Stellenbosch Municipality
Spatial Development Framework
November 2012

STELLENBOSCH MUNICIPALITY
SPATIAL DEVELOPMENT FRAMEWORK

Prepared for

STELLENBOSCH MUNICIPALITY
Plein Street, Stellenbosch, 7599
Tel: (021) 808 8111 Fax: (021) 808 8200

Prepared by the Sustainability Institute based on the
Stellenbosch Municipal Spatial Development Framework
Draft Status Quo and Draft Strategies reports by CNdV Africa (2010)
and inputs from Stellenbosch Municipality (2012)

Revised addition April 2017

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SYNOPSIS

This Spatial Development Framework (SDF) has been drafted by Stellenbosch Municipality in accordance with the relevant legislative requirements to guide the future spatial form of the greater Stellenbosch area. It is aimed at developing a binding set of principles which guide development and developmental rights of property owners. Specifically, the SDF aims to:

- Achieve shared and inclusive growth
- Increase access to opportunities, particularly for disadvantaged citizens
- Improve sustainability by minimizing ecological footprints
- Maintain the unique sense of place of the towns and region

To achieve these outcomes, various factors such as strategic infrastructure needs and requirements, natural resources, housing, agriculture and appropriate land use need to be taken into consideration. Section 2 looks at seven strategic perspectives that will guide the future spatial development of Stellenbosch and ensure that development that does not diminish the resource base on which its economy depends, or the beauty and sense of place that is valued by local inhabitants and visitors:

INTERCONNECTED NODES

A key feature of the greater Stellenbosch area is the historic pattern of locating settlements along strategic transport and river systems. To protect the unique character of the area and constrain environmental damage, it would be advantageous to follow this pattern. However, development patterns in recent years have seen the growth of unplanned informal settlements and low-density suburbs situated far away from transport routes, both of which place unnecessary pressure on ecosystems, arable land and other resources.

Those living in distant suburbs are almost entirely reliant on private motor vehicles for their mobility, and the expansion of these developments has an important role to play in increasing traffic congestion. To stem this, it is suggested that higher density developments be allowed within town limits, and that a strict urban edge be defined and enforced to put an end to low density urban sprawl.

While each settlement should have its own design and implementation framework that recognizes the unique characteristics of its setting, the common principles of walking distance, functional integration and socio-economic integration should be common to all of them. Developments should be prioritized firstly around rail routes, and secondly alongside road routes and intersections.

A balanced supply of low-, middle- and high income housing should be prioritized in each node including some social and gap-housing on private developments. In accordance with the principles of densification, existing settlement nodes should receive priority above greenfield land. Land use should be based on its best long term sustainable use, rather than on its best financial return.

CAR FREE LIVING

Congestion has increased significantly in recent years, and most of the vehicles on the road are from within the municipality as opposed to those from outside. To reduce the number of cars on the road, a combination of non-motorized transport and public transport facilities is suggested. Adequate pedestrian and cycling infrastructure and appropriate development policies should ensure that at least 50% of activities found in an urban area are within 1km of residential areas, making it easier to live without private cars. Ensuring that settlement densities are adequate to ensure the financial viability of public transport facilities should also encourage a shift away from ever-increasing dependence on private cars.

INCLUSIVE ECONOMIC GROWTH

Stellenbosch effectively has a dualistic economy. One part is highly skilled and affluent, and their desire to live in Stellenbosch has led to rapid increases in the value of land for housing and farming. This is contrasted by a significant low-income population which experiences poor service access and low living standards. Recent retail and housing developments have predominantly catered to the needs of high income earners and car owners, and the divide between the two groups has widened as a result.

To address imbalances between rich and poor, a proportionate balance of low, middle and high income housing should be provided. More affordable housing should be provided closer to economic opportunities, and commercial zones should be created within close proximity of low income suburbs. Sufficient industrial land should also be made available near public transport links, especially rail.

Shopping centres and areas with high pedestrian traffic should include market areas and sidewalk opportunities that help informal traders to access more business. Markets and informal retail spaces should be properly managed, and rentals charged for informal retail spaces according to the level of services provided.

In accordance with the various aims of the SDF, appropriately located public land should be used for agricultural, conservation and tourism purposes in land reform, equity or lease schemes that broaden participation in the rural economy. Stellenbosch University's ambitious "Campus Master Plan" should also be integrated into the municipality's spatial planning.

OPTIMAL LAND USE

Stellenbosch faces a shortage of around 20,000 housing units, and meeting this need will require doubling the current stock. Given the current relationships, this implies that at least 6,000 units will have to be built on municipal land, much currently used for agricultural purposes. Doing so would destroy the municipality's character, so the concept of infill and redevelopment with higher densification is promoted instead. Due to excessively cumbersome procedures, national and provincial land reform programs prefer to acquire private land rather than making publically owned land available for development via lease. Various factors including policy uncertainty and indecision have significantly increased the premium on private land. Policy consistency is required for at least ten years in regard to the approval of applications either within or outside the urban edge to allow longer term financial stability and planning.

Instead of expanding the footprint of built areas, suitable locations for at least 6,000 middle and low income residential units need to be identified either as part of existing settlements through densification or extension and integration of existing settlements. At all times, preference must be to develop locations close to public transport hubs, and brownfield sites are preferred over greenfield locations. Projects catering to low, middle and high income groups should be designed as larger integrated settlements rather than stand-alone townships or gated communities. It is proposed that municipal land be allocated to its most appropriate use, and that the land be used or applied by the municipality – preferably under a lease agreement - to allow for the desired developments to become feasible, rather than being sold to the highest bidder.

RESOURCE CUSTODIANSHIP

Achieving a sustainable future for Stellenbosch will depend on its ability to make best use of available resources for the benefit of all. Resolving inequality and growing the economy will require access to energy, water, waste and sanitation services, and the 20,000 new residential units proposed for Stellenbosch municipality will require a doubling of infrastructural service points over the next 10 or more years. The infrastructure backlog equates to a funding requirement of R1billion. This implies an annual requirement of approximately R400 million for 5 years. Current budgetary projections indicate that no more than R200 million will be available under the most optimistic scenarios implying that it is not possible to fund the infrastructure investment. The potential for large scale upliftment and development is severely hampered by the lack of attention to necessary infrastructure in the past. Five specific areas require urgent attention:

- Fresh water: Much of Stellenbosch's key water supply infrastructure is in a state of disrepair, severely constraining the municipality's ability to deliver uninterrupted fresh water services and preventing future development. At the same time, poor management of solid and liquid wastes in agricultural, industrial and informal residential areas and run-off from roads is causing the pollution of rivers and groundwater. To address this, pollution reduction should be complemented by efforts to re-establish and protect indigenous riverine ecosystems. All rivers above a minimum size shall be protected by river conservation zones, and no buildings should be located in the 1:100 year flood lines. The eradication of alien vegetation from all areas should be supported. Peak water demand should be accommodated with supplementary water storage and recycling, and urban water conservation and demand management programs should be implemented.

- Waste water: Stellenbosch municipality's 7 waste water treatment works (WWTW) and sewage reticulation system cannot meet the needs of the current population, let alone support future development. Regular sewage leaks and overflows into rivers and groundwater result in eutrophication, ecosystem degradation and the spread of disease, threatening the health of communities and reducing quality of life. WWTW must be upgraded to achieve minimum water quality standards as defined by DWAF. Where feasible, development at new settlement nodes should be serviced by localized waste water treatment plants that deploy appropriate sustainability-oriented technologies. Peak load management systems will need to be considered for particular areas. Sewage should be regarded as a potential source of water, nutrients, methane gas.

- Solid waste: The municipality's solid waste system is at maximum capacity. The current landfill site at Stellenbosch town is way over capacity, and the new cell being constructed in August 2012 will only provide additional capacity until 2017. With high public resistance to new solid waste sites and in line with new legislation, ways of reducing waste streams need to be implemented urgently. Appropriate strategies for waste separation at source should be formulated and implemented as swiftly as possible. A MRF should be installed at each waste transfer station and landfill site, and private and community-based sub-contractors should be included in a recycling-oriented waste management system.

- Energy: Economic growth and the provision of housing are directly affected by the availability of electricity, and the municipality is entirely dependent on the Eskom grid in this regard. Stellenbosch town needs to reduce its consumption by 10% to avoid overstepping supply. A combination of innovative demand reduction measures and increases in capacity will be required to prevent power disruptions whilst improving access to the poor, and this change will need to be led by wealthy households, businesses and the University. All new housing should install solar water heating devices, and non-subsidy housing should be encouraged to meet the portion of their electrical demand that exceeds 300kWh per month by generators such as solar photovoltaic panels and solar hot water heating devices. SANS 10400-XA energy efficiency standards should be adhered to in all planning applications for new buildings, major renovations and usage changes. Alternative energy sources should be developed and integrated into the grid, and the largest energy users should be encouraged and incentivised to invest in solar energy generation.

- Construction materials: Most of Stellenbosch's building materials are sourced outside the municipality, increasing the load on the transport system whilst contributing to CO_2 emissions and depleting fossil fuels. Many of these materials also require vast amounts of electricity to produce. Private contractors should be educated about source sites for building materials that are as close to the settlement nodes as possible, and their use should be encouraged over more distant sources. The use of recycled, recyclable and low energy building materials in the construction of new buildings should also be encouraged.

FOOD AND AGRICULTURE

The fertile soils of Stellenbosch produce the region's largest export products, namely wine and vegetables. If one then includes the tourism sector which is largely built on wine tourism, then the importance of agriculture to the region cannot be overemphasised. The majority of arable land is used for the production of wine, with only a small proportion of the region's food being produced locally.

Several factors such as inappropriate rezoning of high value agricultural land and the diminishing financial returns on farming have led the sector to experience difficulties in attracting capital. While significant investments have been made in the farming sector, not all is related to productive uses of the land. This has led to fertile land being rendered unproductive, and this in turn has diminished employment opportunities for low skilled workers and increased reliance on food imported from elsewhere.

It is proposed that 10,000 ha of land should be used for the production of food for local consumption. Land outside of existing or proposed urban settlements should be used for agricultural production, biodiversity conservation, scenic quality and agri-tourism. The use of incentives to encourage the usage of fallow land should be implemented, including potentially using public land as surety for the release of funding from the Land Bank, DBSA and others to further land reform projects. To ensure sustainable agricultural usage, further sub-division of land should be strongly discouraged. Informal, properly managed farmers markets selling fresh produce should be provided in key centres, while further large mall developments should be discouraged.

HERITAGE

The sense of place of the Stellenbosch region is derived from a long agricultural and academic history coupled with well-preserved architecture and endemic biodiversity. Uncontrolled expansion of urban areas and industrialised agriculture into indigenous ecosystems threatens the unique fabric of the region, and may diminish the appeal of the area. Several specific principles are proposed to protect the character of the area, including the use of guidelines for sensitive biodiversity areas, controls over building heights and architectural styles along major roads, and the determination of appropriate land use zoning according to view sheds. The character of the rural area should be protected via various guidelines such as setting buildings along provincial roads back by at least 100m. Tourism that reinforces the municipality's sense of place should be encouraged and attractions should be developed that remain appropriate to the region's well established themes.

Following the principles introduced in Section 2, Section 3 considers the 14 nodes that have been identified as the loci of future development in Stellenbosch Municipality in more detail. This includes a summary of the challenges and opportunities faced by each node and maps of the status quo and proposed developments that indicate how this could be translated into more detailed spatial plans. Table 1 on page 12 summarizes the key infrastructure capacity issues that need to be addressed in each of the nodes, and can be used to prioritize infrastructure investments across the municipality in the short term.

SECTION 1: INTRODUCTION

South Africa's spatial planning is governed by the Municipal Systems Act, National Environmental Management Act (NEMA), the Spatial and Land Use Management Act (SPLUMA),the Western Cape Land Use Planning Act (LUPA) and the Stellenbosch Municipality: Land Use Planning Bylaw, and consists of two components:

1) Spatial Development Frameworks (SDF)

2) Land Use Management Systems (LUMS)

SDF's are guiding and informing documents that indicate the desired spatial form and define strategies and policies to achieve this. They guide the LUMS, which can be likened to town planning or zoning schemes that have a binding effect on development rights. Based on the challenges identified in the 2008 Stellenbosch Municipal Draft Spatial Development Perspective, this SDF aims to:

- Achieve shared growth
- Increase access to opportunities, particularly for disadvantaged citizens
- Improve sustainability by minimizing ecological footprints
- Maintain the unique sense of place of the municipality's towns and regions

Based on the Municipality's vision statement for the 2010-2020 period, the SDF aims to guide:

- future economic growth within a sustainable and coherent spatial framework;
- the planning and organization of strategic infrastructure for managing mobility, water, energy, solid & liquid wastes to reduce negative environmental impacts;
- the protection and conservation of key natural resources and eco-system services, particularly rivers, soils, biodiversity, air quality, sacred spaces and public open spaces;
- the use of privately and publicly owned land to maximize opportunities for low skilled job seekers living in the area;
- the delivery of public and private sector housing on the social, gap and lower income sectors, taking into account the prioritization of incremental upgrading of informal settlements;
- the maintenance and further development of the municipality's agricultural base;
- the form, quality and appearance of all forms of urban and rural development in order to preserve the beauty and sense of place that is valued by the people of Stellenbosch and visitors from around the world.

At the heart of this SDF is the concept of 14 interconnected development nodes, whose size and infrastructural capacities are displayed on the Table 1 and the map on the following page (Figure 1).

Infrastructure capacity is rated as follows, based on the assumption of conventional technologies (i.e. those that do not explicitly aim to minimize demand for services):

- © Adequate capacity to meet development needs for the next 5 years (2012 - 2017)
- © Insufficient capacity can be overcome with development contributions within the next 5 years (2012-2017)
- ® Insufficient capacity cannot be overcome without additional budget within the next 5 years (2012-2017)

INFRASTRUCTURE CAPACITY TO MEET DEVELOPMENT NEEDS FROM 2012-2017

	Water	Sewage	Electricity	Solid Waste
Stellenbosch Town	☹	☹	☹	☺
Franschhoek	☹	☺	☹	☺
La Motte	😐	☺	Eskom	☺
Wemmershoek	☹	☺	Eskom	☺
Groot Drakenstein	☹	☺	Eskom	☺
Dwars River Valley (Pniel, Johannesdal, Lanquedoc, Kylemore)	😐	☹	Eskom	☺
Klapmuts	😐	☹	☺	☺
Muldersvlei Crossroads	😐	😐	Eskom	☺
Koelenhof	☹	☹	Eskom	☺
Jamestown / De Zalze	☹	☹	Eskom	☺
Vlottenburg	☹	☹	Eskom	☺
Spier	☺	☺	Eskom	☺
Lynedoch	☺	☺	Eskom	☺
Raithby	😐	☺	Eskom	☺

TABLE 1

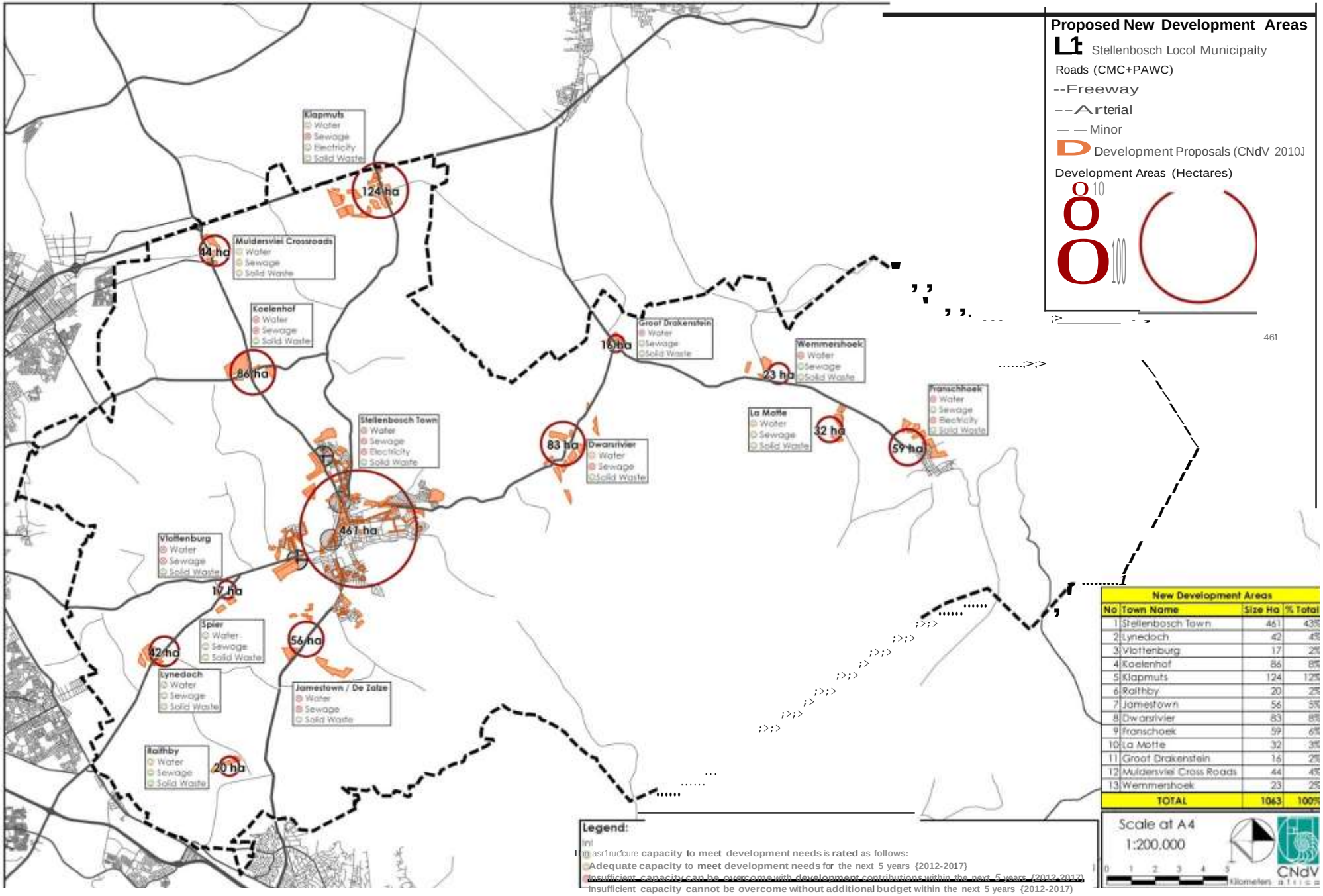

FIGURE 1: PROPOSED NEW DEVELOPMENT AREAS (Note: New development areas have not been indicated for Spier as the development of this node will focus on intensification)

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SECTION 2: DEVELOPMENT PRINCIPLES

There are seven strategic perspectives that will guide the future spatial development of Stellenbosch. The seven strategic perspectives which will be discussed in greater detail below are:

- Interconnected nodes
- Car Free Transport
- Inclusive Economic Growth
- Optimal Land Use
- Resource Custodianship
- Food and Agriculture
- Heritage

1. INTERCONNECTED NODES

With the exception of parts of Stellenbosch town, the Stellenbosch municipal area consists of a relatively tightly structured settlement pattern located at strategic nodes along transport and river systems. This is regarded as a key strength and needs to be reinforced.

However, the largely sustainable development patterns established in the municipality over the last 300 years are being threatened by:

1) Pressure on resources like fresh water and arable land due to rapid population and settlement growth.
2) "Urban sprawl" type growth since the 1970's, typified by the construction of low density suburbs or "security estates" on agricultural land situated far from major transport systems.

New suburbs in far flung portions of the municipality are dependent almost entirely on private motor vehicles, and this has negative consequences in terms of congestion, pollution and costs of commuting. An alternative approach is to focus on the development of nodes located at strategic intersections of road and rail networks, or intensify the development of existing nodes at these points as an alternative to uncontrolled, low density sprawl. Instead of converting valuable farmland into new suburbs, a high density nodal development pattern based on strategic transport intersections has a much smaller impact on the landscape and arable land, and allows rural, agricultural, hydrological and ecological systems much more freedom to function successfully. Stellenbosch Municipality's development nodes and their interconnecting transport systems are illustrated on the following page:

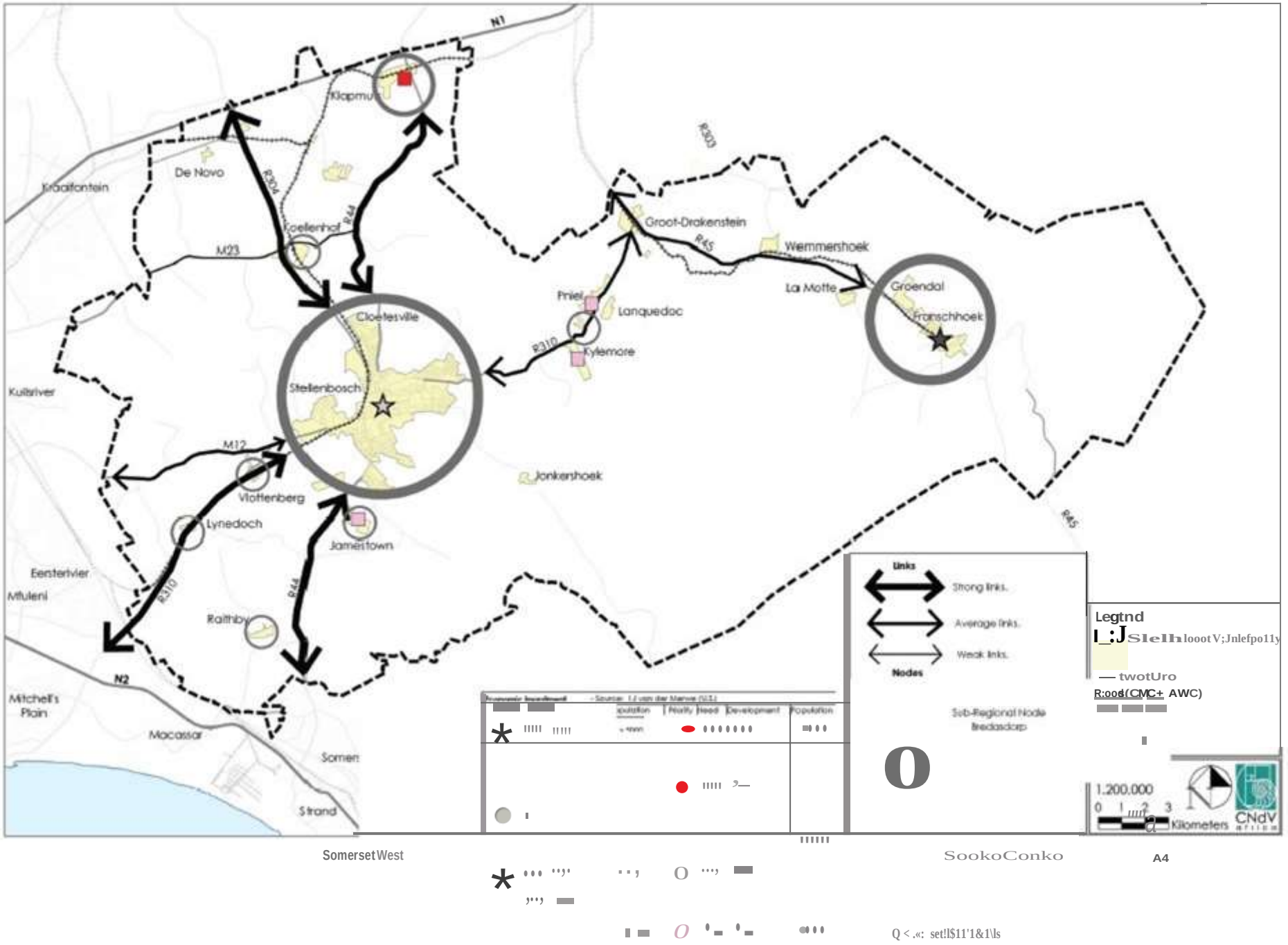


FIGURE Z: STELLENBOSCH SETTLEMENT NODES CONNECTED BY ROAD AND RAIL NETWORKS

PRINCIPLES

- The municipality should be developed as a system of inter-connected, nodal, tightly constrained settlements that have minimal outward expansion, have relatively dense internal plans, and are linked to other settlements by road, rail and high speed voice and data telecommunications.
- The development of settlement locations should be prioritized firstly on rail routes, then secondly on road routes. Acquisition or not of land for development should be informed by this priority.
- Internal average gross densities should vary between approximately 15 du/ha for small settlements and approximately 25 du/ha for large ones, particularly where traffic congestion is prevalent.
- Urban design frameworks should be developed for each settlement, recognizing their unique characteristics and potential.
- The principles of walking distance, functional integration, socio-economic integration, appropriate densification and the urban edge should inform settlement design.
- In order to prevent urban sprawl and protect natural environments and farmland, settlements should define and maintain a strict urban edge, outside of which development should not be permitted.
- Instead of focusing development on the urban periphery (like a doughnut shape), efforts should be made to ensure that the settlement centre is the most dense, with densities diminishing toward the urban edge (like a cupcake shape).
- The usage of land should be based on its highest and best long term sustainable use as opposed to its best long term financial return.
- A balanced supply of low, middle and high income housing should be ensured in each settlement node so as to promote integration and minimize the need for travel.
- Developments on private land must include at least social and gap housing components - if not also an RDP component - particularly if such projects involve upgrading of land rights.

New development applications should be encouraged to focus on locations within existing settlement nodes rather than greenfields land.

2. CAR-FREE TRANSPORT

Traffic congestion has increased significantly in recent years due to Stellenbosch's economic growth, an increase in private vehicle ownership and reduced restrictions on car use by students in central Stellenbosch. The 2004 Transport Master Plan for Stellenbosch (currently being updated for 2012) found high levels of congestion on the arterials between settlements, and that only 10.1%-11.3% of this traffic is from outside the municipality. Large volumes of vehicles leave the municipality each day, and many of those that move within it have Stellenbosch town as their final destination. The university is a significant generator of traffic.

To reduce the number of cars on the road, a combination of non-motorised transport (NMT) and public transport facilities should be used so that residents commute without needing a private car. The municipality is served by a number of railway lines, as well as bus and taxi routes along the major arterial routes. Residents from further afield can use park-and-ride facilities to reduce the distance travelled by car, but focusing development around transport thoroughfares will help to reduce the need for this. A non-motorised transport (NMT) strategy was prepared for the municipality in 2009 to encourage commuting on foot and by bicycle. This requires the demarcation and construction of dedicated lanes for cyclists, and the development and linking of pedestrian-friendly zones. Where vehicle traffic acts as a barrier to NMT, road intersections need to be made safer for pedestrians, cyclists and the disabled to cross. Paving and landscaping can be used to attract pedestrians to public spaces, and help to improve the quality and functionality of urban spaces.

The proposed vision of a Sustainable Transit-Oriented Development (STOD) approach is one framing of development which succeeds in transcending the tension that Stellenbosch faces between heritage and sprawl perspectives. This does not mean to say that alternative or complementary approaches to development are ignored; rather, infrastructure and spatial planning will prioritizes integrated public transport-oriented and infrastructure-led development. Together these interconnected and complementary components serve to reinforce a framing of development for this municipality which makes ecologically sustainable growth and inclusive economic prosperity possible.

PRINCIPLES

- Settlement form should lessen rather than increase the demand for private motor vehicle travel.
- The primary measure of access is appropriate walking distance. At least 50% of activities found within the urban area (e.g. employment, shopping, public transport, social & recreational) should be within 1km of where people live.
- Within urban settlements, pedestrian movement should be prioritized in the circulation pattern of streets and the design of street cross-sections.

- All regional roads should facilitate non-motorized transport (particularly cycling) by ensuring that shoulders are available and demarcated as cycling ways. These can be used on an emergency basis for breakdowns, but cyclists should receive priority.
- The possibility of constructing more stations on the Lynedoch – Klapmuts rail line should be investigated, along with the option of the municipality or a service provider operating a commuter shuttle along this line. Similarly, consideration should be given to re-opening the rail link to Franschhoek.
- Development approvals should be guided by the need to achieve the settlement densities needed to make the public transport system financially and operationally viable.
- Intensification, integration and mixed use development around primary station precincts that recognizes: (a) the primary and overarching TOD approach with prioritization of development around a set of carefully designed, ecologically sustainable high density nodes built around integrated public transport services along the Klaptmuts-Lynedoch railway spine;
- Building an integrated mobility network to ensure that all communities have access to a comprehensive range of preferably public as well as private transport options.

3. INCLUSIVE ECONOMIC GROWTH

Stellenbosch faces the twofold challenge of attracting skills to supply dominant economic sectors (manufacturing, wholesale, retail, accommodation, tourism and financial services) whilst ensuring demand for low skilled labour (mainly in agriculture, construction and tourism) in order to reduce the numbers of unemployed. Good quality of living and jobs in the tertiary sector make Stellenbosch an appealing home for high income earners. However, as land for housing and farming becomes increasingly expensive and the retail sector shifts toward shopping centres (accessible mainly by private car), there is a risk that the gap between the rich and the poor will widen. In contrast, town centres in Franschhoek and Stellenbosch provide examples of retail spaces that are socially inclusive. The proliferation of open air markets also provides opportunities for inclusive commercial activities.

Agriculture, property development and tourism are Stellenbosch's most competitive economic sectors, while the industrial, manufacturing, transport and freight industries are seen as being in decline. Stellenbosch town is reputed to be the small town with the most JSE listed or private equity companies in South Africa, and the exceptional growth in the financial services sector over the past 5 years is expected to continue.

Inclusive economic development will depend on a creative mix of the larger formal businesses that need to expand; the proliferation of middle-level businesses across the primary, secondary and tertiary sectors; and the strengthening and integration of smaller and informal businesses into the mainstream economy. From a spatial perspective, this requires that the distances between lower income groups and economic opportunities be reduced by developing new housing closer to job opportunities or developing new commercial areas closer to low income suburbs, and improving affordable mobility options for the poor. Land reform programs on both public and private rural land can offer access to agricultural, agri- and eco-tourism and conservation opportunities, and the allocation of well-located areas for use by informal traders and SMMEs can help to integrate these businesses into urban economies.

The proposed growth of Stellenbosch University is viewed as a major opportunity for the property and service sectors. It is a major driver of the municipality's tertiary economic sector, and its needs and forward plans should be integrated with those of Stellenbosch town and the wider municipality.

STELLENBOSCH UNIVERSITY "CAMPUS MASTER PLAN"

The development of Stellenbosch University has been envisaged in the recently completed 2011 Campus Master Plan. As a major driver of the Municipality's tertiary economic sector, the University has as its vision to fulfil the role of a true 21st century, low carbon institution of excellence. To maximise its potential economic influence, the University's needs and forward plans should be aligned with those of Stellenbosch town and the wider Municipality. As a major contributor to the traffic volumes in Stellenbosch, the University has developed an integrated solution to the ever-increasing number of vehicles visiting the campus. A Campus Mobility Plan was implemented to limit the use of private vehicles and promote the use of public transport and non-motorised transport, and the municipality's mobility plans should be aligned with this. The University has also adopted a policy to increase the percentage of resident students to reduce commuting.

The Campus Master Plan is addressing accessibility, sustainability and the maintenance and provision of open and green spaces for recreation. In this regard the efforts towards rehabilitating Stellenbosch Mountain should be acknowledged, supported and sustained. A joint venture between the Jan Marais Trust, the Municipality and the University to develop the Jan Marais Nature Reserve as a recreational space for the community should be investigated further.

Although the University believes that it is operating within its land use rights, it is aware of challenges faced by the Municipality with regard to infrastructure capacity and has expressed a willingness to become involved in upgrading precinct infrastructure where such challenges are a result of University growth. Innovative sustainable solutions to deal with infrastructure constraints should be co-developed by unlocking the vast intellectual capacity of the University

PRINCIPLES

- The complete socio-economic cross-section of a community should be located within 1km of each urban centre. In larger settlements like Stellenbosch town, they should be located within 1km of its 6 sub-centres.
- Low income housing should be balanced with a proportionate amount of middle-income and upmarket housing.
- Care should be taken to ensure that income disparities are not reflected in large differentiations between neighbouring groups, nor should contrived barriers be erected that reproduce historic patterns of division and exclusion.
- Suitable land located close to places of work should be made available timeously to cater for the residential needs of employees, particularly in the gap, social and middle income markets.
- 20% of the space in regional and neighbourhood shopping centres should include a market area, preferably linked to public transport drop off points and sidewalk opportunities.
- Areas of land should be set aside, and if necessary expropriated to provide SMMEs with access to well located parts of the CBDs for retail, service provision and manufacturing.
- Marketplaces should be created in central locations that are able to intercept significant pedestrian flows, preferably linked to public transport interchanges.
- A range of informal retail locations should be provided on sidewalks, verges and median areas to cater for permanent traders (e.g. fruit and vegetables, newspapers and magazines, refreshments and snacks, second hand goods, crafts, clothing etc.)
- All markets and informal retail spaces should be properly managed and reasonable permit conditions enforced, and rentals charged depending on the level of facilities and services provided.
- Appropriately located public land should be used for agricultural, conservation and tourism purposes in land reform, equity schemes or lease schemes that broaden participation in the rural economy.
- Stellenbosch University's plans should be integrated with the town and municipality's Spatial Development Frameworks.
- Sufficient industrial land should be made available close to public transport links (especially rail) and new industrial land should be launched in Klapmuts and Koelenhof.

4 OPTIMAL LAND USE

Meeting Stellenbosch's current housing needs could result in another 20,000 housing units across income groups by 2025. This represents a near doubling of the current stock built up over 300 years, and is estimated to require a capital investment of approximately R9.5 billion from the public and private sector over 10 years. For the housing model to work, the required level of cross-subsidy means that 6,000 dwellings may need to be located on what is now municipal land. If greenfield land is used without urban infill and redevelopment, the 750 - 1,000 ha required could result in the loss of 250-300 low skilled agricultural jobs, GGP contributions from agriculture of R18.5 million, exports of R8.5 million and the destruction of the municipality's identity. Development should thus target infill and redevelopment of strategic areas to prevent this from happening, and fourteen development nodes have been identified as suitable locations. Each node has unique characteristics that make different combinations of densification and greenfields development appropriate.

Prevailing property market patterns are impeding the sustainability and affordability of the municipality's growth. The lifestyle / trophy premium of living on farm land is increasing agricultural land prices, making farming unaffordable, chasing away investment in farming and undermining the possibility of successful land reform projects. Policy indecision about whether agricultural land should be preserved or eventually used for urban development enhances this premium. Urban land also commands high prices, providing little incentive for social and middle income housing in urban areas. This results in lower income residents having to live far away from their places of employment, creating a need for transport and worsening congestion. It also encourages informal settlements on well-located land so that people can save on transport costs (e.g. Enkanini in Stellenbosch).

A large amount of municipal land is publicly owned, and this can be used to provide affordability advantages for agricultural and low income housing developments rather than selling this land to the highest bidder. Unfortunately, procedures for leasing or alienating state land are exceptionally cumbersome, and as a result the national and provincial land reform program prefers to concentrate on acquiring private land instead.

PRINCIPLES

- Identify suitable locations for 6,000 middle- and low-income residential units (middle to high density, including flats), either as part of an existing settlement (densification) or an extension that is integrated into the existing settlement rather than isolated from it. At all times preference must be given to locations that are close to public transport links.

- Subdivisions, second dwellings, sectional title, re-development of existing low density areas, infill and brownfield land opportunities should be prioritized over greenfield sites, as guided by the SDF.

- Land and projects catering for low-, middle- and high-income groups should be designed as part of a larger integrated settlement rather than stand-alone townships or gated estates. In addition to site plans, Development Frameworks and Precinct Plans for the broader settlement should be included in project proposals.

- Land should be used for its most sustainable and appropriate use whether publicly or privately owned[1].

- As far as possible, care should be taken to ensure that publicly owned land is not sold for purposes for which it is not ideal, but may be more lucrative (e.g. urban development in farming areas).

- Public land to be used for social or low income housing should not be sold at the highest price, but rather leased or sold at levels that make such projects viable.

- Policy consistency is required for at least 10 years in regard to the approval of applications whether they are inside (urban) or outside the Urban Edge (agricultural, conservation, eco/agri tourism) so that investment time horizons are sufficiently long term to support investment by land owners, farmers and bankers.

[1] For example, publicly owned agricultural land could be leased through open or limited tender for farming purposes or used for land reform programs in agriculture, agri-tourism, eco-tourism or conservation.

5. RESOURCE CUSTODIANSHIP

Achieving a sustainable future for Stellenbosch will depend on its ability to make best use of available resources for the benefit of all. Resolving inequality and growing the economy will require access to energy, water, waste and sanitation services, and the 20,000 new residential units proposed for Stellenbosch municipality will require a doubling of infrastructural service points over the next 10 or more years. The municipality's ongoing ability to provide these services at an affordable price will depend on its ability to raise the funds required for this purpose while at the same time protecting the resources and ecosystems on which current and future settlements depend.

Due to a long period of delayed decisions on infrastructure investment, Stellenbosch currently faces a major infrastructure backlog worth approximately R1 billion. A capital budget of approximately R400 million per annum is required for four to five years to rectify this, yet the municipality's capacity to spend on infrastructure is currently limited to between R120 - R200 million per annum over the next fifteen years.

Development in the municipality is effectively being stifled by its infrastructure backlogs and constraints. During the course of 2011 the Mayoral Committee was made aware of the fact that no new land-use applications should be supported for approval, and plans to construct low cost housing will have to be restricted due to infrastructure limitations. Existing critical backlogs require immediate attention, and developmental backlogs will need to be addressed if the municipality wishes to house its growing population. Clear policy decisions need to be made as to how the municipality will meet its legal imperatives in terms of levels of service provision and service delivery.

5.1 FRESH WATER

Much of Stellenbosch's key water supply infrastructure is in a state of disrepair, severely constraining the municipality's ability to deliver uninterrupted fresh water services to its constituents and preventing future development. An urgent priority is the main water link between Idas Valley and Cloetesville. Almost all of the development nodes require investments in bulk infrastructure to improve their access to water and sanitation and reduce water wastage.

At the same time, poor management of solid and liquid wastes in agricultural, industrial and informal residential areas and run-off from roads is causing the pollution of rivers and groundwater. Combined with reduced river flows from upstream dams, the situation has become so serious that the South African National Biodiversity Institute (SANBI) has classified most of Stellenbosch's rivers as "critically endangered". This means that so much of the original riverine habitat has been destroyed that ecosystem functioning has been impaired. These rivers can no longer clean and slow down storm water flows, with negative repercussions for the ecosystems, communities and economic activities[2] that rely on them. To address this, pollution reduction should be complemented by efforts to re-establish and protect indigenous riverine ecosystems.

Compounding the challenges mentioned above, climate change is likely to bring a combination of rising temperatures and reduced or erratic rainfall, placing pressure on already constrained water supplies. Unless new approaches to service delivery can be implemented that allow the same benefits to be achieved using less fresh water, increasing competition for water resources will place additional pressure on rivers, estuaries and wetlands. The drying of these ecosystems will compromise their ability to provide goods and services, with negative repercussions for humans and other dependent species.

[2] There is mounting concern that if water quality falls below European Union standards, the fruit and wine export industry could suffer in the near future.

PRINCIPLES

- All rivers above a minimum size shall be protected by river conservation zones of 10-30m on either side of the bank, depending on the width and maturity of the river (as determined by an aquatic ecologist or land surveyor). These zones should be returned to their natural riparian status for passive recreational use only, and no urban development or intensive agriculture shall be permitted within them.
- No foundations of permanent buildings shall be located within the 1:100 year flood lines (as determined by a hydrological engineer).
- Peak water demand should be accommodated with supplementary storage and recycling (e.g. rainwater tanks, grey water recycling) of water so that the municipality can focus on satisfying base demand and meeting the needs of the poor.
- Urban water demand management programs should be implemented to ensure that urban water demand does not undermine agricultural needs, including:
  - Rainwater harvesting should be mandatory on all new urban developments, and retrofitting of rainwater harvesting should be encouraged on all existing developments (where heritage constraints allow for this).
  - Grey water recycling should be promoted on all residential, commercial and industrial units with gardens.
- Water conservation measures should be adopted, for example minimizing unaccounted for water through leak repair and pressure adjustment, installing water meters, educating consumers about water saving, promoting water saving devices and promoting waterwise gardening.
- Technologies that facilitate the efficient use of irrigation water should be encouraged.
- Conservation areas should continue to enjoy the highest possible level of protection in order to ensure water quality and quantity at least in the upper reaches of the river system.
- The eradication of alien vegetation from all areas should be supported.

5.2 WASTE WATER

Stellenbosch municipality's 7 waste water treatment works (WWTW) and sewage reticulation system cannot meet the needs of the current population, let alone support future development. Regular sewage leaks and overflows into rivers and groundwater result in eutrophication, ecosystem degradation and the spread of disease, threatening the health of communities and reducing quality of life.

Stellenbosch town, Koelenhof, Jamestown / De Zalze and Vlottenburg all depend on Stellenbosch's WWTW, but it does not currently have sufficient capacity to accommodate further development. The Dwars River Valley and Klapmuts WWTW are also constrained. Some of the other development nodes have constructed decentralised plants, or have plans in place to construct them or connect to larger, centralized plants. Although the municipality has favoured centralized water treatment systems over package plants due to ineffective management of package plants by private entities in the past, it has recognized that there are technologies that can productively re-use waste water and the nutrients it contains, and also improve efficiencies. Advanced electronic monitoring technologies will be required to ensure a sufficient degree of centralized control of decentralized systems.

PRINCIPLES

- Waste Water Treatment Works (WWTW) must be upgraded to achieve minimum water quality standards as defined by DWAF.
- Where feasible, development at new settlement nodes should be serviced by localized waste water treatment plants that deploy appropriate sustainability-oriented technologies and are capable of extension, rather than being connected to a centralized regional system. Monitoring technologies and regulations should be used to facilitate centralized control.
- Peak load management systems will need to be considered for particular areas and/or large developments (e.g. storage facilities that accumulate flows during peaks and then release during off-peak periods).
- Sewage should not be regarded as waste but rather as a source of water, nutrients, methane gas and sludge - all of which can be productively re-used, especially if technology partners can be contracted to take over the management of certain plants.

5.3 SOLID WASTE

Stellenbosch Municipality's solid waste system is at maximum capacity. The current landfill site at Stellenbosch town is way over capacity, and the new cell being constructed in August 2012 will only provide additional capacity until 2017. The closest alternative is the Vissershok landfill site, but trucking the waste to Vissershok will increase costs per ton of waste removal by 186% (from R70/ton to R200/ton).

With high public resistance to new solid waste sites and in line with new legislation, ways of reducing waste streams need to be implemented urgently. Waste separation at source is not widely adopted, and as a result there is minimal diversion of waste from landfill for recycling. In order to facilitate recycling, new recycling collection trucks, conveniently located drop-off facilities and new Materials Recovery Facilities (MRFs) are required as part of an integrated strategy for waste minimisation.

PRINCIPLES

- Appropriate strategies for waste separation at source should be formulated and implemented as swiftly as possible in Stellenbosch town and other settlements that use its landfill site. If this process is to be phased, the largest generators of waste per capita (i.e. upper income households, businesses, the University, industries and demolition sites) should be targeted first.
- A MRF should be installed at each waste transfer station and landfill site.
- Private and community-based sub-contractors should be included in a recycling-oriented waste management system.
- Disused quarries (e.g. the quarry to the west of the R304 intersection with Koelenhof) should be re-used as landfill sites, and closed landfill sites should be used for conservation, agriculture or urban development depending on their suitability and that of the surrounding land.

- The council must request from the DME that it also signs off on mine rehabilitation plans to ensure that they comply with the SDF. This must be integrated into the process of issuing mine closure certificates.

5.4 ENERGY

With the exception of Stellenbosch town and Franschhoek, information on the municipality's electricity consumption is hard to come by due to the fact that a number of areas are serviced directly by Eskom. However, it is anticipated that Eskom supply will be constrained at least until 2014 while it builds additional capacity, predominantly in the form of CO_2-emitting coal-fired power stations. Cables will also need to be upgraded in some areas to cater for growth in demand as a result of densification. Economic growth and the provision of housing are directly affected by the availability of electricity, and a lack of electricity supply capacity within the municipality makes its growth entirely dependent on Eskom's environmentally hazardous power supply.

Stellenbosch town is supplied by the municipal energy department, and available data indicates that it needs to reduce its consumption by 10% to avoid overstepping supply. It is estimated that R200m will be required over the next 10 years to supply an additional 20,000 units with 350Kwh/month (which is substantially less than the 700kWh that typical middle income households draw from the grid each month).

Given electricity supply constraints and the need to increase average consumption by low income households to meet basic needs, wealthy households, businesses and the University will need to take the lead in reducing demand for electricity and moving to alternative energy sources (e.g. solar hot water heating). A combination of innovative demand reduction measures and increases in capacity will be required to prevent power disruptions whilst allowing for access to be extended to the poor.

It must be noted that as from November 2011, all buildings must by law adhere to the promulgated SANS 10400-XA energy efficiency standards. Plans must detail how the building conforms to these standards in order to be approved, and the people who approve these plans need to be trained so that they can evaluate these submissions.

It is also worth noting that there are now various incentives for large energy users to invest in renewable energy plants that can be cash positive within the first year. These include a 3% discount from Eskom if a plant of 1MW or above is constructed, cheap loans from the IDC's Green Fund, grant funding from international sources, etc.

PRINCIPLES

- In accordance with the new SANS 10400-XA standard, all new housing (including low income housing) should install solar water heating devices (for which there are various technologies).
- All non-subsidy housing should be encouraged to meet the portion of their electrical demand that exceeds 300kWh per month by generators such as solar photovoltaic panels and solar hot water heating devices.
- SANS 10400-XA energy efficiency standards should be adhered to in all planning applications for new buildings, major renovations and usage changes.
- Alternative energy sources should be developed and integrated into the Stellenbosch grid, including renewable energy (which could include solar or wind power generated, for example, on the West Coast, or energy from waste).
- The largest energy users in Stellenbosch, plus all future large property developments, should be encouraged and incentivised to invest in solar energy generation equal to or greater than their existing requirements.
- Stellenbosch should ensure that it benefits from the strategies mounted by the Western Cape's Green Cape initiative.

5.5 CONSTRUCTION MATERIALS

Most of Stellenbosch's building materials are sourced outside the municipality, increasing the load on the transport system whilst contributing to CO_2 emissions and depleting fossil fuels. Many of these materials, for example Portland cement, require vast amounts of the country's scarce electricity to produce, and can be substituted for materials with less of an environmental impact. Lower embodied-energy construction materials include local stone, clay, thatch, sustainably-grown wood and recycled bricks.

There are at least two brick quarries located north of Stellenbosch, one of which is anticipated to be in use for another 100 years. A quarry on the Polkadraai Road makes an effort to be lower carbon by using recycled oil to fire its kilns and pelletized sewage instead coal chip within the bricks.

PRINCIPLES

- Educate private contractors about source sites for building materials that are as close to the settlement nodes as possible, and encourage them to use them instead of more distant sources.
- Encourage the use of recycled, recyclable and low energy building materials in the construction of new buildings (e.g. re-used, SABS bricks made from crushed rubble, adobe bricks, sand bags etc.) to reduce the need for raw materials and transport.
- Low embodied-energy alternatives to Portland cement should be encouraged.

6. FOOD AND AGRICULTURE

Together with water, Stellenbosch's fertile soils represent its most important resource for long-term sustainability. Wine and vegetable products are the district municipality's largest export products, and agriculture contributes to over 18% of the municipality's employment. Between 1996 and 2001, 64% of all new jobs created in the CWDM were in the agricultural sector. Agriculture is a significant employer of people who are not sufficiently skilled to find work in other sectors with skills shortages. Due to the nature of the wine and fruit industries, many of these jobs are seasonal, and ways to create year-round employment in other sectors should be sought where appropriate. There are strong linkages between the agricultural sector and manufacturing, wholesale, trade and accommodation, and financial services sectors (particularly with agri-tourism).

In recent years, the agricultural industry has experienced difficulties in attracting capital as high premiums paid for the lifestyle aspects of Stellenbosch farm land have driven property prices up and financial returns for farmers down. High and medium potential agricultural land has been rezoned to inappropriate uses (e.g. upmarket housing, golf courses, RDP housing, certain types of tourism development and poor mining rehabilitation). This has the following negative impacts:

1) Fertile agricultural land is rendered unproductive, compromising the region's ability to ensure food security
2) Low skilled farm labourers have less opportunities for employment, contributing to the poverty gap
3) Opportunities for biodiversity conservation are reduced.

Despite approximately 40,000 ha of cultivated land in the Stellenbosch region, 17 265 ha (43%) is used for wine grapes and relatively little of it is used for food production. The vast majority of the municipality's food requirements are being imported from outside its boundaries, and distributed through major retailers, agricultural coops, corner shops and farm stalls. In addition to the negative environmental impacts associated with importing food, there are indications that this large scale, formal food distribution system will come under increasing pressure as a result of inflation, decreasing purchasing power amongst all income groups, particularly the poor. Informal marketing channels that build a network of farmers markets could allow retail prices to drop whilst increasing revenues to farmers, effectively circumventing middlemen.

PRINCIPLES

- A minimum of 10,000 ha of arable land (public or privately owned) should be safeguarded for the cultivation of food for local consumption, and not used for purposes that would remove its productive potential.
- Land outside of existing and proposed urban settlements should be used for agricultural production, biodiversity conservation, scenic quality and agri-tourism.
- Intensification of agriculture, biodiversity conservation and agri-tourism should be promoted in farming areas outside of urban settlements.
- Incentives should be put in place to encourage the use of currently fallow land for agriculture or biodiversity conservation purposes. This could include using municipal land as surety for Land Bank / DBSA / IDC loans, and promoting partnership land reform projects on private and municipal land.
- Outside of existing and proposed urban settlements for township development (and permanent freehold residential occupation), the subdivision and lease of land should be strongly discouraged.
- The construction of additional large grocery anchored shopping malls should be discouraged in the municipality, mainly because they undermine neighbourhood-level commercial activity and they often are only accessible by private car.
- Locations for informal, properly managed farmers markets selling fresh produce, arts and crafts should be provided in key centres.

7. HERITAGE

Stellenbosch's sense of place is derived primarily from its historic architecture, endemic biodiversity and the views from its main arterial routes. Its main attractions include wine farms, natural areas, historic sites and museums, sports and recreational facilities, and tight-knit urban street character in many of the historic urban cores (e.g. Stellenbosch, Franschhoek). Approximately 169,000 tourists visited the municipality's tourism bureau in 2005, of which over 80% were foreign. Growth in domestic tourism is seen as an opportunity to expand the tourism economy. The establishment of Stellenbosch 360 in 2012 clearly marks the start of a new era in tourism promotion and business involvement in development in general.

Stellenbosch is home to some of the rarest and most diverse vegetation on earth, but this is coming under pressure from the uncontrolled expansion of urban areas and industrialized agriculture into indigenous ecosystems. As pockets of untouched ecosystems get smaller and the spaces between them get wider, they lose their ability to function and reproduce, and species become extinct. Combined with climate change, uncontrolled conversion of rare ecosystems could result in the loss of beneficial ecosystem services and significantly diminish the appeal of the area unless decisive action is taken to protect and nurture endemic biodiversity.

There is increasing importance of telecommunications to the growth of the economy. This is especially the case in Stellenbosch that has a strong emphasis on business services and information communication technology Rapid expansion of the telecommunications industry in recent years has resulted in an increasing demand for radio telecommunication services, and new technologies in the cellular phone industry. The location, siting and development of TMI continues to be an issue of particular interest to both local communities and local government alike, with debate focusing on adequate availability of connectivity, visual amenity and public health. With the nature of technology it must be accepted that the future need for TMI sites will increase in the short to medium term..

PRINCIPLES

- Sensitive biodiversity areas should be mapped, and clear and appropriate guidelines introduced to conserve them.
- Crest lines should be kept free of buildings and intensive agriculture to protect biodiversity.
- Ridge lines should be used for properly managed walking trails to increase recreational potential, tourism and income.
- The boundaries of view sheds along major routes should be determined by a visual resource management exercise.
- Land within these view sheds and outside of existing or proposed settlement nodes should be classified as either "Buffer" or "Intensive Agriculture" Spatial Planning Categories (SPCs) depending on the underlying land's suitability and use.

- Development for agricultural or agri-tourism activities within these view sheds and outside of existing or proposed settlement nodes should be limited to 1 du per 10 ha (or equivalent).
- Buildings along provincial roads should be set back at least 100m from these roads to preserve the character of rural areas.
- Building heights and architectural styles should be controlled within 200m of any prominent road so as to preserve the heritage of the built environment.
- Outside of formal conservation areas, land owners should be encouraged to conserve vegetation classified by SANBI as Endangered or Critically Endangered (particularly along ridge lines) and to link to existing conservancies (e.g. through the CapeNature Stewardship Program). These land uses should be classified in the Core SPC.
- Adopt a telecommunication mast infrastructure policy that will facilitate the growth of new and existing telecommunications systems and ficilitate the provision of TMI in an efficient, cost-effective, environmentally appropriate and sustainable way.
- Tourism that reinforces the municipality's sense of place (e.g. agri-tourism, wine tourism and eco-tourism) should be encouraged in the settlements and on rural land outside the urban edge.
- Variety in the region's tourism offerings should be preserved rather than focussed on one unique resource (e.g. wine tourism), but attractions must remain appropriate to the region's tourism themes.
- Restaurants, wine tasting and holiday accommodation should be encouraged, but must be within the parameters of the rural housing guidelines and provincial resort guidelines.

SECTION 3: STELLENBOSCH NODES

In line with the principles introduced in section 2.1 on interconnected nodes, the following 14 nodes have been identified as the loci of future development in Stellenbosch Municipality.

3.1. Stellenbosch Town

3.2. Franschhoek

3.3. La Motte

3.4. Wemmershoek

3.5. Groot Drankenstien

3.6. Dwars River Valley

3.7. Klapmuts

3.8. Muldersvlei Crossroads

3.9. Koelenhof

3.10. James Town/De Zalze

3.11. Vlottenberg

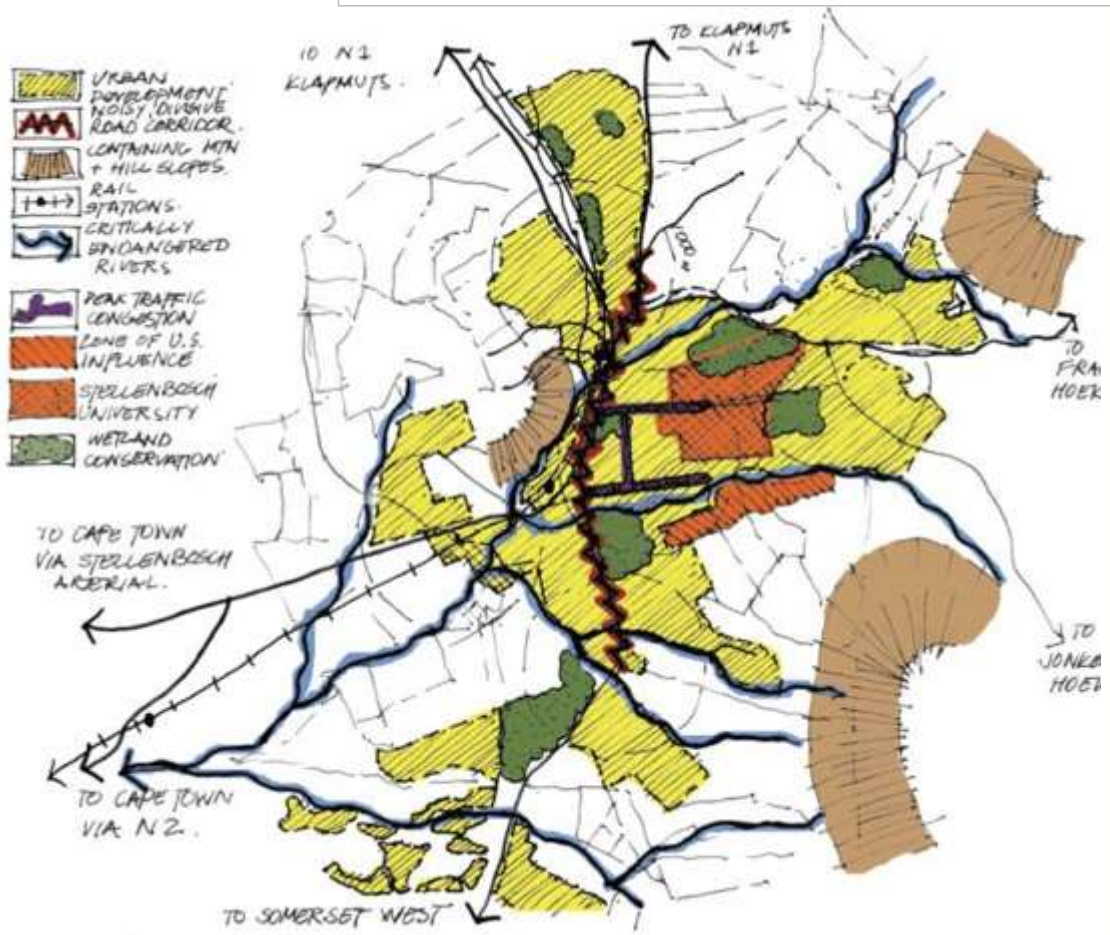
3.12. Spier

3.13. Lynedoch

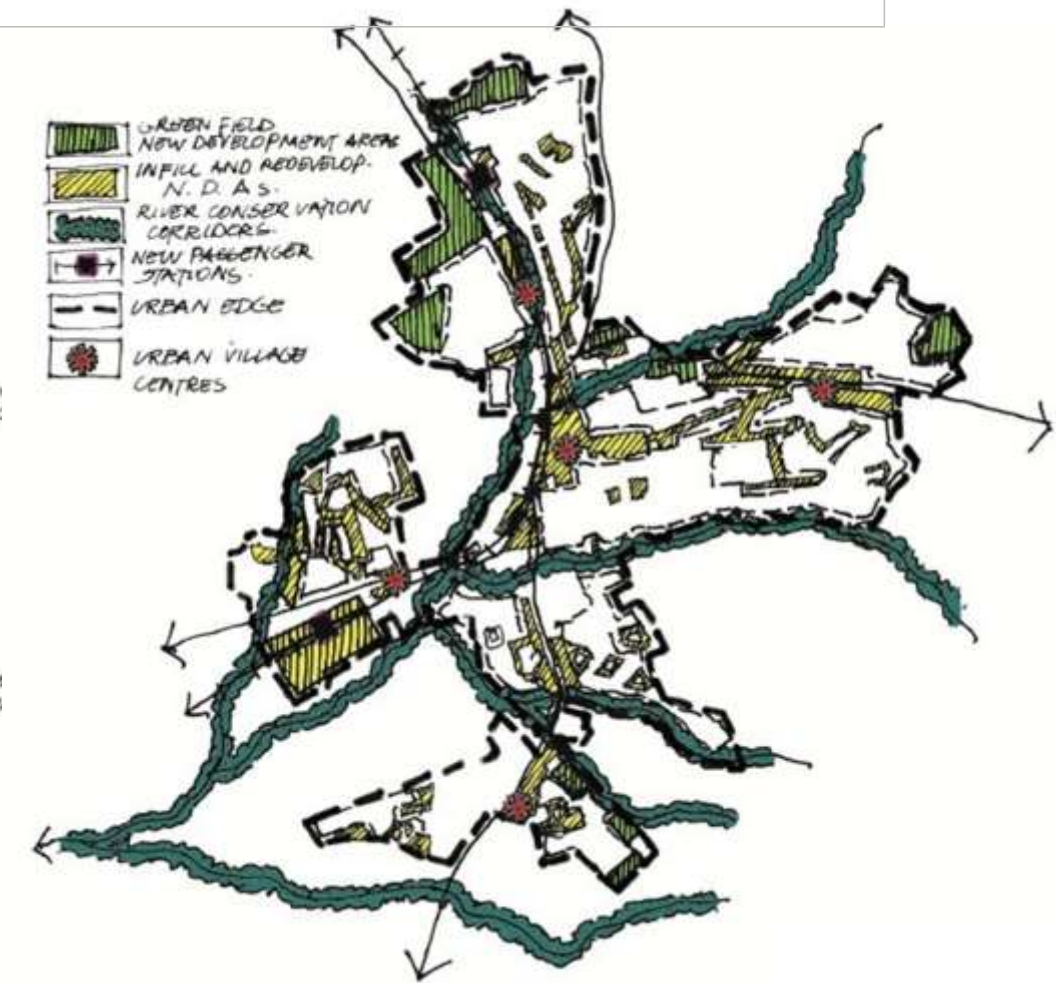
3.14. Raithby

3.1. STELLENBOSCH TOWN

Strategic location	• On the main R44 arterial and railway line



STELLENBOSCH TOWN ANALYSIS



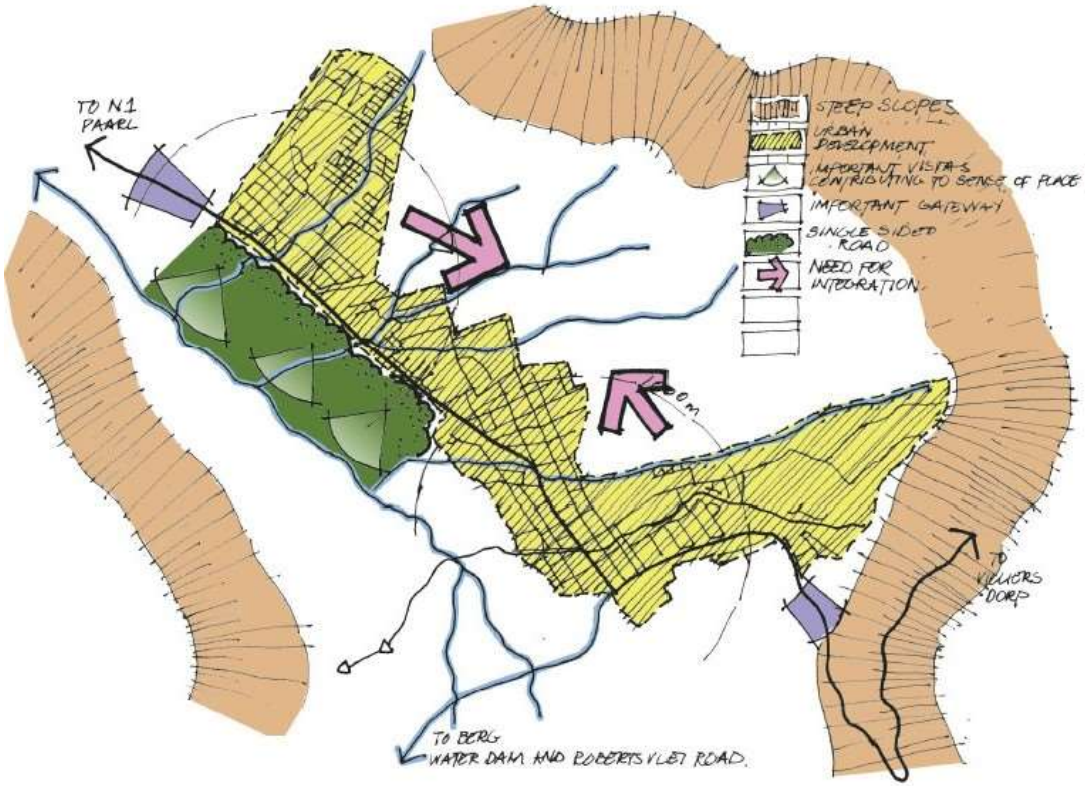
STELLENBOSCH TOWN PROPOSALS

Description	• Educational, administrative, agricultural and services centre functioning as the economic hub of the Stellenbosch Municipality.
Advantages	• Existing corporate and governmental offices • Local authority decision-making centre • Rail access • Hospital and health functions • Historical buildings
Challenges	• Large informal settlements on the periphery and in central parts of the town are expanding in an uncontrolled manner and require access to services. • Stellenbosch is still largely divided along apartheid planning lines, with a poor north and wealthy south. • The town suffers from morning and evening traffic congestion that is considered excessive for a town of its size. • The needs and intended growth of the university need to be taken into account to avoid it becoming a gated complex that blocks movement and hinders integration.
Opportunities	• To maintain the character of the town centre, development should follow a perimeter block layout, with clearly defined street building lines echoing the town's historic fabric, with parking underneath or to the rear. • Street trading, businesses and NMT frontages along Bird Street should be consolidated and extended into Kayamandi, Cloetesville and Idasvallei along Cluver and Merriman Streets. • There is potential to fill the gap in the market for middle income residential accommodation
Constraints	• The primary constraint on development is the lack of finance to extend the bulk infrastructure - especially sanitation, solid waste, energy and roads to meet the needs of current and future citizens. • The town's rivers are categorized as Critically Endangered and need to be protected, especially downstream of WWTW and informal settlements. • Special care needs to be taken to avoid damage to heritage buildings and precincts.
Future lateral growth direction	• To prevent sprawl, an urban edge to limit the outward growth of the town over the next decade needs to be demarcated and adhered to.

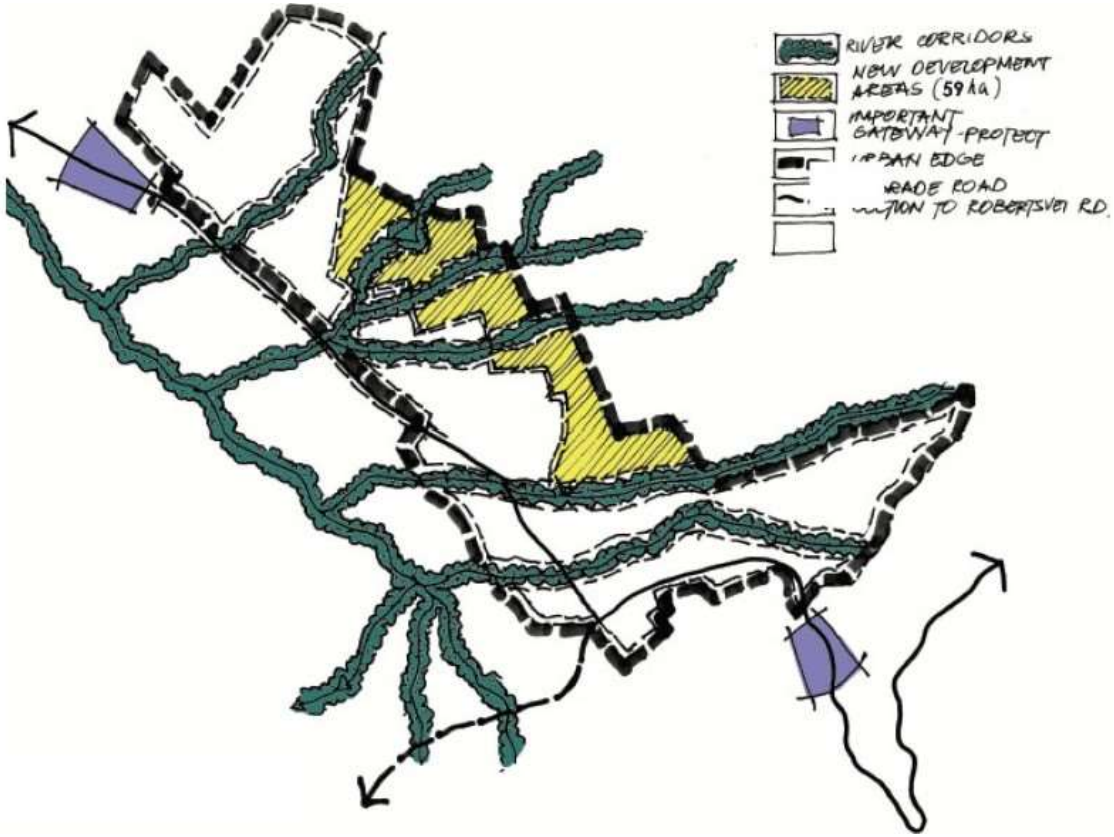
Development areas	• The town is to be conceptualized as 5 interdependent mixed-use, mixed-income urban villages focusing on: (1) North: intersection of Bassi Street / R304 / Cloetesville Steps (2) Centre: existing town centre, (3) East: Idasvallei/Uniepark on intersection of Helshoogte/Cluver. (4) West: Onderpapagaaiberg/SFW on intersection of Devon Valley/Adam Tas/Oude Libertas, (5) South: Paradyskloof on intersection of Blaauklippen/Strand Roads. • Low key densification of existing suburbs is to be achieved by subdivision down to minimum plot size and adding second dwellings. • New development areas that can accommodate large scale, mainly housing development outside of the existing urban development are to be identified. These include the northern extension of Stellenbosch and the infill opportunity between Brandwacht and Paradyskloof. • The settlement as a whole should achieve a gross dwelling unit density of 25du/ha, with densities of 100-200du/ha along main transport routes and around public open spaces. • Special consideration should be given to the future of the area where the prison, Department of Transport and various small public open spaces are located in order to ascertain more high value uses for these areas, especially within the context of the University's masterplan.
Roads and transport	• Main streets are to be upgraded with trees, landscaping, cycling and pedestrian facilities similar to that already in Dorp, Plein and Church Streets. • The high quality main street with good pedestrian and cyclist access is to be extended to the main streets of peripheral suburbs. • Transport plans should integrate and support the traffic reduction strategies in Stellenbosch University's "Campus Master Plan" (See Section 3). • Transit-oriented development principles should apply. This means linking investments in public transport and NMT to zoning decisions that promote densification in nodes serviced by public transport and NMT facilities. • Given the rising volume of traffic that is supposedly passing through Stellenbosch town (causing congestion, road deterioration, etc), the transport plan has suggested that it may be worth considering a new arterial bypass that links the R44 at a point between Annandale Road and the Technopark entrance, passes behind Technopark (giving it another much needed entrance), cuts across the R310 and rejoins the R44 on the other side of Kayamandi. This extremely expensive option may, in fact, not resolve the congestion problem because it will open up large tracts of new land for development. Also, the bulk of traffic is not passing through Stellenbosch, as already mentioned above. The alternative would be major new investments in public transport links, especially into Technopark, eg. a light rail or tram service connection.
Water	• Certain supply zones within town (i.e. Cloetesville and Kayamandi) do not have capacity.
Sewage	• No capacity at Stellenbosch WWTW to justify approvals of new developments.
Electricity	• The Nominated Maximum Demand (NMD) has reached full capacity. No additional large developments can be accommodated.
Solid waste	• Stellenbosch landfill site is at capacity. A new cell is under construction to create airspace up to 2017. Additional landfill sites are urgently required to meet demand after 2017.

Rivers and conservation zones	• Fresh water ecologists to demarcate 10 to 30m setbacks from the banks of rivers and canals within which no new development (other than roads, paths, landscaping or street side trading) or ploughing may occur. These setbacks are to be mandatory for new developments and retrofitted in existing ones where possible. • The redevelopment of public open spaces should be avoided unless they can be shown to be surplus to open space requirements in the long run.


STELLENBOSCH: PROPOSED URBAN EDGE
Legend
Proposed New Urban Edge
Affected Areas
Included
Excluded
Other Municipalities
Stellenbosch
Kilometers
0 0.5 1 2 3 4



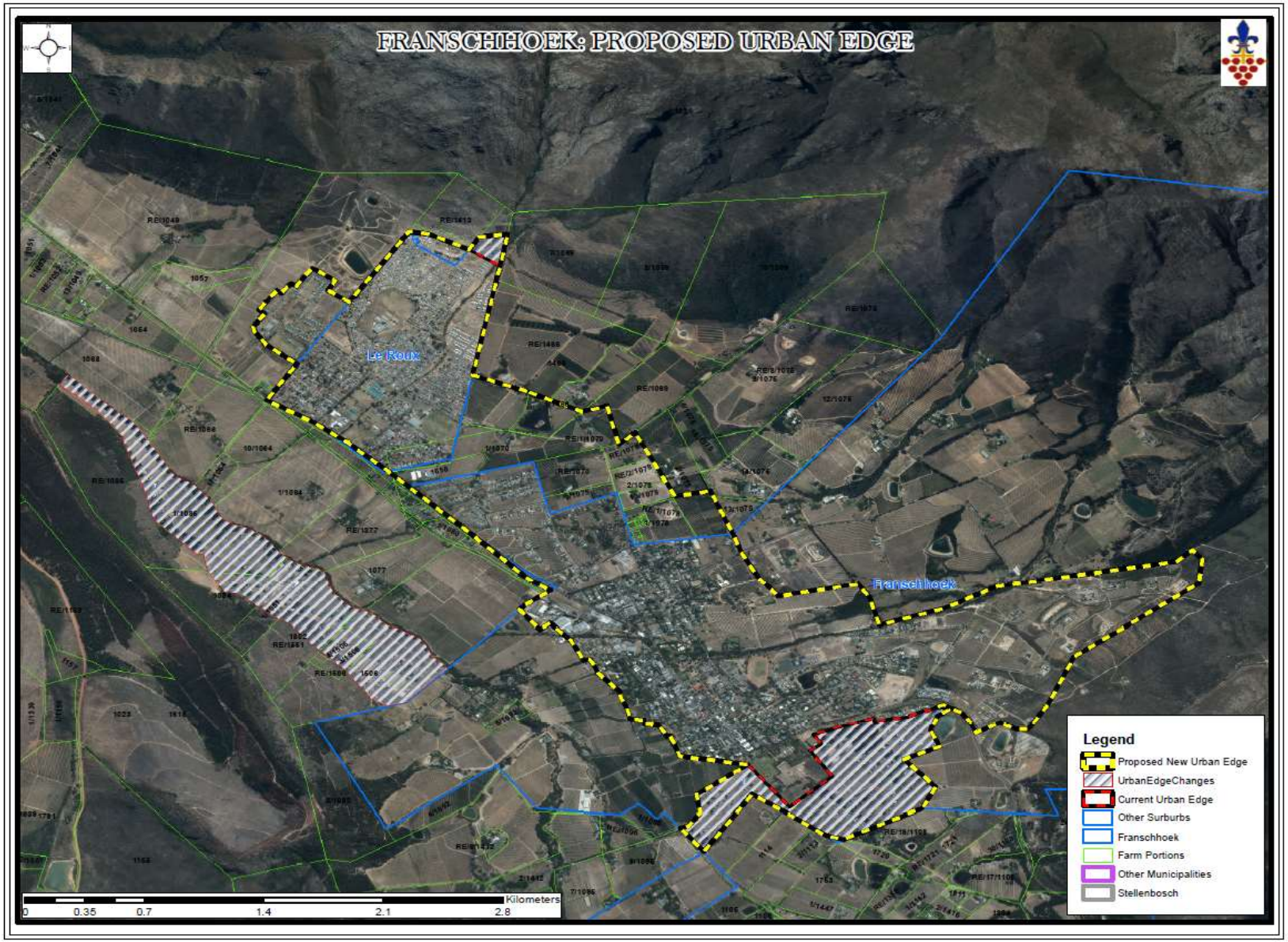
FRANSCHHOEK ANALYSIS



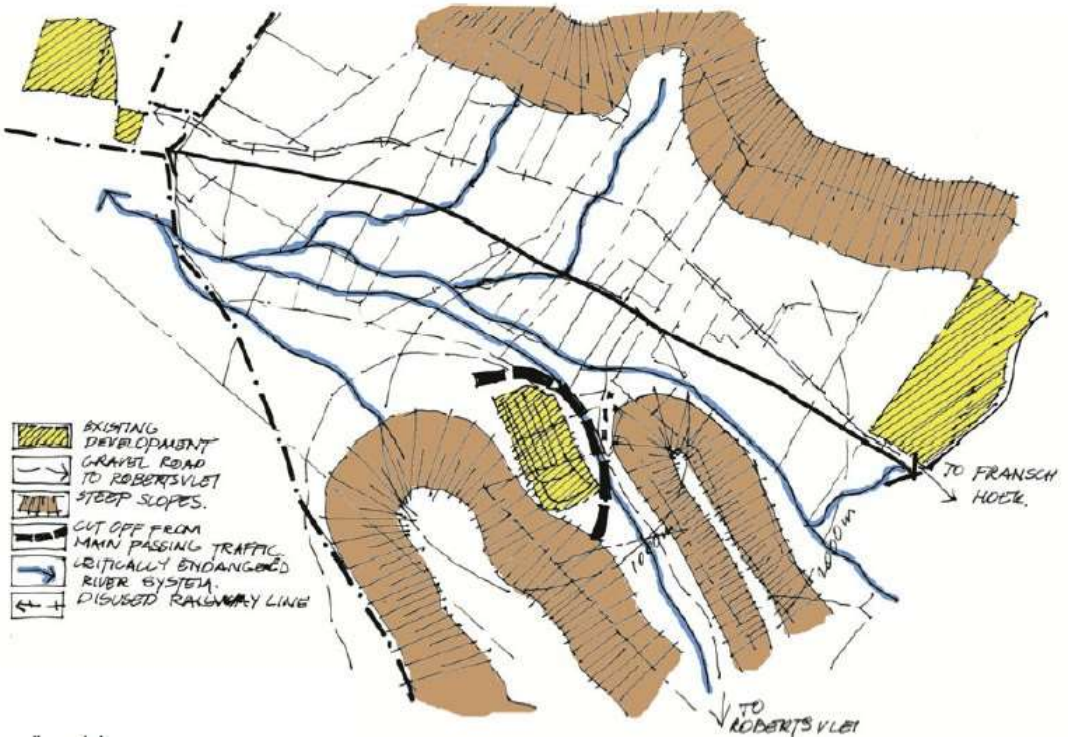
FRANSCHHOEK PROPOSALS

Strategic location	• On the R44 and railway line
Description	• An administrative and agricultural service centre that has become popular as a destination for upmarket tourism and cuisine.
Advantages	• Existing corporate and governmental offices • Local authority decision-making centre • Rail access • Hospital and health functions • Tourist destination • Historical buildings
Challenges	• Franschhoek South (where most of the higher order facilities are located) is poorly integrated with Franschhoek North, a low income settlement 2km north of the main village. • Its successful tourism economy is facing challenges of over-capacity and traffic congestion along its main streets, particularly during summer. • Informal settlements are expanding. • Insecticide spray from agriculture negatively affects health in the valley at certain times of the year.
Opportunities	• The economic opportunities offered by the main road are to be extended northwards so that Franschhoek North may also benefit. • A Cape Country aesthetic has been successfully retained thanks to a rigorous aesthetics committee, particularly in Franschhoek South. Current heritage areas are to be supported and extended into surrounding suburbs to promote the growth of high quality urban areas. • The approaches to the village from North and South contribute to its sense of place, and should be carefully controlled.
Constraints	• Located in a narrow flood plain, Franschhoek is abutted by the steep slopes of the Wemmershoek/Limietberg mountains to the north and Groot Drakenstein mountains to the south.
Future lateral growth direction	• Development along the northern edge of the river between Franschhoek North and South should be promoted. • An urban edge that holds the current line of development to the South, West and East and accommodates the integration of Franschhoek North and South needs to be demarcated.
Development areas	• Land above the current urban boundary of the town between Franschhoek North and South is to be promoted for mixed use, mixed income development including social and gap housing. The current small-holdings south of Franschhoek is to be included within the urban edge. • Low key densification of existing suburbs with 2nd dwellings and subdivisions down to minimum plot sizes should be encouraged.
Roads and transport	• The upgrading of the main street currently underway should be completed, and extended to Franschhoek North, including the provision of cycle paths. • NMT facilities are to be prioritised to reduce the need for motorised transport.
Water	• Certain supply zones within town (i.e. central town and surrounds) do not have capacity.

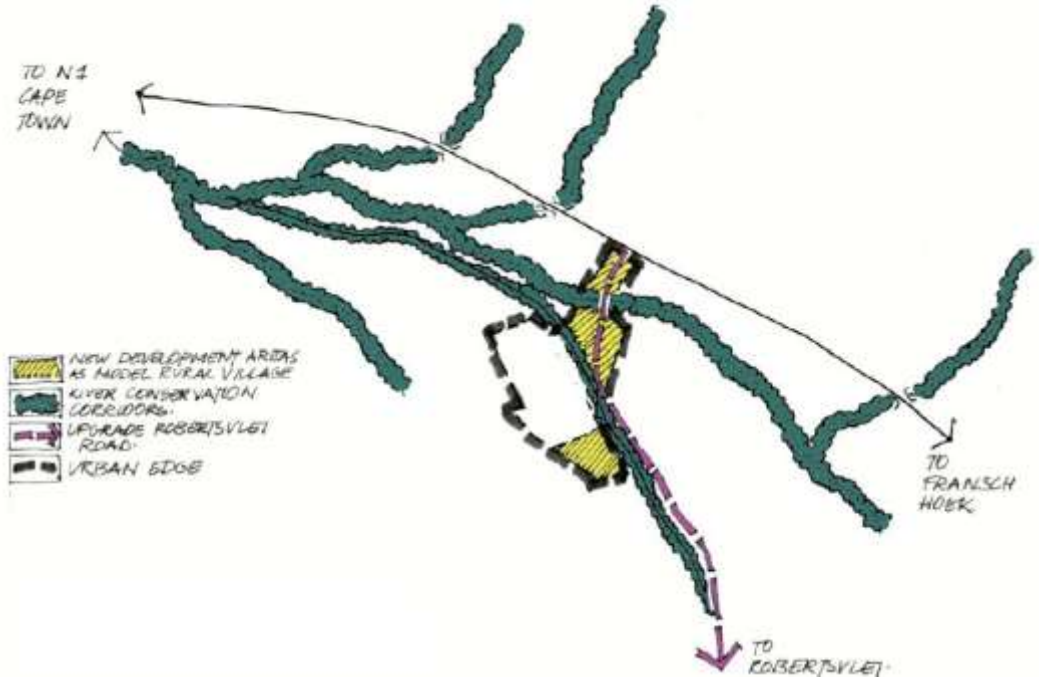
Sewage	• Capacity will be provided by end of 2013.
Electricity	• The Nominated Maximum Demand (NMD) has reached full capacity. No additional large developments can be accommodated.
Solid Waste	• Stellenbosch landfill site is at capacity. A new cell is under construction to create airspace up to 2017. Additional landfill sites are urgently required to meet demand after 2017.
Rivers and conservation zones	• Fresh water ecologists to demarcate 10 to 30m setbacks from the banks of rivers and canals within which no new development (other than roads, paths, landscaping or street side trading) or ploughing may occur. These are to be mandatory for new developments and retrofitted where possible to existing developments.
Important Reference Documents	• Franschhoek Spatial Development Plan (November 2000) by TV3 Architects & Planners • Franschhoek Urban Edge Policy (April 2003) by TV3 Architects & Planners


FRANSCHHOEK: PROPOSED URBAN EDGE
Le Roux
Franschhoek
Legend
Proposed New Urban Edge
UrbanEdgeChanges
Current Urban Edge
Other Surburbs
Franschhoek
Farm Portions
Other Municipalities
Stellenbosch
Kilometers
0
0.35
0.7
1.4
2.1
2.8

3.3. LA MOTTE

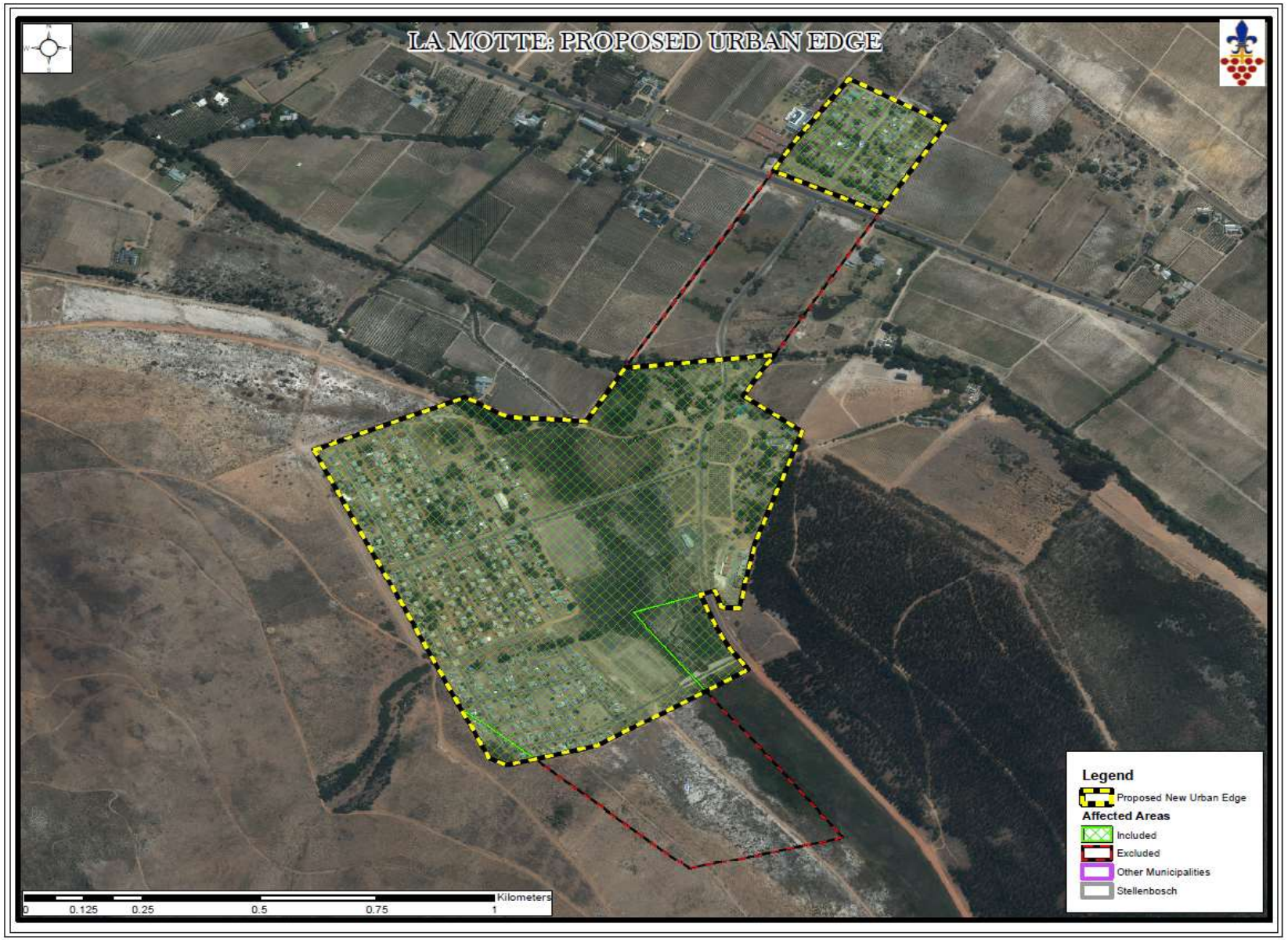


LA MOTTE ANALYSIS

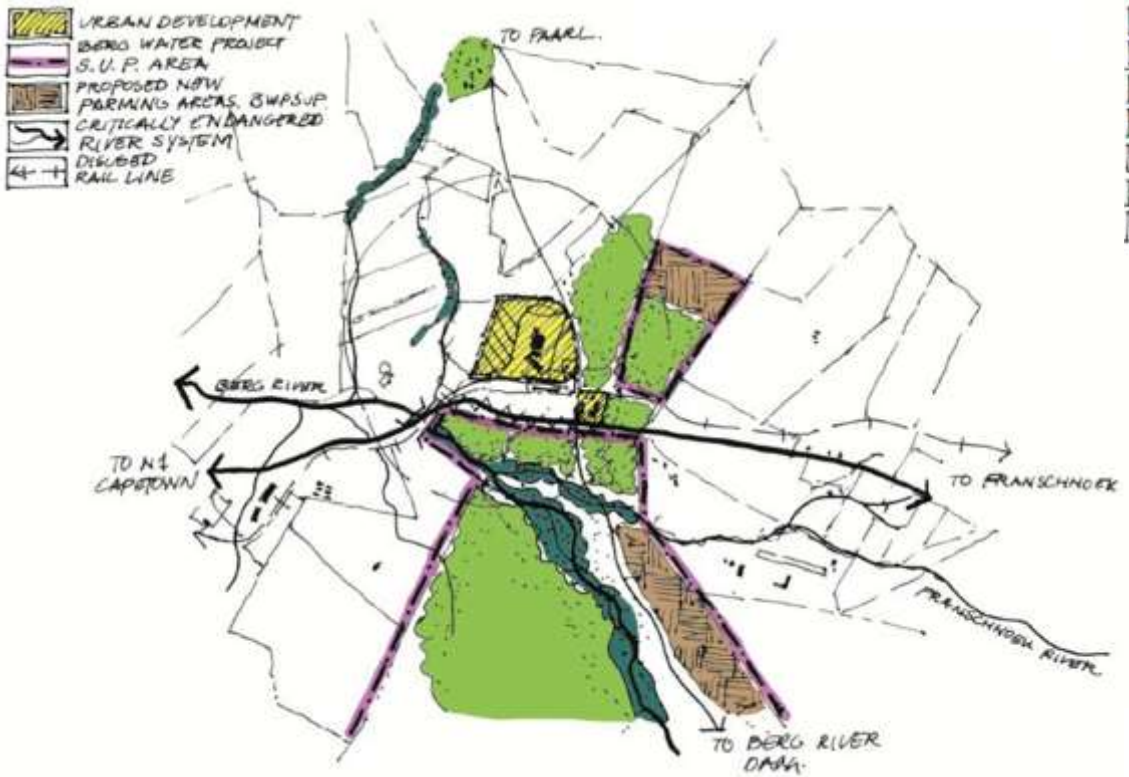


LA MOTTE PROPOSAL

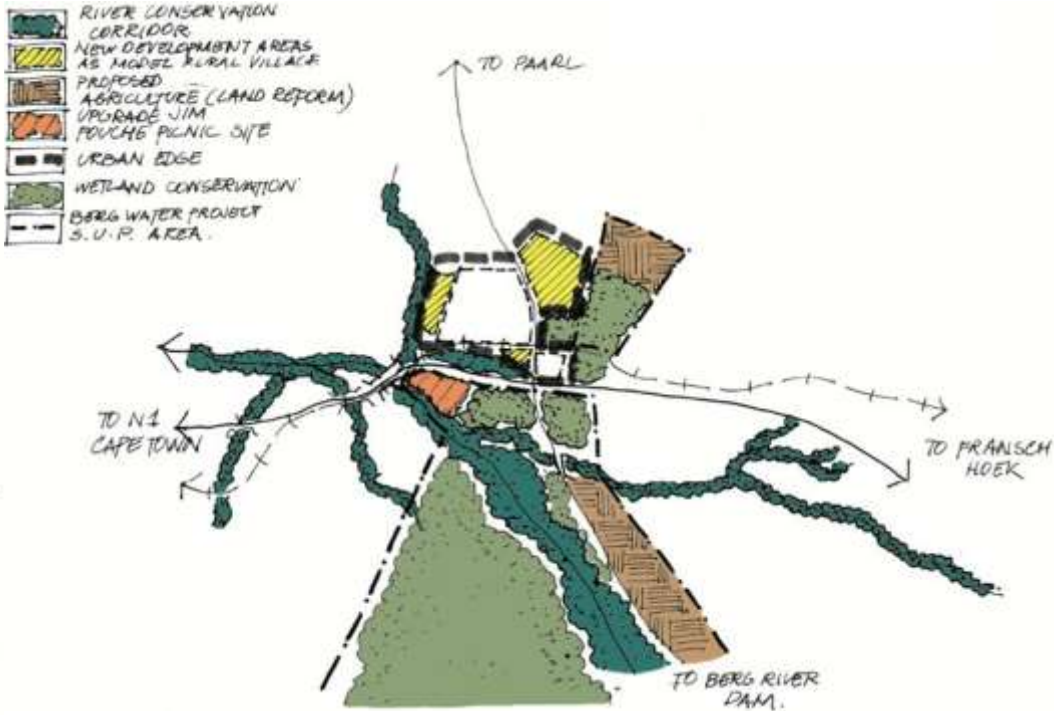
Strategic location	• Set 1km back from the R45.
Description	• A former Bosbou hamlet functioning as a rural settlement.
Advantages	• Rural character
Challenges	• Set back from the R45, the hamlet is cut off from passing trade. This makes it difficult to be anything more than an agri-village serving the surrounding farms.
Opportunities	• Link to R45 and improve access to public or private transport so that the residents can benefit from passing trade.
Constraints	• Robertsvlei and Franschhoek Rivers require the demarcation of setback lines by a freshwater ecologist, and river management guidelines.
Future lateral growth direction	• Towards the R45
Development areas	• The former SAFCOL headquarters site offers an excellent opportunity for mixed income, mixed use development with a low key retail/commercial farm stall frontage along the R45. Land south of the new TCTA housing to the boundary of this property.
Roads and transport	• Tar the Robertsvlei Road to act as an alternative route to increase exposure to passing trade and act as an alternative route to the south. • Implement NMT links with the R45 and surrounding settlements (at the cross-section of this road). • Upgrade current streets and open spaces with landscaping and tree planting.
Water	• Bulk provision in place but minor upgrades necessary on reticulation.
Sewage	• Capacity will be provided by end of 2013.
Electricity	• Area supplied by Eskom. Capacity to be confirmed by Eskom.
Solid Waste	• Stellenbosch landfill site is at capacity. A new cell is under construction to create airspace up to 2017. Additional landfill sites are urgently required to meet demand after 2017.
Rivers and conservation zones	• Fresh water ecologists to demarcate setbacks from the banks of the Robertsvlei and Franschhoek Rivers and implement river corridor management guidelines.


LA MOTTE: PROPOSED URBAN EDGE
Legend
Proposed New Urban Edge
Affected Areas
Included
Excluded
Other Municipalities
Stellenbosch
Kilometers
0
0.125
0.25
0.5
0.75
1

3.4. WEMMERSHOEK

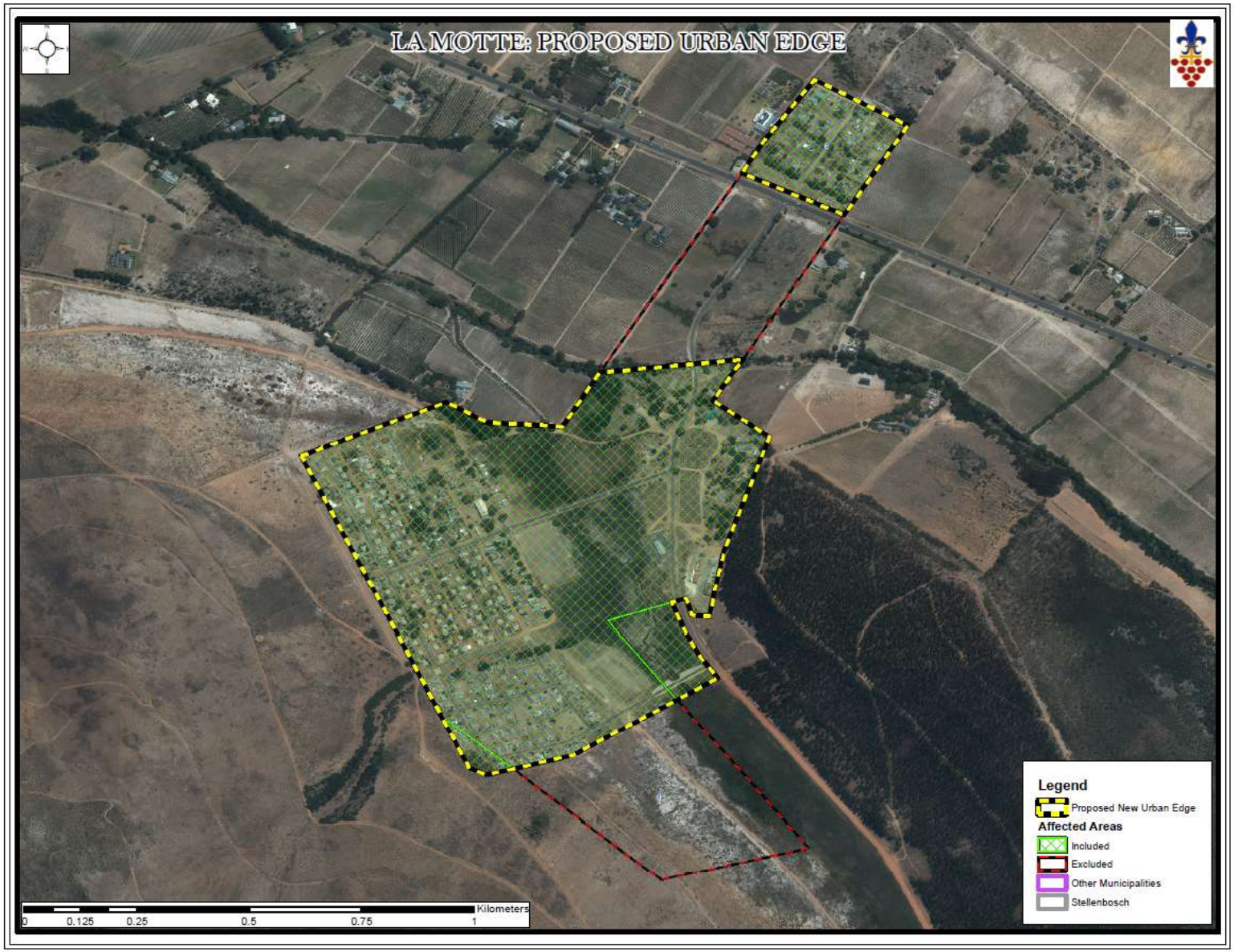


WEMMERSHOEK ANALYSIS

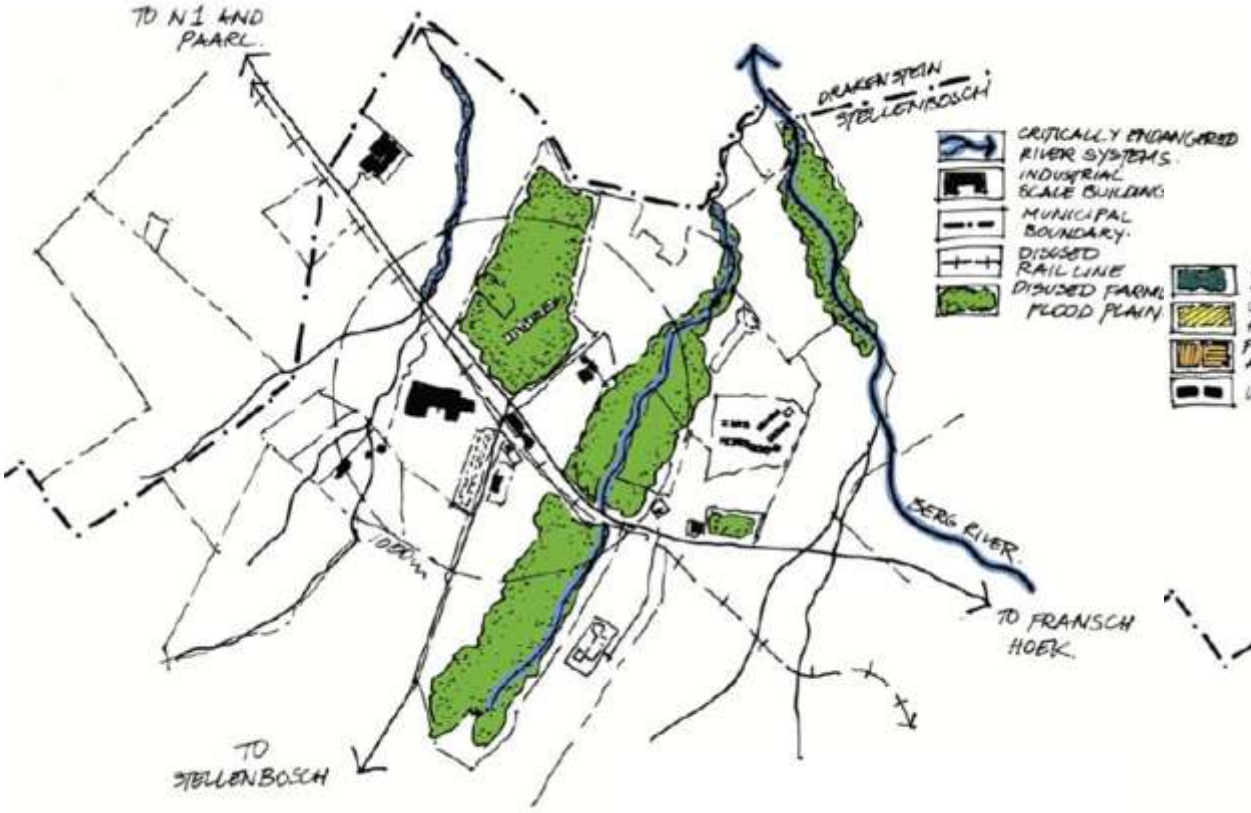


WEMMERSHOEK PROPOSALS

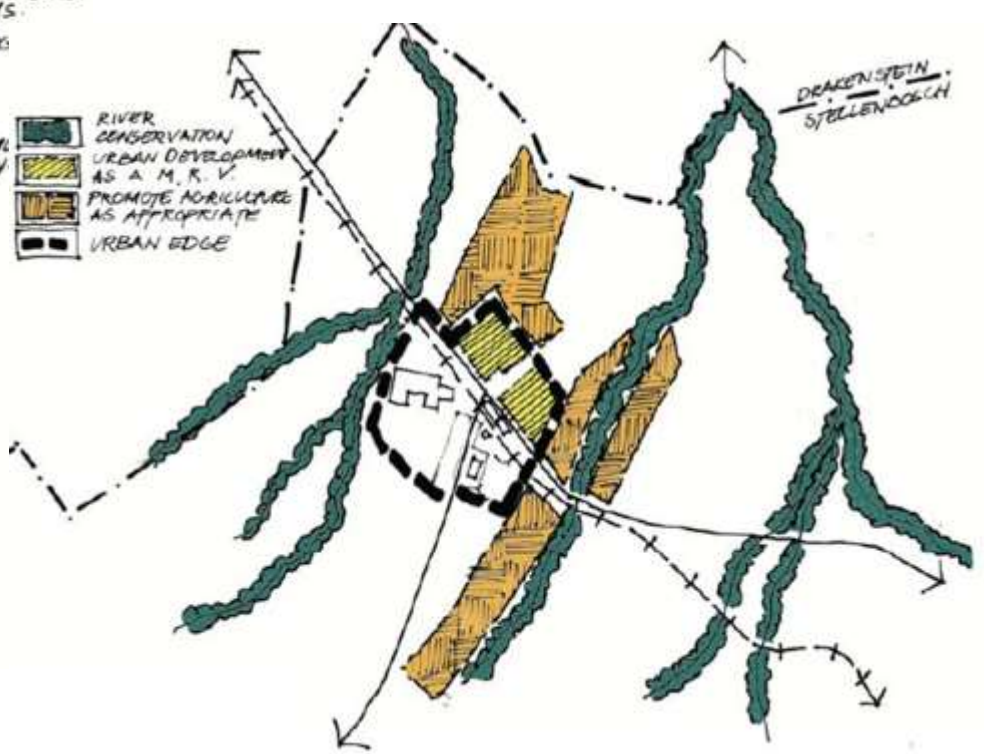
Strategic location	• Strategically located at the gateway to the Franschhoek valley, at the confluence of the Berg and Franschhoek Rivers and intersection of the R45 and R303.
Description	• Bosbou village built around Wemmershoek sawmill, now functioning as a rural settlement.
Advantages	• Rural character
Challenges	• High water table in the lower vineyards of farms surrounding the wetlands.
Opportunities	• Small scale mixed use development could be achieved along the R303. • The closed sawmill precinct could provide opportunities for industrial premises.
Constraints	• Surrounding wetlands in the river confluence area severely limit urban and agricultural development to the west, south and east, and make it difficult to achieve frontage along the R45.
Future lateral growth direction	• West towards and up to the river.
Development areas	• Above the wetland area abutting the R303 to the north. • Along the western boundary of the current residential area. • Possibly below the railway line abutting the school on the western edge of the R303.
Roads and transport	• NMT links with the R45 and surrounding settlements should be implemented at the cross section of this road. • Upgrade current streets and open spaces with landscaping and tree planting.
Water	• Bulk infrastructure required, e.g. reservoir and feeder pipes.
Sewage	• Capacity will be provided by end of 2013.
Electricity	• Area supplied by Eskom. Capacity to be confirmed by Eskom.
Solid Waste	• Stellenbosch landfill site is at capacity. A new cell is under construction to create airspace up to 2017. Additional landfill sites are urgently required to meet demand after 2017.
Rivers and conservation zones	• Implement river corridor management guidelines for the Berg River tributaries and wetlands with setback lines demarcated by a freshwater ecologist.


LA MOTTE: PROPOSED URBAN EDGE
Legend
Proposed New Urban Edge
Affected Areas
Included
Excluded
Other Municipalities
Stellenbosch
Kilometers
0
0.125
0.25
0.5
0.75
1

3.5. GROOT DRAKENSTEIN

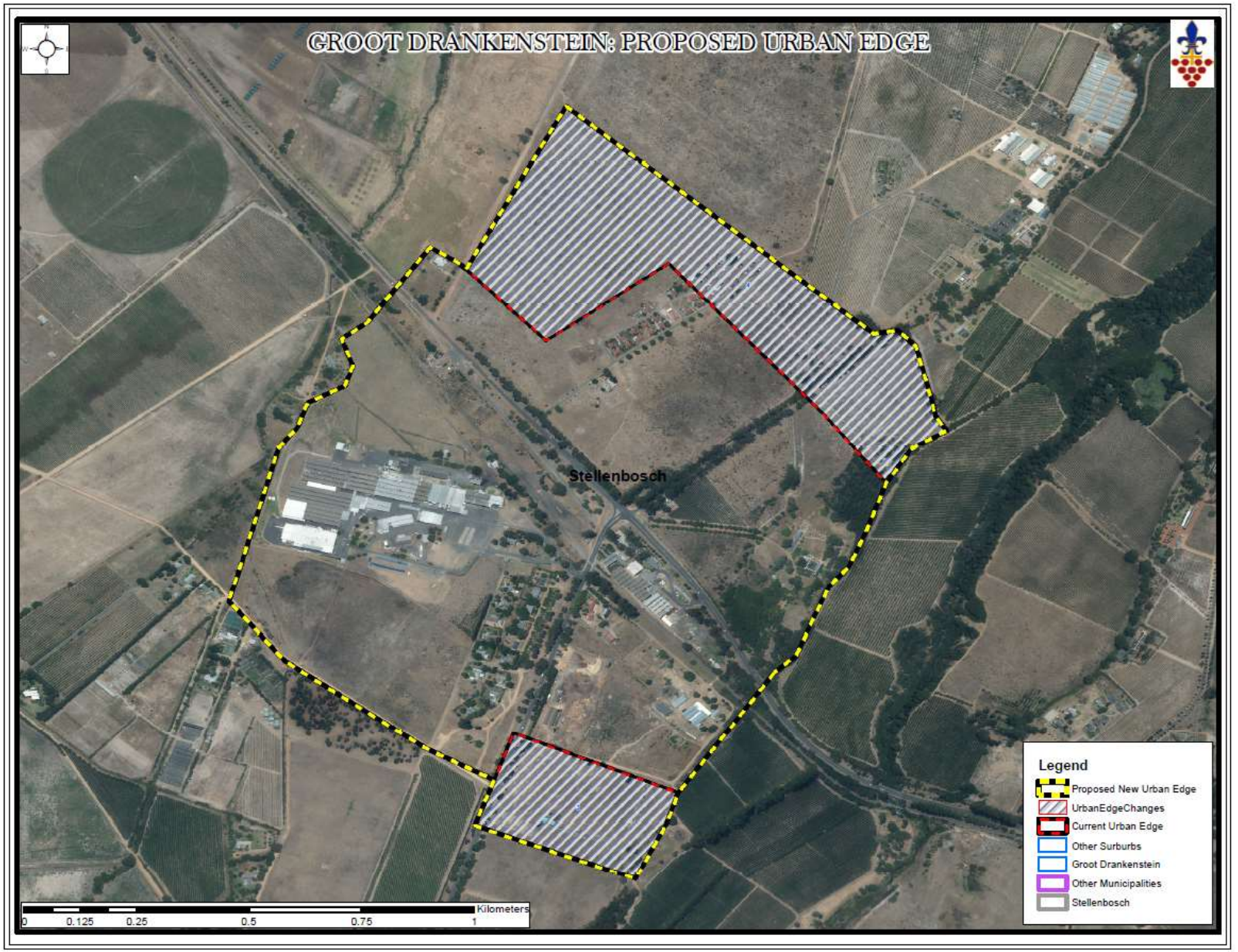


GROOT DRAKENSTEIN ANALYSIS

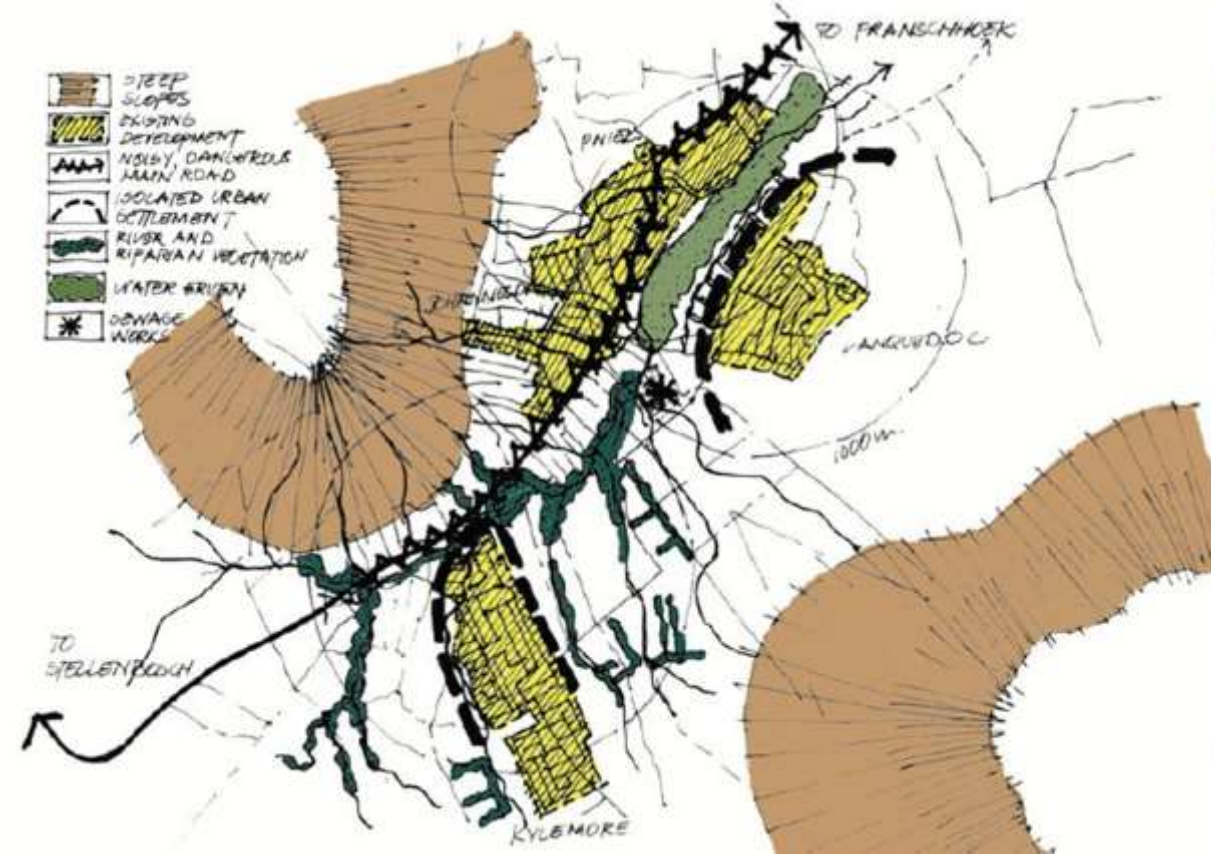


GROOT DRAKENSTEIN PROPOSALS

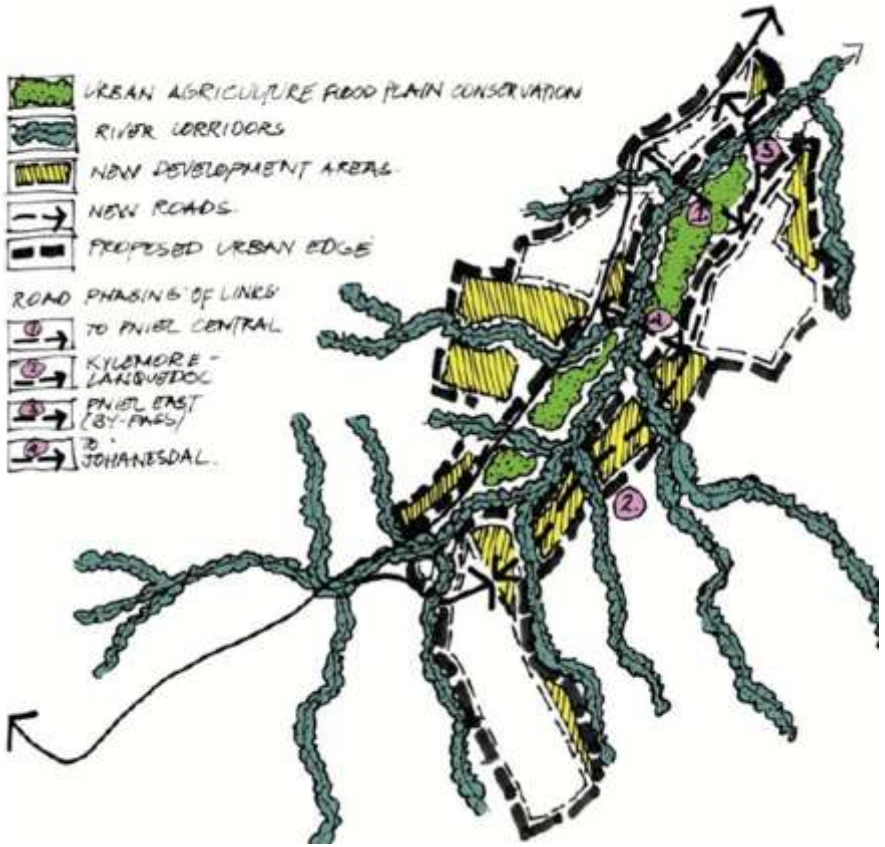
Strategic location	• Intersection of the R310 to Stellenbosch and the R45 between Franschhoek and the N2
Description	• There is no existing settlement at this intersection, and the area is currently occupied by Boschendal agri-village, cellars, rail station and sheds.
Advantages	• Not constrained by existing development
Challenges	• The development of Meerust will need to be linked to the land reform project approved for the site.
Opportunities	• The land around the road intersection has strategic potential as a settlement. • Careful development can reinforce the heritage potential of Groot Drakenstein as a Boland Village.
Constraints	• Located between tributaries of the Berg and Dwars rivers, but both are some distance away.
Future lateral growth direction	• Along the roadside or northwards into the remainder of the properties.
Development areas	• Western portion of Meerust and property on the other side of the entrance road abutting the R45 for a distance of 500m. There is scope for agriculture on remainder of Meerust property and in the flood plain of the Dwars River outside of the river corridor.
Roads and transport	• Service roads to be introduced along property frontages facing the R45 so that benefits of passing trade can be obtained without disrupting traffic. • These should be properly pedestrianised and landscaped so as to offer an attractive experience.
Water	• Bulk infrastructure required, e.g. reservoir and feeder pipes.
Sewage	• Capacity will be provided by end of 2013.
Electricity	• Area supplied by Eskom. Capacity to be confirmed by Eskom.
Solid Waste	• Stellenbosch landfill site is at capacity. A new cell is under construction to create airspace up to 2017. Additional landfill sites are urgently required to meet demand after 2017.
Rivers and conservation zones	• Fresh water ecologists to demarcate 10 to 30m setbacks from the banks of rivers and canals within which no new development (other than roads, paths, landscaping or street side trading) or ploughing may occur. • Eco conservation zones to be investigated on site.


GROOT DRANKENSTEIN: PROPOSED URBAN EDGE
Stellenbosch
Legend
Proposed New Urban Edge
UrbanEdgeChanges
Current Urban Edge
Other Surburbs
Groot Drankenstein
Other Municipalities
Stellenbosch
0
0.125
0.25
0.5
0.75
1
Kilometers

3.6. DWARS RIVER VALLEY (PNIEL, JOHANNESDAL, LANQUEDOC, KYLEMORE)



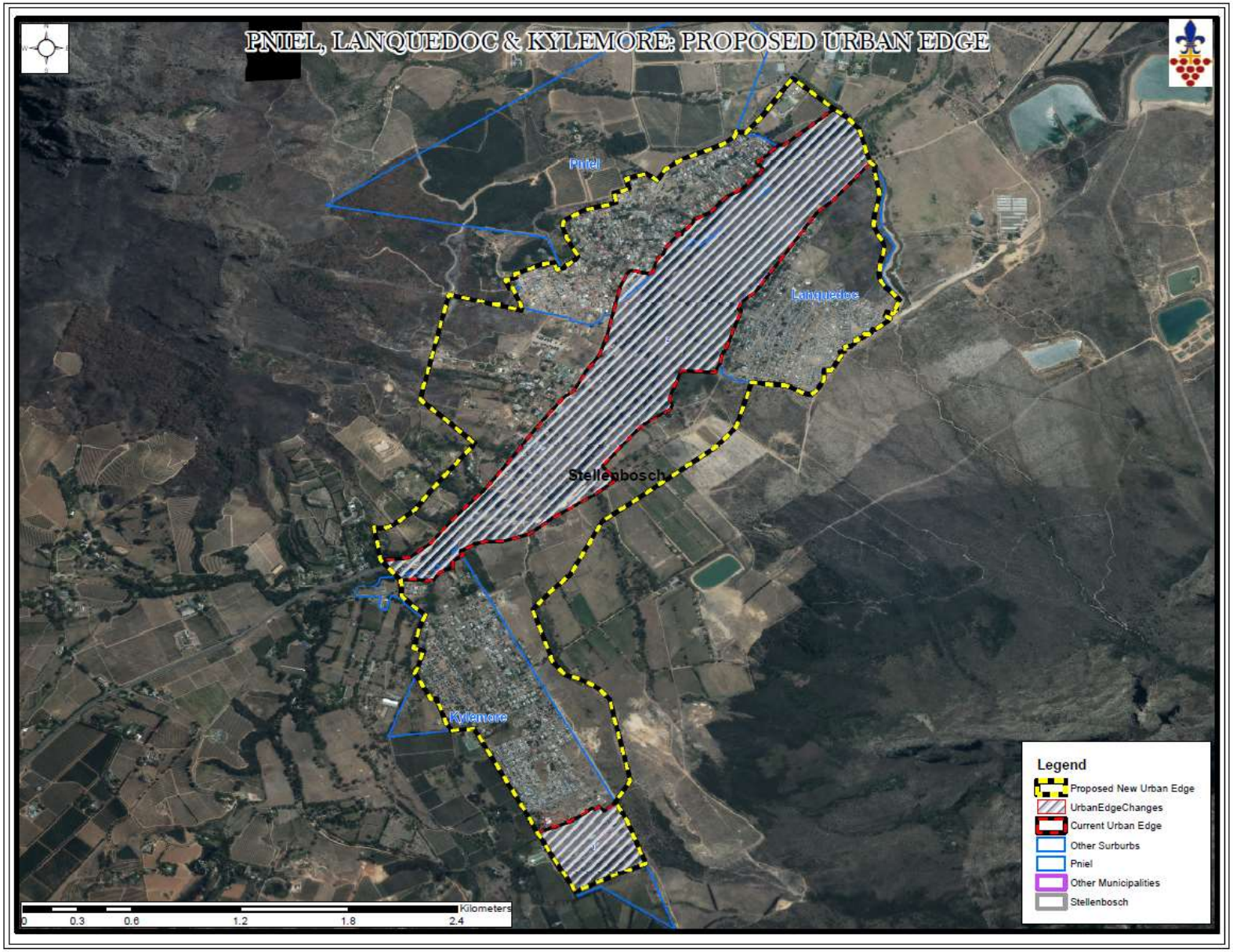
DWARS RIVER ANALYSIS



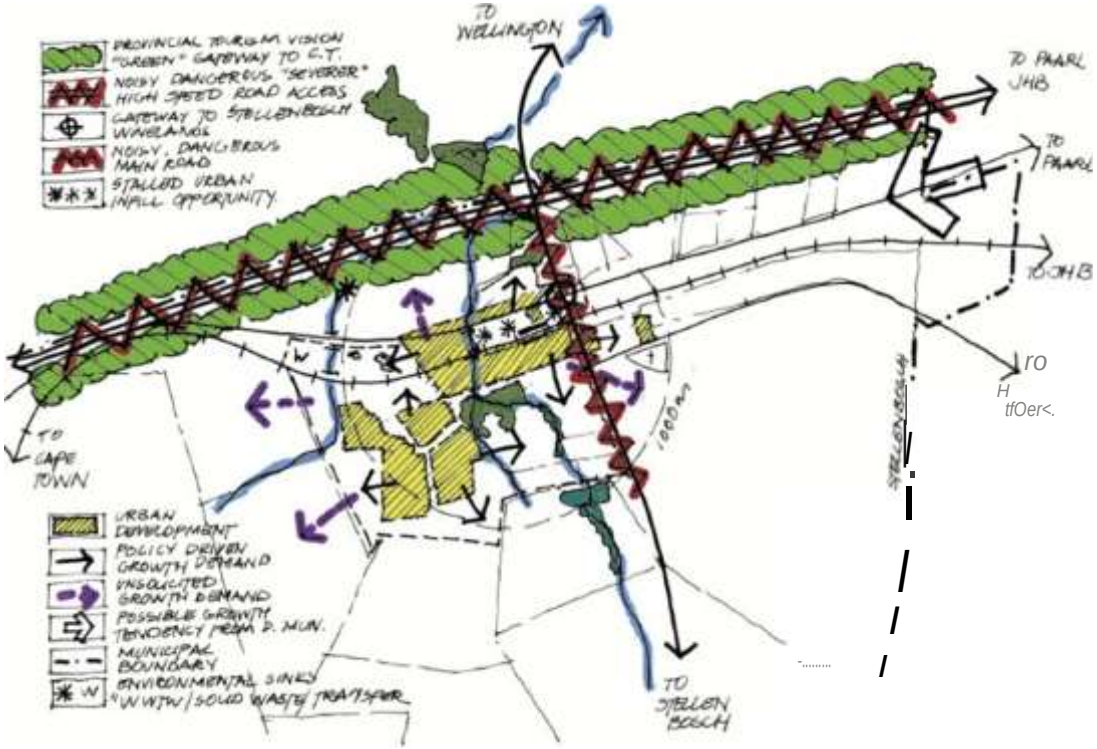
DWARS RIVER PROPOSALS

Strategic location	• Close proximity to the Helshoogte Road joining Stellenbosch town and Franschhoek.
Description	• Ex-mission and farm villages functioning as isolated rural settlements.
Advantages	• Hospital and health functions • Tourist destination • Historical buildings
Challenges	• The Helshoogte Road cuts dangerously Johannesdal and Pniel, and bypasses Kylemore and Lanquedoc. This needs to be designed and reconstructed to integrate the hamlets, in conjunction with the proposed ring road.
Opportunities	• Better integration of the four settlements and improved access to passing trade on HelshoogteRoad would enhance economic prospects. • Creating pleasant street frontages, well landscaped public spaces and parking in front of shops would encourage pedestrians. • Providing good internet access could aid the development of local businesses. • Historic buildings in Pniel, Kylemore and Lanquedoccreate a unique sense of place that should inform the architectural, urban design and landscape guidelines. • All of this will need to be achieved as part of the proposed wider redevelopment plan for Boschendal.
Constraints	• The valley is flanked by steep mountain slopes and the Dwars River serves as a barrier between the settlements.
Future lateral growth direction	• Link Kylemore and Lanquedoc, and consolidate development along internal ring road where possible.
Development areas	• Johannesdal plots and the strip along Helshoogte Road. • Eastern fringe of Kylemore to proposed river corridor setback line. • Link area along flood plain between Kylemore and Lanquedoc (above 1:100 year flood plain). East of Lanquedoc.
Roads and transport	• Construction of new roads to better integrate settlements. • Helshoogte Road Access Management Environment to be amended to 'urban', and cross-sections to be amended accordingly so that it performs more as a high street where it passes through Johannesdal and Pniel. • Road cross-sections for Helshoogte and proposed ring road and links must accommodate pedestrians and cyclists, and regional transport linkages.
Water	• Bulk infrastructure required, e.g. reservoir and feeder pipes.
Sewage	• Upgrade of WWTW is scheduled for 2015, but will require funding.
Electricity	• Eskom supplies Lanquedoc and Kylemore. Drakenstein supplies Pniel and Johannnesdal.

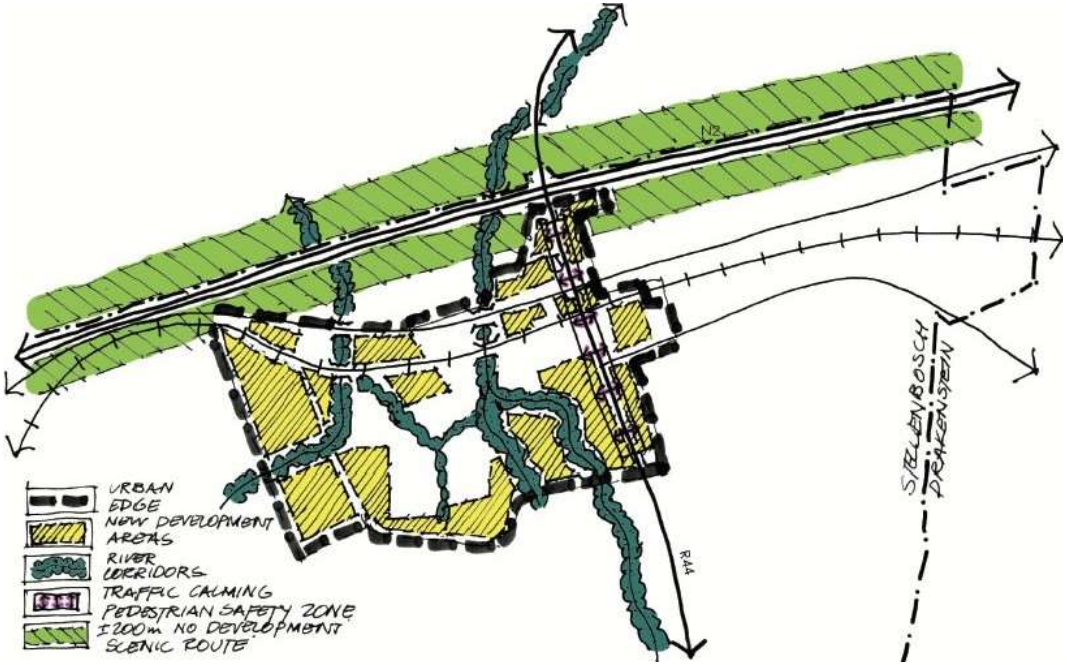
Solid Waste	• Stellenbosch landfill site is at capacity. A new cell is under construction to create airspace up to 2017. Additional landfill sites are urgently required to meet demand after 2017.
Rivers and conservation zones	• Fresh water ecologists to demarcate 10 to 30m setbacks from the banks of rivers and furrows within which no new development (other than roads, paths, landscaping or street side trading) or ploughing may occur.


PNIEL, LANQUEDOC & KYLEMORE: PROPOSED URBAN EDGE
Pniel
Lanquedoc
Stellenbosch
Kylemore
Legend
Proposed New Urban Edge
UrbanEdgeChanges
Current Urban Edge
Other Surburbs
Pniel
Other Municipalities
Stellenbosch
Kilometers
0
0.3
0.6
1.2
1.8
2.4

3.7. KLAPMUTS



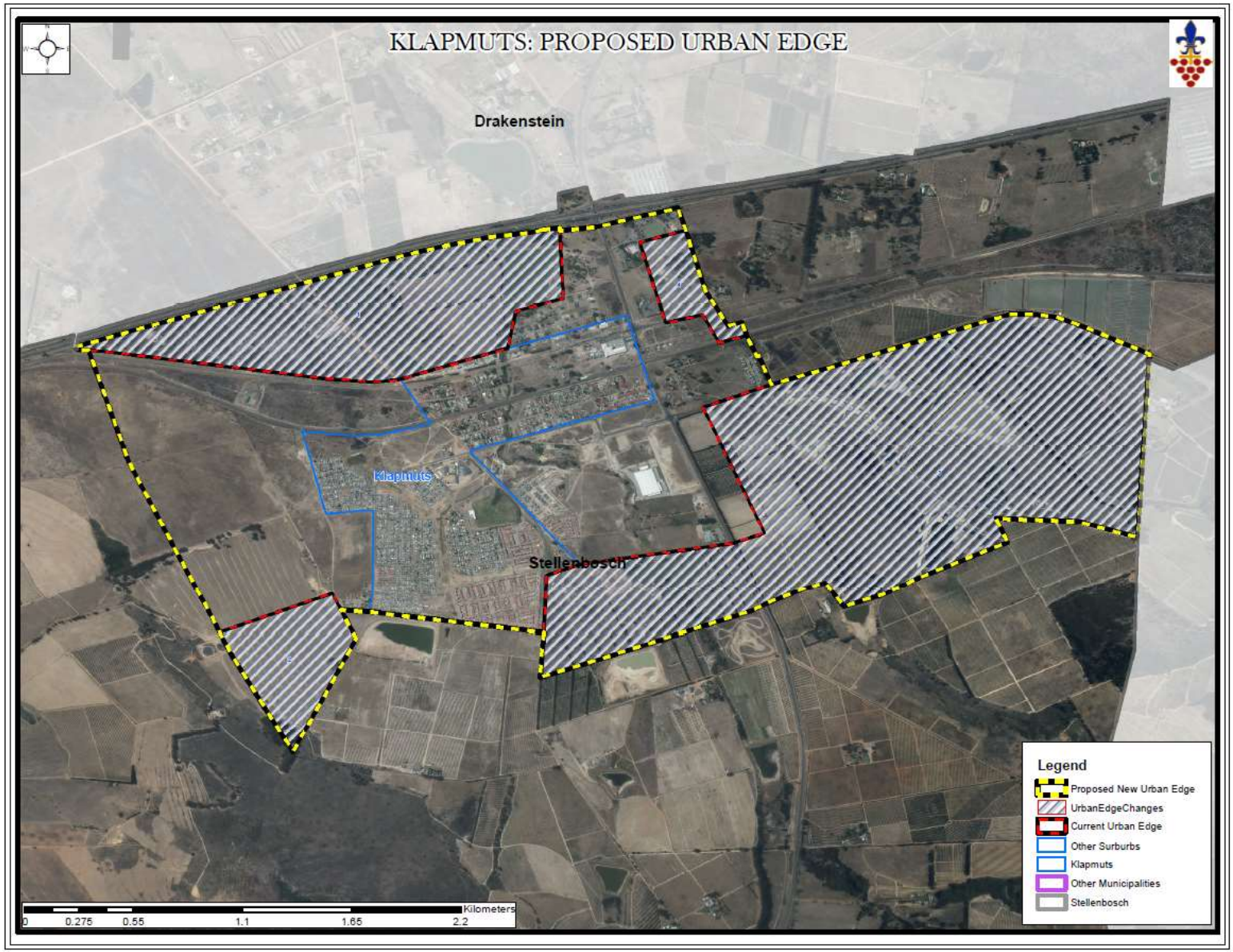
KLAPMUTS ANALYSIS



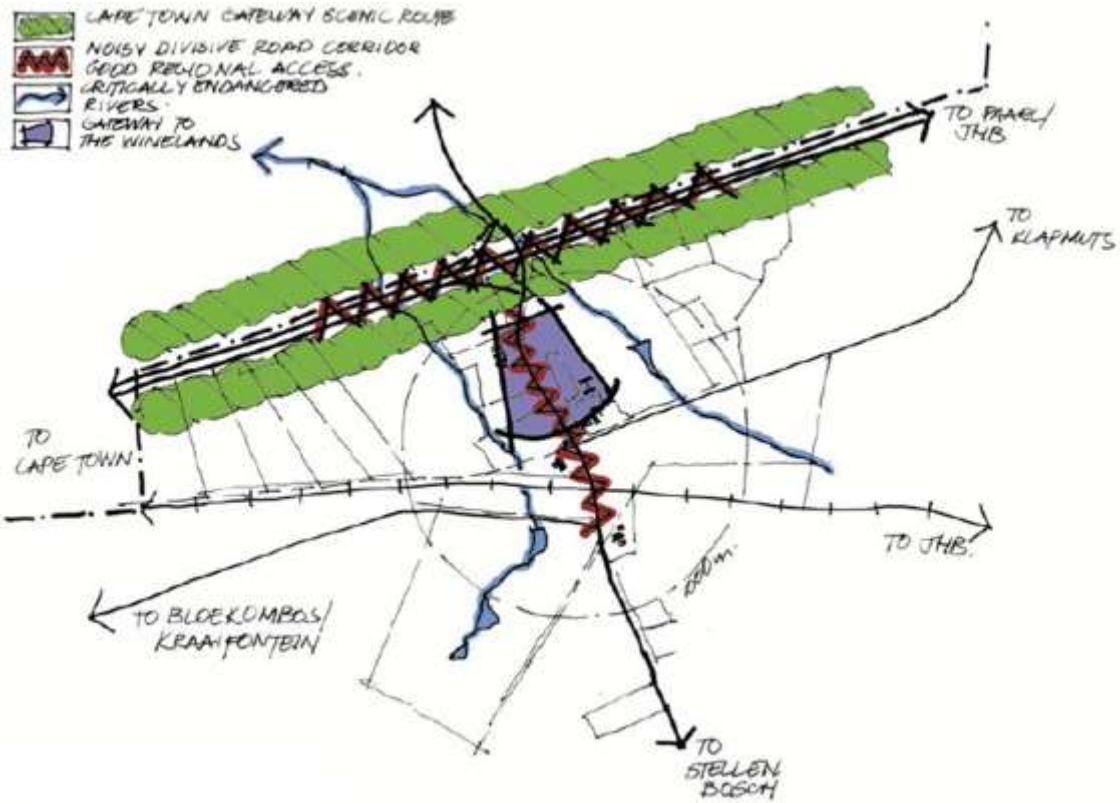
KLAPMUTS PROPOSALS

Strategic location	• Located near the intersection of the N1 and R44, straddling the Cape Town - Gauteng railway line, the Old Paarl Road and the road link to Simondium and Franschhoek.
Description	• Largely undeveloped small village.
Advantages	• Rural character • Tourist destination • Hospital and health functions
Challenges	• Klapmuts is a 'doughnut' settlement with most development favouring the periphery rather than the centre (except for the new filling station). It runs the risk of developing as a series of peripheral townships and gated estates rather than a well integrated, balanced settlement. • The socio-economic gradient principle should be carefully adhered to when allocating land to different income groups, and the physical interfaces between these areas must be carefully considered so as not to worsen inequality. • The point where the R44 cuts through the settlement could be problematic if it is designed for high speed traffic. • Farm dams above the southern part of the village could pose a hazard if they break.
Opportunities	• The area of Klapmuts to the west of the R44 has potential to operate as a mixed-use, mixed-income settlement, particularly if development can be encouraged in the centre of the village. • Open spaces around the 4-way stop and on the verges are well positioned for low income traders. • The market in front of the church could be formalized, and drawings for this are already available.
Constraints	• At least a 200m strip of land should be left on either side of the N1 for agricultural or conservation purposes (i.e. No increasing of development rights should be allowed there).
Future lateral growth direction	• The public and private land identified for future development should more than cater for the settlement's growth for the next decade, and this period should be dedicated to ensuring appropriate development in the centre of the village and implementing infill schemes.
Development areas	• Infill and redevelopment projects need to be incentivized in accordance with building, urban design and landscaping guidelines. • Major infill opportunities include Etlinger Street south (between R44 and the river), Old Paarl Road south (between the railway line and transfer station) and Merchant Street (between the river corridor, Grootfontein Pad and the railway line). • Greenfield areas include Klapmuts West, the strip abutting the eastern boundary of the R44.

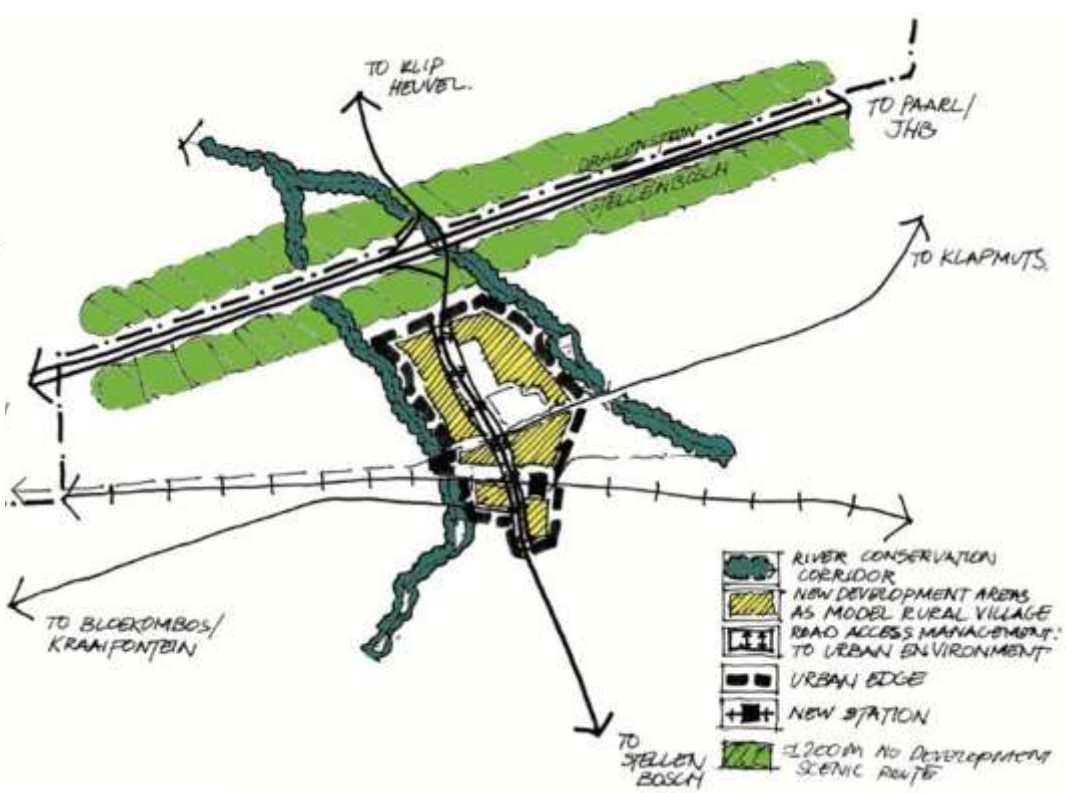
Roads and transport	• The upgrading of Merchant and Etlinger Street with landscaping, tree planting and pathways for pedestrians and cyclists needs to be completed. • Negotiations with transport authorities are required to amend the Road Access Management conditions of the R44 within the urban edge to an Urban Environment, with traffic calming measures and provision for cyclists and pedestrians. If sufficient pedestrian linkages can be created across the railway line and there is a mix of land uses on both sides of the settlement, NMT should be sufficient for the majority of Klapmuts' internal transport needs. • Railway facilities need to be upgraded to increase usage by commuters, and new services are required to make mobility between Klapmuts and Stellenbosch and Klapmuts and Paarl easy, affordable, reliable and regular.
Water	• Bulk infrastructure required, e.g. reservoir and feeder pipes.
Sewage	• Upgrade of Klapmuts WWTW will provide limited capacity.
Electricity	• Although an Eskom supply area, adequate capacity exists at newly constructed substation.
Solid Waste	• Stellenbosch landfill site is at capacity. A new cell is under construction to create airspace up to 2017. Additional landfill sites are urgently required to meet demand after 2017.
Rivers and conservation zones	• Fresh water ecologists to demarcate 10 to 30m setbacks from the banks of rivers and furrows within which no new development (other than roads, paths, landscaping or street side trading) or ploughing may occur. These setbacks are to be mandatory for new developments and retrofitted where possible to existing ones. • Special attention needs to be given to ecological conservation around the dams.
Important Reference Document	• Klapmuts Spatial Development Framework (September 2007) by MCA Africa


KLAPMUTS: PROPOSED URBAN EDGE
Drakenstein
Klapmuts
Stellenbosch
Legend
Proposed New Urban Edge
UrbanEdgeChanges
Current Urban Edge
Other Surburbs
Klapmuts
Other Municipalities
Stellenbosch
Kilometers
0
0.275
0.55
1.1
1.65
2.2

3.8. MULDERSVLEI CROSSROADS



MULDERSVLEI ANALYSIS



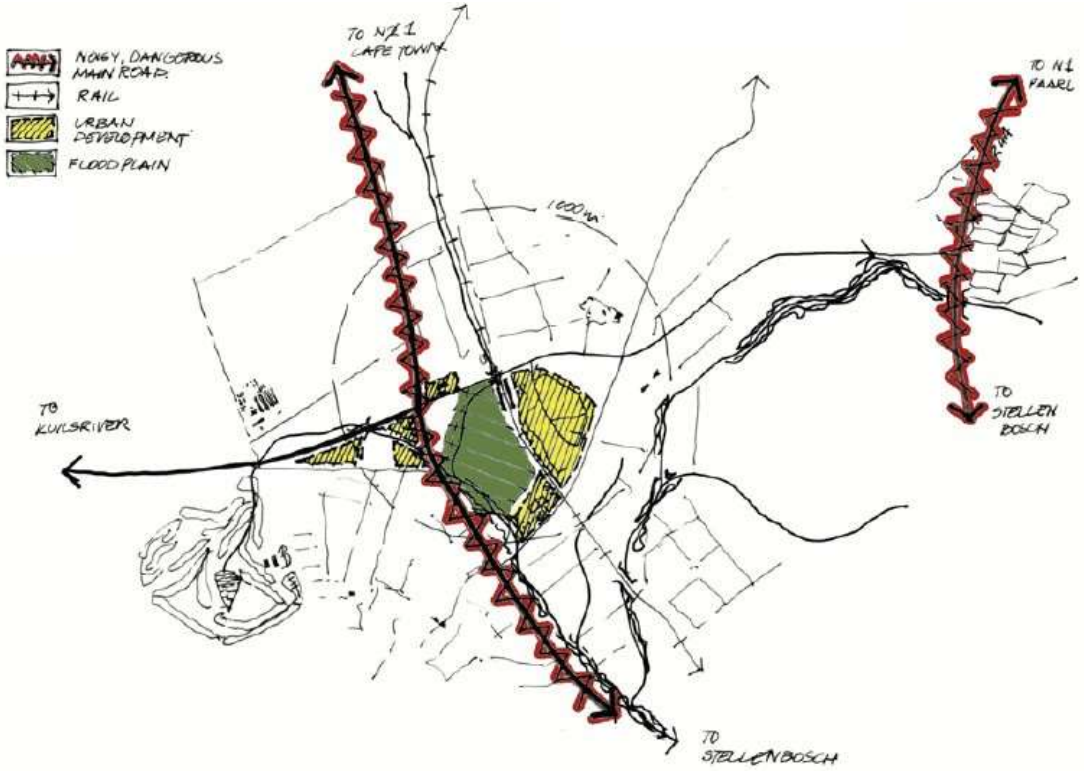
MULDERSVLEI PROPOSALS

Strategic location	• Extremely well located, with access to the Cape Town - Gauteng railway line, N1, Old Paarl Road and R304.
Description	• Consists of farms and some high order facilities, but is not currently a cohesive settlement.
Advantages	• Rail access • Rural character
Challenges	• Speed of passing traffic and lack of safe pedestrian and cycle routes. • N1 and R304 produce a lot of noise pollution. • Land is privately owned so opportunities for farm worker, social and gap housing can only be achieved through quid pro quo arrangements with landowners in their development applications for middle and high income development proposals.
Opportunities	• The properties around the intersection have been sub-divided far below minimum farm size, which could facilitate further subdivision into urban townships. • Existing heritage buildings could inform architectural, urban design and landscape guidelines for new developments.
Constraints	• 'Fringe' of 100-200m alongside the N1 to remain free from development. The site is flanked by two river tributaries, and the quality of their water is a problem. • The site is not recommended for a regional shopping centre, a large stand-alone office park or an industrial estate.
Future lateral growth direction	• No further provision for lateral growth should be made until the existing proposal has been fully developed.
Development areas	• Potential for 45 hectares to be yielded, but a framework plan is required to guide the detail of how various areas should be developed.
Roads and transport	• Sections of the main routes within the urban edge should be upgraded with landscaping and demarcated routes for pedestrians and cyclists. • Service roads parallel to thoroughfares may be required to provide frequent direct access to abutting properties. • A new rail station may be required, depending on the size of the proposed settlement.
Water	• Bulk infrastructure to be provided by developers
Sewage	• Bulk infrastructure to be provided by developers.
Electricity	• Area supplied by Eskom. Capacity to be confirmed by Eskom.

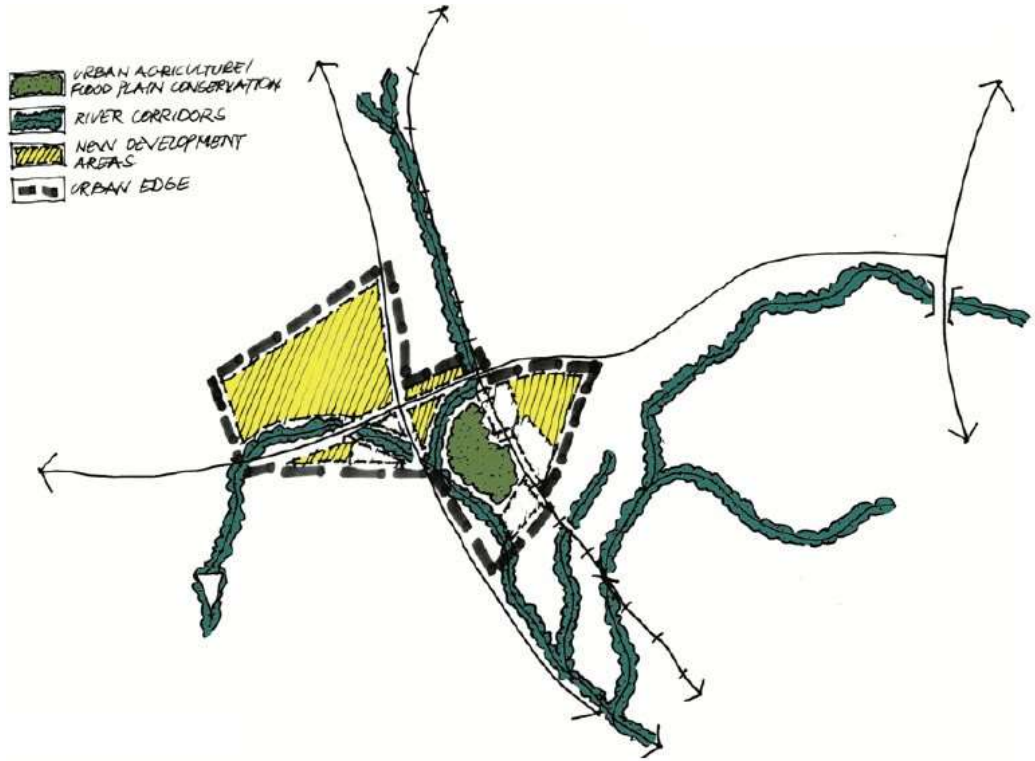
Solid Waste	• Stellenbosch landfill site is at capacity. A new cell is under construction to create airspace up to 2017. Additional landfill sites are urgently required to meet demand after 2017.
Rivers and conservation zones	• Fresh water ecologists to demarcate 10 to 30m setbacks from the banks of rivers and furrows within which no new development (other than roads, paths, landscaping or street side trading) or ploughing may occur.


MULDERSVLEI: PROPOSED URBAN EDGE
NO URBAN DEVELOPMENT,
ONLY TOURISM GATEWAY
Legend
Current Urban Edge
Other Municipalities
Stellenbosch
Kilometers
0
0.1
0.2
0.4
0.6
0.8

3.9. KOELENHOF



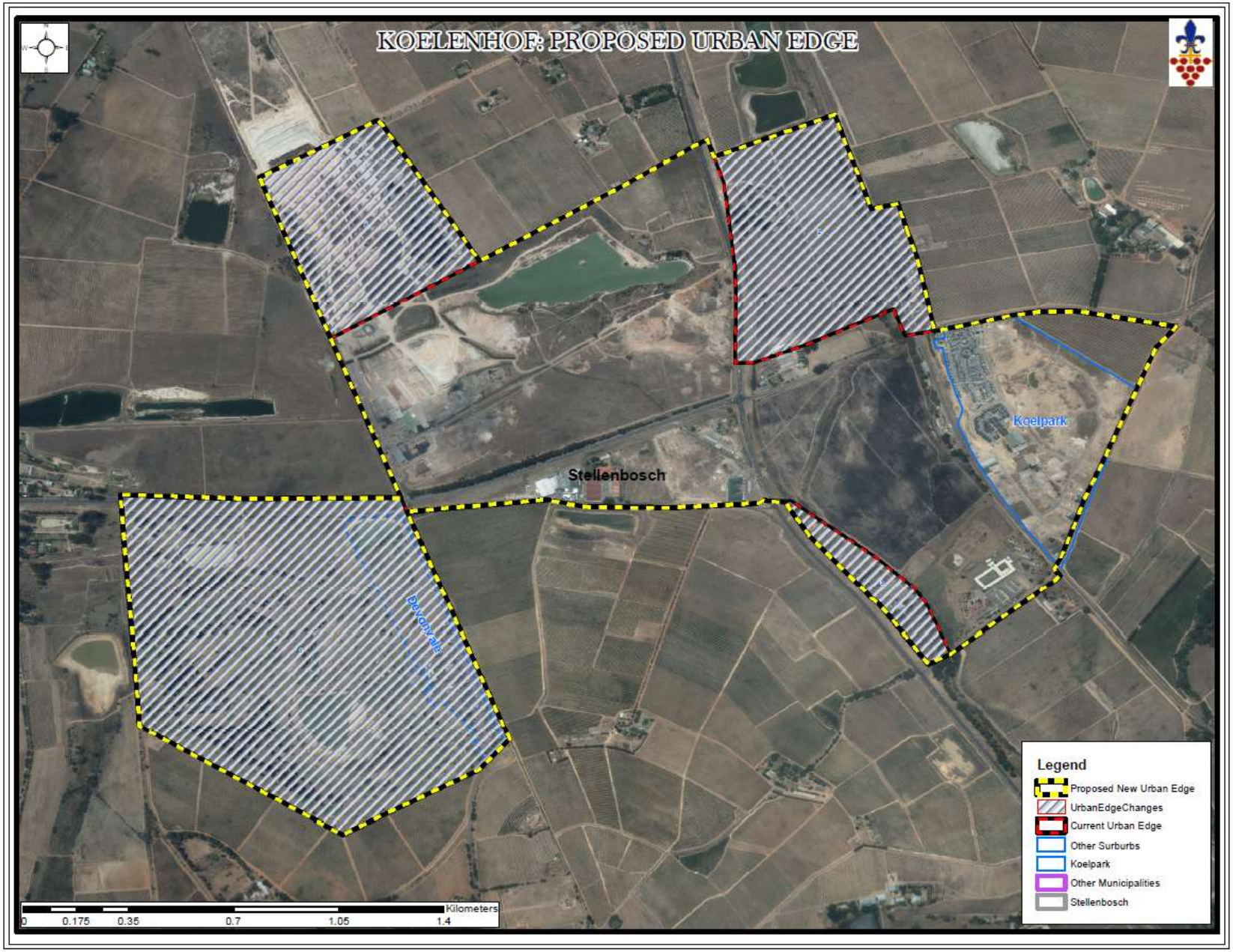
KOELENHOF ANALYSIS



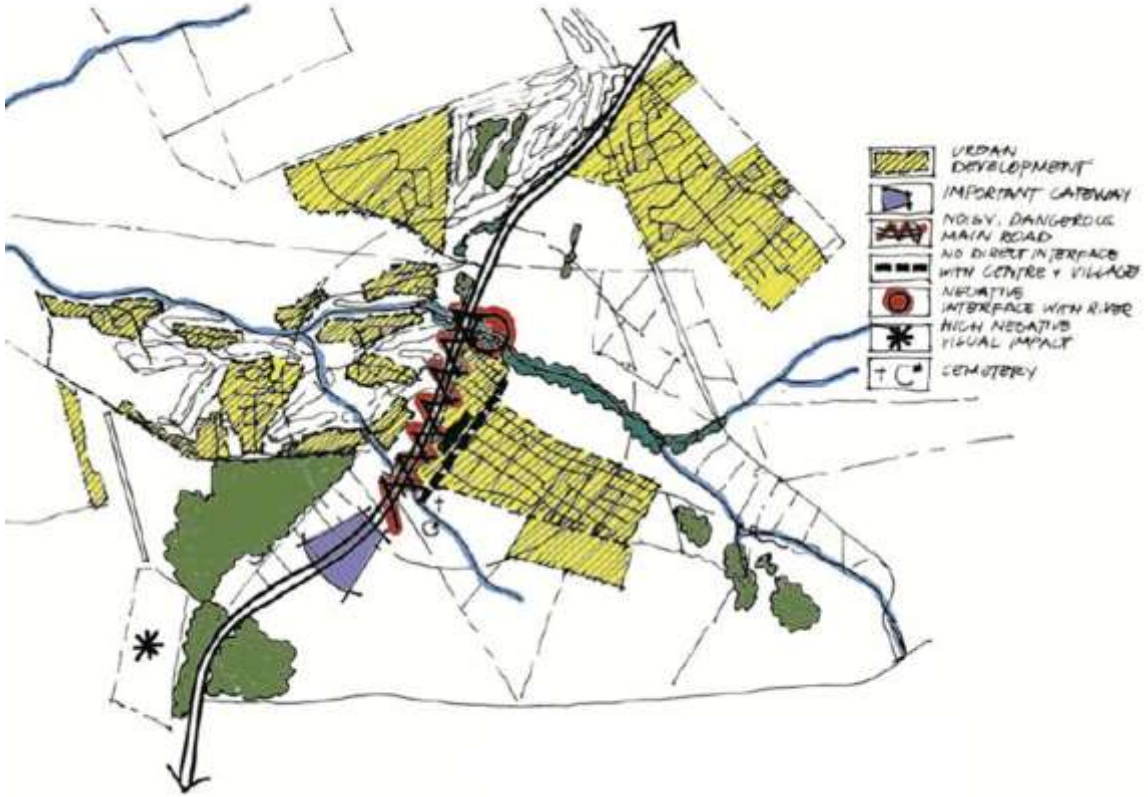
KOELLENHOF PROPOSALS

Strategic location	• Intersection of R304 and M23, with a station on the Metro rail suburban route to Stellenbosch town.
Description	• Ad-hoc, disjointed developments focused on access to regional road and rail.
Advantages	• Rail access • Rural character
Challenges	• Land is privately owned so opportunities for farm worker, social and gap housing can only be achieved through quid pro quo arrangements with landowners in their development applications for middle and higher income development proposals. • The settlement consists of several uncoordinated parcels of singular function. • There is no provision for SMMEs and informal traders.
Opportunities	• Cape Winelands heritage creates a unique sense of place that should inform the architectural, urban design and landscape guidelines. • Care should be taken to ensure a complete range of commercial and retail space is available, including the informal sector and SMMEs. • Densification and infill of existing built areas.
Constraints	• The confluence of a number of river tributaries forms a wetland near the centre of the village that is undevelopable. • The valley location is bounded by steep slopes.
Future lateral growth direction	• No further provision for lateral growth should be made until the existing proposal has been fully developed.
Development areas	• Densification and infill in existing underdeveloped townships and subdivisions (this may require incentives). • A framework plan is required to guide the detail of how various areas should be developed so as to ensure that the settlement operates as a coherent system.
Roads and transport	• Service roads parallel to thoroughfares may be required to provide frequent direct access to abutting properties. • Sections of the main routes within the urban edge should be upgraded with landscaping and demarcated routes for pedestrians and cyclists. • A convenient rail-based public transport system using the existing railway and station would help to functionally link the centre to Stellenbosch town.
Water	• Bulk infrastructure required, e.g. reservoir and feeder pipes.
Sewage	• No capacity at Stellenbosch WWTW.
Electricity	• Area supplied by Eskom. Capacity to be confirmed by Eskom.

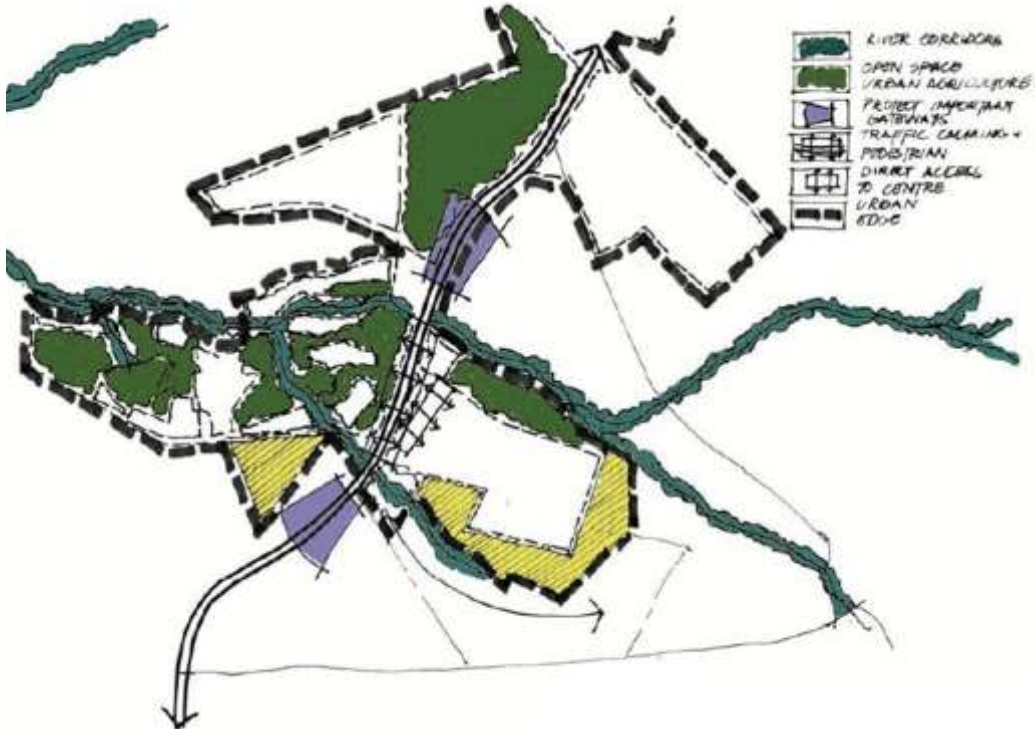
Solid Waste	• Stellenbosch landfill site is at capacity. A new cell is under construction to create airspace up to 2017. Additional landfill sites are urgently required to meet demand after 2017.
Rivers and conservation zones	• The wetland between R304 and the rail line should be declared a conservation area and/or used for market gardening/horticulture if suitable. • Fresh water ecologists to demarcate 10 to 30m setbacks from the banks of rivers and furrows within which no new development (other than roads, paths, landscaping or street side trading) or ploughing may occur.
Important Reference Document	• Koelenhof Spatial Development Framework (December 2007) by CNDV Africa


KOELENHOF: PROPOSED URBAN EDGE
Koelpark
Stellenbosch
Devonvale
Legend
Proposed New Urban Edge
UrbanEdgeChanges
Current Urban Edge
Other Surburbs
Koelpark
Other Municipalities
Stellenbosch
Kilometers
0
0.175
0.35
0.7
1.05
1.4

3.10. JAMESTOWN/DE ZALZE



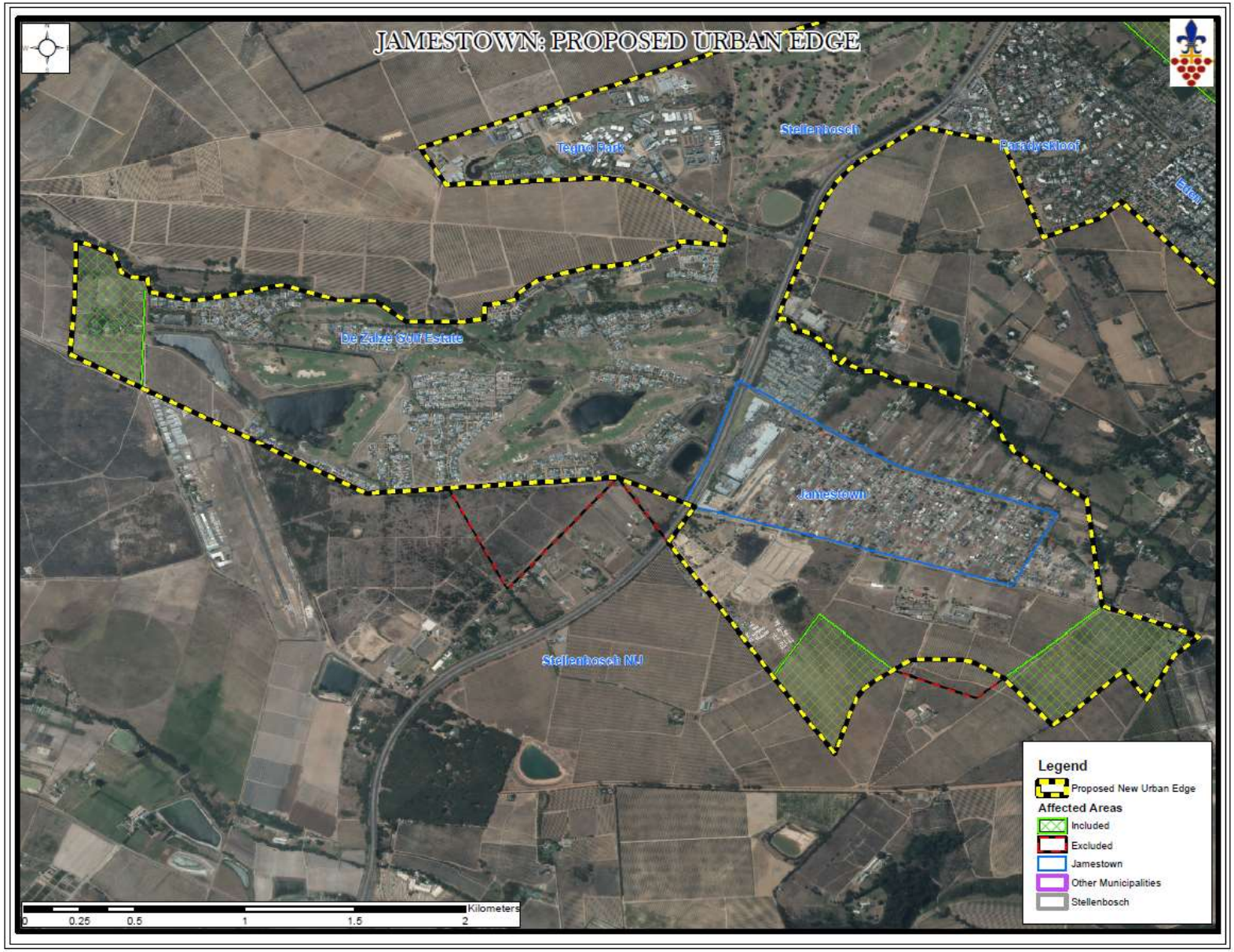
JAMESTOWN/DE ZALZE PROPOSALS



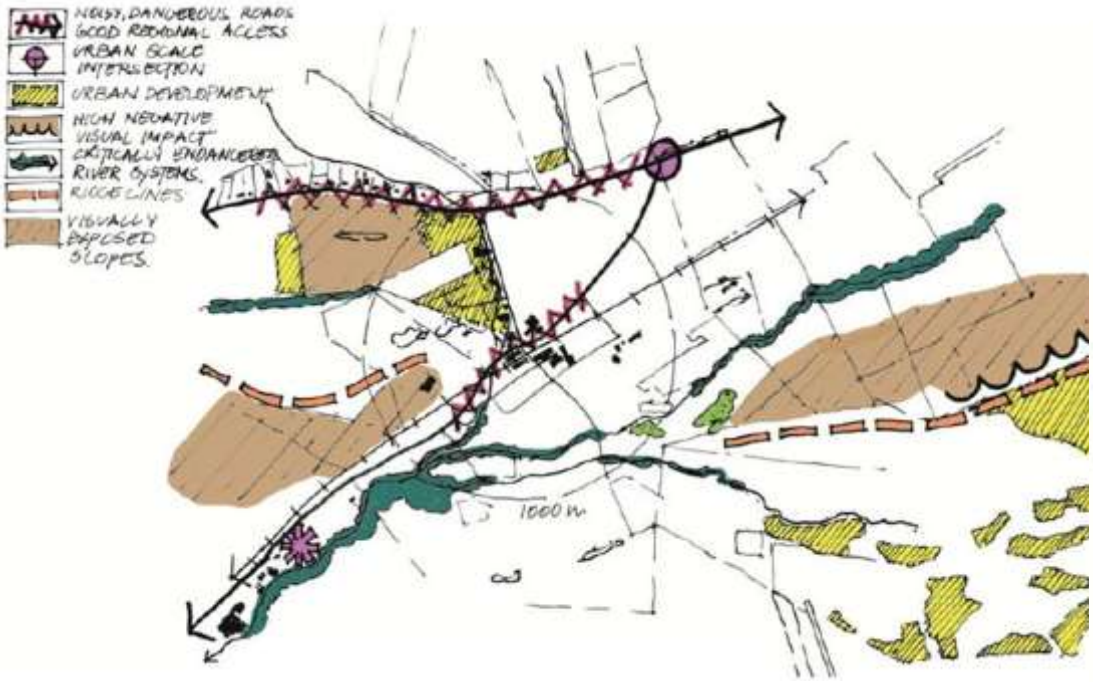
JAMESTOWN/DE ZALZE ANALYSIS

Strategic location	• Straddling the R44.
Description	• A disjointed semi-rural settlement on the outskirts of Stellenbosch town consisting of three isolated components: a historic Rhenish mission village (Jamestown), an out of town shopping centre (Stellenbosch Square) and an upmarket golf estate (De Zalze).
Advantages	• Rural character • Hospital and health functions
Challenges	• The three components are not integrated at all due to the high-speed R44 and walling off of De Zalze. • Jamestown residents need access to viable economic space that gives them opportunities for SMMEs and employment. • The Blaauwklippen River is Critically Endangered as a result of poor agricultural and urban development along its banks.
Opportunities	• Opportunity to implement low income housing on commonage land to the south. • Small scale commercial and retail activities could be catered for along De Zalze's frontage with the R44 (e.g. a farm stall or market for emerging businesses).
Constraints	• The R 44 bisects the node.
Future lateral growth direction	• Southerly expansion to accommodate RDP, social and gap housing.
Development areas	• A portion of municipal land on which the airfield stands as well as the land holding at the entrance to Technopark has potential to be used for social and gap housing. • Vacant land in Jamestown can be further consolidated. • Further research is required to assess the long term costs and benefits of developments that convert productive agricultural land into new suburbs.
Roads and transport	• The extent to which the R44's cross-sections can be amended to make it less of a barrier to pedestrians and cyclists should be investigated. • The impact of traffic generated by each of the three components should be undertaken.
Water	• Bulk infrastructure required, e.g. reservoir and feeder pipes.
Sewage	• No capacity at Stellenbosch WWTW.
Electricity	• Area supplied by Eskom. Capacity to be confirmed by Eskom.
Solid Waste	• Stellenbosch landfill site is at capacity. A new cell is under construction to create airspace up to 2017. Additional landfill sites are urgently required to meet demand after 2017.

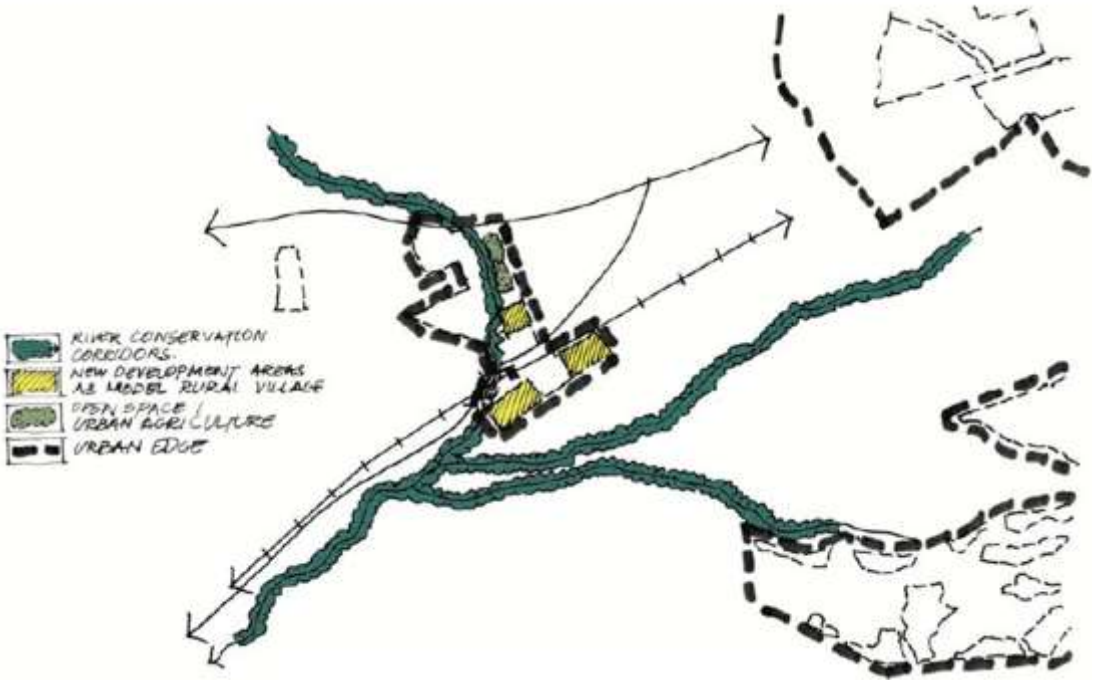
Rivers and conservation zones	• Fresh water ecologists to demarcate 10 to 30m setbacks from the banks of rivers and furrows within which no new development (other than roads, paths, landscaping or street side trading) or ploughing may occur. • Particular care needs to be given to Jamestown's interface with the Blaauwklippen River.


JAMESTOWN: PROPOSED URBAN EDGE
Tegno Park
Stellenbosch
Paradyskloof
Elsen
De Zalze Golf Estate
Jamestown
Stellenbosch NU
Kilometers
0
0.25
0.5
1
1.5
2
Legend
Proposed New Urban Edge
Affected Areas
Included
Excluded
Jamestown
Other Municipalities
Stellenbosch

3.11. VLOTTENBURG



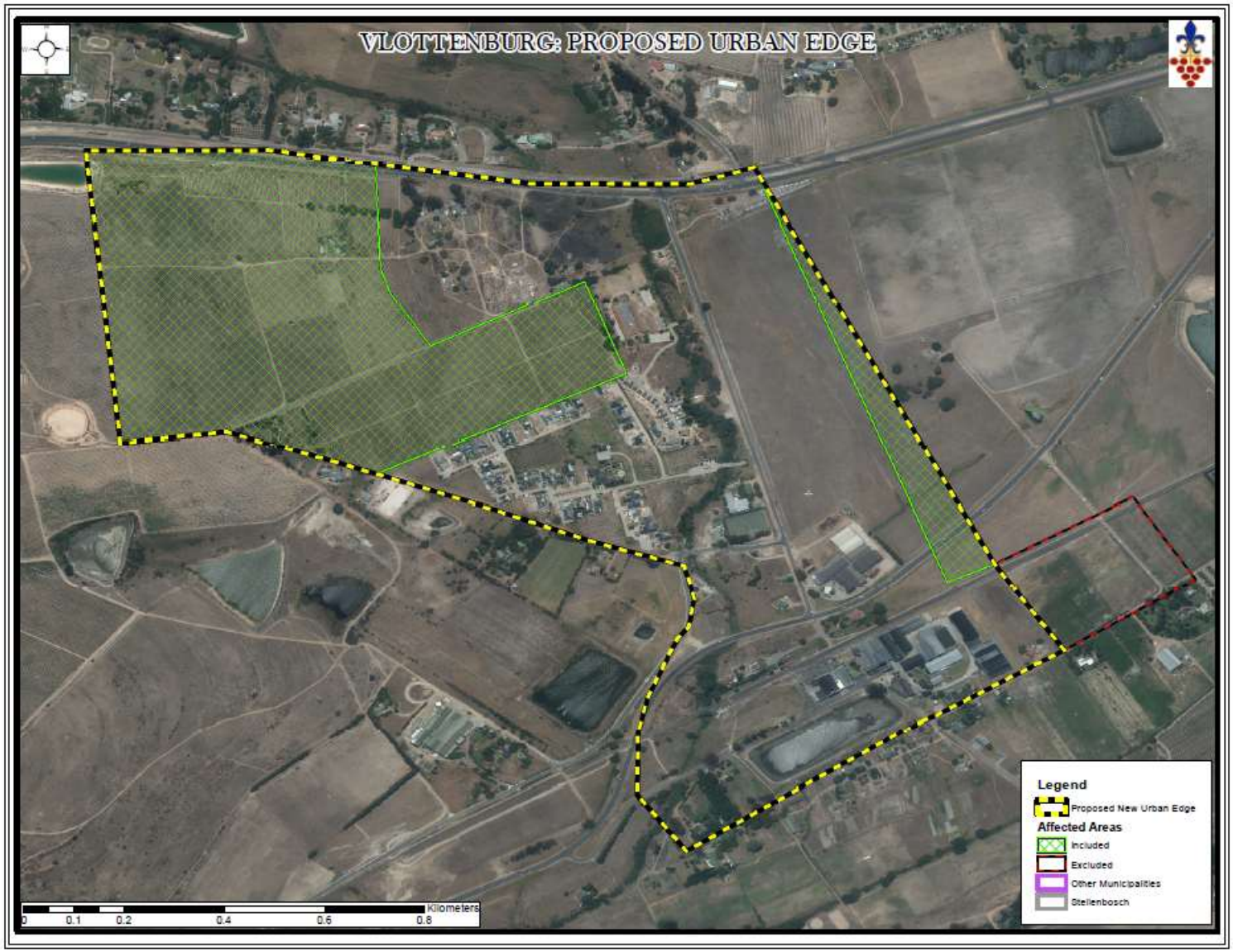
VLOTTENBURG ANALYSIS



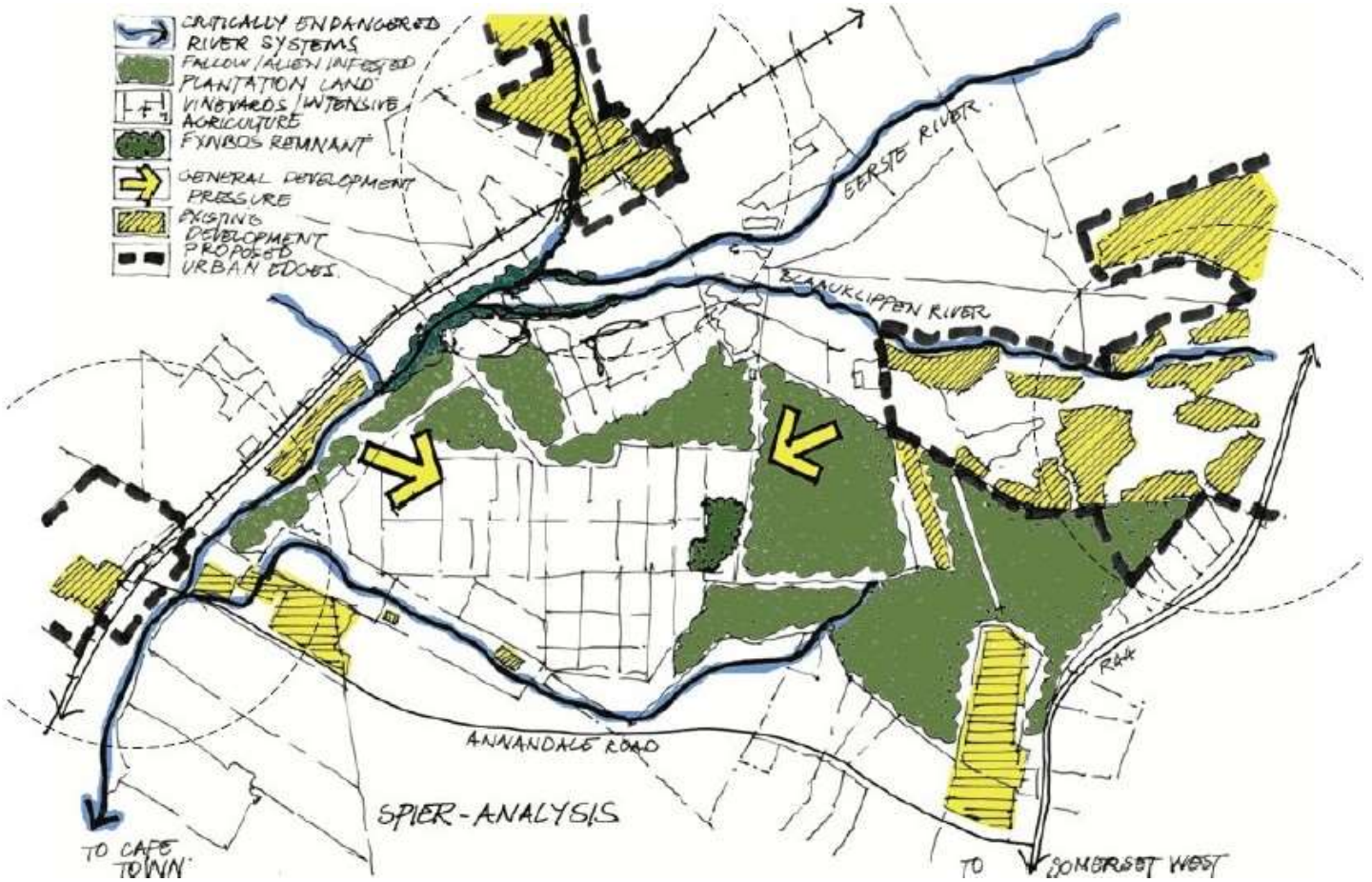
VLOTTENBURG PROPOSALS

Strategic location	• On the R310 and railway line
Description	• Mixed-income rural settlement focused on a small processing node around the railway station, van Ryn Brandy Cellar and Vlottenburg Winery.
Advantages	• Tourist destination • Rail access
Challenges	• There is a demand for upmarket housing on the higher westerly slopes and a need for low income housing to accommodate current and future residents. • The interfaces between land use activities threaten integration, particularly between upmarket and lower income housing areas.
Opportunities	• Spaces around the intersection could be designed for use as informal markets, accessing passing trade. • A collection of Victorian residential, industrial and transport buildings around the Vlottenburg Road / R310 intersection adds character to the area, which diminishes as one moves northwards. The heritage value of these buildings could be used to inform guidelines for future development.
Constraints	• Rivers are considered Critically Endangered and require protection from development.
Future lateral growth direction	• No further lateral growth should be undertaken for the next 10 years.
Development areas	• Land, mainly below the R310 has been identified as having development potential subject to the identification and demarcation of flood lines. • Theland between Vlottenburg and De Zalze and OnderPapagaaiberg could be relatively easily developed into continuous urban suburbs.
Roads and transport	• Vlottenburg's good linkages to rail and road transport networks make it well suited to an efficient and convenient rail car service that would reduce the need for private transport and circumvent road widening. • Vlottenburg Road should be designed as a pedestrian and cycle friendly high street lined with small scale retail activities where possible. • The possibility of calming traffic around the intersection between the R310 and Vlottenburg Road should be explored.
Water	• Bulk infrastructure required, e.g. reservoir and feeder pipes.
Sewage	• No capacity at Stellenbosch WWTW.
Electricity	• Area supplied by Eskom. Capacity to be confirmed by Eskom.
Solid Waste	• Stellenbosch landfill site is at capacity. A new cell is under construction to create airspace up to 2017. Additional landfill sites are urgently required to meet demand after 2017.

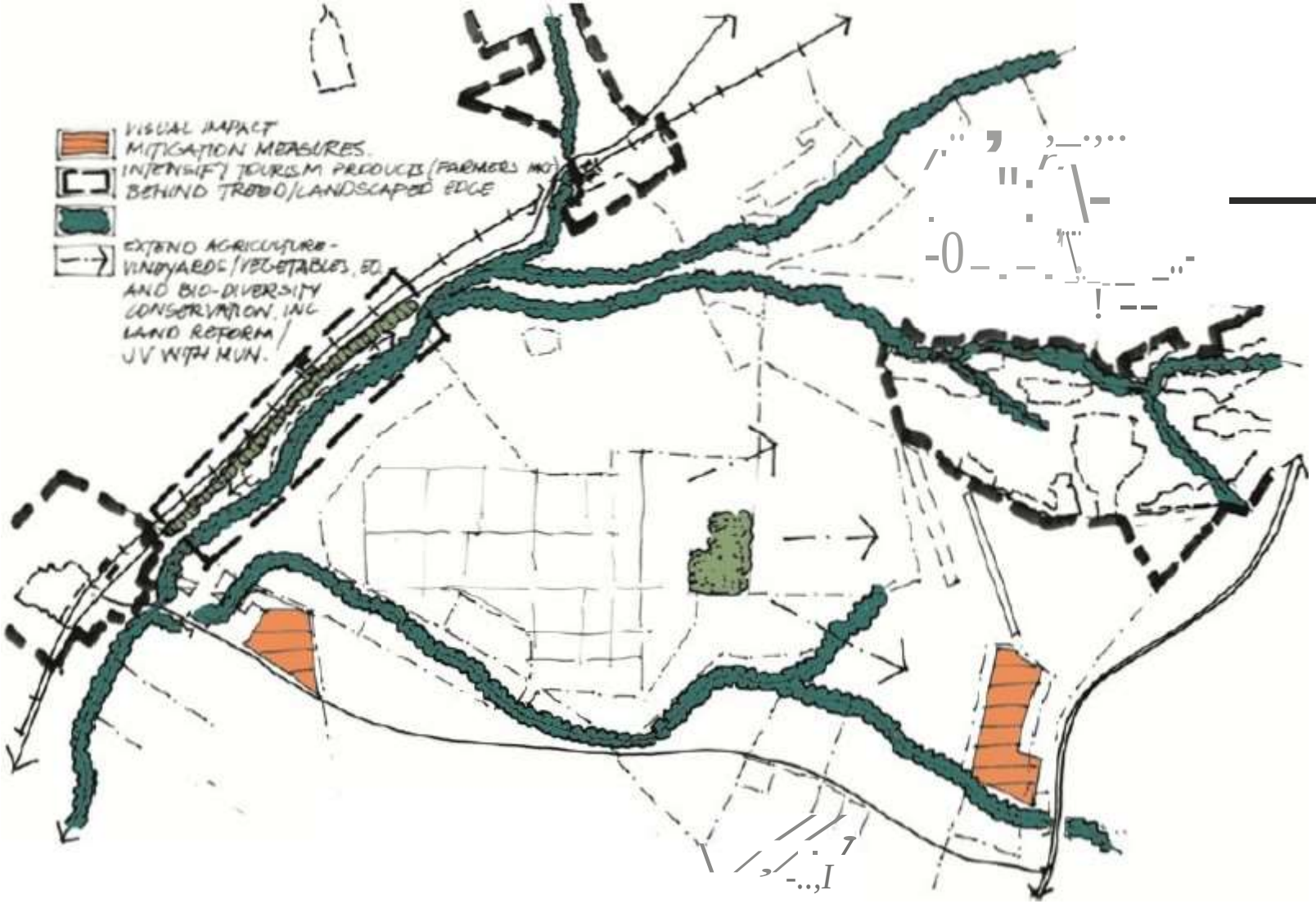
Rivers and conservation zones	• Fresh water ecologists to demarcate 10 to 30m setbacks from the banks of rivers and furrows within which no new development (other than roads, paths, landscaping or street side trading) or ploughing may occur. Particular care needs to be paid to the interface with the Sandrift River, and a detailed design exercise is required to resolve the interface between housing, the river and Vlottenburg Road.


VLOTTENBURG: PROPOSED URBAN EDGE
Legend
Proposed New Urban Edge
Affected Areas
Included
Excluded
Other Municipalities
Stellenbosch
Kilometers
0 0.1 0.2 0.4 0.6 0.8

3.12. SPIER



SPIER ANALYSIS

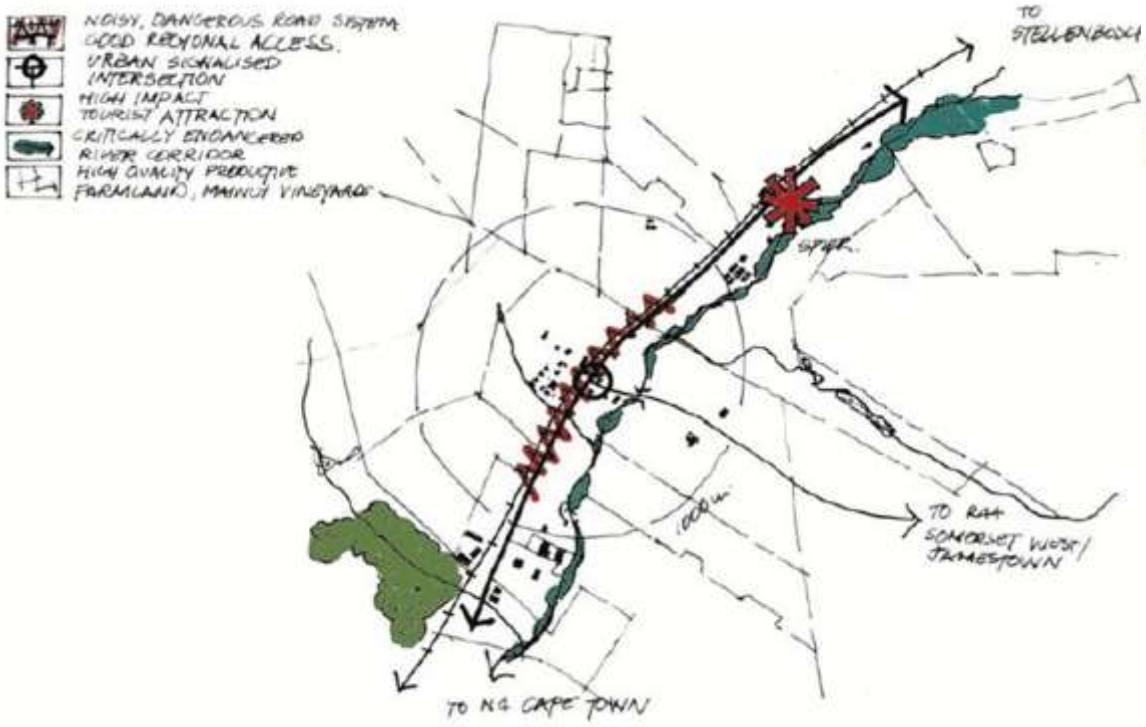


SPIER PROPOSALS

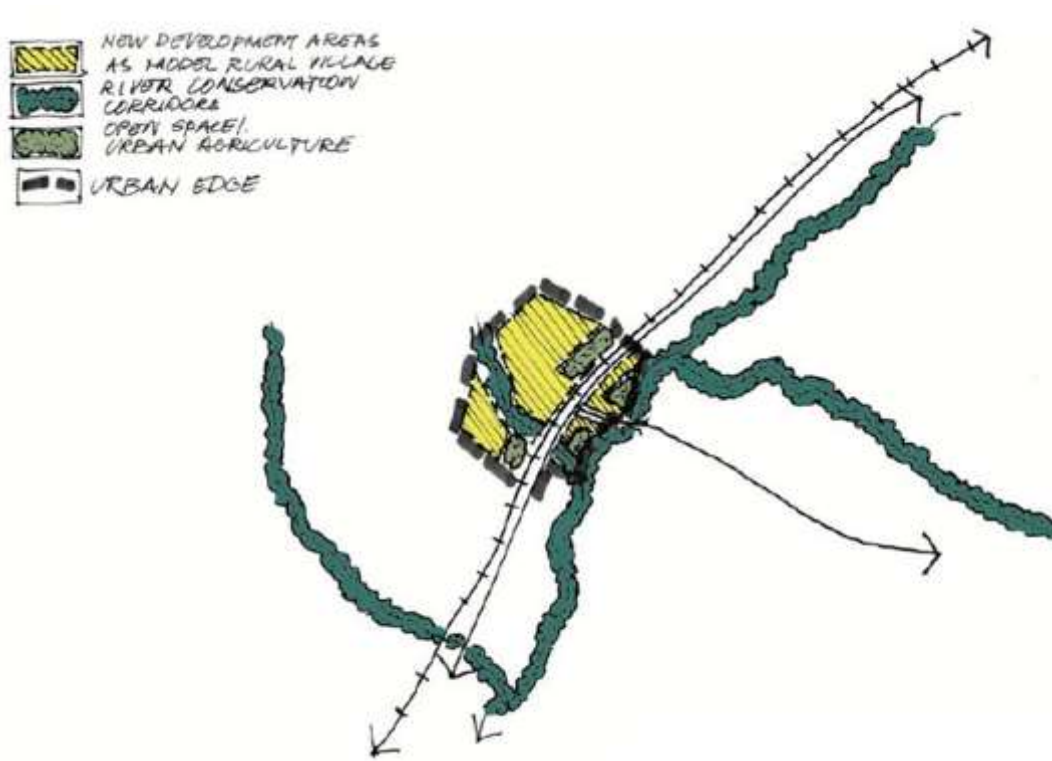
Strategic location	• Between the R44 and the R310, and alongside the railway line.
Description	• Mixed-income, mixed-use area centred on Spier winery and its tourism offering.
Advantages	• Tourist destination • Rail Access
Challenges	• Further urban development at Spier is likely to extend onto food producing land, with negative implications for Stellenbosch's food security. • Intended to be a mixed-income settlement, accessibility (rail, taxi and bus) and provision of services to low income groups may become a problem. • The visual impact of existing activities along Annandale Road and at the airfield should be assessed and mitigated against, as this area serves as a gateway to Spier and Stellenbosch.
Opportunities	• Tourism products such as farmers' markets are proposed along the urban development area between the Eerste River and the landscaped edge along the R310. • Spier has tried to establish its infrastructure systems in line with sustainability principles, for example treating waste water through wetlands and recycling its solid waste. Future development should be linked to the ability of this development to provide for its own services using sustainable methods.
Constraints	• The Eerste, Blouklip, and Bonte Rivers that flow through and alongside Spier are Critically Endangered.
Future lateral growth direction	• Future lateral growth should be confined to the existing urban area. • The impact of further development on Lynedoch, De Zalze, Jamestown and Stellenbosch would need to be assessed in order to gauge its macro-level impact.
Development areas	• Further development should be promoted only within the current development precinct at Spier (i.e. Between the R310 and Eerste River) in order to protect the remaining area for agricultural development, biodiversity conservation and possibly agricultural land reform use.
Roads and transport	• The rural nature of the current main streets creates a pleasant sense of place, and this character should be retained.
Water	• Capacity to be determined for new developments. Cost will be borne by the developer.
Sewage	• Capacity by means of own sewage treatment plant to be created.
Electricity	• Area supplied by Eskom. Capacity to be confirmed by Eskom.
Solid Waste	• Stellenbosch landfill site is at capacity. A new cell is under construction to create airspace up to 2017. Additional landfill sites are urgently required to meet demand after 2017.

Rivers and conservation zones	• Fresh water ecologists to demarcate 10 to 30m setbacks from the banks of rivers and furrows within which no new development (other than roads, paths, landscaping or street side trading) or ploughing may occur. • Further development should take particular care of the interface with the Eerste River, Blouklip River and Bonte River.

3.13. LYNEDOCH



LYNEDOCH ANLYSIS

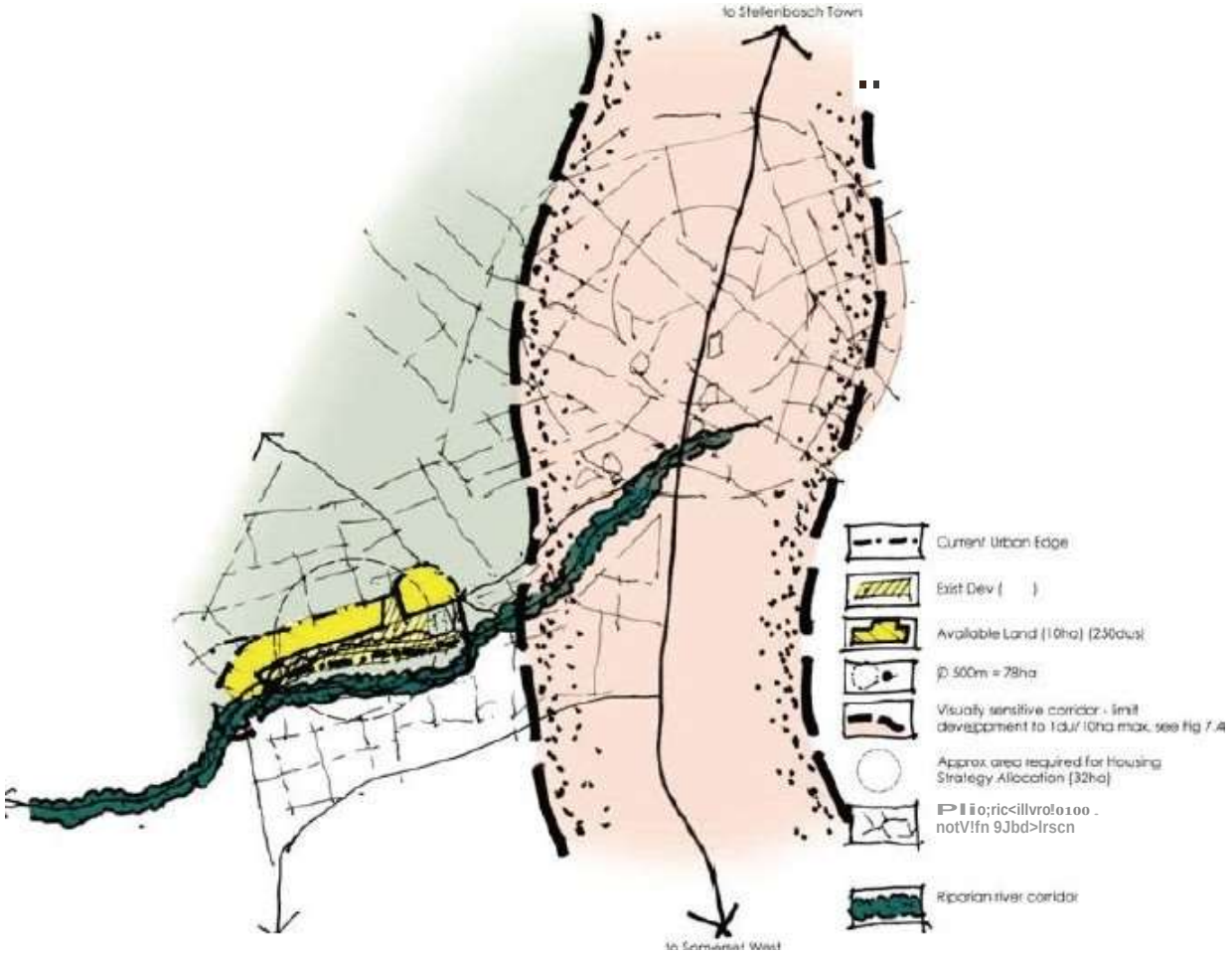


LYNEDOCH PROPOSALS

Strategic location	• Intersection of the R310 and Annandale Road, at the Lynedoch Railway station.
Description	• Mixed-income mixed-use rural settlement containing labourers' accommodation, a petrol station and the Lynedoch Eco-village.
Advantages	• Tourist destination • Rural character • Rail access
Challenges	• Development should be located on land that is not high quality farm land. • The R310 forms a barrier and needs to be integrated into the development in a way that minimises this effect.
Opportunities	• Appropriately designed spaces around the intersection could support informal markets that benefit from passing trade. • Architectural guidelines should be prepared to ensure that future development is in keeping with the sense of place. • If infill is pursued with an adherence to sustainable development principles, Lynedoch could serve as a model rural village.
Constraints	• The railway line and the R310 which run though the settlement in parallel. • The Eerste River has been identified as Critically Endangered and requires conservation.
Future lateral growth direction	• No further lateral growth should be provided for the next 10 years.
Development areas	• Infill areas are identified east and west of the railway line / R310, although the major infill areas are proposed to the west of this arterial. It is proposed that an urban edge be defined around these infill areas.
Roads and transport	• Lynedoch's good linkages to rail and road transport networks make it well suited to an efficient and convenient rail service that would reduce the need for private transport and circumvent road widening. • The widening of the R310 as proposed by Western Cape Provincial Government is not supported because this will place undue burdens on intersections in Stellenbosch and discourage the use of the trains. Park and Ride facilities are encouraged as the alternative.
Water	• Capacity to be determined for new developments. Cost will be borne by the developer.
Sewage	• Capacity by means of own sewage treatment plant to be created.
Electricity	• Area supplied by Eskom. Capacity to be confirmed by Eskom.
Solid Waste	• Stellenbosch landfill site is at capacity. A new cell is under construction to create airspace up to 2017. Additional landfill sites are urgently required to meet demand after 2017.

Rivers and conservation zones	• Fresh water ecologists to demarcate 10 to 30m setbacks from the banks of rivers and furrows within which no new development (other than roads, paths, landscaping or street side trading) or ploughing may occur. Further development should take particular care of the interface with the various rivers. • The pockets of open space should be carefully treated and permitted to be developed for urban agriculture.

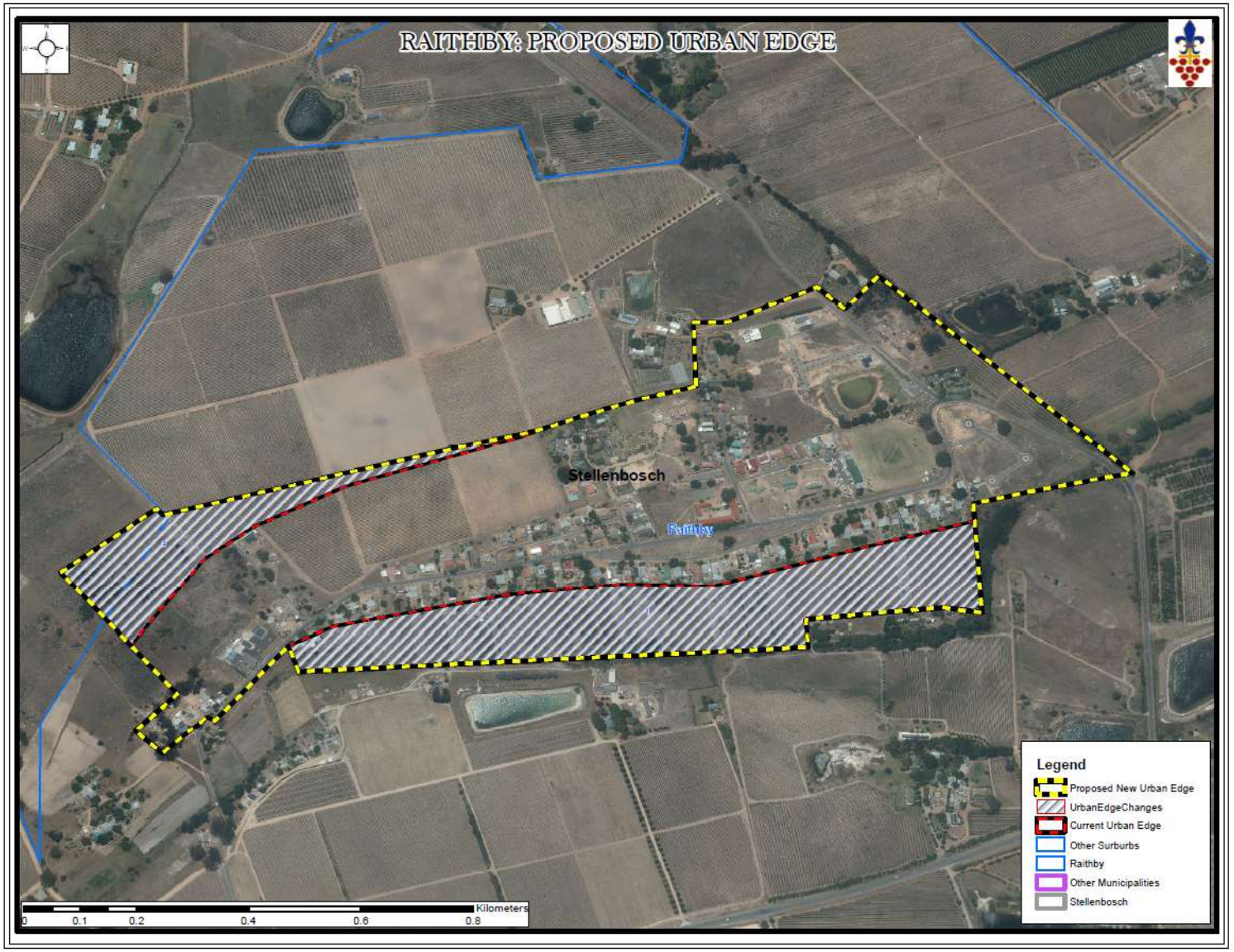

LYNDOCH: PROPOSED URBAN EDGE
Stellenbosch
Legend
Proposed New Urban Edge
UrbanEdgeChanges
Current Urban Edge
Other Surburbs
Lyndoch
Stellenbosch_13Dec2016
Other Municipalities
Stellenbosch
0
0.075
0.15
0.3
0.45
0.6
Kilometers



RAITHBY ANALYSIS

Strategic location	• Located mainly on Watson Way, far from the main road and rail routes.
Description	• Mixed-income rural settlement serving a number of farms in the vicinity.
Advantages	• Rural character • The settlement's amenities are within walking distance of each other
Challenges	• The sustained existence of the settlement depends on its ability to create jobs and retain agricultural land for economic and subsistence purposes. • Besides a school, church and shop, Raithby is a dormitory settlement that lacks the necessary thresholds to support higher level facilities. • The need for low income housing in the area must be assessed. • There is significant pressure to develop the area around the settlement into gated estates. • Raithby is far from main road and rail routes, making it functionally isolated.
Opportunities	• The character of the existing settlement (e.g. the church, built forms, watererven) can be translated into architectural and urban design guidelines for new developments, particularly along Watson Way. • The river stream to the south of Raithby has potential to be enhanced as a tourist attraction.
Constraints	• There is limited land available for further development in Raithby, and any further development would most likely be in the form of private medium or high income developments which threaten the ability to create an integrated settlement at this node. • The river stream that flows south of Raithby is an important natural environmental element that has been assessed as Critically Endangered and requires protection. • Any development within 1km of the R44 would fall into a visually sensitive corridor, and would require low density (not more than 1du per 10 has) and visual impact studies.
Future lateral growth direction	• No further lateral growth should be provided for the next 10 years.
Development areas	• There are infill opportunities on Raithby's existing plots and pockets of land within 1km of the settlement. Approximately 10ha have been identified for infill development (approximately 250 dwelling units at 25du/ha). • It is proposed that an urban edge be defined around Raithby to protect the natural and agricultural land from development pressure and allow for the integrated development of the existing urban area. • There is a need to confirm the role of Raithby hamlet in relation to the rest of Stellenbosch in terms of whether it should grow, and if so in what direction and form.
Roads and transport	• Any development of Watson Way should be in keeping with its character and sense of place.
Water	• Bulk infrastructure required, e.g. reservoir and feeder pipes.
Sewage	• Capacity by means of own sewage treatment plant.

Electricity	• Area supplied by Eskom. Capacity to be confirmed by Eskom.
Solid Waste	• Stellenbosch landfill site is at capacity. A new cell is under construction to create airspace up to 2017. Additional landfill sites are urgently required to meet demand after 2017.
Rivers and conservation zones	• Fresh water ecologists to demarcate 10 to 30m setbacks from the banks of the Bonte River and furrows within which no new development (other than roads, paths, landscaping or street side trading) or ploughing may occur. Any development along the stream will require careful treatment of the interface with the river.


RAITHBY: PROPOSED URBAN EDGE
Stellenbosch
Raithby
Legend
Proposed New Urban Edge
UrbanEdgeChanges
Current Urban Edge
Other Surburbs
Raithby
Other Municipalities
Stellenbosch
Kilometers
0
0.1
0.2
0.4
0.6
0.8