

# MIDVAAL AGRICULTURAL POLICY DRAFT REPORT



**BID 8/2/6/46**  
**FORMULATION OF SDF/RSDF, IDP AND LAND USE POLICIES AND  
STRATEGIES FOR THE MIDVAAL LOCAL MUNICIPALITY**



**FROM**  
**URBAN ENERGY CONSERVATION & TRANSPORTATION**  
**FOR URBAN DYNAMICS**

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## 1. INTRODUCTION

One of the major challenges facing all levels of government in its quest to provide basic services to all its people, progressively improve the quality of life and life chances of all South Africans and eradicate the dualistic nature of the South African economy, has been the effective integration, coordination and alignment of the actions that influence development and investment in an integrated and sustainable manner. The Constitution does not explicitly refer to agriculture, but in the Bill of Rights contained in Chapter Two, the following rights are of relevance to this Midvaal Agricultural Policy:

### **Section 24 (Bill of Rights) - Environment**

Everyone has the rights:

- a) to an environment that is not harmful to their health or well-being; and
- b) to have the environment protected for the benefit of present and future generations, through reasonable legislative and other measures that:
  - i. prevent pollution and ecological degradation
  - ii. promote conservation; and
  - iii. secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development

### **Section 27 (Bill of Rights) - Health care, food, water and social security**

Everyone has the right to have access to:

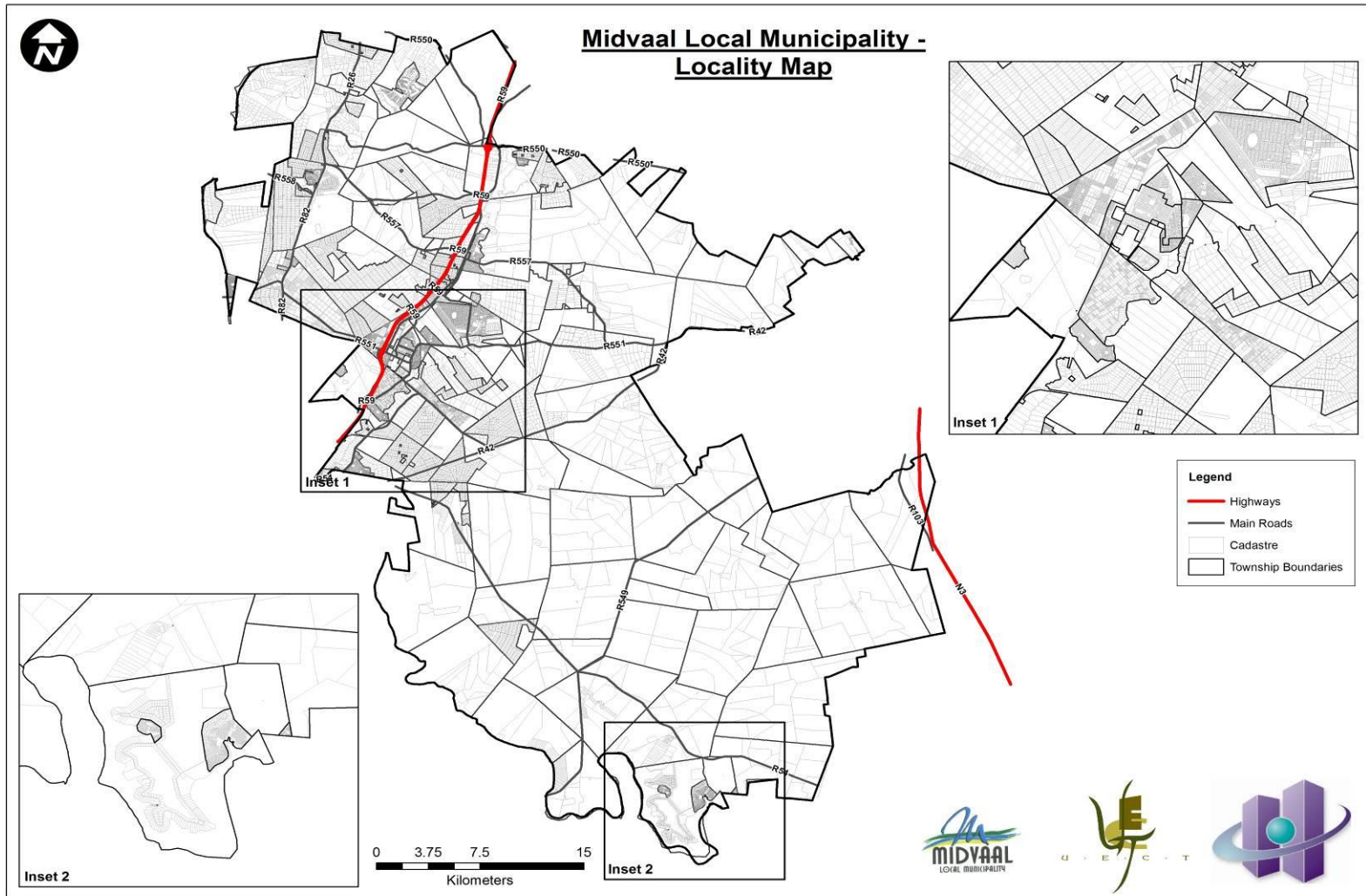
- a) sufficient food and water
- b) The state must take reasonable legislative and other measures, within its available resources, to achieve the progressive realisation of each of these rights

Taking into account these rights, the aim of this Agricultural Policy for the Midvaal Local Municipality is to ensure that high agricultural land is adequately preserved so as to be productive for current and future generations. Even though agriculture is designated as a concurrent competence for national and provincial government, local government still has a role to play from the perspective of land use management and the facilitation of investment opportunities for increased agricultural activities as this is an important land use for the Midvaal Local Municipality.

Over the last decade this intention has found expression in a range of Acts, policies, strategies, development planning instruments and integration mechanisms aimed at ensuring that resource allocation and implementation takes place in an integrated, effective, efficient and sustainable way. Figure 1 below is a contextual map of the Midvaal Local Municipality.

Within this context and through analysis that has been undertaken in the formulation of this Policy, it has been confirmed that the Midvaal Local Municipality is the food basket of Gauteng. Considering the development pressures being placed on Midvaal from other parts of Sedibeng and also from Johannesburg, there is a need to protect the high potential agricultural land, provide mechanisms and incentives for the medium potential agricultural land of small plot sizes, as well as determine the most appropriate subdivision criteria for low potential agricultural land so as to ensure sustainability.

**Figure 1: Midvaal Local Municipality Locality Map**



## 2. CONTEXT

The Midvaal Local Municipality is one of three local municipalities located in the Sedibeng District Municipality. The population of Midvaal is estimated at 64 644 persons, in terms of the 2001 Census, which constitutes approximately 8% of Sedibeng's population and approximately 0.7% of the total Gauteng population. The Midvaal area is predominantly rural, with extensive farming constituting approximately half of the physical extent of the municipality. Meyerton is the highest order town in Midvaal, with large business and residential components. From an agricultural point of view, the following problems or issues have been identified:

1. Land availability in the northern part of Midvaal has become scarce and over capitalised and the developmental pressures are beginning to outweigh the opportunities.
2. The land and development costs in relation to land availability and land development potential has become unaffordable to the north and therefore the natural tendency is to move south where market pressures have not as yet escalated the costs.
3. Large vacant land for potential large sustainable development exists in the south adjacent to the Midvaal Local Municipal boundary. There is, however, increased development pressure on the agricultural resources in the Midvaal Local Municipality.
4. As can be seen from Figure 2 below, most of Midvaal is agricultural and outside the town planning schemes. Substantial development pressure exists in these areas, especially on agricultural holdings of 5 hectares and smaller.
5. There is a need to conserve agricultural land of 20 hectares or larger as these farms are commercially viable.

### 3. LEGISLATIVE CONTEXT

There are five pieces of legislation that are of relevance to this Midvaal Agricultural Policy. The components of the legislation are each individually addressed.

#### 3.1 Subdivision of Agricultural Land Act (Act No. 70 of 1970)

This Act (SALA) is central to this policy, as it controls the subdivision of agricultural land. The Act -

- Defines what land is covered by this Act (i.e. what is agricultural land)
- Prescribes that the following actions may not take place without written consent of the National Minister of Agriculture:
  - the subdivision of agricultural land
  - the transfer and registration of shares in agricultural land
  - the lease of agricultural land for 10 years or longer
  - the sale of a portion of agricultural land or the sale or transfer of a right
  - the development of or inclusion of agricultural land in a development, or the publishing of a scheme relating to agricultural land
- Requires the Minister to consult with the premier of the province, when considering and application relating to agricultural land in that province. This consultation is in turn forwarded to the Municipality by Province for comment.
- Allows for the granting of its consent, subject to conditions
- Requires the supervisor general and register of deeds to act upon the decision of the Minister, i.e. it may only register or approve any of the actions listed above if the written consent of the Minister has been submitted

The National Department of Agriculture is essentially responsible for this Act and it deals with the subdivision of agricultural land. It is, however, recommended that the Midvaal Local Municipality forward the policy via Province to the Department of Agriculture so as to make the DOA aware of the Municipality's intention in relation to agricultural land in its area of jurisdiction.

### **3.2 Conservation of Agricultural Resources Act ( Act 43 of 1983)**

The Conservation of Agricultural Resources Act (CARA) provides for the control over the use of agricultural land in order to promote the conservation and the production potential of soil, water resources and vegetation and to combat weeds and invader plants. The Act provides for the introduction of control measures by the Minister which may relate to inter alia the following:

- the utilization and protection of land which is cultivated
- the utilization and protection of vegetation and
- the grazing capacity of veld, expressed as an area of veld per large stock unit

Other aspects covered by the Act include weed control, soil conservation, conservation of natural agricultural resources and assistance schemes. Furthermore, the Act makes provision for the DoA to issue directives to landowners, to rectify situations where their practices impact negatively on the production potential of agricultural land

This Act is one of the tools that the Department has to assist in preserving South Africa's natural agricultural resources ( i.e. the quality of agricultural land). Hence, it is important that this policy does not conflict with the Act. In fact, the policy will support the Act as a tool for preventing the loss of agricultural land to non-agricultural uses.

### **3.3 National Environmental Management Act (Act 107 of 1998) - NEMA**

The key objective of NEMA is to give effect to the environment right (section 24) in the Constitution. In this regard, the principles set out in Section 2 of the Act are particularly important, since in effect, they expand on or give substance to this right. Another important aspect of these principles is that all organs of state are required to take them into account when undertaking actions that could have a significant effect on the environment.

An important aspect of section 24 of NEMA is that it empowers the National Ministers and MECs to compile "information and maps that specify the attributes of the environment in particular geographical areas, including the sensitivity, extent, interrelationship and significance of such attributes which must be taken into account by every competent authority". This has been catered for in the EIA Regulations in the form of Environmental Management Frameworks (EMFs). Once adopted by the National Minister or MEC, and EMF must be taken into account by environmental authorities when making a decision about Listed Activities within the area covered by the EMF.

- NEMA principles need to be considered in decision-making involving agricultural land
- Cooperative governance in decision-making involving agricultural land is necessary, where a development proposal needs approval from the DoA for subdivision and an environmental authorisation in terms of the EIA Regulations is also required. Consideration should be given to the appropriateness of a Regulation 6 agreement to these circumstances.

The Midvaal Local Municipality needs to ensure that through its Spatial Development Framework, environmental protection of high potential agricultural land is a priority. This further relates to water conservation, especially on land parcels larger than 20ha as these are commercial entities.

### **3.4 National Water Act (NWA) (Act 36 of 1998)**

In terms of the NWA the national government is the public trustee of the country's water resources. One of the unique features of the Act is that it recognises natural cycles and systems as the basis for managing water resources. Accordingly, in terms of the Act the allocation of water resources is based on catchments.

Furthermore, the ecological reserve is the basis on which the availability of water for various uses, including agriculture, is to be determined. The NWA also emphasises demand management as a means of conserving water resources. Various water uses are defined in the Act (Section 21) which include taking water from a water resource,

storing water, discharging waste or water containing waste into a water resource; and disposing of waste in any other manner that may detrimentally impact on a water resource. Requirements for obtaining a license and registering water uses are covered in the Act.

Agriculture is a major water user in the country and therefore the sustainability of water resources is critical to this sector. There are cases where water rights for irrigation associated with agricultural activities are being bought to cater for the needs of non-agricultural uses (e.g. irrigation of golf courses). This poses a threat to the availability of water for agricultural and ecological purposes, both of which are important in the context of sustainable development.

Accordingly, the loss of agricultural land to non-agricultural uses has potentially wider implications in terms of water resource use. Since this policy is concerned with the preservation of agricultural land, it has the potential to assist in ensuring that water resources allocated for agricultural purposes are retained or at least, are not redirected to large scale non-agricultural purposes.

### **3.5 National Environmental Management - Biodiversity Act (NEMBA) (Act 10 of 2004)**

The main objectives of the Biodiversity Act are to manage and conserve biological diversity and to provide for the sustainable use of indigenous resources. One of the key features of the Act is that it recognises that the management of biodiversity begins with planning. Accordingly, the Act makes provision for various plans:

- The primary planning instrument is the National Biodiversity Framework, prepared by the National Minister, which must identify priority areas for the establishment of protected areas and where conservation action needs to be taken. The framework may also identify norms and standards for provincial and municipal environmental conservation plans.

- Bioregional plans are another category of planning that is covered in the Act. In terms of this provision the National Minister or relevant provincial MEC may identify an area as a bioregion. A bioregional plan can then be developed in relation to biodiversity management or bioregion.
- Another type of plan that is provided for is a biodiversity management plan. Such plans may be prepared by any organ of state, but are subject to the approval of the National Minister. Also, they must be consistent with any applicable bioregional plan and Municipal IDP. These plans can be prepared for specified ecosystems, indigenous species or migratory species not been listed as threatened or protected ecosystems or species in terms of Chapter 4 of the Act.

It is notable from a cooperative point of view that NEMBA specifically prohibits conflict between, on the one hand, the National Biodiversity Framework, a bioregional plan and a biodiversity management plan and on the other hand, any IDPs, SDFs, EIPs and EMPs.

Internationally and more particularly in developing countries, there is often tension between biodiversity imperatives and agricultural development. This is evident in various articles about the clearing of forests in the Amazon area for growing of crops. Biodiversity resources are important for maintaining agricultural productivity (e.g. micro-organisms in soil, pollinators for plants). This policy needs to address means for ensuring that both biodiversity and agricultural needs are considered in land use planning.

## 4. AGRICULTURAL OVERVIEW

The agricultural sector has seen many shifts over its history, with major changes occurring due to the industrialisation and technological developments, particularly since the mid 1940's. Over the past two to three decades, sustainable agriculture has been gaining increasing support and acceptance within the mainstream agricultural sector, because it is seen as a means of addressing the many environmental and social concerns that have arisen in relation to current practices.

Sustainable agriculture involves stewardship of both natural and human resources. Agriculture is critical to advancing sustainable development since it is directly linked to the inter-related issues of food security, poverty eradication and human well being. Since agriculture is the main economic activity in most of South Africa's rural areas, successful rural development is largely dependent on this sector. This means that mismanagement of agricultural resources will have an adverse effect on the livelihoods of rural people, particularly the poor.

At the macro-economic level, the poor management of agricultural resources will impact on the direct linkages that agriculture has in the economy, such as the manufacturing of food products. There are also implications in terms of economic linkages that are more difficult to quantify such as the contribution to tourism. The need for a policy on the preservation of agricultural land in the Midvaal Local Municipality is driven by the following factors:

1. **Agricultural Land is a Limited Resource:** There is limited agricultural in South Africa. Of the 122 million hectares total land surface of the country, 82 million hectares is used for agriculture, of which most is used for grazing purposes. It is estimated that 16 million hectares can be used for crop production and just more than 3 million hectares of this land can be classified as high potential land. Some 1.3 million hectares (ha) are under irrigation. The most important factor limiting agricultural production is the availability of water.

2. **Food Security:** Food security exists when all people have access to sufficient food to meet their dietary needs for a healthy and productive life. Food security is therefore not only dependant on how much food is available but also access to this food by people either through purchasing food or producing it themselves. Clearly, therefore, agricultural production is fundamental to the food security of a country. In this regard, land is needed not only for commercial farming but also for small-scale and subsistence farming to support livelihoods, both in rural and urban areas.
  
3. **Development Pressure:** There is increasing pressure to use agricultural land for other purposes in the Midvaal area. The major causes are urbanisation and associated urban sprawl from Johannesburg. Pressure on land in the rural areas of Midvaal is also related to the demand for land for large-scale and upmarket developments (e.g. residential estates combined with various leisure activities). The scenic beauty of rural landscapes makes these areas attractive locations for such developments. A potential consequence of this is that the market value of land can become inflated by speculative buying on the expectation of land use changes and development rights.
  
4. **Climate Change and Desertification:** Much has been written about climate change in recent months, particularly as a result of the publication of recent research, which indicates that changes in the environment are occurring faster than was originally predicted. Data shows that in Southern Africa, longer dry seasons are being experienced and rainfall is becoming less reliable (IPCC, 2007). Such factors will influence agricultural production. Consequently, there will be an increasing need to preserve land for the purpose of producing food, otherwise food security will be negatively affected.

It is recommended that the Midvaal Local Municipality compile a Climate Change Policy for its area of jurisdiction. This will be a source of revenue generation for the Local Municipality. Further, such a Policy would ensure that there is a more hands-on approach to the management of all land uses, including agriculture and mining activities.

## 5. POLICY OBJECTIVES

- Preserve land with high conservation potential in support of the livelihoods of communities and to ensure food security, as detailed in Figure 2.
- Preserve agricultural land in support of the livelihoods of communities and to ensure food security, especially on agricultural land with high yield potential, as detailed in Figure 3.
- Provide a high level of certainty to landowners, decision makers and other stakeholders with regard to the status and future of agricultural land.
- Regulate and control access to agricultural land by proponents of non-agricultural development, thereby giving effect to the provisions of agricultural legislation.
- Build awareness and knowledge about the value of agricultural land and the need to preserve it and on matters pertinent to the threats that contribute to the loss of this resource.
- Promote efficiency in decision-making on applications relating to the subdivision of agricultural land and the change in use of agricultural land.
- Promote investment into alternative agricultural practices in the Midvaal area, for the benefit of the economy and to improve the quality of life.
- It should be noted that the aim was to align the Midvaal Local Municipality's Agricultural Policy with the Department of Agriculture's Agriculture Policy: 2009

## 6. POTENTIAL IMPACTS

- The irreversible loss of productive, high potential agricultural land
- Impacts on sensitive land such as wetlands, conservation areas, and land vulnerable to erosion with resultant impact on adjacent farming practises
- The fragmentation of agricultural areas. The fragmentation of agricultural land limits farmers' ability to expand farming operations and in general reduces confidence in the agricultural industry, dissuading farmers from investing in farming
- Loss of employment opportunities for people who do not have sufficient skills to find employment in another sector
- Increased competition for the use water resources, for the purpose other than agriculture

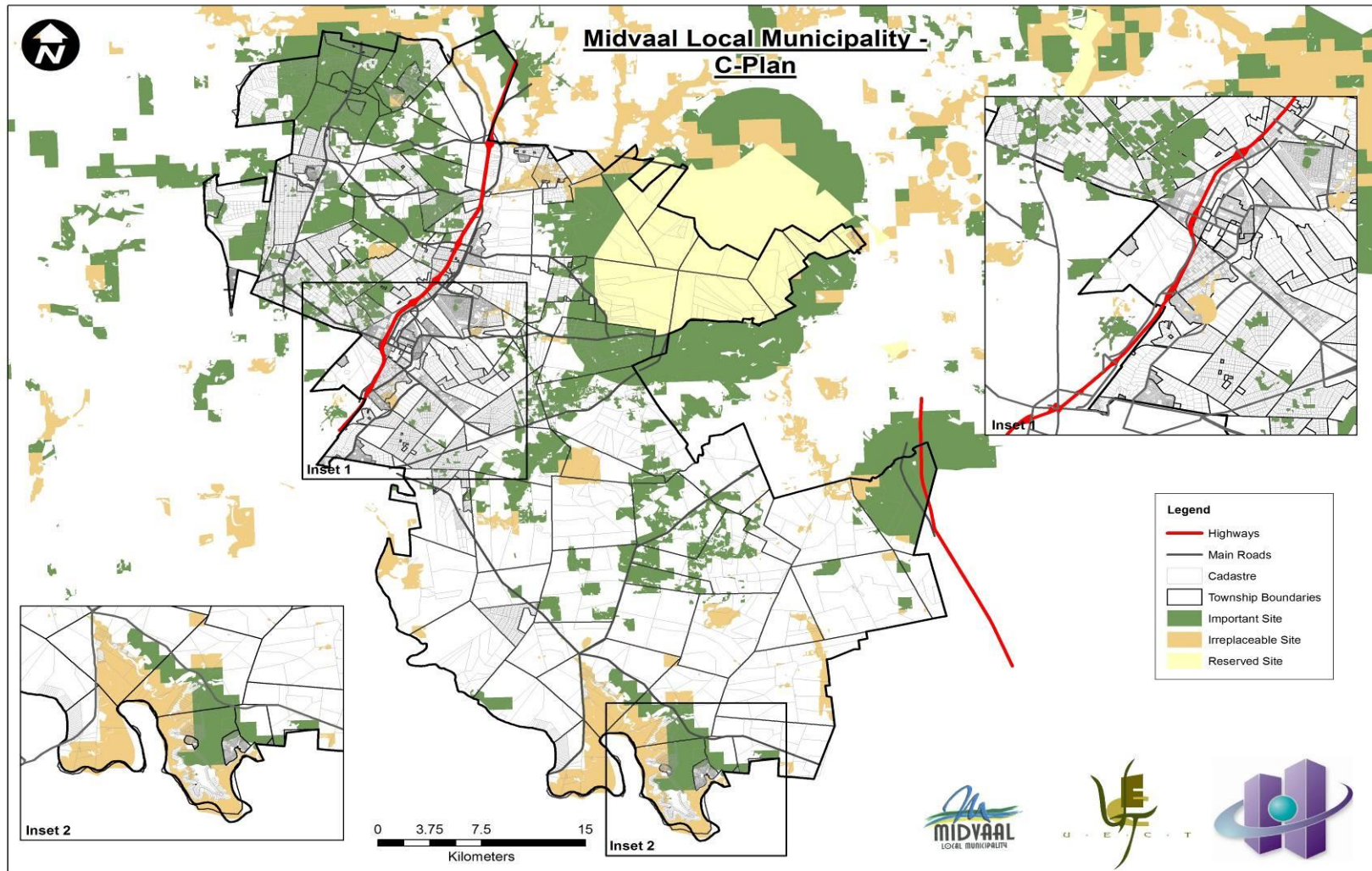
- Potential pollutants of water and soil, e.g. runoff from highly manicured lawns that may impact on agricultural production. This includes potential impacts of the development on neighbouring properties, e.g. complaints about crop spraying, noise or unpleasant smells
- An increase in traffic which may impact on roads used to transport agricultural produce
- An increase in land value based on expectations of development rights that inhibit the expansion of units in the area as well as the potential for land reform
- A general loss of amenity in the area, which may impact on the long term desirability of farming in the area

## **7. DECISION MAKING CRITERIA**

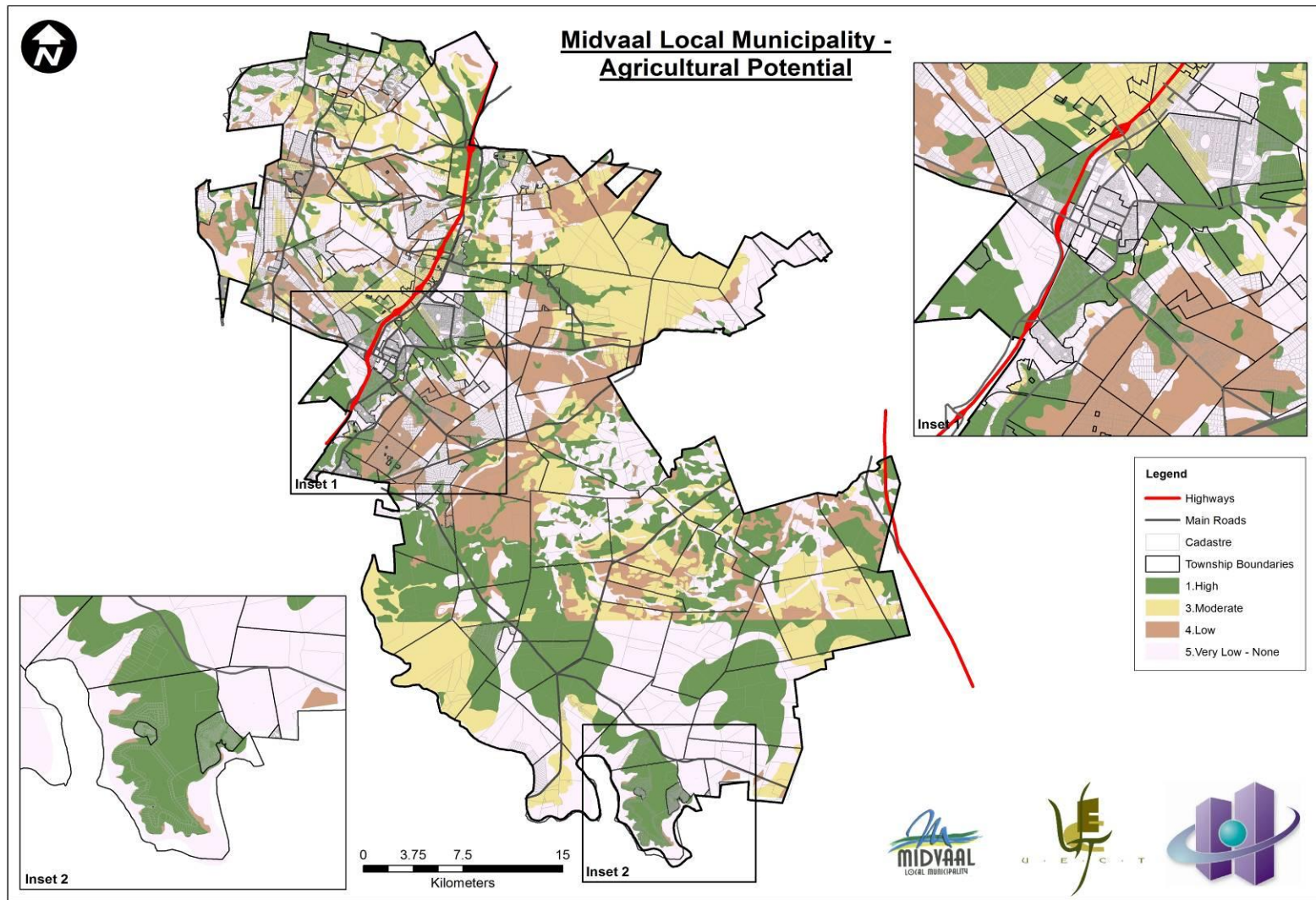
In the light of the above, the following criteria should guide decision making:

- The quality and viability of the land that will be lost – particular issues to be considered is whether the land is irrigated and whether the DoA has provided financial and other assistance in providing agricultural infrastructure to the property
- The location of the development should not constitute leap frog development or result in the establishment of a new node over time
- The development may not result in the use of water reserved for agricultural purposes for other purposes
- The development should be consistent with any approved forward planning exercise that applies to the area, as referenced in the Midvaal Spatial Development Framework
- Other policies in operation in the Midvaal Area than might have an impact on the application in question, shall be taken into account.

Figure 2: Conservation Areas



**Figure 3: Agricultural Potential**



## 8. POLICY STATEMENTS

The policy statements are underpinned by the principle of retaining viable economic farm units. The focus is on land that is utilised for agricultural activities, no matter what its zoning. Where farm units are too small to provide a sufficient and sustainable income, the pressure for land use change increases dramatically. The norms and standards presented here provide the minimum possible standards for viable economic units. In addition to these, it is also essential that the following issues be considered when the norms and standards are applied:

- Natural resource capacity, particularly water and impact on the environment
- Sustainability
- Human capital requirements
- Local agro-ecological peculiarities

When considering agricultural policy it is useful to distinguish between those aspects of agricultural land use over which the Midvaal Local Municipality has direct control, i.e. the subdivision of agricultural land.

### 8.1 Subdivision of Land for Agricultural Purposes

The subdivision of land in this instance is in relation to two sets of legislation, namely

- The Division of Land Ordinance No 20 of 1986
- The Subdivision of Agricultural Land Act No 70 of 1970. This Act is of relevance for agricultural land that is still viable for farming purposes. In most cases for farm portions greater than 20 hectares in extent
- The subdivision of agricultural land should not result in units smaller than:
  - A unit able to carry 60 livestock units on land used for grazing
  - A unit of 100 hectares on land used for dry crop production
  - A unit of 20 hectares on irrigated land with the proviso that of validated water rights from a recognisable source, such as a water scheme or borehole, for 10 hectares is available

- These standards will also apply to the notion of small holdings - small holdings may not be established on productive or high potential agricultural land
- If piped water is not available (excluding borehole water), the minimum size for subdivision of farm portions that are on medium or low potential agricultural land, is 5 hectares. If piped water is available (excluding borehole water), the minimum size for subdivision of farm portions that are on medium or low potential agricultural land, is 1 hectare.
- Notarial links will only be allowed when consolidation is not possible and/or where the municipality boundaries do not allow it.
- Restrictions on processing of undivided shares application will remain in place so as to pre-empt pressure for subdivision and ensure accountable ownership of the property.
- An agricultural holding can be subdivided to a minimum size of 8565m<sup>2</sup>, as stipulated in the Agricultural Holdings Act No 22 of 1919.
- Subdivision of farm portions smaller than 1 hectare or holdings smaller than 8565m<sup>2</sup>, where piped water is available (excluding borehole water), are not supported. In such cases township establishment applications will need to be submitted in terms of the Town-planning and Townships Ordinance No15 of 1986. Further, this Policy does not guarantee approval of any application. Each application will be treated on its own merit.

## 8.2 Dwelling Units on Agricultural Land

The number of dwelling units which can be erected are controlled by the various town planning schemes in operation across the Midvaal Local Municipality. The general, standardised guidelines are, however, as follows:

- All suitable zoned properties (Residential, Agricultural, Undetermined) permit as a primary right one dwellings unit. It should be noted that a dwelling unit in this case is subsidiary to the main use.
- For a second dwelling unit a special consent shall be applied for in terms of the stipulated requirements. They shall only be permitted on erven larger than 750m<sup>2</sup> and shall be restricted to 120m<sup>2</sup> in extent.

- Densification of the rural areas outside of the urban edge shall be limited, due to the lack of services and the impact on the scarce agricultural land.
- Clustering of buildings should be regarded as a high priority to reduce visual impacts and effects on productive land.
- New access roads that could impact negatively on natural processes, the fragmentation of land units and visual amenity should not be allowed.

### **8.3 Employee Accommodation on Agricultural Land**

The following policy guidelines have been developed in relation to employee accommodation on farms, farm portions and agricultural holdings:

- For farm portions larger than 5 hectares, a land owner may erect up to 6 units for employees as a primary right. For more than 6 units, a special consent use application shall be submitted. In all cases building plans must be submitted and approved prior to construction.
- For farm portions smaller than 5 hectares, a land owner may erect 2 units for employees as a primary right. For more than 2 units, a special consent use application shall be submitted. In all cases building plans must be submitted and approved prior to construction.
- For agricultural holdings, a land owner may erect a maximum of 1 unit for employees. For more than 1 unit, a special consent use application shall be submitted. In all cases building plans must be submitted and approved prior to construction.
- Each employee unit shall not exceed a floor area of 120m<sup>2</sup>.
- The footprint of buildings and cartilage should be limited in order to minimise impacts on productive soil. Existing and where possible, future productive land in relation to the proposed additional buildings should be clearly shown on the application.
- The use of existing disturbed sites for additional dwelling units and farm worker housing is preferable.
- The location of farm worker housing should include the consideration of safe access to social facilities and transport opportunities.

#### **8.4. Norms and Standards for Land Use Change**

Land use change in this context refers to applications which also require an application in terms of land use management legislation and which will result in farming activities ceasing on the land that is the subject of the application.

##### **8.4.1 Land Use Change to Residential or Commercial**

Typically this would entail an application for township establishment with the view to develop the land and sell erven. When considering such applications the Midvaal Municipality should focus on the potential impact of such developments on agricultural resources, i.e. planning and environmental issues, although important, should be secondary considerations as these are the responsibilities of other authorities.

Potential impacts to consider when assessing an land use application to change from an agricultural use to another, more intense land use, are:

- The irreversible loss of productive, high potential agricultural land
- Impacts on sensitive land such as wetlands, and land vulnerable to erosion with resultant impact on adjacent farming practises.
- The fragmentation of agricultural areas. The fragmentation of agricultural land limits farmers' ability to expand farming operations and in general reduces confidence in the agricultural industry, dissuading farmers from investing in farming.
- Loss of employment opportunities for people who do not have sufficient skills to find employment in another sector.
- The potential impacts of the development on neighbouring properties, e.g. complaints about crop spraying, noise or unpleasant smells.
- Increased competition for the use water resources, for the purpose other than agriculture.
- Potential pollutants of water and soil, e.g. runoff from highly manicured lawns that may impact on agricultural production.

- An increase in traffic which may impact on roads used to transport agricultural produce.
- An increase in land value based on expectations of development rights that inhibit the expansion of units in the area as well as the potential for land reform.
- A general loss of amenity in the area, which may impact on the long term desirability of farming in the area.

In the light of the above, the following criteria should guide decision making:

- The quality and viability of the land that will be lost – particular issues to be considered is whether the land is irrigated and whether the DoA has provided financial and other assistance in providing agricultural infrastructure to the property.
- The location of the development should not constitute leap frog development or result in the establishment of a new node over time.
- The development may not result in the use of water reserved for agricultural purposes for other purposes.
- The development should be consistent with any approved forward planning exercise that applies to the area, as referenced in the Midvaal Spatial Development Framework.

#### **8.4.2 Land Use Change with a View to Establish an Agri-village**

The establishment of agri-villages constitutes a form of land use change in support of agricultural production as well as providing security of tenure to farm workers. Unsustainable agri-villages have the potential to lock people into poverty through limiting access to social and economic opportunities. In addition, the development of too many agri-villages in an area and the development of inappropriate form, style and scale of buildings can impact on the amenity of an agricultural area.

Thus the following criteria should guide decisions regarding the establishment of agri-villages:

- A sequential approach must be used to determine the optimal location of an agri-village – i.e. it must be demonstrated why farm worker housing cannot be provided in an urban area, before an agri-village can be established outside existing nodes
- Agri-villages should be located in areas where there is a high economic potential
- Agri-villages must be identified as a node in the spatial development framework of the relevant local municipality
- Agri-villages should be within walking distance (less than 2km) of a public transport opportunity (this allows people to access other opportunities and does not “lock” them into areas with no opportunities)
- Agri-villages should preferably be established on existing disturbed sites
- Agri-villages should be limited population size (usually up to 500 people) and contain all major settlement functions (mixed residential, social facilities, commercial space and public open space) with a particular emphasis on human development programmes.

#### **8.4.3 Land Use Change to allow for Mining, Waste Disposal Sites and Other Large Scale Infrastructure**

Land use changes for mining, waste disposal sites and other large scale infrastructure could have severe negative impacts on surrounding agricultural activities including:

- Damage to crops and livestock as a result of increased dust (in the case of open cast mining) and ground water pollution
- Increased heavy vehicle traffic that damages roads and impact on road safety

- Fragmentation of farm land with the resultant negative impacts listed above
- A general loss of amenity in the area, which may impact on the long term desirability of farming in the area

Thus in considering applications that will result in a change of land use to allow for mining, waste disposal; sites and other large scale infrastructure Midvaal should request that the application includes an assessment of the impact of the mine on agriculture in the area, as well as set conditions regarding the mitigation of such impacts. No such development may be allowed on productive, high potential agricultural land.

It is further recommended that the Midvaal Local Municipality amends its town planning schemes to incorporate a mining purpose zoning. This would enable the Municipality to have more control over the related issues that such a land use impacts on. It should be noted that the mining use will not be able to be addressed by the Municipality as it is a national government competency but the related municipal issues Midvaal would be able to influence, namely:

- Management and upgrading of access roads or railway lines to and from the intended mining facilities
- Investment by the mining operators into sustainable waste management practices and environmentally sound operations, to the satisfaction of the municipality
- Control of the limited water resources
- Pollution control, including noise, water, underground and air pollution
- Energy efficiency practices
- Other service provision
- Housing and amenities for mining personnel, etc.

#### **8.4.4 Land Use Change to allow for Nature Reserves and Resorts**

Related to the above, are land use changes to allow for nature reserves and resort type development, with the exception that such development is usually located outside of urban edge. Game farming is considered elsewhere. Of greatest concern with such developments is that permission for land use is often initiated with the view to obtaining more land use rights typically to allow for low-density residential development in the future, which would have similar potential impacts as those, listed above.

Thus land use change to nature reserves and resorts should be considered only under the following conditions:

- Relevant conditions in NEMA and other environmental legislation shall apply
- Resorts shall not be permitted on high potential, unique agricultural land and irrigated agricultural land currently under cultivation.
- The potential to undertake restoration to re-establish natural habitat must be demonstrated, where a nature reserve is being proposed.
- No further subdivision of the property may be allowed on erven with high potential agricultural land
- Only limited accommodation may be allowed as follows:
  - In mountains or hill terrain – 1 unit per 10ha
  - On plains 1 unit per 30ha
  - Dwelling units are limited to a floor area of 120m<sup>2</sup>
  - Dwelling units should be clustered and interrelated
- An environmental management plan should indicate how potential impacts on adjacent agricultural land will be mitigated for instance how burning regimes and runoff from landscaped areas will be controlled
- No water reserved for agricultural purposes may be used to serve the development
- An SDP shall be submitted along with the special consent use application or rezoning, which details the functionality of the resort, ancillary facilities, access, elevation, etc.

There may be circumstances that is of high potential and has not been cultivated which are the subject of a sub-division application for the purpose of establishing a nature reserve. Such land may be of high biodiversity or conservation value. In these circumstances, there is a need for extensive consultation with the relevant environmental authority and nature conservation authority. The possibility that subdivision of such land would have merit from a biodiversity perspective is limited. The approach should be to retain this land as an intact unit, unless otherwise indicated by both the relevant environmental authority and nature conservation authority.

#### **8.4.5 Land Use Change to Allow for Game Farms**

There are a number of permutations related to game farming – it can take the form of an enterprises breeding game for meat production, hunting purposes, export or conservation purposes, or it could be geared towards tourism in which case it would mostly like include lodges and other facilities required to accommodate tourists.

A switch from livestock to game farming does not require permission for a land use change in terms of planning legislation (except where tourist accommodation is provided) and also does not require consent, except where veterinary permits are needed for the importation and keeping of certain animal species. However game farming is controlled by environmental and tourism legislation. The following criteria should be used to assess such applications:

- Relevant conditions in NEMA and other environmental legislation shall apply
- The minimum subdivision requirement of 60 livestock units per subdivided land unit remains applicable.
- With regard to accommodation for tourists or hunters the criteria for resort developments remain applicable.

On farm activities and uses refer to land uses that do not necessarily require subdivision or rezoning of agricultural land and which are secondary to the agricultural activities. Typically these would include uses that provide additional income so as guest accommodation on a small scale, farm stalls and function venues. Potential negative impacts of such developments include:

- Negative impacts on agricultural production through fragmentation of farmed areas, or concerns regarding noise and other types of pollution
- Additional non-farm related traffic could impact on the road maintenance and traffic volumes
- Additional road requirements which lead to loss of productive land and require erosion control
- A general loss of amenity through unsightly and dense development which may impact on the long term desirability of agriculture in the area as well as increased pressure for land use change.

## **8.5 General Land Use Criteria for Agricultural Land**

The following criteria should apply to such on farm activities:

### **8.5.1 Commercial Uses**

- One farm stall and farm shop may be allowed per unit and the floor area should be limited to 100m<sup>2</sup>.
- A farm stall or farm shop shall only sell local produce that is related to the farming activity or home industry products made by the local community.
- Where consideration is given to allow additional buildings such as bush pubs, tasting or function venues, such applications should be accompanied by a site development plan that indicates buildings and productive and unproductive land (i.e. land used for parking). New buildings may not result in loss of productive land, including access roads to such buildings, and as a rule not more than 10% of the property may be used for non-farming purposes – this includes the additional dwelling units referred to above.

### **8.5.2 Agri-industry**

Agri-industry refers to buildings and infrastructure required to accommodate processing of agricultural products in close vicinity of the production thereof, e.g. abattoirs and wine cellars. In many instances such uses require a change of zoning in terms of planning legislation and may also require a subdivision to account for ownership issues (e.g. enterprise held by co-operatives). The following criteria apply to agri-industry:

- Where subdivision is required only the minimum land required may be subdivided and the remainder of the property must remain a viable unit as per the norms and standards set out above
- Agri-industries may not be established on productive agricultural land
- The location of such industries in relation to access roads requires careful consideration – new roads to accommodate such agri-industries should be avoided at all costs.

There is no doubt that we need an alternative agricultural development paradigm, one that encourages more ecologically, bio diverse, sustainable and socially just forms of agriculture. Strategies are needed which lead to the revitalization of small and medium sized farms, and point the way towards the reshaping of the entire agricultural policy and food system in ways that are economically viable to farmers and consumers.

## 9. INVESTMENT OPPORTUNITIES IN AGRICULTURE

Two alternative farming opportunities have been identified for the Midvaal Local Municipality area. There are funding and training opportunities available for both opportunities that need to be communicated to the private sector and the land owners in Midvaal. The Municipality can be the information conduit to facilitate investment into the area by private land owners, who can then explore them further.

The two alternative farming opportunities are hydroponics, which has already been explored to some extent in the Midvaal and been initiated in a small pilot project in Bantu Bonke. This pilot should either be extended or there is a need to explore other investment opportunities in other areas for Midvaal - the focus should be on vegetable hydroponics. The second investment opportunity is in relation to bamboo farming, harvesting and manufacturing. Recent research in South Africa has highlighted that this is a major opportunity for amongst other things the production of clean, carbon neutral fuel.

### 9.1 Hydroponics in Midvaal

Often times when one mentions hydroponics people think of this method as being relatively new. But perhaps the earliest recordings of hydroponics were in the Hanging Gardens of Babylon, where plants were grown in a steady stream of water. The word hydroponics as we know it today is derived from two Greek words: "hydro" meaning water and "ponos" meaning labour.

Hydroponics is a method of growing plants without soil in nutrient solutions. Dozens of different nutrient solution compositions have been suggested over the years, but most resemble each other fairly closely. The guidelines for nutrient solutions is that they contain nutrients in amounts that are proportional to plant tissue composition and in a total solution concentration that does not damage the plant. In South Africa, hydroponic vegetable production is almost always done under protection.

Growing plants in soil is unpredictable, a diverse range of problems are evident, such as changing temperatures, moisture holding capacity, available nutrient supply, proper root aeration, as well as disease and pest control issues. Hydroponics alleviates some of the problems of nature, while giving the farmer precise control of the plants and often times the season. A hydroponic farmer can manipulate a fruit bearing plant into producing more fruit rather than leaves and extending its season long after his competitor's season has ended.

ADVANTAGES OF HYDROPONICS	LESSONS FOR MIDVAAL
<ul style="list-style-type: none"> <li>• Suitable soil need not be present</li> <li>• Water use is conserved</li> <li>• Pests and diseases can be better controlled without the use of harsh chemicals</li> <li>• Weed problems are lessened</li> <li>• Hydroponic nutrients are recyclable</li> <li>• Significant reduction in space requirements</li> <li>• Growing time is often lessened</li> <li>• Heavy manual work is reduced i.e. No tilling of soil with some systems being automated</li> <li>• Better control of environmental factors i.e. From indoors or greenhouses: lighting, temperature, humidity, composition of atmosphere, frequency of feeding and irrigation can be controlled</li> <li>• Higher yields</li> <li>• Root zone chemistry is easier to control i.e. Salt toxicity, pH, electro-conductivity</li> <li>• Crop rotation is not necessary</li> <li>• Transplant shock is reduced</li> <li>• Hydroponically produced vegetables can be of high quality and need little washing</li> </ul>	<ul style="list-style-type: none"> <li>• There is a need and opportunity, especially for medium to low potential agricultural holdings of a smaller size (5-10 hectares) to explore hydroponics as an alternative income source. Once established, yields are much higher and there are substantial employment opportunities available.</li> <li>• There is a market at the moment for vegetables using hydroponics.</li> <li>• This medium of farming has a much higher yield and has more retained nutrients. There can therefore be a linkage to a health facility or wellness clinics. There can therefore be a relationship between the tourism market and agriculture.</li> </ul>

DISADVANTAGES OF HYDROPONICS	LESSONS FOR MIDVAAL
<ul style="list-style-type: none"> <li>• System setup cost can be high</li> <li>• Hydroponic production is management, capital and labour intense</li> <li>• Pests and disease can spread quickly to plants using shared nutrient solutions</li> <li>• Not all plant varieties are suitable for hydroponics</li> <li>• Plants have quick reaction to both good and bad conditions</li> <li>• Beneficial microbial soil life is usually absent</li> <li>• Expert skills and knowledge are usually needed to operate at optimum production in a commercial setting</li> </ul>	<ul style="list-style-type: none"> <li>• The main deterrent for investing into hydroponics is the substantial capital outlay. There are, however, opportunities to source donor funding in terms of innovative, poverty alleviation grants and even EE / GHG funding opportunities. There is also a possibility to link this sustainable farming venture with the tourism industry and even an education facility in the Vaal Region.</li> </ul>

## 9.2 Bamboo Planting and Farming in Midvaal

Problems such as joblessness, a weakening economy, pollution and the current cost of energy, which are all prevalent in the Midvaal Local Municipality, could be minimised through the large scale cultivation of Bamboo Plantations. This realisation for South Africa came after several years of research done on existing clumps of Bamboo, as well as market research to quantify the global need and consumption of bamboo. A further outcome of this research was the establishment of a reliable supply of bamboo plantlets, both locally as well as abroad. This research had until now been focused in the Eastern Cape but can be translated to any part of South Africa.

Once planted, an initial watering is required for the bamboo to minimise the impact of transplanting. This is done by means of a watering cart which is contracted specifically for the planting process. Minimal irrigation is required thereafter and in times of drought yet yields improve greatly when regular irrigation is possible. For obvious reasons planting times are coincided with bi-annual rainy periods. The actual harvesting of

mature shoots, otherwise known as culms, only start at the end of year 3 after planting. In the preceding 3 years the new shoots are thinned out selectively to avoid an unmanageable density. To start a bamboo farm there would be a need to contact the South African Bamboo Corporation (S.A.B.C.) who will come out and undertake an assessment of the land potential, especially in relation to the following:

- Current Infrastructure
- Availability of labour and water
- Quality of soil and water
- Road / rail access for vehicles
- The size of proposed plantation areas
- Current vegetation cover
- The total amount of bamboo plantlets needed

To set up a hectare of bamboo plantation costs the farmer are estimated at between R12 000 and R15 000 per hectare, depending on the desired plant density and available infrastructure (fencing, water, labour). The unit cost per plant (year 2010) is currently R20 each, delivered to the farm. The S.A.B.C. offer four additional services, which look after the plants from the moment of arrival until the second year in the plantation. Each service comes at a cost of R5 per plant. Although the S.A.B.C. outsources labour, equipment and other relevant components to the project, the availability of the aforementioned on site will keep the costs down.

The four mentioned services that the S.A.B.C. will provide are listed below in more detail and are inclusive of labour, materials, tools but excluding infrastructure setup costs:

- Setup plants from the S.A.B.C. tunnels or temporary nursery sites, fertilise, weed, and water (60 days).
- Clear proposed plantation area of vegetation, rip, till, disc if needed and dig holes for the plantlets.
- Transplant from the nursery to the plantation area, fertilize and water.
- Maintain, weed, water all plants periodically for 2 years

A clump of bamboo containing 16 mature culms ready to be harvested could provide an average 640kg wet yield. After drying this figure reduces to an average of 490kg per clump. If assuming an average clump density of 600 clumps per hectare, one arrives at a total weight of 294 tons of dry yield per hectare. It should be noted that a differentiation has to be made between the wet yield and the ultimate dry yield, which has been allowed to dry for 3-5 days causing a weight loss of on average 30%.

The total dry weight (294 tons / hectare) calculated at R100.00 / ton suggests an annual return of R29 400.00 / HA per annum to the farmer. The S.A.B.C. suggests that an estimated / average figure of R20 000.00/ha/pa be used as a yardstick for all calculation. This will be after a three year initial period of establishment.

#### **Uses for Bamboo**

- Housing construction
- Furniture
- Corrugated roofing
- Laminated solid bamboo flooring
- Bamboo fibre for textiles
- Chipped and pelletized bamboo, which is a clean substitute for coal
- Torrefied fuel pellets - compressed into briquettes
- Oil extracted for bio-diesel

After torrefaction, bamboo pellets have an energy content on a par with the best quality coals, exceeding by an order of magnitude other biomass crops, while at the same time being totally carbon neutral and non-competitive with crops such as maize used for food production. In essence, the large scale growing of bamboo for the production of such biomass-to-energy products as clean coal pellets, bio-ethanol, bio-diesel, and/or bio-oil solve several key issues in one very simple and elegant way - reducing carbon emissions, providing a clean energy source alternative to fossil fuels, and not competing with food production.

### **What is Torrefied Bamboo?**

- A 100% renewable biomass fuel that is an alternative to fossil fuel / coal
- A CO<sup>2</sup> neutral / negative sustainable biomass fuel
- Has all the energy of a fossil coal but is less than the total cost of the fossil coal
- It is an environmentally friendly upgrade to fossil coal
- It is a pollution-free replacement fuel that is smokeless and odourless, and can be used immediately at any coal-burning power plant worldwide without any retrofitting, down time, loss of productivity, or service to customers to reduce CO<sup>2</sup> and all GHG emissions
- The most cost effective solution for coal-burning power plants to meet the mandatory emissions reductions set by their governments
- Tests done on torrefied bamboo from concessions in Mozambique, show that the calorific value was 26.795 MJ/kg. Pelletizing the product will optimise the volumetric calorific value. It is also hydrophobic, and easily transported and stored.

## 10. CONCLUSION

A more radical transformation of agriculture is needed, one guided by the notion that ecological change in agriculture cannot be promoted without comparable changes in the social, political, cultural and economic arenas that conform and determine agriculture. The organized peasant and indigenous based agrarian movements consider that only by changing the export-led, free-trade based, industrial agriculture model of large farms can the downward spiral of poverty, low wages, rural-urban migration, hunger and environmental degradation be halted. These movements embrace the concept of food sovereignty which constitutes an alternative to the current mainstream thinking on food production. The concept behind food sovereignty contrasts the neo-liberal approach that believes that international trade will solve the world's food problem. Instead, it focuses on local autonomy, local markets and community action for access and control of land, water, agro biodiversity, etc, which are of central importance for communities to be able to produce food locally.

Agriculture contributes less than 4% to GDP but accounts for 10% of total reported employment. Agriculture is well-diversified with field crops, livestock and horticulture the main sectors. Agricultural policy reform continues with a package of measures to address past injustices including land redistribution, agricultural support programmes to disadvantaged farming communities, and a broad based programme of economic empowerment of the black population.

South Africa's agricultural policy is dualistic, where a developed commercial farming sector co-exists with a large number of subsistence (communal) farms. South African agriculture is increasingly export-orientated with about one third of total production exported. The conditions for agricultural production are not favourable in most regions due to poor land quality, high variable climatic conditions and scarce water. There can be large annual fluctuations in output.

## 11. RECOMMENDATIONS

- 11.1 That the Midvaal Local Municipality approve the Agricultural Policy: 2010, as detailed in the body of the Report.
- 11.2 That Sections 2.1, 2.2, 2.4, 3 and 4 of the Use and Division of Land in the Midvaal Area Policy: 2004, be repealed on approval of this Agricultural Policy: 2010
- 11.3 That the principles as contained in the Agricultural Policy be cross-referenced in the Midvaal IDP and Spatial Development Framework.
- 11.4 That the Midvaal Local Municipality undertake an exercise to amend the town planning schemes that are in operation in the area so as to incorporate a "mining" land use zone. This will ensure that the Municipality will be able to manage such activities and their related impacts.
- 11.5 That the Midvaal Local Municipality develop an investment information pack for interested investors into alternative farming methods, so as to facilitate growth in this sector of the economy.

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## 12. TERMINOLOGY

### **Agricultural Land**

Arable land, meadow or pasture land, market gardens, poultry farms, nursery gardens, plantations and orchards (excluding pig farms, land used for bee farming and poultry farms).

### **Agricultural Industry**

An enterprise for the processing of agricultural products on a farming unit owing to the nature, perishability and fragility of such agricultural products and includes inter alia, wineries and farm pack stores, but does not include service trades.

### **Agricultural Building**

A building designed for use in connection with, and which is ordinarily incidental to, or reasonably necessary in connection with the use of land on which the building is situated is agricultural land, and may include a dwelling house.

### **Agricultural Holding**

Land laid out in terms of the Agricultural Holdings (Transvaal) Registration Act No 22 of 1919

### **Farm Stall**

A farm stall or farm shop shall only sell local produce that is related to the farming activity or home industry products made by the local community. The farm stall is not a general dealer.

### **Food Poverty**

A situation where a household's monthly food spending is less than the cost of a nutritionally adequate very low cost diet.

### **Food Security**

Access by all people at all times to sufficient food for active, healthy lives( World Bank, 1986).



## URBAN AGRICULTURE ACTIVITIES

- **Home based activities** – home dwellers using their back or front yards to grow vegetables and/or to keep animals. It is of a very small scale and is looked after by the family with the objective to supplement their food basket. It is conducted on a part-time basis as part of a survival strategy.
- **Community based activities** – this consist of a group of people from the community that came together to produce food collectively for themselves or a community institution like an old age home, orphanage, school, etc. Usually these activities take place around public facilities, on public open spaces or smaller pieces of unutilized land. It's conducted on a part-time basis as part of a survival strategy and includes both vegetable gardening and animal husbandry.
- **Micro farmers** – this includes individuals or groups of people that are involved in urban agricultural activities (both vegetable gardening and animal husbandry) to create an income. It is a micro scale business activity aimed at a profit. It is located at small pieces of unutilized land (public or private) and could be regarded as an informal economic activity. This is conducted on a part-time basis as part of a survival strategy.
- **Small emerging farmers** – this constitutes individuals or groups of people that are or want to be full time farmers. It is a formal business activity and needs to make a profit to survive.