and productive farming methods amid growing populations and climate changes. Such advancements are made in areas such as water-saving irrigation equipment, controlled-environment tunnels for sensitive produce and higher yields, and the prevention of animal diseases. The secondary school is a proposed intervention that can deliver benefits beyond the precinct boundary. The proposal focuses on continuing capacity building in agricultural technology in South Africa.

COMMUNITY CEMETERY EXPANSION

Burial sites are a critical element of, and integral to, African cultural and religious practices. These are sites where remembrance of the loss of life is preserved for the identity of the younger generations. They are heritage resources that should be considered meaningfully in planning and maintenance systems. More burial capacity is provisioned for Bantu Bonke to service the expected growth in the village population in the medium term.

The incidence of the Covid-19 pandemic has highlighted the importance of burial sites at planning level for communities. Pursuing integrated and sustainable human settlements is mainly about enhancing the quality of life, social cohesion, and liveability. Cultural and heritage elements such as burial sites are an integral part of community practices and way of life.

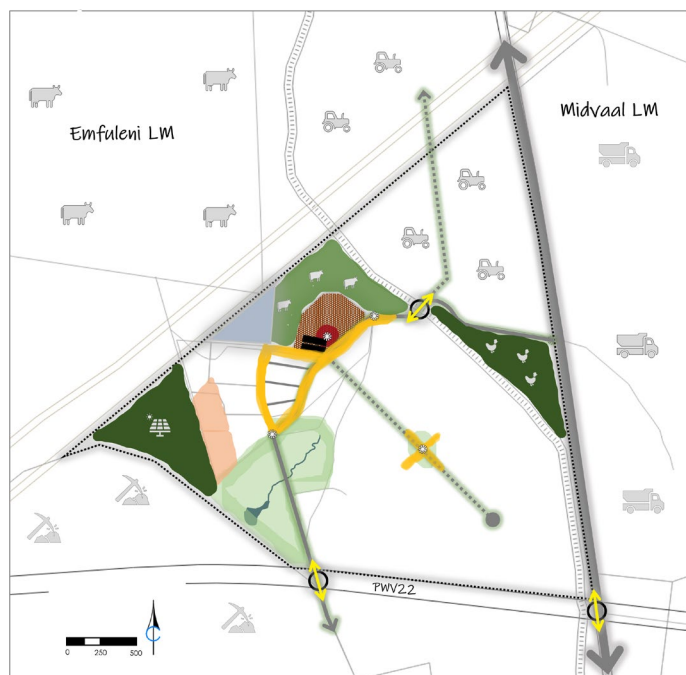


The intervention intends to promote the continuation of cultural and religious heritage of the community of Bantu Bonke. It is fundamental to incorporate the upkeeping of the site in the municipal public works programme such as Community Worker Programme. The latter intervention should see the burial site as a community heritage site that should be protected.

COOPERATIVE AGRICULTURE ZONES

Agriculture is a considerable land use in agri-villages. Bantu Bonke has existing community agricultural cooperatives that should be enhanced through deliberate interventions. In Bantu Bonke, a critical resource to enhance these community agricultural cooperatives include land redistribution and capital implements. The plan proposes the capacitation of livestock handling and cropping at subsistence and commercial scales.

Cattle handling facilities (feed lotting) is provisioned to organise and grow a cattle farming enterprise belonging to the community. The enterprise will supply the nearby abattoirs across the district. To continue economic opportunity within the agri-village, food and beverage outlets are encouraged to source meat supplies directly from one of these abattoirs at negotiated lower prices. A small rural red meat abattoir is



provisioned to supply local shops within the village. The latter intends to increase economic activity and everyday visitors to the village. Feasibility studies to establish an abattoir around Panfontein are encouraged in support of the programme of agri-industrial investments in the area.

A broiler production project which is already on the books of the DALLRD is spatially provisioned for adjacent to the Vischgat road for easy transportation to larger abattoirs and markets. Household chicken farming is also encouraged through land distribution in the form of BNG housing subsidies for either informal market trading or household consumption.

Prospects of solar farming in the village is accommodated provisionally should the CPA be successful in its funding and approval processes with the relevant authorities including the district municipality. This facility would be accommodated on the western parts of the precinct boundary to provide clean energy for the households and agri industries in the village. A commercial scale solar plant is advised to be established on the western border of the precinct boundary on the Remaining Extent of Panfontein Farm 437. Eskom servitudes should be considered.

INCREMENTAL UPGRADING INTERVENTIONS

The settlement expansion is not the only focus area for incremental interventions. There are critical interventions that are needed in the existing settlement footprint. These include (1) road surface upgrading inside the settlement (2) physical expansion of the community healthcare centre (3) expansion of the primary school learning facilities and (4) increasing the capacity of the water treatment plant. The hydroponics plant is also provisioned for infrastructure upgrades and management restructuring.

The housing structures of the current settlement are in many cases old and dilapidated. The plan relies heavily on local economic development strategies to have spill-over effects that will instil increased quality of life and affordability of households. This allows households to engage in self-help housing upgrades.



The conversion of old order rights (communal) to individual title, is provisioned for in terms of the Communal Property Associations Act, 1996. The option is subject to the CPA general meeting that shall be convened to determine the views and acceptance of CPA members. On consensus, the process would be engaged through township establishment to form freehold titles.

5.5 Human settlements development concepts

CONCEPT A: RURAL RESIDENTIAL AGRI-VILLAGE CONCEPT

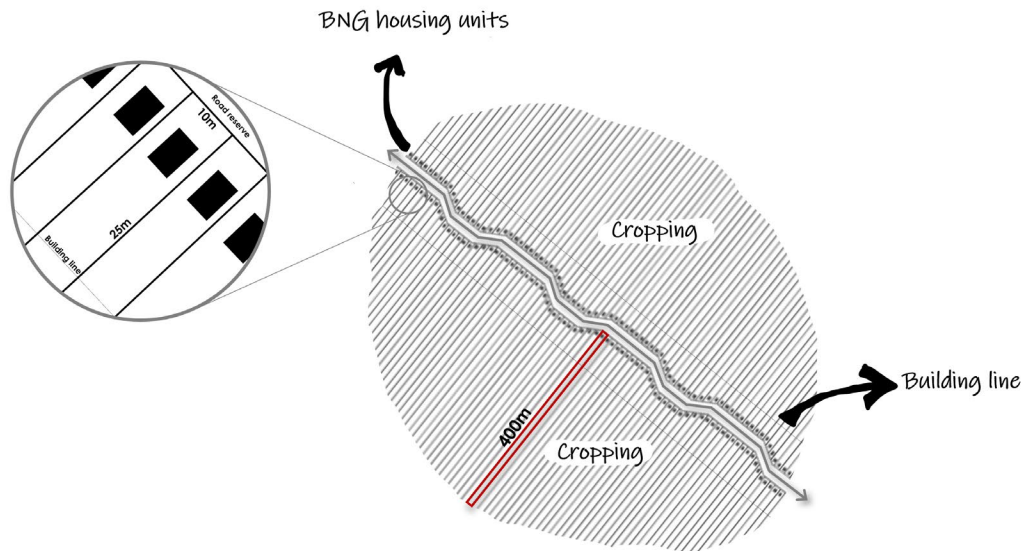


Figure 63: Staggered linear development concept

The linear agri-village concept is introduced to promote meaningful land redistribution and effect tenure security. This concept establishes simple reticulation of engineering services such as conventional sewer, stormwater, and potable water networks.

These combined elements institute and promote an improved quality of rural life that is supported by adequate human settlements that are cost effective to the public purse. **TABLE 12** summarises some of the benefits related to this settlement geography.

TABLE 12: LINEAR AGRI-VILLAGES	
Advantages	Disadvantages
1. Independent decision making on land activities. 2. Meaningful land redistribution and tenure security. 3. Limits development on prime agricultural land. 4. Safety and security (households closer together). 5. Cost-effective engineering services (roads, sewer).	1. Monotonous landscape. 2. Long-stretches of roads (not pedestrian friendly). 3. Plots are most productive with cooperation. 4. High maintenance costs to non-agricultural households.

In principle, the linear development approach in Panfontein/Greater Bantu Bonke establishes dwelling units along two main roads which will accommodate different engineering services. These include sewer, water, electricity, and road networks provisioned in the road reserves. More than two-thirds of the **10 X 400m** (4000m²) stands are dedicated to crop production such as maize. The individual property owners have a choice to utilise their land privately or cooperatively. The guidelines promote non-erection of fences beyond the building lines; households can also rent out their properties to the neighbours who seek bigger cropping space.

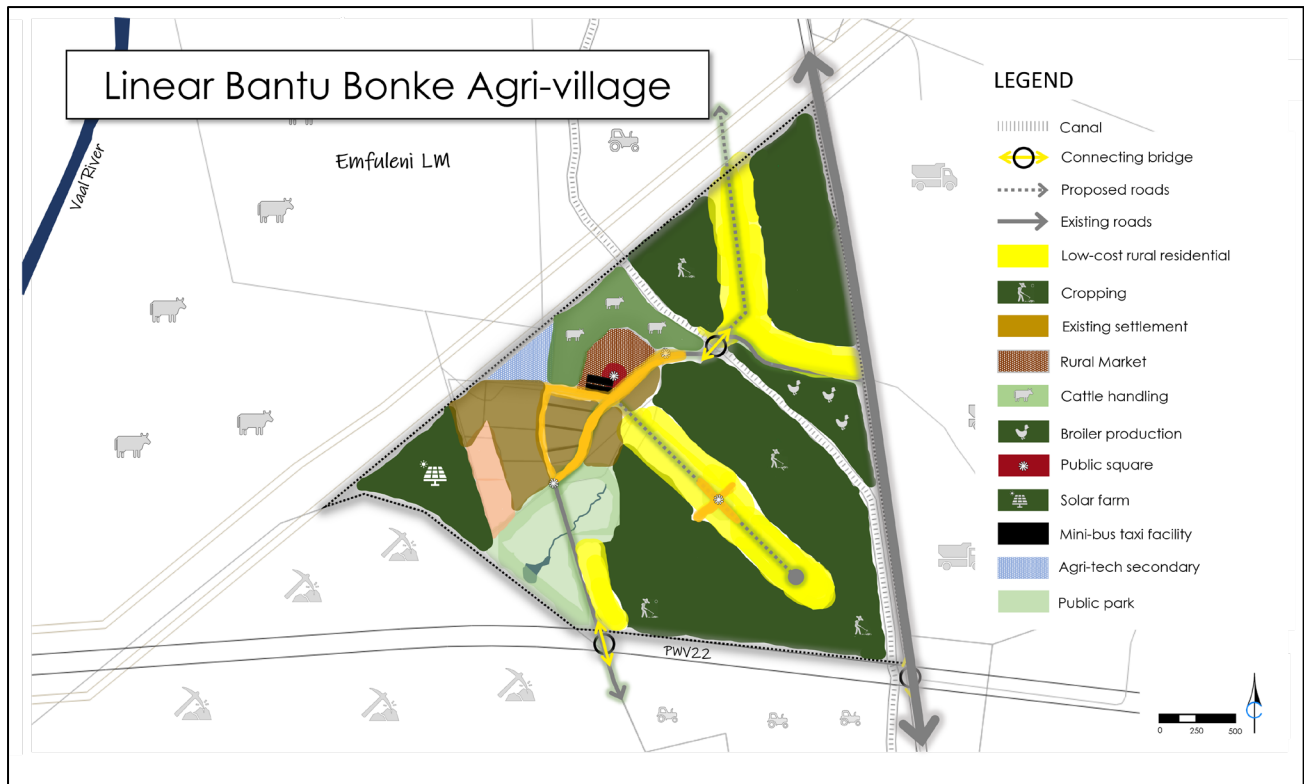


Figure 64: Linear settlement development concept

Jabulani, located in Gert Sibande district in Mpumalanga, is the first agri-village in South Africa which utilised the linear model at a smaller scale. The successful construction of the agri-village depended on vigorous and progressive stakeholder relations between:

- Department of Rural Development and Land Reform
- Department of Human Settlements
- National Development Agency
- Mondi Group.



Promoting adequate housing and rural lifestyle



Cost-effective utility reticulations

Figure 65: Jabulani Agri-village (Mpumalanga)
(SAForestry, 2015)

The agri-village intended to redistribute sufficient land to the rural residents with stands of about 2500m². The provision of adequate housing and social facilities formed priority interventions.

CONCEPT B: RESIDENTIAL 1 AGRI-VILLAGE CONCEPT

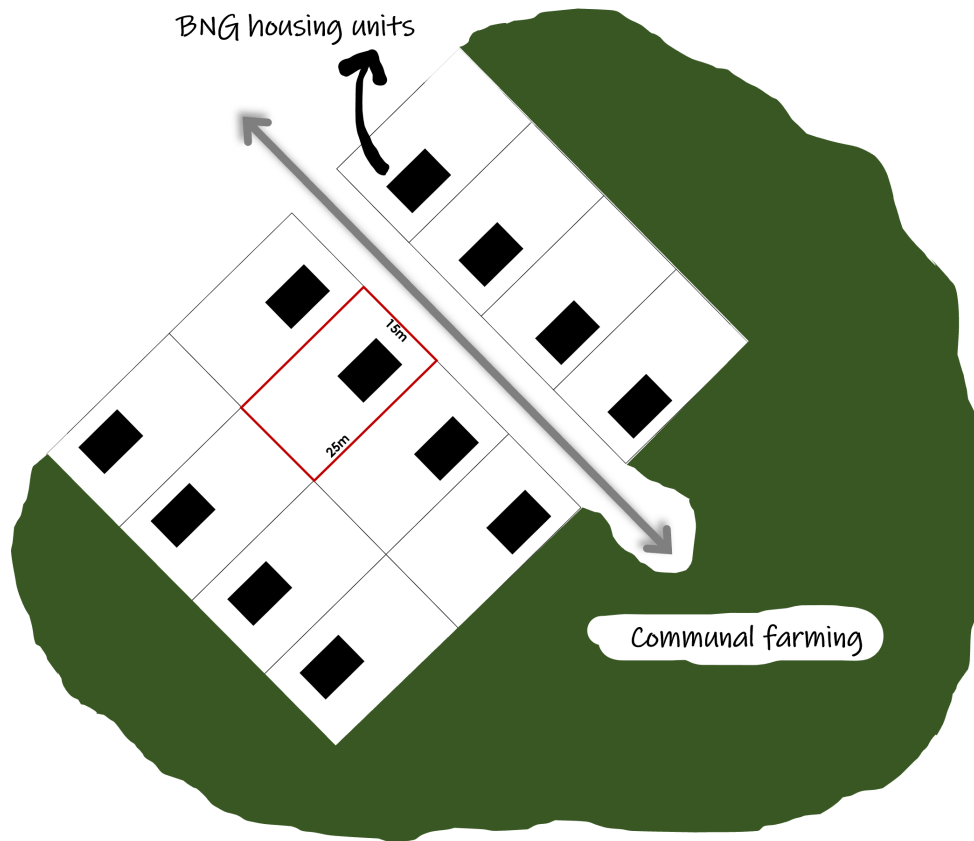


Figure 66: Nucleated settlement design concept

The nucleated settlement design concept follows the widely accepted settlement arrangements in the South African context. The concept concentrates the human settlements development in one area and reserves the rest of the agricultural land for communal farming purposes. The concept has more social benefits including promoting increased contact and socialisation. However, the reticulation of engineering services become expensive and is likely to dissolve the rural ecology. **TABLE 13** shares some of the socio-economic benefits of this settlement geography.

TABLE 13: NUCLEATED AGRI-VILLAGES	
Advantages	Disadvantages
1. More contact and socialising. 2. Safety and security as people are nearby. 3. More communal farming space. 4. Share ideas and costs of farming equipment. 5. Efficient provision and usage of social facilities.	1. Dissolves rural landscape and lifestyle. 2. Limited independent decision-making on communal land. 3. Sharing of equipment prone to high maintenance costs. 4. Limited stand sizes for households interested in backyard poultry and vegetable farming.

The nucleated settlement geography is typically found in urban areas for densification purposes. Nucleated rural settlements intend to limit physical development on prime agricultural and natural land. In Panfontein/Greater Bantu Bonke, the **15 X 20m** (300m²) stands are redistributed to subsidy beneficiaries supported with low-cost Breaking New Ground (BNG) units. Using the gross density of 20du/ha the model requires about 25ha of allocated stands.

Considering road reserves and other facilities, the 30ha of land dedicated to human settlements development in the memorandum signed by the Minister of DALRRD, is a feasible provision.

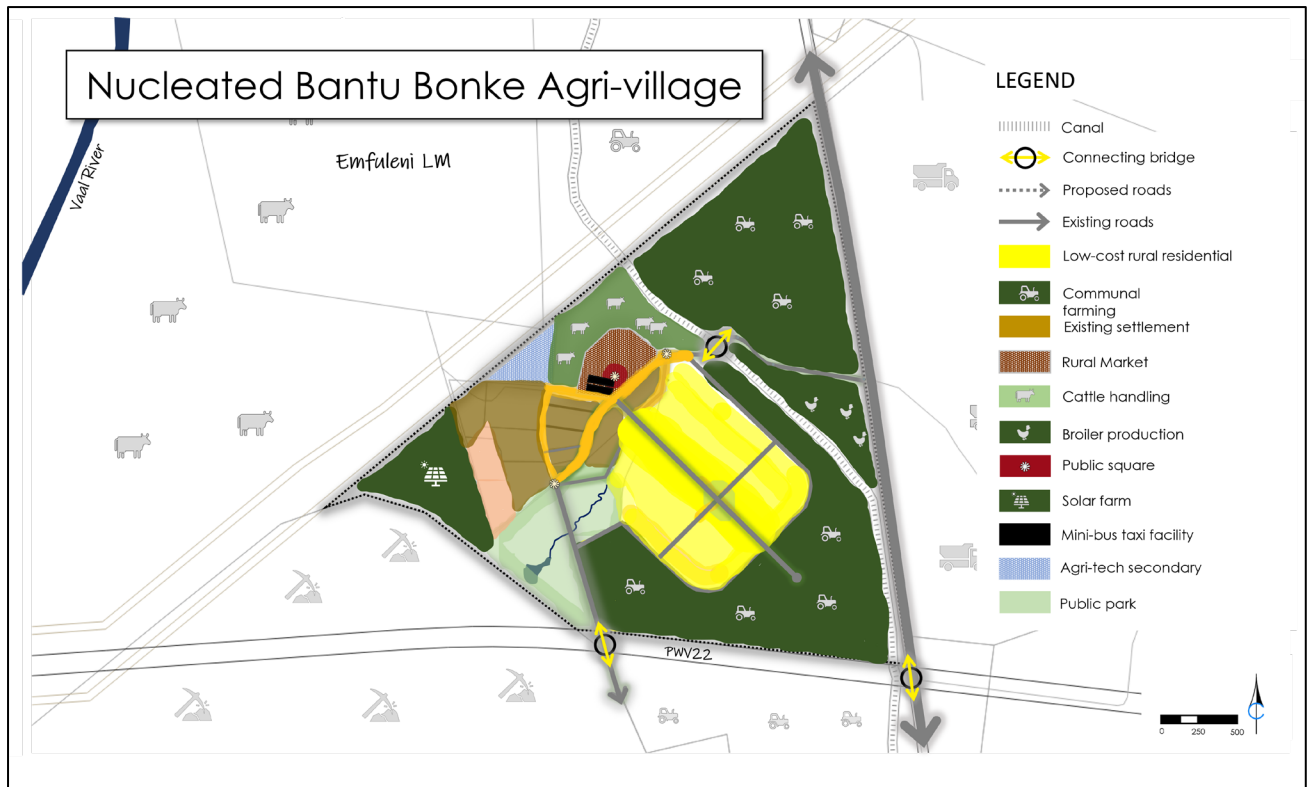


Figure 67: Nucleated settlement design concept

5.6 Proposed land use framework

The land use framework outlines the proposed land uses and further proposed zoning for the agri-village. The proposed land use framework is the building block to guide the Midvaal Land Use Scheme in managing development in the agri-village. The rural design guidelines are important to manage physical development and activities in the agri-village precinct. These are detailed in section **6.2 Rural design guidelines**.

The framework intends to promote a complex rural settlement that will be vibrant and productive. This is achieved by promoting investments of small-scale agri-industries institutional facilities, and residential uses in a focused area. The framework limits expansion into the surrounding pockets of land to guard against sprawl onto agricultural and natural ecologies. Horizontal mixed uses are promoted to spatially support the sustenance of small enterprises and efficient operations of the social facilities.

5.6.1 Linear concept land use framework

This demonstrates large pockets of land that is allocated to residential and food production plots where cooperative cropping is encouraged for commercial purposes. This sustains the rural ecology, agriculture, and, simultaneously, advances tenure security through the provision of BNG subsidy units.

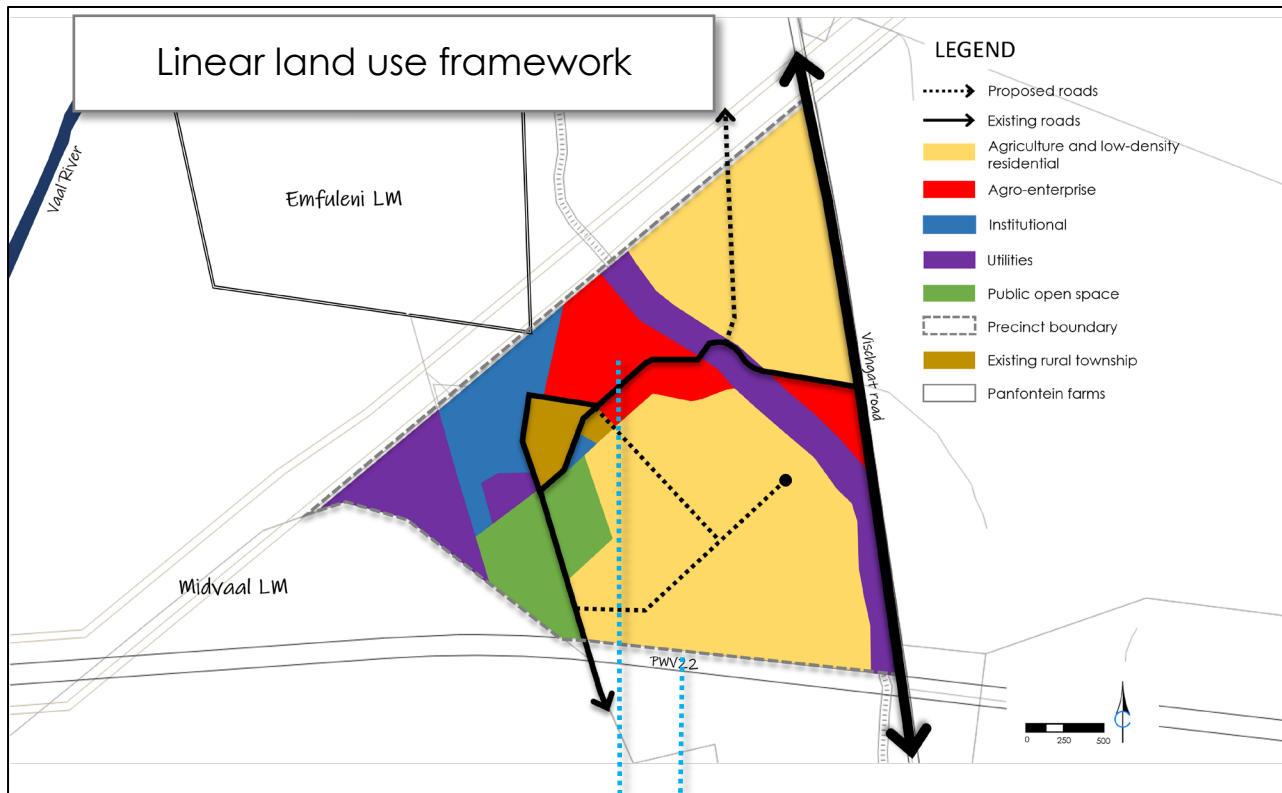


Figure 68: Linear model land use framework



5.6.2 Nuclear concept land use framework

This reserves the remaining pockets of land from human settlements development to communal cooperative agriculture. Similar to the linear framework, tenure security, rural ecology, and high-potential agricultural land is promoted in the agri-village.

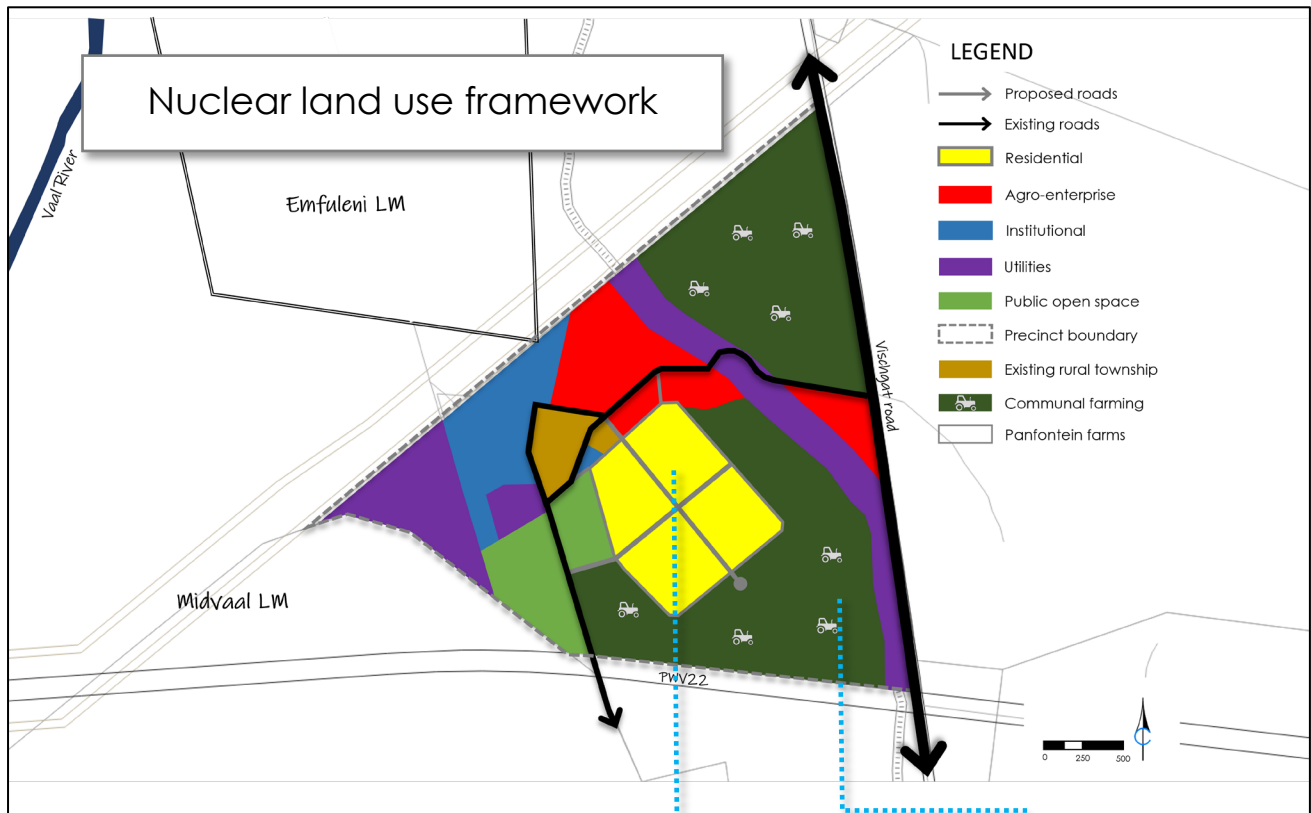


Figure 69: Nuclear model land use framework



Critical to the development of an integrated and sustainable Panfontein/Greater Bantu Bonke—is dedicated land space for local production, trade, and synergic social facilities. The two frameworks capitalise on the existing social and economic units. The frameworks aim to expand these socio-economic opportunities in the agri-village for long term rural success. This is achieved by anchoring the social node and the market node within the precinct to support the expansion of the village households.

5.7 Tenure reform

5.7.1 Bantu Bonke old order rights

The establishment of the Bantu Bonke village in 2000 came after a donation of about 23ha of land by Anglo American Farms Limited (AAF). The AAF's abandoning of its farming operations in the area would result in tenure insecurity for its workers who had already resided on the farm. Through the provisions of the Extension of Security of Tenure Act, 1997 (ESTA) the Minister of the then Department of Land Affairs was empowered to facilitate tenure security for the former workers of AAF. The donation of the 23ha of land would consist of 68 duet dwelling units and 19 single dwelling units, adding up to 87 dwelling units of the Uitvlucht Village.

Families of AAF's former employees in good standing acquired ownership and secure tenure of 45 dwelling units. The remaining units would be transferred to the AAF's farm residents. Two portions of land bordering the village units on the east and west were dedicated for uses such as education and agricultural purposes. When the transfer was finalised with conditions, the community was officially registered as the Bantu Bonke Communal Property Association in terms of the Communal Property Associations Act, 1996. The Act enabled such communities to form juristic persons to be able to acquire, hold and manage property following the prescripts of their adopted constitution.

Restrictions on the physical expansion of the property would later result in household overcrowding. These households would supplement these conditions through establishing backyard units. In addition, the industrial operations in the area attracted migrant workers coming from as far as Lesotho, the Eastern Cape and Mozambique. Bantu Bonke would offer these individuals affordable shelter through the backyard shacks. Noting the overcrowded conditions of the village, the CPA requested the GDHS to facilitate the extension of the village and the subsequent provision of adequate housing. The Minister of DALRRD would later commit to the transfer of 30ha of land for the needed human settlements expansion.

5.7.2 Communal tenure conversion

Evidence gathered systematically through observations and community accounts signifies the need for incremental upgrading in Bantu Bonke. The National Housing Code notes that rural populations, mainly in communal arrangements, constitute some of the poorest households in the country. Some of the hardships that such communities face includes a significant number of indigent households and the lack of basic infrastructure provision and maintenance.

In the African context, communal tenure systems facilitate social cohesion and the sharing of ecological resources in the community. The system, however, may not withstand increasing external shocks that constrain land and resources including economic depression and climate change. Specific, targeted interventions at household level, could bring about the much-needed aid for indigent households. The land use rights afforded to members of an association may be limited to exercise individual decision making on land and deprived of access to bespoke municipal interventions.

Some of the major advantages of individual tenure for poor rural households include title ownership and indigent registration. With freehold ownership, households could benefit from free or considerably subsidised basic municipal services. Considering the income bracket and affordability index of the households in Bantu Bonke, an indigent register is needed to advance social safety nets for the poorest households of the village.

The association in Bantu Bonke has encountered challenges to (1) report as required to the DALRRD (2) contribute towards rates and taxes due to Council and (3) maintain infrastructure services as provisioned by the Communal Property Associations Act, 1996. In efforts to bolster progressive interventions for Bantu Bonke, two strategies may be employed by local authorities to assist the association. The local authorities may request a general meeting of the association as provisioned by section 12(1) of the Communal Property Associations Act, 1996 and section 11 of the Constitution of the Bantu Bonke Communal Property Association to:

1. Establish a written agreement between the association and Council detailing practical trade-offs in advancing external engineering services and indigent benefits; or



2. Propose the endorsement of communal tenure conversion into freehold ownership through township establishment to advance indigent administration.

Proposed approach to the upgrading of land tenure rights in Bantu Bonke

Section 12(6) of the Communal Property Associations Act, 1996 provisions that "[t]he Director- General shall, at the request of an association, appoint an authorised officer to attend a general meeting of an association and to take such other steps as may be necessary in order to certify that a transaction referred to in subsection (1) has been duly approved at a general meeting and is in accordance with the constitution of the association."

Furthermore, section 11(1) of the Constitution of Bantu Bonke CPA provides that "[g]eneral meetings of the members are conducted from time to time as the need may arise in order to deal with the affairs of the Association including, but not restricted to the appointment, removal and replacement of Committee members, the guidance and commanding of the Committee as well as the handling of such other matters that require the consent of members at a General Meeting as prescribed by the Act or the Constitution, with due regard thereto that:

- 11.1.1 an Annual Meeting shall be held on twenty one (21) days' notice;
- 11.1.2 a General Meeting shall be held on fourteen (14) days prior notice."

Section 14 of the Constitution of Bantu Bonke Communal Property Association outlines the general procedure to convene such a meeting in which:

- 14.1 The Chairperson and, in his absence, the Deputy Chairperson of the Committee, shall preside over the meeting.
- 14.2 A quorum for any decision to be taken at a General Meeting, unless stated otherwise, shall be 50% (fifty percent of the present members of the Association.
- 14.3 In the event of a quorum not being present, the meeting shall be adjourned for fourteen (14) days and during this time notice shall be given as aforesaid to all the members where reasonably possible.

The Director-General's certification of the resolution to approve the land transaction by the members of the association constitutes an authorisation to commence township establishment processes in terms of the Upgrading of Land Tenure Rights Act, 1991 as amended by Act No.06 of 2021. Individual members aggrieved by the decision of the Director-General may in the prescribed manner appeal to the Minister who may sustain, in whole or in part, or overturn the appeal as provided by section 16 of the Communal Property Associations Act, 1996.



6 IMPLEMENTATION

6.1 Design guidelines

6.1.1 Anchoring development conditions

The compilation of the rural design guidelines employs three anchoring strategies to drive the successful implementation of the plan. These three development conditions include (1) rural conservation (2) redevelopment and (3) new development areas.

STRATEGY 1: RURAL CONSERVATION

The focus of rural conservation is on the preservation of the natural resources that sustain the villagers as well their agricultural livelihoods.

This development anchor intends to enhance the rural ecology of the Panfontein/Greater Bantu Bonke, to ensure the preservation of the rural identity and functionality, amidst development pressure. The maintenance of the historic rural landscape and the sparking of sustainable socio-economic development requires a well-balanced spatial provision.



STRATEGY 2: RURAL REDEVELOPMENT

The existing village settlement needs key infrastructure refurbishments including roads and stormwater, healthcare, and hydroponics facilities. The area of focus seeks to enhance the overall quality and functionality of the existing settlement to integrate with the expanded section. The latter avoids spatial disparity and promotes community cohesion.

The redevelopment provisions directly affect the CPA property which the community feels strongly about with regards to the historical identity of the settlement. The promotion of key infrastructure improvements (street lighting, roads, and stormwater) takes priority in the redevelopment strategy.



STRATEGY 3: NEW DEVELOPMENT

There is substantial appetite in the community to have new residential development. The provision of the new 500 dwelling units takes a human settlements strategic approach. Key to promoting human settlements is the support of soft and hard interventions for the residents. Hard interventions in a form of housing structures mandate the provision of soft interventions such as local economic production units. These include transport, markets and production plants that will establish an economic demand.



The latter enables long-term sustainability of the improved quality of life in the agri-village. In this condition, bulk services for expansion areas are provisioned.

6.2 Rural design guidelines

GUIDELINE 1: BUILDINGS AND STREETS

The existing settlement area is mainly characterised by public building and residential properties having a positive interface with streets. The conditions in this section intend to enforce the continued approach in building-street interaction.

This approach is strategic in instituting safe and desirable neighbourhoods. When streets interact with properties, rural lifestyle and culture is promoted; residents can put more eyes on the streets which enhances public safety and increased socialisation.

TABLE 14: BUILDINGS MUST INTERACT WITH STREETS

Development condition	Guidelines	Visualisation
Redevelopment	1. In the existing settlement, street boundary walls in private residences should be 60% visible from the street. 2. In cases where palisade fencing (see-through) is used a maximum height of 1,8 meters is provisioned. 3. Refurbishment of both public buildings and residential units are required to have front doors and/or windows directly facing the street. 4. Local distributor roads are required to be installed with pedestrian sidewalks furnished with street lighting and trees.	
New development	1. All buildings are facing the main roads along anchor spines. 2. Residential units are placed between 5 and 10 meters from street boundary. 3. All new roads networks are supported by quality surface pedestrian sidewalks, furnished with trees, sitting benches and refuse bins every 400m. 4. To create an active building edge, at least 75% of the building facade on ground floor should have openings (doorways or shop windows), with no solid wall being longer than 5m.	

GUIDELINE 2: PUBLIC OPEN SPACE

Recreation and public open spaces in Bantu Bonke are limited and disintegrated with the rest of the settlement. Expansion areas will further exacerbate the disintegration of the provisioned recreational and public open spaces, west of the village. Three more public open spaces are spatially provisioned to support

vibrancy and enhance the beauty of the physical environment. The guidelines dictate diversified uses in these spaces to promote usage and neighbourhood vitality. Elements such as sitting places, jungle gyms, water features, play equipment and Wi-Fi are promoted in these spaces. The landscaping should be attractive to include trees, shrubs to offer shade and sustain bird life.

TABLE 15: PUBLIC OPEN SPACES SHOULD BE INTERACTIVE

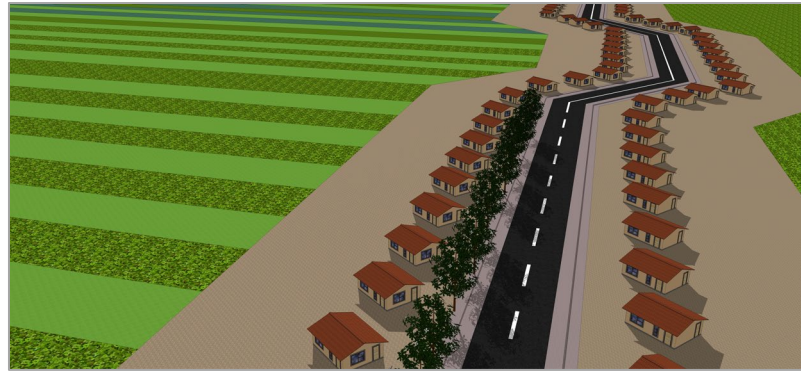
Development condition	Guidelines	Visualisation
Redevelopment	1. The existing public open space should have sitting facilities that will accommodate at least 10 people at a time. 2. Playing equipment and the introduction of trees and shrubs is encouraged to offer comfort and usability. 3. Wi-fi hotspot threshold should be increased to capture the entire open space adjacent to the multi-purpose facility. 4. Water features and/or public art as focal point in a hard or soft public space is to enhance the identity and congruence of the precinct.	
New development	1. The extension of the soft open space southwest of the village should be 80% soft landscape. 2. Provision of permeable material walkways is promoted with supporting sitting places and refuse bins along the walkways. 3. Hard open space (market square) should have a minimum of 10% green and communal space. 4. Sitting places accommodating a minimum of 10 people are encouraged. 5. Streetlights, Wi-Fi and interactive public sculptures are encouraged in the landscape design.	

GUIDELINE 3: PEDESTRIAN AND VEHICULAR ACCESS

Walking and mini-bus public transport constitute the main modes of transport in the village. The guidelines intend to sustain this transportation culture through pedestrianizing the settlement and offer convenient public transport infrastructure.

Other vehicular requirements are provisioned for including cycling, small-medium delivery trucks and private vehicles. Comfortable walking routes, permeable parking spaces and good rural connectivity are key elements explored in the guidelines.

TABLE 16: GOOD PEDESTRIAN MOVEMENT

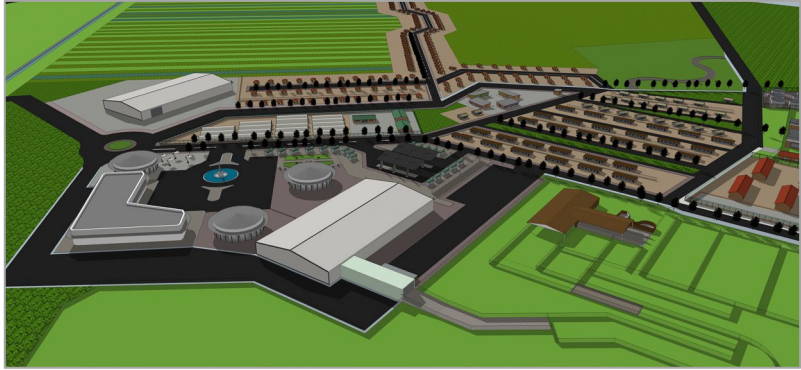
Development condition	Guidelines	Visualisation
Redevelopment	1. The main access roads in the existing settlements should have a sidewalk provisioned on one side of the street with trees and street lighting as supporting facilities. 2. Broken on-street parking is permitted adjacent to public and commercial buildings at 5m intervals to avoid vehicle dominance in the public realm. 3. Parking surfaces and taxi holding facilities should be of permeable material to reduce surface runoff in the settlement. 4. Vehicle lanes (7m) are attached to sidewalks (2m) in the identified boulevards.	
New development	1. Anchor spines in the new development areas should be staggered at every 100m to avoid monotonous landscapes. 2. Pedestrian sidewalks are provisioned on at least one side of the street furnished with trees and refuse bins. 3. Kerb design should allow vehicular access at any point along the roads and channel stormwater sufficiently. 4. Solar street lighting facilities are encouraged along these stretches of roads.	

GUIDELINE 4: BUILDINGS AND LAND USES

Horizontal mixed-uses are encouraged in the precinct to create buzz, activity, and the vibrancy of the agri-village. Various land use activities create choices for residents. This brings a variety of local economic activities. Some of these uses will be operated at extended times into the evenings creating

comfortable environments for those coming back from work after dark. Bringing in business uses and industrial activities to the agri-village, will reduce the cost of travelling to nearby towns for e.g., bread and milk. Economic production units will also absorb more youth into employment. Synergy of land uses form priority in the precinct.

TABLE 17: BUILDINGS MUST INTERACT WITH STREETS

Development condition	Guidelines: Linear and nucleated agri-villages	Visualisation
Residential and agriculture	1. Dwelling units are interfaced 5m from the street boundary. 2. A building line of 25m from the street boundary is provisioned for every parcel in the linear expansions. 3. Physical structures (dwelling units) beyond the building line are strictly prohibited to allow only agriculture-related activities. 4. Chicken coups and cattle kraals are allowed for subsistence farming purposes only. 5. Written agreements may be established by households to rent out the piece of land for farming purposes only, both at communal and private capacity. 6. Only agricultural handling facilities are permitted on communal farming spaces.	
Industrial and business	1. Commercial land uses should offer quality landscapes that will promote the beautification of the precinct. 2. Parking spaces should allow permeability of 40% to reduce surface runoff in the settlement. 3. Industrial activities such as bakery, storage facilities, small scale abattoirs should be disintegrated from the main settlement to reduce nuisance. 4. Fencing of these properties should be 100% visible from the street fronts to avoid negative interfaces with the streets. 5. Units are to utilise at least 50% renewable energy independently produced as per power production license guidelines.	

6.2.1 Visualisation

Figure 70 simulates a desired spatial form guided by the rural design guidelines and the zoning plans.

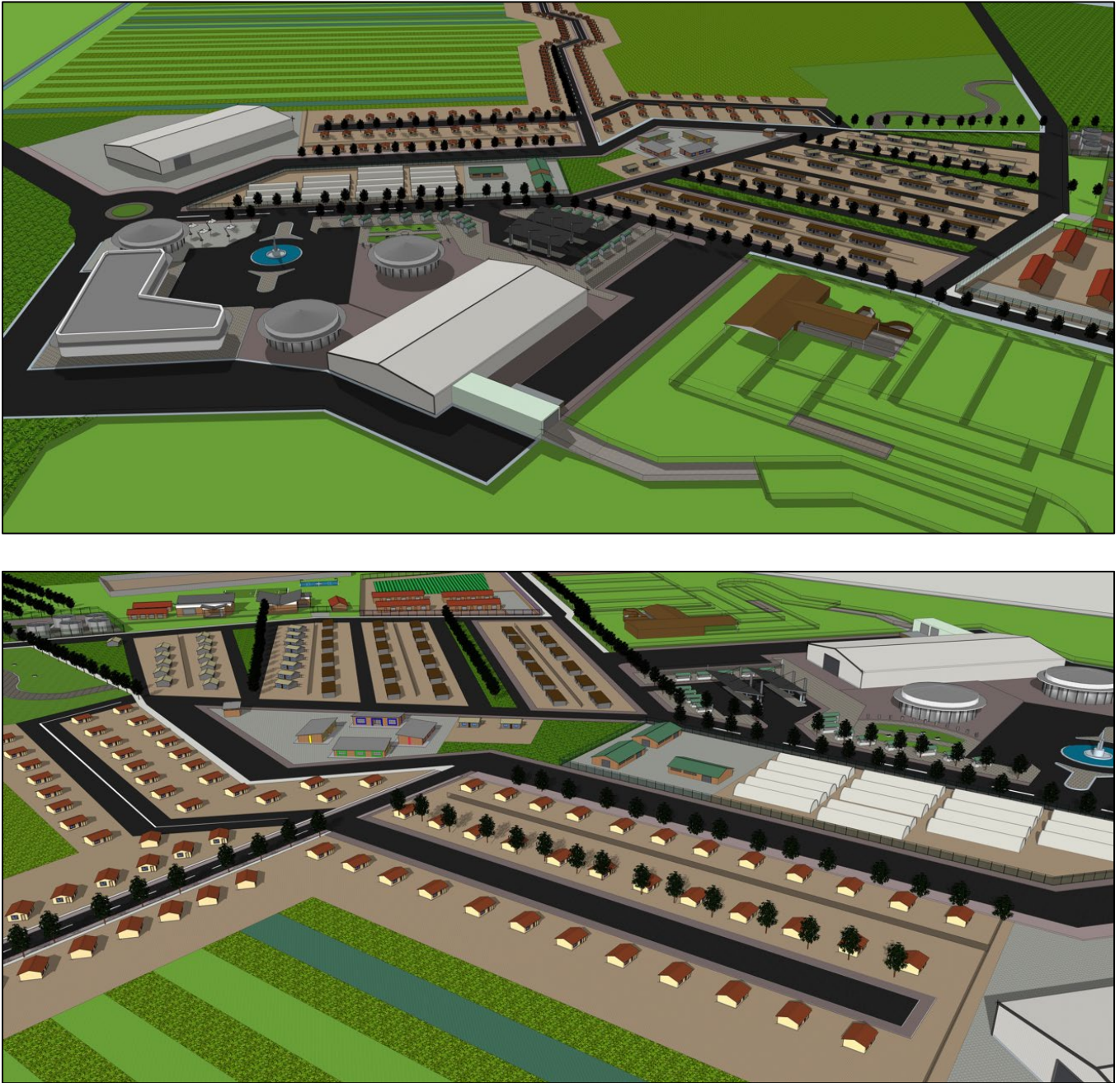


Figure 70: Bantu Bonke agri-village 3-dimensional simulation

6.3 Project spatial allocation

Figure 71 and **Figure 72** depict the spatial locations of the identified priority interventions for Panfontein/Greater Bantu Bonke. The bulk of the projects identified, are provisioned the same in the two development concepts.

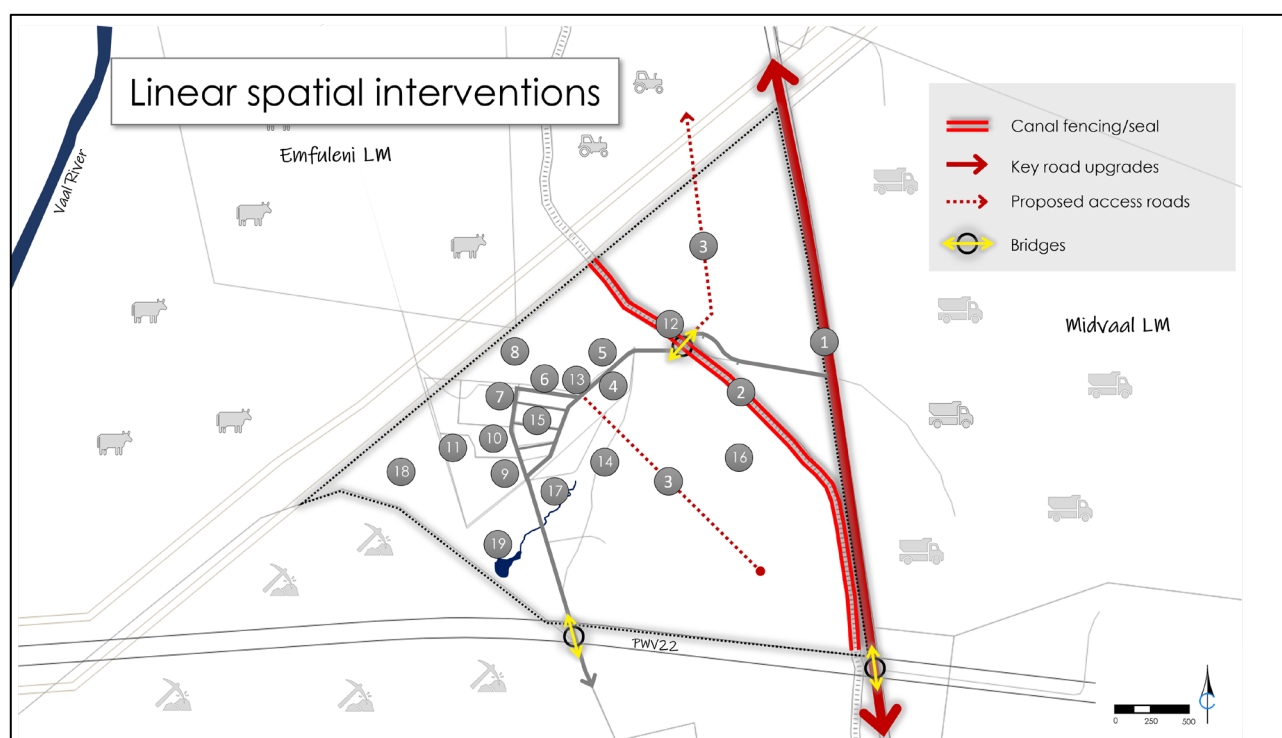


Figure 71: Spatial location of capital projects in the linear approach

TABLE 18: LINEAR PROJECT SPATIAL PLACEMENTS

No	Existing condition	Nature of intervention
1	Gravel road used mainly by heavy vehicles.	Asphalt surface upgrading.
2	Exposed high-velocity water canal.	Improved security such as fencing.
3	Vacant land identified for human settlements.	Construction of tarred roads.
4	Underutilised hydroponics plant.	Recapitalisation for commercial purposes.
5	Vacant land used for livestock grazing.	Construction of a small/medium retail centre.
6	Cattle kraal belonging to the cooperative.	Improved cattle-handling facilities for commercialisation.
7	Overcrowded learning and teaching facilities.	Increase capacity of learning facilities with permanent structures.
8	Vacant land identified used for cattle grazing.	Construct secondary level educational facilities.
9	Micro waste-water treatment plant.	Increase treatment capacity to service additional units.
10	Under-capacitated community healthcare centre and a derelict community hall.	Expand the CHC physically supported with additional human resources.
11	Burial facilities filled.	Expand burial site within the CPA property southerly.
12	Low-capacity bridge.	Upgrade bridge facilities to accommodate higher vehicular movements and improved aesthetics.
13	Vacant land used for livestock grazing.	Construct taxi facilities integrated with the market centre.
14	Vacant land identified for human settlements.	Construction of 500 low-cost single dwelling units and supporting bulk services.
15	Overcrowding, indigent households and poor roads.	Incremental upgrading through township establishment.
16	Vacant land identified for cropping.	Individual/communal cropping.
17	Vacant land identified to enhance rural ecology.	Construct public open space elements (sitting, walkways, landscaping).
18	Vacant land identified for renewable energy produce.	Install micro-grid solar panels for the village's electricity demand.
19	Vacant land identified for conservation.	Promote smooth transition of the settlement with the public open space and the natural area.

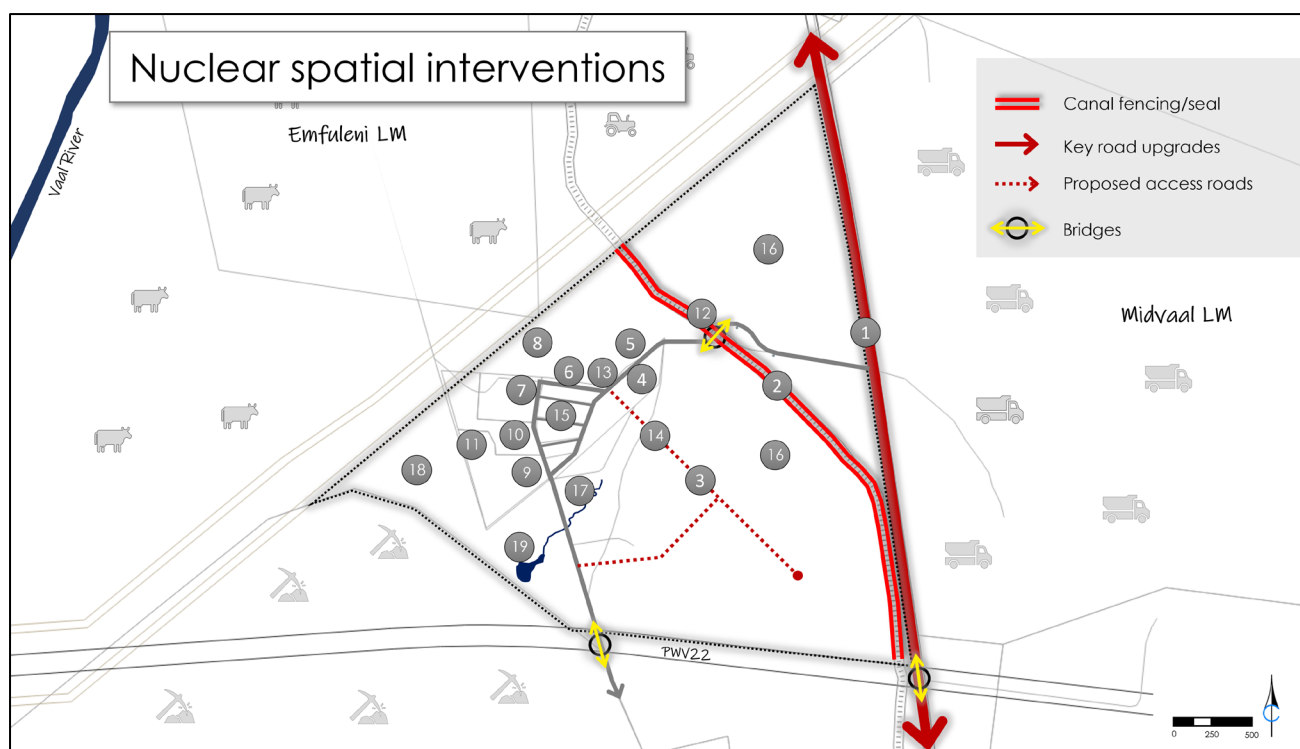


Figure 72: Spatial location of capital projects in the nucleated approach

TABLE 19: NUCLEATED PROJECT SPATIAL PLACEMENTS

No	Existing condition	Nature of intervention
1	Gravel road used mainly by heavy vehicles.	Asphalt surface upgrading.
2	Exposed high-velocity water canal.	Improved security such as fencing.
3	Vacant land identified for human settlements.	Construction of tarred roads.
4	Underutilised hydroponics plant.	Recapitalisation for commercial purposes.
5	Vacant land used for livestock grazing.	Construction of a small/ medium retail centre.
6	Cattle kraal belonging to the cooperative.	Improved cattle-handling facilities for commercialisation.
7	Overcrowded learning and teaching facilities.	Increase capacity of learning facilities with permanent structures.
8	Vacant land identified used for cattle grazing.	Construct secondary level educational facilities.
9	Micro waste-water treatment plant.	Increase treatment capacity to service additional units.
10	Under-capacitated community healthcare centre and a derelict community hall	Expand the CHC physically supported with additional human resources.
11	Burial facilities filled.	Expand burial site within the CPA property southerly.
12	Low-capacity bridge.	Upgrade bridge facilities to accommodate higher vehicular movements and improved aesthetics.
13	Vacant land used for livestock grazing.	Construct taxi facilities integrated with the market centre.
14	Vacant land identified for human settlements.	Construction of 500 low-cost single dwelling units and supporting bulk services.
15	Overcrowding, indigent households and poor roads.	Incremental upgrading through township establishment.
16	Vacant land identified for cropping.	Individual/communal cropping.
17	Vacant land identified to enhance rural ecology.	Construct public open space elements (sitting, walkways, landscaping).
18	Vacant land identified for renewable energy produce.	Install micro-grid solar panels for the village's electricity demand.
19	Vacant land identified for conservation.	Install smooth transition of the village settlement with the public open space and the natural area.





PRELIMINARY LINEAR SETTLEMENT LAYOUT PLAN

The linear layout plan for the Panfontein/Greater Bantu Bonke promotes rural design that intends to re-distribute land to the residents. The layout plan follows on the footsteps of the One Household One Hectare programme of the DALRRD, to promote tenure security, food security and improved rural livelihood.

The human settlements provision requires 30ha of land. The layout plan proposes individual stands of 10 X 400m area where more than two-thirds of the plots are dedicated to soft agriculture activities. The layout intends to maximise the number of properties that can be serviced by short spans of (1) roads (2) sewer and (3) water lines.

A total of about 350 individual stands are provisioned for smallholding. The individual properties are narrow in design; the construction of a typical BNG single unit is 5 X 7m by area. A density of 1du/farm is provisioned for these stands. The plan proposes an overlay zone to permit a second dwelling as per the MLM LUS. The width of the properties gives enough access to the backyard where households can plant their vegetables in a cooperative, as neighbours.

Pockets of medium-density residential units (20du/ha) are promoted adjacent to the current settlement footprint. A further 150 low-cost single dwelling units are accommodated in these pockets.

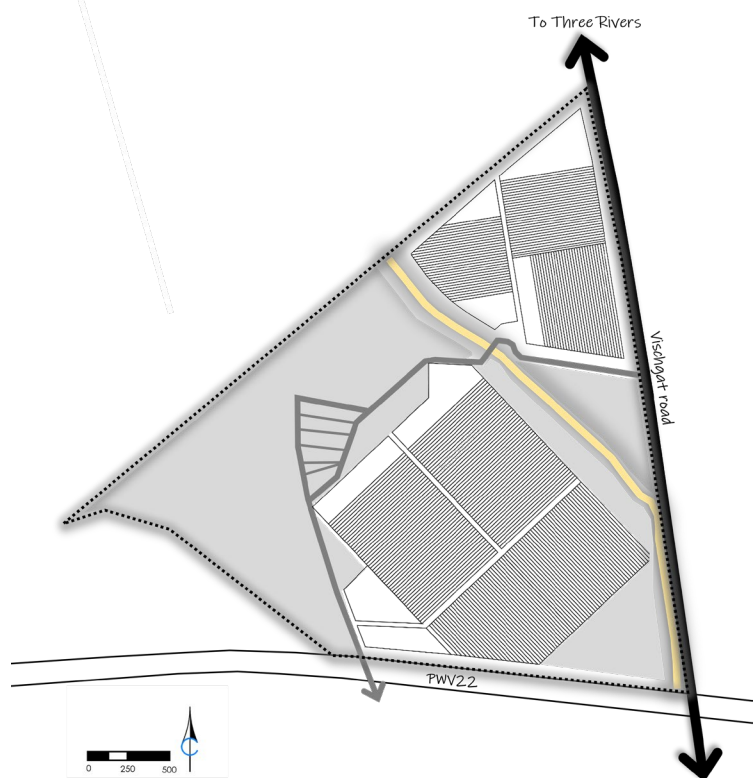


Figure 73: Preliminary linear settlement layout plan

6.1 Proposed zoning

Figure 71 shows **Area 1** that is controlled by the Bantu Bonke CPA recorded to be **6.3ha** by DALRRD and the Remainder of Panfontein Farm 437 which is state-owned land. The remaining parts of Portion 8 as noted from the Deed of Donation, are vested in the local Council.

The DALRRD is leasing units on the Remainder of Farm 437 to four different entities including Bantu Bonke agricultural cooperatives and Kwasomnandi Farming. The Property Management unit of DALRRD emphasised that these lease contracts are subject to reviews for any spatial provisions in the aforementioned parcel of land.

Two development concepts are proposed in Area 2: Linear and Nuclear. This section proposes zoning plans to accommodate desired facilities of an agri-village following both the linear and nuclear concepts. Area 1 is already developed, and the zonings proposed there will accommodate the existing uses.

Zoning controls are provisioned for **(1)** communal property in case of formalisation **(2)** linear development concept and **(3)** nuclear development concept in **TABLE 20**, **TABLE 21**, and **TABLE 22** respectively.

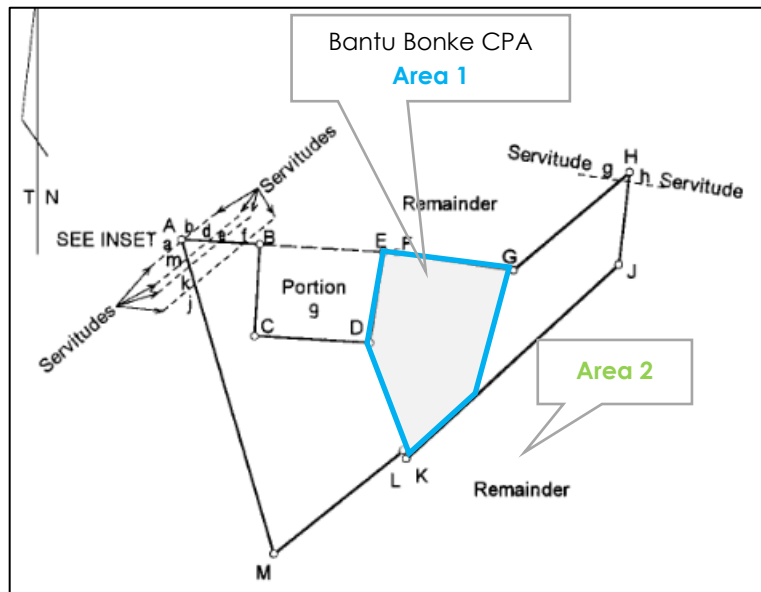


Figure 74: Portion 8 of Farm Panfontein 437 (SG 9515/2000)

Area 1: Communal property

In both linear and nuclear development concepts, the following land uses are proposed **(1)** single dwelling units **(2)** duet houses **(3)** primary school **(4)** cemetery **(5)** the hydroponics plant **(6)** waste water treatment plant **(7)** public open space and **(8)** the multi-purpose community centre.

Area 2: Nuclear development

In Area 2 it is proposed to allocate 500 (15 x 20m) residential erven. Other uses proposed for allocation include **(1)** agricultural technology secondary school **(2)** cattle feedlot and rural red meat abattoir **(3)** agricultural processing, cooling, and packaging plant **(4)** broiler production houses and **(5)** small scale solar farm and a **(6)** communal farming area.

The portion of land designated for Business 2—is envisioned to accommodate **(1)** small supermarket **(2)** Automatic Teller Machines **(3)** bakery **(4)** informal trading stalls **(5)** public square **(6)** restaurant and/or place of refreshment **(7)** taxi rank and a **(8)** dispensing chemist.

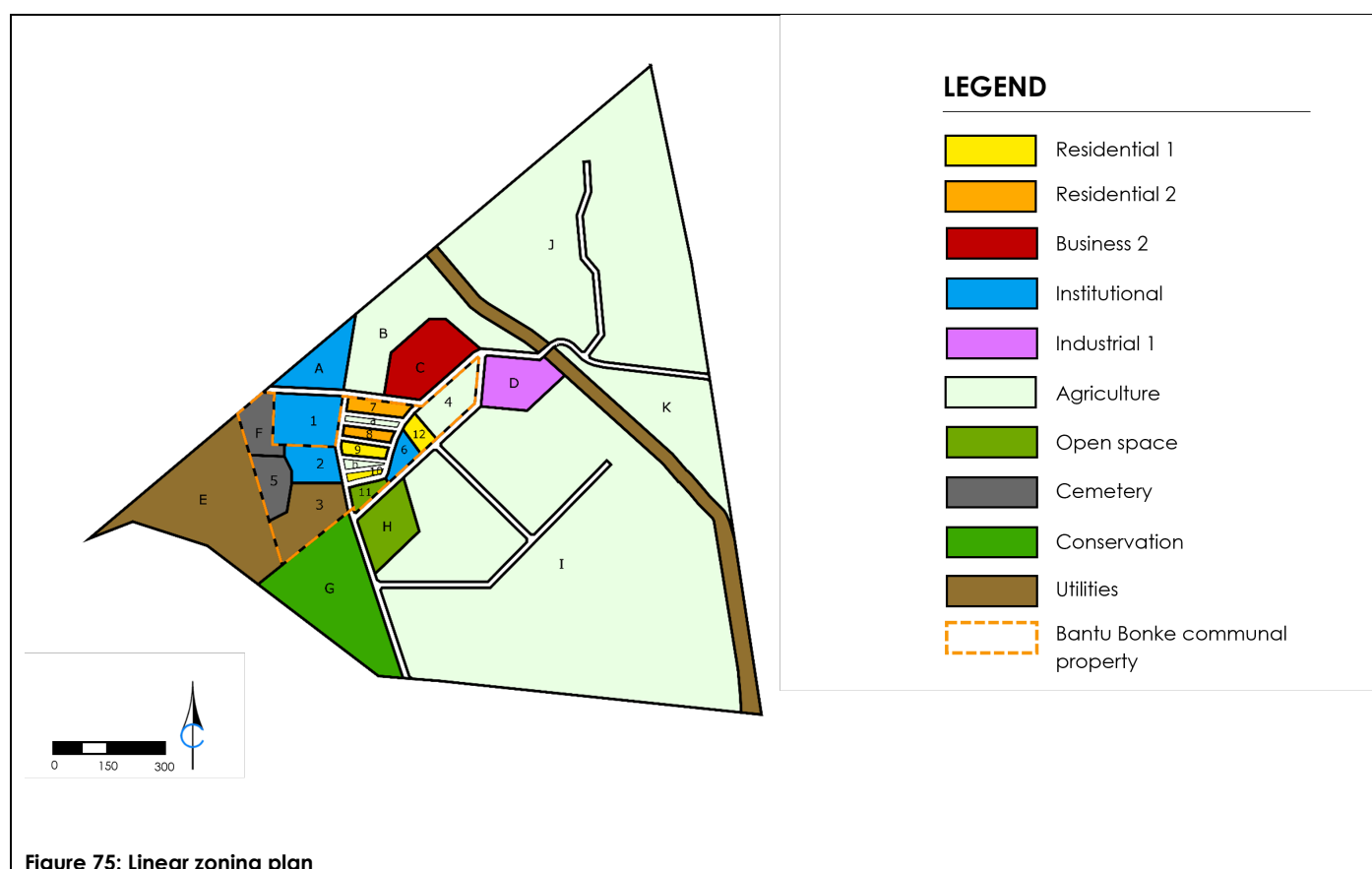
Area 2: Linear development

The linear rural development concept allocates 350 (10 x 400m) residential and food production plots, and 150 (15 x 20m) residential erven. Other non-residential uses promoted include **(1)** agricultural technology secondary school **(2)** cattle feedlot and rural red meat abattoir **(3)** agricultural processing, cooling, and packaging plant **(4)** broiler production houses and a **(5)** small scale solar farm.

Similar to the nuclear model, the portion of land designated for Business 2—is envisioned to accommodate **(1)** small supermarket **(2)** Automatic Teller Machines **(3)** bakery **(4)** informal trading stalls **(5)** public square **(6)** restaurant and/or place of refreshment **(7)** taxi rank and a **(8)** dispensing chemist.

6.1.1 Linear agri-village development

The following proposes a zoning plan to accommodate desired facilities of an agri-village following a linear model.



PROPERTIES NORTH OF CPA BOUNDARY

Properties: RE/437—A, RE/437—B, RE/437—C, RE/437—D
Current zoning: Agriculture

Parcel A will accommodate secondary educational facilities which will be integrated with **Parcel B** dedicated to commercial cattle handling facilities.

Parcel C accommodate the rural market that will see mixed uses that will support local economic activities.

Parcel D accommodates processing, cooling and storage facilities which will support commercialisation of the agricultural cooperatives in the village.

PROPERTIES WEST OF CPA BOUNDARY

Properties: RE/437—E, RE/437—F
Current zoning: Agriculture

Parcel E provides for flexible land uses to support community projects such as solar farming, fish farming or cropping activities.

Parcel F is an extension of the burial facility further north to make provision for the village's natural population growth in the medium and long-term.

PROPERTIES SOUTH OF CPA BOUNDARY

Properties: RE/437—G, RE/437—H
Current zoning: Agriculture

Parcel G is mainly connected to the water pan and continues outside the precinct boundary. This portion is dedicated to increase ecological quality and access by the residents.

Parcel H offers a smooth transition of the developed area into the natural landscape. Landscaping allows sitting and picnic areas that will enhance access and enjoyment of the soft rural ecology.

PROPERTIES EAST OF CPA BOUNDARY

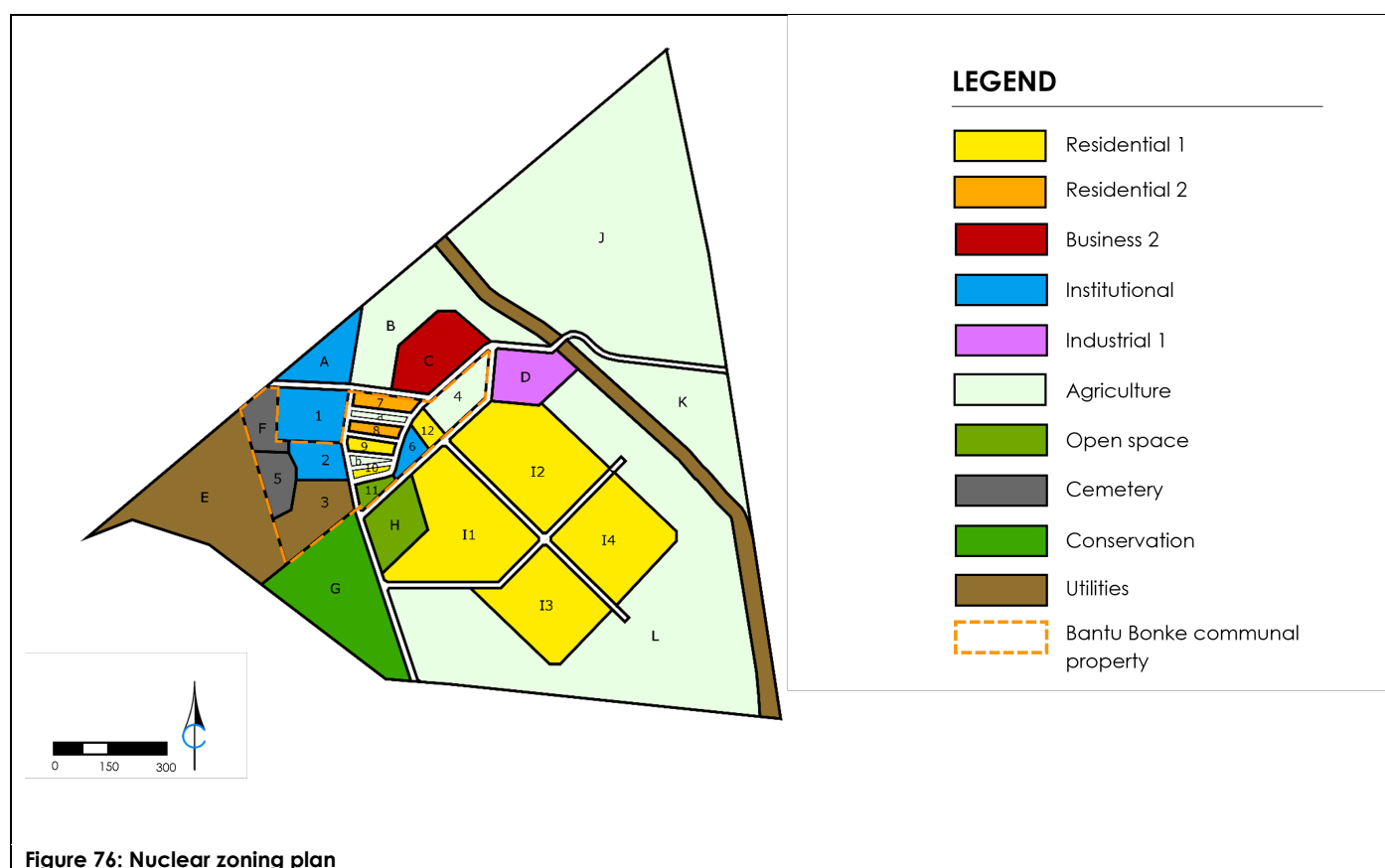
Properties: RE/437—I, RE/437—J, RE/437—K
Current zoning: Agriculture

Parcel I and J are dedicated for low-cost housing developments that will promote meaningful land reform and tenure security. Crop production is promoted at household level and communal cooperative level.

Parcel K is identified for broiler production at commercial scale belonging to the community cooperative. Engineering solutions are encouraged to prevent water pollution.

6.1.2 Nuclear agri-village development

The following proposes a zoning plan to accommodate desired facilities of an agri-village following a nuclear model.



PROPERTIES NORTH OF CPA BOUNDARY

Properties: RE/437—A, RE/437—B, RE/437—C, RE/437—D
Current zoning: Agriculture

Parcel A will accommodate secondary educational facilities which will be integrated with **Parcel B** dedicated to commercial cattle handling facilities.

Parcel C accommodates the rural market that will see mixed uses that will support local economic activities.

Parcel D accommodates processing, cooling and storage facilities which will support commercialisation of the agricultural cooperatives in the village.

PROPERTIES WEST OF CPA BOUNDARY

Properties: RE/437—E, RE/437—F
Current zoning: Agriculture

Parcel E provides for flexible land uses to support community projects such as solar farming, fish farming or cropping activities. **Parcel F** is an extension of the burial facility further north to make provision for the village's natural population growth in the medium and long-term.

PROPERTIES SOUTH OF CPA BOUNDARY

Properties: RE/437—G, RE/437—H
Current zoning: Agriculture

Parcel G is mainly connected to the water pan and continues outside the precinct boundary. This portion is dedicated to increase ecological quality and access by the residents.

Parcel H offers a smooth transition of the developed area into the natural landscape. Landscaping allows sitting and picnic areas that will enhance access and enjoyment of the soft rural ecology.

PROPERTIES EAST OF CPA BOUNDARY

Properties: RE/437—I1,2,3,4, RE/437—J, RE/437—K, RE/437—L
Current zoning: Agriculture

Parcel I1, I2, I3, and I4 are dedicated for Residential 1 low-cost housing. **Parcels J and L** are dedicated for communal crop farming. Crop production is promoted at commercial scale to establish stronger market linkages with the cooperatives.

Parcel K is identified for broiler production at commercial scale belonging to the community cooperative. Engineering solutions are encouraged to prevent water pollution.

TABLE 20: PROPOSED ZONING CONTROLS IN CASE OF FORMALISATION (COMMUNAL PROPERTY)

Existing conditions			Proposed conditions						
Parcel description	Current zoning	Current land uses (Tertiary classification)	Proposed zoning (MLM LUS)	Current land use (MLM LUS)	Building cover (%)	Building height (Storey)	Size (ha)	Density (du/ha)	Number of facilities
8/437-2	Agriculture	Social Hall, Sports Facility, Clinic, Educational Use	Institutional	Social Hall, Sports Facility, Clinic, Educational Use	60	One	2.46	M/A	4
8/437-3	Agriculture	Sewage Works	Utilities	Sewage Works	M/A	M/A	4.56	M/A	3
8/437-4	Agriculture	Greenhouse	Agriculture	Greenhouse	10	One	1.93	M/A	24
8/437-5	Agriculture	Cemetery	Cemetery	Cemetery	M/A	One	1.45	M/A	
8/437-6	Agriculture	Vacant-under construction	Institutional	Creche	60	One	0.91	M/A	4
8/437-7	Agriculture	Dwelling House	Residential 2	Dwelling House		One	0.88	25	27
8/437-8	Agriculture	Dwelling House	Residential 2	Dwelling House		One		25	26
8/437-9	Agriculture	Dwelling House	Residential 1	Dwelling House	60	Two	0.94	1 du/erf	11 (erven)
			Residential 2					25	08 (erven)
8/437-10	Agriculture	Dwelling House	Residential 1	Dwelling House	60	Two	0.73	1 du/erf	12 (erven)
8/437-11	Agriculture	Vacant-disturbed	Open Space	Public Open Space	M/A	M/A	0.64	M/A	
8/437-12	Agriculture	Dwelling House	Residential 1	Dwelling House	60	Two	0.76	1 du/erf	4 (erven)
8/437-F	Agriculture	Vacant-undisturbed	Cemetery	Cemetery	M/A	M/A	1.99	M/A	
8/437-a	Agriculture	Vacant-temporary	Agriculture	Vegetable gardening	M/A	M/A	0.53		
8/437-b	Agriculture	Vacant-temporary	Agriculture	Vegetable gardening	M/A	M/A	0.21		



TABLE 21: PROPOSED ZONING CONTROLS (LINEAR DEVELOPMENT)

Existing conditions				Proposed conditions						
Parcel description	Current zoning	Current land use (Tertiary classification)	Size (ha)	Proposed zoning (MLM LUS)	Preferred land use (MLM LUS)	Building cover (%)	Building height (Storey)	Land area required (ha)	Number of units	Number of facilities
RE/437-A	Agriculture	Vacant-temporary (Grazing)	2.85	Institutional	Educational (Secondary school)	60	One	2	15	1
RE/437-B	Agriculture	Vacant-significant (Handling structures)	7.30	Agriculture	Beef cattle farming	10	One	8	100 cattle	1
					*Rural red meat abattoir		One		2 slaughter units/day	1
RE/437-C	Agriculture	Vacant-temporary (Grazing)	7.17	Business 2	Shop	60	One	8		1
					*Informal trading		One		10	10
					*Dispensing Chemist		One		1	1
					*Taxi terminus		One		4	1
					*Public Open Space (hard)		One		1	1
					Restaurant		One		2	2
					Bakery		One		1	1
RE/437-D	Agriculture	Vacant-temporary (Grazing)	2.98	Industrial 1	Agricultural Industry (Processing and packaging)	75	One	3		1
RE/437-E	Agriculture	Vacant-temporary (Grazing)	13.18	Utilities	*Electrical purposes (non-commercial solar farm)	M/A	One	13	~10 000 PV panels	~4500 kVA (4,5 MW)
RE /437-F	Agriculture	Vacant-undisturbed	1.74	Cemetery	Cemetery	M/A	One	1.74		1
RE/437-G	Agriculture	Vacant-undisturbed	11.60	Conservation	*Conservation purposes (Recreation and ecotourism)	M/A		11		
RE/437-H	Agriculture	Vacant-undisturbed	8.19	Open space	Public Open Space (soft)	M/A	One	8		1
RE/437-I & J	Agriculture	Vacant-undisturbed	110	Agriculture	Residential and food production plots	10	Two	110	1 du/farm	≥350
O/437-K	Agriculture	Vacant-undisturbed	7.22	Agriculture	Agricultural Industry (Hatchery)	10	One	4	1000 bird capacity	

*These uses are permitted with consent. It is proposed that they are rather allowed as a primary right in terms of an overlay zone.

TABLE 22: PROPOSED ZONING CONTROLS (NUCLEAR DEVELOPMENT)

Existing conditions				Proposed conditions						
Parcel description	Current zoning	Current land use (Tertiary classification)	Size (ha)	Proposed zoning (MLM LUS)	Preferred land use (MLM LUS)	Building cover (%)	Building height (Storey)	Land area required (ha)	Number of units	Number of facilities
RE/437-A	Agriculture	Vacant-temporary (Grazing)	2.85	Institutional	Educational (Secondary school)	60	One	2	15	1
RE/437-B	Agriculture	Vacant-significant (Handling structures)	7.30	Agriculture	Beef cattle farming	10	One	8	100 cattle	1
					*Rural red meat abattoir		One		2 slaughter units/day	1
RE/437-C	Agriculture	Vacant-temporary (Grazing)	7.17	Business 2	Shop	60	One	8		1
					*Informal trading		One		10	10
					*Dispensing Chemist		One		1	1
					*Taxi terminus		One		4	1
					*Public Open Space (hard)		One		1	1
					Restaurant		One		2	2
					Bakery		One		1	1
RE/437-D	Agriculture	Vacant-temporary (Grazing)	2.98	Industrial 1	Agricultural Industry (Processing and packaging)	75	One	3		1
RE/437-E	Agriculture	Vacant-temporary (Grazing)	13.18	Utilities	*Electrical purposes (non-commercial solar farm)	M/A	One	13	~10 000 PV panels	~4500 kVA (4,5 MW)
RE /437-F	Agriculture	Vacant-undisturbed	1.74	Cemetery	Cemetery	M/A	One	1.74		1
RE/437-G	Agriculture	Vacant-undisturbed	11.60	Conservation	*Conservation purposes (Recreation and ecotourism)	M/A		11		
RE/437-H	Agriculture	Vacant-undisturbed	8.19	Open space	Public Open Space (soft)	M/A	One	8		1
RE/437-I1, I2, I3 & I4	Agriculture	Vacant-undisturbed	110	Residential 1	Dwelling House	60	Two	30	1 du/erf	≤500
O/437-K	Agriculture	Vacant-undisturbed	7.22	Agriculture	Agricultural Industry (Hatchery)	10	One	4	1000 bird capacity	1

*These uses are permitted with consent. It is proposed that they are rather allowed as a primary right in terms of an overlay zone.

6.2 Statutory processes

The precinct plan makes spatial provisions on the following properties:

TABLE 23: PROPERTIES AFFECTED					
Property description	Size	Ownership	Zoning	Title deed reference	Custody/lease agreements
Portion 8 of the farm Panfontein 437 IR	23,1315ha	Bantu Bonke Communal Property Association	Agriculture	T118421_2005	Department of Agriculture, Land Reform and Rural Development
Remainder of the farm Panfontein 437 IR	890.96ha (290ha of designated boundary)	NATIONAL GOVERNMENT OF THE REPUBLIC OF SOUTH AFRICA	Agriculture	T88690_2015	Department of Agriculture, Land Reform and Rural Development ▪ Kwasomnandi Farming ▪ 3x Bantu Bonke agriculture cooperatives
Portion 9 of the farm Panfontein 437 IR	4.1034ha	Provincial Government of the Gauteng Province	Agriculture	T118422_2005	Gauteng Department of Basic Education

*Portion 11 is accounted for under Portion 8 of farm 437 as there is no deeds registration and zoning information of the property.

Section 18(4) of the Midvaal Land Use Scheme, 2017 provisions that the municipality may adopt, replace, amend or recommend overlay zones that provide for development directives by following the rezoning procedures stipulated in planning law; together with Section 35(2) of the Midvaal Local Municipality Spatial Planning and Land Use Management By-law, which provides that the Municipality may, on its own initiative or on application, create an overlay zone for land.

It is proposed that the Municipality adopts an overlay zone, to be known as the Panfontein/Greater Bantu Bonke Agri-village. The purpose of the overlay zone is to regulate development in the demarcated area, by promoting safe and sustainable development. Additional rights will be allocated to the properties in addition to the primary and consent use rights of the current agriculture zone.

Any other land uses not provided for in the overlay zone will have to be obtained either with a rezoning or township establishment application process. No land uses which constitute an illegal township would be approved by the Municipality. An illegal township means a land development or land to be developed which in the opinion of the municipality constitutes an [illegal township](#), without having established a township as contemplated in the By-law, including but limited to consisting of more than one use, single or multiple proposed erven including a sectional title scheme or multiple ownership, existing or proposed on farm land.

Tenure conversion into freehold ownership can be obtained either with a subdivision application or a township establishment application process, depending on the size of the proposed properties. The municipal policy on division of agricultural land shall apply. It is important to note that no person shall commence with, carry on or cause the commencement with or carrying on of land development without the approval of the municipality; and when an applicant or owner exercises a use right granted in terms of an approval he or she shall comply with the conditions of the approval, and the applicable provisions of the Scheme, building plans and any other applicable legislation.

6.3 Roles and responsibilities

The implementation framework employs an integrated stakeholder approach to capital and socio-economic investments. The framework categorises planning activities that still need to take place at project level. The identification of stakeholders for specific projects, does not limit expanded collaborations in both private and public sector entities. The framework intends to begin and expand stakeholder discussions and relations.

The current framework excludes costing of the identified projects and programmes which are critical for budgeting purposes. Most capital projects involve the provision of bulk infrastructure with many variables potentially impacting on costs. Furthermore, long-term timeframes cannot be accurately defined at this stage.

TABLE 24: PROJECT DIRECTIVES

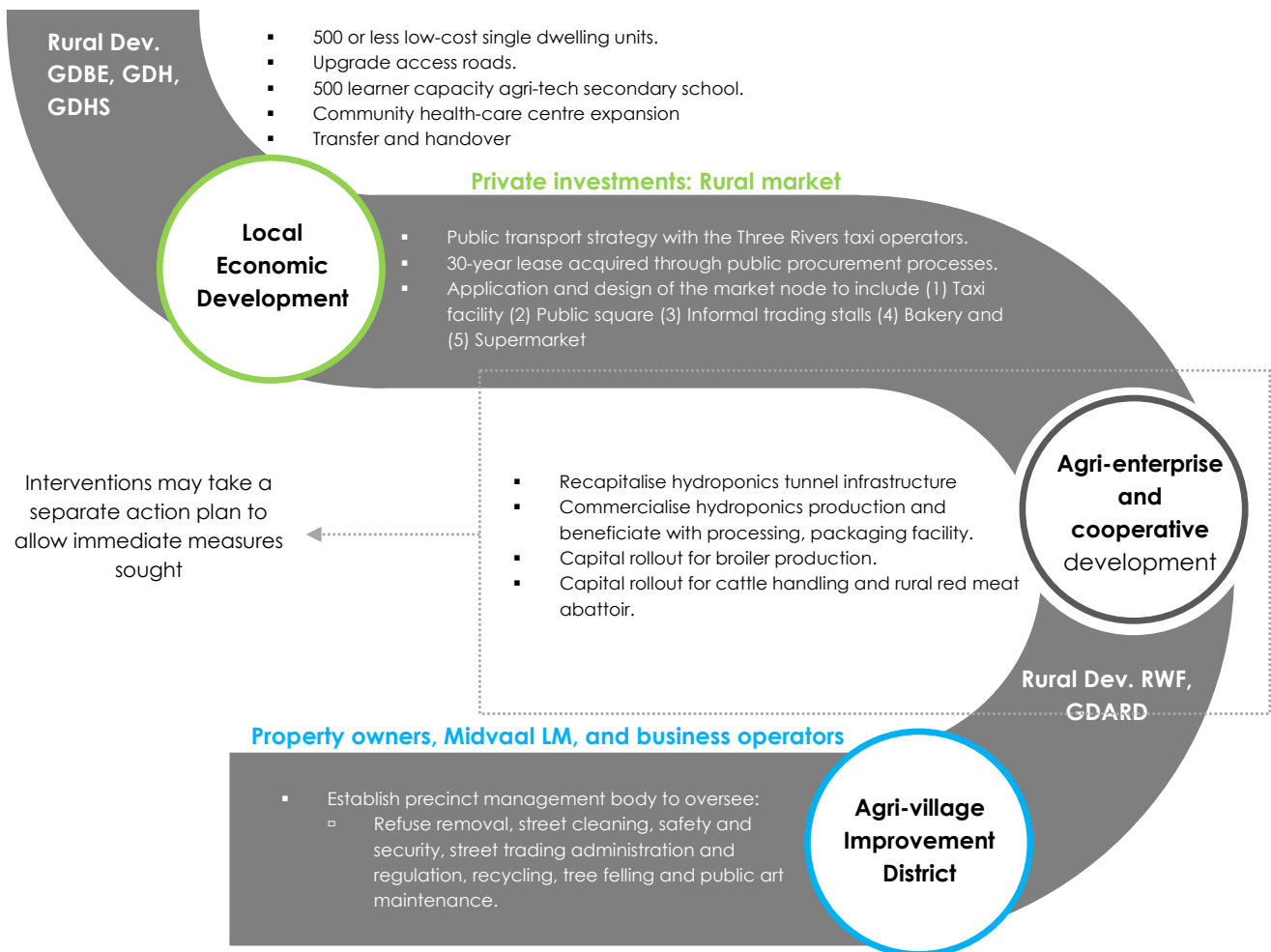
Project details	Responsibility	Implementation priority			Budget estimates (R)
		High	Med	Low	
Planning, design, and studies					
Commission market study for the commercialization and expansion of the hydroponics project	Rand Water Foundation	X			500 000
Commission market study for the commercialization of the cattle farming.	Rural Development		X		500 000
Commission a feasibility study for beneficiation of the sludge into brickmaking enterprise development.	Rand Water		X		500 000
Advance township establishment processes for the construction of the 500 dwelling units.	GDHS		X		1 million
Draft detailed rural design for boulevards, market node, and the public open spaces.	Midvaal LM		X		500 000
Commission Environmental Impact Assessment for the broiler project.	Rural Development		X		500 000
Conduct detailed (1) Environmental Impact Assessment (2) Geo-technical and (3) Groundwater Impact Assessment studies.	GDHS		X		TBC
Advance Traffic Impact Assessment for Vischgat road	Gautrans		X		TBC
Capital investment projects					
Provide 10km bulk sewer for human settlements expansion.	RD and/or GDHS		X		16 million
Expand the existing micro water treatment plant to increase capacity for the additional dwelling units.	Midvaal LM		X		15 million
Design and construct market centre (micro shopping centre) adjacent hydroponics plant.	Private		X		30 million
Design and construct a taxi rank facility supported by trading stalls and public square.	Sedibeng DM		X		2 million
Upgrade existing roads with conventional stormwater system and pedestrian walkways.	MLM, RD and LE	X			2.5 million
Construct 500 low-cost single dwelling units.	RD and/or GDHS		X		50 million
Construct 4km roads and stormwater	Rural Development		X		25 million
Install solar geysers for the existing household units headed by senior residents.	DMRE and/or Midvaal LM	X			800 000
Install solar street lighting facilities in the existing settlement.	Midvaal LM	X			300 000
Design and construct public identity elements at the two entrance points to the settlements.	Sky Sand/Lonsa Everite	X			20 000
Design and extend the existing Community Healthcare Centre.	GDH	X			1 million
Recapitalise tunnel infrastructure and supporting handling facilities.	RWF and RD	X			300 000
Reconstruct the community hall with suitable building engineering fitting for the ground conditions.	Midvaal LM	X			TBC
Design and construct cattle handling facilities.	GDARD		X		1.5 million
Construct 8 broiler production houses.					900 000

TABLE 24: PROJECT DIRECTIVES					
Project details	Responsibility	Implementation priority			Budget estimates (R)
		High	Med	Low	
Design and construct agricultural technology secondary school	GDBE			X	10 million
Extend learning and teaching facilities of the Panfontein primary school.	GDBE	X			1 million
Establish a solar plant to service village households, agri-industries, and other facilities as a business transaction for Bantu Bonke cooperatives.	Sedibeng DM		X		60 million
Planning and development processes					
Transfer 30ha of land to GDHS for human settlement development.	DALRRD	X			TBC
If tenure conversion is endorsed by community—convert old order rights to freehold ownership through township establishment.	Midvaal LM		X		
Improve the Midvaal Land Use Scheme to provide conditions for agri-villages and effect the Panfontein/Greater Bantu Bonke Agri-village Overlay Zone.	Midvaal LM		X		
Facilitate human settlement development grants through the Integrated Residential Development Programme.	Sedibeng DM/Midvaal LM	X			
Negotiate with Rural Development to invest in conventional sewer facilities, housing and/or roads	Sedibeng DM/Midvaal LM		X		
Negotiate with Rand Water to seal or fence off the water canal where it traverses the precinct demarcation.	Midvaal LM	X			500 000
Facilitate subsidy administration a year before the construction of the units, prioritising backyard dwellers only.	GDHS and Midvaal LM		X		
Establish a permanent stakeholder forum involving Rand Water, Lonsa Everite, Rural Development and the Bantu Bonke Communal Property Association.	Midvaal LM	X			
CPA to allocate land on the western border for the expansion of the burial facility.	CPA and MLM		X		
Identify and register small traders supported by entrepreneurial skills development.	LE, CPA and MLM		X		
Renew leadership composition, electoral constitution of the CPA.	CPA	X			
Socio-economic projects and programmes					
Compile a programme to assist the revitalization of the cooperatives' sustainable business strategy.	LE, RWF and DALRRD	X			500 000
Establish a collaborative programme between the schools and the agri-cooperatives for formal knowledge transfers recognised in the basic education syllabus.	GDBE and GDARD			X	
Cattle cooperative to collaborate with Barnlab for the supply of animal feed at highly competitive pricing to lower operational costs.	Barnlab and CPA	X			
Design a programme identifying local artists to design, fabricate, install, and maintain public art elements.	Lonsa Everite/Sky Sand	X			
Establish a seed programme for households interested in backyard vegetable farming to promote food security.	DALRRD	X			900 000
Compile a computer literacy programme that will procure equipment and facilitate training.	Lonsa Everite/Sky Sand	X			100 000
Establish the Adult Basic Education and Training (ABET) programme.	Lonsa Everite/Sky Sand	X			

The unit costs of the capital projects identified are to be used for first order project planning and budgeting only. The actual unit costs should be determined through detailed project feasibility studies, design, and contractor costings.

6.4 Implementation process guide





6.5 Agri-village improvement district

Bantu Bonke Neighbourhood Node is classified as the only rural node in Midvaal. The envisioned cluster of agricultural economic activities entail a rural economic hub, located in the mid-west of the Midvaal municipal region. The establishment of the participatory management body is essential to institute sustainable growth and development of the node.

A participatory management body is a soft intervention that will protect and sustain capital investments in the node. This body will be established as the "Agri-village Improvement District" and would comprise the CPA, RWF, Panfontein Primary School, Barnlab, Sky Sands, Midvaal LM, agricultural cooperatives, taxi operators, business owners, informal traders, CWP volunteers. The participatory management body will oversee the physical development, maintenance, and management of the agri-village. Procedures to establish the agri-village management body are anchored to the Gauteng City Improvement District Act of 1997 (GPL, 1997).

The body would promote the cooperation and facilitation for capital implements in the agri-village. There would be a collection of levies from businesses to fund public maintenance programmes including street cleaning, tree felling and recycling projects. Rural safety and security bodies, formal and informal trading placements may be organized through the agri-village management body. The existing CWP presents a human resource advantage for all groundwork. The proposed precinct boundary would define the demarcation and jurisdiction of the Agri-village Improvement District.



6.6 Infrastructure requirements

BULK SERVICE DEMANDS

The table below sets out the proposed bulk services identified for developable properties. Cadre Connect (Pty) Ltd calculated the engineering services demands for water, sanitation, and electricity for the expected expansion areas.

The design standards used for the calculations are in accordance with the standards specified in "The Guidelines for Human Settlement Planning and Design" (Red Book) published in 2000 by the Council for Scientific and Industrial Research (CSIR), with a revision published in 2019. The calculations provided do not consider the existing bulk services (or additional capacity); provision is made for the additional bulk capacity

that is needed with the expansion plans. Unit requirements of bulk services are determined by the maximum development provisions contained in the Midvaal LM Land Use Scheme. These include zoning coverage and density provisions.

With maximum development provisions of the linear model the following water and electricity will be required, and sewerage will be generated:

- Average Annual Daily Demand for water will be **608 kl/day**
- Average Annual Daily Flow of sewerage will be **639 kl/day**
- Load demand for electricity will be **12 941 kVA**.

TABLE 25: REQUIREMENTS FOR ENGINEERING SERVICES

Land parcel	Proposed development					Water		Sewerage		Electricity	
	Proposed zoning	Size (ha)	Midvaal LM LUS		Estimated area on erf based on FAR (m ²)	Average Annual Daily Demand (kL/100m ²)	Water Demand (kL/d)	Average Annual Daily Flow (Kl/100m ²)	Sewerage Flow (kL/d)	Unit Load Assumption (VA/m ²)	Electricity Load (kVA)
			FAR	Density (units/ha)							
RE/437-A	Institutional	2.85	0.6	M/A	17 100	0.6	102.6	0.39	66.69	80	1368
RE/437-B	Agriculture	7.30	0.1	1 du/farm	7 300	0.8	58.4	0.32	23.36	80	584
RE/437-C	Business 2	7.17	0.6	40	42 020	0.65	27.3	0.52	218.50	80	3362
RE/437-D	Industrial 1	2.98	0.75	N/A	22 350	0.4	89.4	0.32	71.52	80	1788
RE/437-E	Utilities	13.18	N/A	N/A	131 800	0	0	0	0	0.3 kW/panel	+4500 (4,5MW)
RE/437-F	Cemetery	1.74	N/A	N/A	17 400	0	0	0	0	80	0
RE/437-G	Conservation	11.60	N/A	M/A	116 000	0	0	0	0	80	0
RE/437-H	Open space	8.19	"0.2"	M/A	16 380	0.4	65.52	0	0	80	0
RE/437-I & J	Agriculture	109.61	"0.06"	1 du/farm	65 766	0.4 (Excl. irrigation)	263.06	0.36	236.76	80	5261
RE/437-I1, I2, I3, I4	Residential 1	30	0.1	1 du/erf (max)	30 000	0.4	120	0.36	108	80	*2400
0/437-K	Agriculture	7.22	0.1	1 du/farm	7 220	0.4	28.88	0.32	23.10	80	578
TOTAL		171.84					608		639		12 941

*Human settlements feasibility study estimated 2.5 mVA (2500 kVA) of electrical services needed for the 500 residential stands.

6.7 Development catalysts and funding

DEVELOPMENT INCENTIVES

The agri-village spatial proposals affect a single property in which the DALRRD remains the custodian. This section focuses on development incentives that should be capitalised on. Some of these incentives to be considered include (1) public-private cooperation (agri-village management, land swop, joint ventures) (2) tax rebates (3) direct grants relating to housing development (4) negotiated land transactions (sale or long-term lease with conditions) and (5) direct municipal

contributions. Municipal capacities are mainly enabled by National Treasury's conditional grants which supplement new infrastructure developments and maintenance. **TABLE 26** captures the framework of these grants in which project funding model can be built from. The municipal infrastructure grant (MIG) is a principal enabler of basic infrastructure planning, funding, financing, and management at the disposal of local authorities. (Treasury, 2020)

TABLE 26: INFRASTRUCTURE GRANTS

Grant type	Transferring department	Sector support	Capital funding areas	Funding cycle
Municipal Infrastructure Grant	Cooperative Governance and Traditional Affairs	Department of Water and Sanitation Support and monitor municipalities to prepare and implement water services development plans.	- Basic water and sanitation services. - Street and community lighting.	Grant continues until 2022/23, subject to review
Infrastructure support	DALRRD	Provide national engineering norms and standards, guidelines, and best practices on all engineering infrastructure.	Irrigation systems, drainage systems, soil conservation, intensive animal production facilities, energy, agri-processing, storage facilities, and roads.	TBC
Expanded Public Works Programme Integrated Grant for Municipalities	Public Works and Infrastructure	Determine eligibility and set grant allocations and FTE targets for eligible municipalities.	- Basic services infrastructure, including water and sanitation reticulation. - Low traffic volume roads and rural roads.	Grant continues until 2022/23, subject to review
Water Services Infrastructure Grant	Water and Sanitation	Evaluate and approve the business plans for each project before funds can be transferred.	Facilitate the planning and implementation of various water and sanitation projects	Grant continues until 2022/23, subject to review
Development Bank of South Africa	National Treasury and DPWI	Infrastructure Fund is applicable to all public sector institutions and project sponsors responsible for infrastructure development and implementation.	Social infrastructure such as housing, education healthcare, water, and sanitation. Economic infrastructure including energy, information, and communication technology. Primary and secondary agriculture	Active—TBC



7 RECOMMENDATIONS

The systematic evidence gathered through surveys, focus group interviews, policy, and strategies indicate the need for incremental development in the Panfontein/Greater Bantu Bonke. The Panfontein/Greater Bantu Bonke Agri-village Precinct Plan employs a systematic approach to the implementation of the key projects identified. The following recommendations are made:

Statutory support and buy-in

1. Midvaal LM is advised to modify all the planning instruments including the spatial development framework and the land use scheme to address developmental guidelines for agri-villages. Provision for these agricultural villages may include but are not limited to (1) designated land (2) settlement typology (3) density and (4) synergistic land uses.
2. Following the comprehensive analysis of Bantu Bonke, Council is advised to consider the feasibility to develop further residential development in Bantu Bonke considering the sole reliance on agricultural development and beneficiation. It is advised that supporting studies including (1) geo-technical (2) environmental impact assessment and (3) groundwater impact assessment studies, be considered as part of any township establishment process.
3. If Council deems that further residential development for predominantly indigent households in the Panfontein/Greater Bantu Bonke is impractical, the focus on agricultural capital investments is recommended in line with the agricultural strategy presented in the precinct plan and the Draft Midvaal Local Economic Development Strategy.
4. It is recommended that Council adopts an overlay zone, to be known as an "agri-village overlay zone", with primary and consent land uses specified.

Communal property Interventions

5. Following challenges from the CPA regarding contributions to the overdue municipal rates and taxes, Council should request the convening of the Bantu Bonke CPA general meeting. This meeting should deliberate on and endorse communal tenure conversion into freehold ownership and/or the reconstitution of the association in terms of section 58 of the Midvaal SPLUM By-law and sections 12 and 13 of the Communal Property Associations Act, 1996.
6. If CPA members approve the conversion of tenure, township establishment is recommended for Area 1 (communal property).
7. Should the majority of the CPA members choose to retain communal arrangements:
 - a. The consequence of the failure of collective responsibility in terms of the interruption of municipal services needs to be made clear.
 - b. It is advised that Council effect the Agri-village Overlay Zone for the property controlled by the association.
 - c. Rural Development unit and Lonsa Everite (via SLP) are advised to collaborate on the reconstruction of access roads within the communal property.

Village expansion interventions

8. The Midvaal LM should select a desired human settlements development concept during the 60-day public consultation period for refined planning and adoption in potential statutory processes.
9. Midvaal LM to consider township establishment, supported by the required studies, of a 30ha portion of land committed by DALRRD and approved by DHS for human settlements expansion in Bantu Bonke.
10. Pending a Council resolution on recommendation 3 above, township establishment is recommended for Area 2 (Remainder of Panfontein Farm 437) in terms of the Midvaal Spatial Planning and Land Use



Management By-law to facilitate the construction of 500 or fewer dwelling units and support internal engineering services through the CRDP and/or IRDP grant funds.

11. Council is advised to improve the Midvaal Land Use Scheme to determine development conditions for agri-village overlay zones. In addition, the Panfontein/Greater Bantu Bonke Agri-village Overlay Zone is recommended to facilitate and regulate development in the area.
12. If the implementation of bulk sewer from Bantu Bonke is beyond the means of the Council:
 - a. The Sedibeng District Municipality is advised to appeal to the Department of Human Settlements to gazette the Bantu Bonke node as a Priority Human Settlements and Housing Development Area (PHSHDA) to draw in bulk infrastructure grants from the DHS; or
 - b. Midvaal is advised to expand the existing off-grid wastewater treatment plant in Bantu Bonke to service the number of new dwelling units as determined by Council.
13. GDHS and Midvaal LM are advised to facilitate subsidy administration for the backyard dwellers in Bantu Bonke and/or Makokong and Kudung, one year before construction, to effect up-to-date subsidy allocation.
14. Pockets of land identified for Industrial 1, Business 2, and Agriculture uses, are recommended for a 30-year long term lease through the DALRRD's State Land Lease and Disposal Policy. Bantu Bonke agri-cultural cooperatives should take priority for the allocation of the sub-lease units.
15. Midvaal LM to coordinate the establishment of a stakeholder forum comprising all relevant stakeholders who would be responsible for project planning, support, implementation, and management in Bantu Bonke. Projects to be prioritised include:
 - a. Large scale cattle handling facilities and biogas production.
 - b. Rural red meat abattoir
 - c. Broiler production units.
 - d. Agri-processing and packaging plant.
 - e. Micro-grid solar farm.
16. Should the initiative of a large-scale solar farm (opposed to the micro-grid solar initiative) be embraced by all role-players the main thrust of an agri-village should be reconsidered.
17. A participatory management body is proposed for the Panfontein/Greater Bantu Bonke Agri-village to oversee (1) community safety and security (2) general cleaning services (3) informal trading and (4) cooperative support and development. The participatory management body would be established in terms of the Gauteng City Improvement District Act, 1997



8 CONCLUSION

The Panfontein/Greater Bantu Bonke Agri-village Precinct Plan embraces robust rural and agricultural development directives within the current legislative prescripts. Spatial provisions for the agri-village, encompass the agrarian approach which centralises inputs of the communities to deal decisively with poverty, unemployment, and rural decline. The precinct plan champions rural development as an autonomous concept and advances multi-sectoral partnerships through its cohesive action plan.

The development of the agri-village is advanced through the establishment of the Panfontein/Greater Bantu Bonke Agri-village Overlay Zone to introduce bespoke development provisions. The overlay zone would be achieved through the improvements to the Midvaal Land Use Scheme to build on the development conditions for agri-villages. Proposals for household support interventions include tenure conversion into freehold title, with the buy-in of community members. This will strengthen indigent administration.

The plan advances a comprehensive rural development strategy to build and diversify the economic base of the agri-village. The capitalisation of the agricultural productive capital and supporting activities constitute soft services that are essential in sustaining functional neighbourhoods following the construction of housing structures. The objective of the plan and its recommendations is to improve the quality of life of the residents of Bantu Bonke.



9 REFERENCES

- Casidra, 2018. *One Home One Garden Campaign*. [En ligne]
Available at: <https://casidra.co.za/one-home-one-garden-campaign-encourages-households-to-start-food-production-units/>
[Accès le 16 August 2022].
- Constitution, 1996. *Constitution of the Republic of South Africa*, Cape Town: Parliament of the Republic of South Africa.
- DHS, 2009. *Part 3: The National Housing Code*, Pretoria: Department of Human Settlements.
- DHS, 2019. *The Neighbourhood Planning and Design Guide: Creating sustainable human*. Pretoria: Department of Human Settlements.
- DHS, 2020-21. *Annual Report*, Pretoria: Department of Human Settlements.
- DHS, s.d. *Towards a policy foundation for the development of human settlements legislation*, Pretoria: Department of Human Settlements.
- DRDLR, 2009. *Comprehensive Rural Development Programme*, Pretoria: Department of Rural Development and Land Reform.
- DRDLR, 2013. *Spatial Planning and Land Use Management Act 16 of 2013*, Pretoria: Department of Rural Development and Land Reform.
- DRDLR, 2016/17. *Communal Property Associations Annual Report to Parliament*, Pretoria: Department of Rural Development and Land Reform.
- GPG, 2019. *Growing Gauteng Together: State of the Province Address by Premier David Makhura*, Johannesburg: University of Johannesburg .
- GPL, 1997. *Gauteng City Improvement Districts Act*, Johannesburg: Gauteng Provincial Legislature.
- GRDP, 2014. *Gauteng Rural Development Plan*, Johannesburg: Gauteng Department of Agriculture and Rural Development .
- GSDF, 2011. *Gauteng Spatial Development Framework* , Johannesburg: Gauteng Provincial Government.
- GSDF, 2022. *Draft Review: Gauteng Spatial Development Framework 2030*, Johannesburg: Gauteng Provincial Government .
- Masiangoako, 2022. *Kwasomnandi Farming Project*, Pretoria: Department of Agriculture, Land Reform and Rural Development.
- Mathoho, M., Greenberg, S. & Benit-Gbaffou, C., 2010. *Participation and development from the perspective of the poor: Synthesis report*, Johannesburg: Planact.
- Midvaal, 2017. *Midvaal Land Use Scheme*, Meyerton: Midvaal Local Municipality.
- Midvaal, 2021. *Final Midvaal Nodal Policy Review*, Meyerton: Midvaal Local Municipality.
- Midvaal, 2022. *Midvaal Local Municipality Spatial Development Framework*, Meyerton: Midvaal Local Municipality.
- Presidency, 2012. *National Development Plan 2030: Our future - make it work*, Pretoria: National Planning Commission.

SAForestry, 2015. *SAForestry Online Magazine: Forestry shows the way in rural development*. [En ligne]
Available at: <https://saforestryonline.co.za/articles/forestry-shows-the-way-in-rural-development/>
[Accès le 10 June 2022].

SANBI, 2018. *Using CBA Maps to support land use planning and decision-making*. SANBI Factsheet Series,
Pretoria: South African Biodiversity Institute .

Sedibeng, 2019. *Sedibeng District Municipality Spatial Development Framework*, Vereeniging: Sedibeng District
Municipality.

StatsSA, 2016. *Community Survey: Provincial Profile Gauteng*, Pretoria : Statistics South Africa .

StatsSA, 2022. *Statistics South Africa*. [En ligne]
Available at: https://www.statssa.gov.za/?page_id=734
[Accès le 14 March 2022].

Treasury, 2020. *Frameworks for conditional Grants to Municipalities*. Pretoria: National Treasury.

Wagner, C., Kawulich, B. & Garner, M., 2012. *Doing Social Research: A Global Context*. 1 éd. Maidenhead:
McGraw-Hill Education.

Yousuf, M. I., 2007. Using Experts' Opinions Through Delphi Technique. *Practical Assessment, Research, and
Evaluation* , 12(4).



10 ADDENDUM 1: HOUSEHOLD SURVEY QUESTIONNAIRE

The following questions were used to capture the baseline quantitative and qualitative data of the participants.

1. **Cadre reference number (house number):**
2. **Name and Surname:**
3. **ID/Passport number:**
4. **Contact details (number/email):**
5. **How many people are in your household?**
6. **What type of a household is this?**
 - a. Multiple (more family members than nuclear)
 - b. Single-headed (male) with children in the house
 - c. Single-headed (female) with children in the house
 - d. Single male
 - e. Single female
 - f. Old couple with no children in the house
 - g. Old couple with no children in the house
 - h. Extended family member
 - i. Young couple with children in the house
 - j. Young couple with no children in the house
 - k. Siblings with children in the house
 - l. Nuclear (two parents, children in the house)
 - m. Single males renting in the backyard
 - n. Single females renting in the backyard
7. **How long have you been living in this area?**
 - a) Less than 12 months
 - b) Between 1 and 5 years
 - c) More than 5 years
8. **Are the members of your household South African citizens?**
 - a) Yes
 - b) Not all
 - c) No
9. **If NOT ALL, how many members of your household are not South African citizens?**
10. **How many members of your household are currently working?**
11. **Are you, or any member of your household, involved in the hydroponics project?**
 - a) Yes
 - b) No
12. **Does your household benefit directly/indirectly from the hydroponics project?**
13. **If YES, how is your household benefiting from the hydroponics project?**
14. **Are you involved in any other agricultural activities of your own? (e.g., subsistence farming)**
 - a) Yes
 - b) No
15. **If YES, which agriculture implements and/or programme(s) would assist your course?**
16. **What is the highest education level of the breadwinner in this household?**
 - a) Standard 5 (Grade 7) and below
 - b) Standard 6 or 7 (Grade 8 or 9)
 - c) Standard 8 or 9 (Grade 10 or 11)
 - d) Standard 10 (Grade 12)
 - e) After matric certificate/diploma
 - f) Undergraduate degree
 - g) Post-graduate degree.



17. What other skills (formal/informal) are you trained in?
18. Current occupation and place of work:
19. Does your household have any persons living with disabilities?

- a) Yes
b) No

20. If YES, please specify the disability....

21. What is the primary mode of transport for your household?

- a) Walk
b) Taxi
c) Bus
d) Own car
e) Train
f) Carpool

22. Have any members of your household ever received a government housing subsidy?

- a) Yes
b) No
c) Unsure

23. What is the main reason for your household to live in this area?

- a) Close to work and/or opportunities
b) Family lives close by
c) Nowhere else to go
d) Other (specify.....)

24. If OTHER, what is the main reason for your household to live in this area?

25. Do you agree or disagree with the following statements about Bantu Bonke?

	Agree strongly	Agree	Unsure	Disagree	Disagree strongly
It is close to work opportunities					
It is close to shopping facilities					
It is close to educational facilities					
It is close to health care facilities					
It is close to friends and family					
The rent is affordable					
The municipal services are good					
Crime in the streets is lower than in other areas					
It has safe play areas for children					
The environment is clean					
It is close to public transport facilities such as trains, buses, and taxis.					

26. Where did you live before moving to this community?

27. Do you see Bantu Bonke as a place to reside in permanently?

- a) Yes
b) No
c) Unsure

28. What are the main challenges that people in Bantu Bonke experience?

29. Which social services are available for the people of Bantu Bonke:

- ☐ Primary school
☐ Secondary school
☐ Health care centre/clinic
☐ Library
☐ Community hall
☐ Life skills development centre
☐ Economic skills development centre
☐ Other

30. If OTHER, what additional services are available?



31. Which of these services does your household make use of regularly?

- ☐ Primary school
- ☐ Secondary school
- ☐ Health care centre/clinic
- ☐ Library
- ☐ Community hall
- ☐ Life skills development centre
- ☐ Economic skills development centre
- ☐ Other

32. If OTHER, which services does your household make use of regularly?

33. Do you have drinkable running water in your household?

- a) Yes at least one tap in the household
- b) Yes, we share a tap with at least 1 other households
- c) The taps are not working
- d) We use borehole water
- e) We use a water tanker
- f) There are no drinking water taps

34. Do you have flushing toilet in your household?

- a) Yes, at least one toilet in the household
- b) Yes, we share a toilet with at least 1 other household
- c) No, we use shared chemical toilet
- d) No, we use a pit latrine
- e) No, we use a Ventilated Improved Pit (VIP)

35. Do you have proper working electricity in your household?

- a) Yes, there is an electricity connection for our individual household
- b) Yes, the electricity is connected from the main unit
- c) No, the electricity is not working
- d) No, there is no electricity connection

36. What are your settlement arrangements here in Bantu Bonke?

- a) Communal land (member of the CPA)
- b) Farmworker accommodation
- c) Leasehold/ renting
- d) Informal dweller on private or state land
- e) Backyard dweller (rental)
- f) Other (specify.....)

37. If OTHER, what housing arrangements do you have in Bantu Bonke?

38. Would you prefer to own or rent a housing unit?

- a) Rent
- b) Own
- c) Unsure

39. Which of the following housing arrangements would you prefer?

- a) Subsidised housing unit
- b) Serviced stand
- c) Renting
- d) Other (specify.....)

40. If OTHER, which housing arrangements do you prefer?

41. Does your household receive any of the following forms of government grants?

- ☐ Old age pension grant
- ☐ Disability grant
- ☐ Child maintenance
- ☐ Child foster grant
- ☐ None of the above
- ☐ Other (specify....)

42. If OTHER, which government grant(s) do you receive?

43. Does your household currently receive any financial help from other family members who do not stay in your household? If YES, how much per month?

- a) No
- b) Yes, R1 up to R500
- c) R501—R1 000
- d) R1 001—R1 500
- e) R15001+

44. What is the total monthly income for your household?

Weekly	Monthly	Code
Up to R577	Up to R2 500	1
R578 — R808	R2 501 — R3 500	2
R809 — R1 039	R3 501 — R4 500	3
R1 040 — R1 386	R4 501 — R6 000	4
R1387 — R1616	R6001 — R7000	5
R1 617 or more	R7 001 or more	6
Do not know/refuse	Do not know/refuse	7

45. Do you know your monthly expenditure?

- a) Yes
- b) No

46. If YES, what is your total monthly expenditure?

47. Do you currently have any credit? If YES, what type of credit?

Type of credit	Repayment per month	Code
No credit		1
Yes, hire purchase	R	2
Yes, credit micro loan	R	3
Yes, loan from somebody	R	4
Yes, clothing account	R	5
Other (specify.....)	R	6

48. If OTHER, which type of credit do you have?

49. Which community projects and/or programmes would you like to see in Bantu Bonke?



11 ADDENDUM 2: INFRASTRUCTURE DEMAND CALCULATIONS

WATER

$$\text{Water demand} = \frac{\text{Area of unit based on FAR (sqm)} \times \text{Average Annual Daily Demand}}{100\text{sqm}}$$

Sanitation

$$\text{Sewer flow} = \frac{\text{Area of unit based on FAR (sqm)} \times \text{Average Annual Daily Flow}}{100\text{sqm}}$$

Electrical supply

$$\text{Electrical load} = \frac{\text{Area of unit based on FAR (sqm)} \times \text{Unit Load Assumption}}{1000 \text{ consumers}}$$