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Draft Drakenstein West Local Spatial Development Framework

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TABLE OF CONTENTS

ANNEXURES:

MAPS:

TABLES:

Serial No.	ACRONYMS	
1	**CBA**	Critical Biodiversity Area
2	**DRDLR**	Department of Rural Development and Land Reform
3	**ECD**	Early Childhood Development
4	**EMF**	Environmental Management Framework
5	**EMZ**	Environmental Management Zone
6	**ESA**	Ecological Support Areas
7	**IDP**	Integrated Development Plan
8	**GFS**	Government Finance Statistics
9	**IHSSP**	Integrated Human Settlements Sector Plan
10	**IUDF**	Integrated Urban Development Framework
11	**LSDF**	Local Spatial Development Framework
12	**NDP**	National Development Plan
13	**NSDF**	National Spatial Development Framework
14	**PDO**	Pre-Determined Objectives
15	**PSDF**	Provincial Spatial Development Framework
16	**SDF**	Spatial Development Framework
17	**SFA**	Spatial Focus Area
18	**SPLUMA**	Spatial Planning and Land Use Management Act, (Act 16 of 2013)
19	**TOD**	Transit Orientated Development

1 PURPOSE

1.1 Purpose of the LSDF

The purpose of the Drakenstein West Local Spatial Development Framework (LSDF) is to provide an overall framework for coordinated action between Drakenstein Municipality and its public and private sector partners.

In addition to an overarching vision and framework, the LSDF endeavours to provide development objectives and development guidelines to guide sustainable planning and development within the Drakenstein West.

1.1.2 Aims of the LSDF

The LSDF has the following aims:

a) Provide more detail in respect of a proposal provided in the municipal Spatial Development Framework;
b) Reflect a clear understanding of the biophysical, socio-economic and built environment of the area;
c) Meet specific land use planning needs;
d) Provide detailed policy and recommended development parameters for land use planning;
e) Provide detailed priorities in relation to land use planning and, in so far as they are linked to land use planning, biodiversity and environmental issues; and
f) Guide decision-making on land use applications.

1.2 Status of the LSDF

Similar to the Drakenstein Spatial Development Framework (SDF), the Drakenstein West LSDF does not confer/give rights or take away land use rights. It guides and informs decision-making by the public and private sector. The Drakenstein West LSDF supplements the Drakenstein SDF. In instances where the LSDF is in conflict with the Drakenstein SDF, the Drakenstein SDF shall take preference over the LSDF.

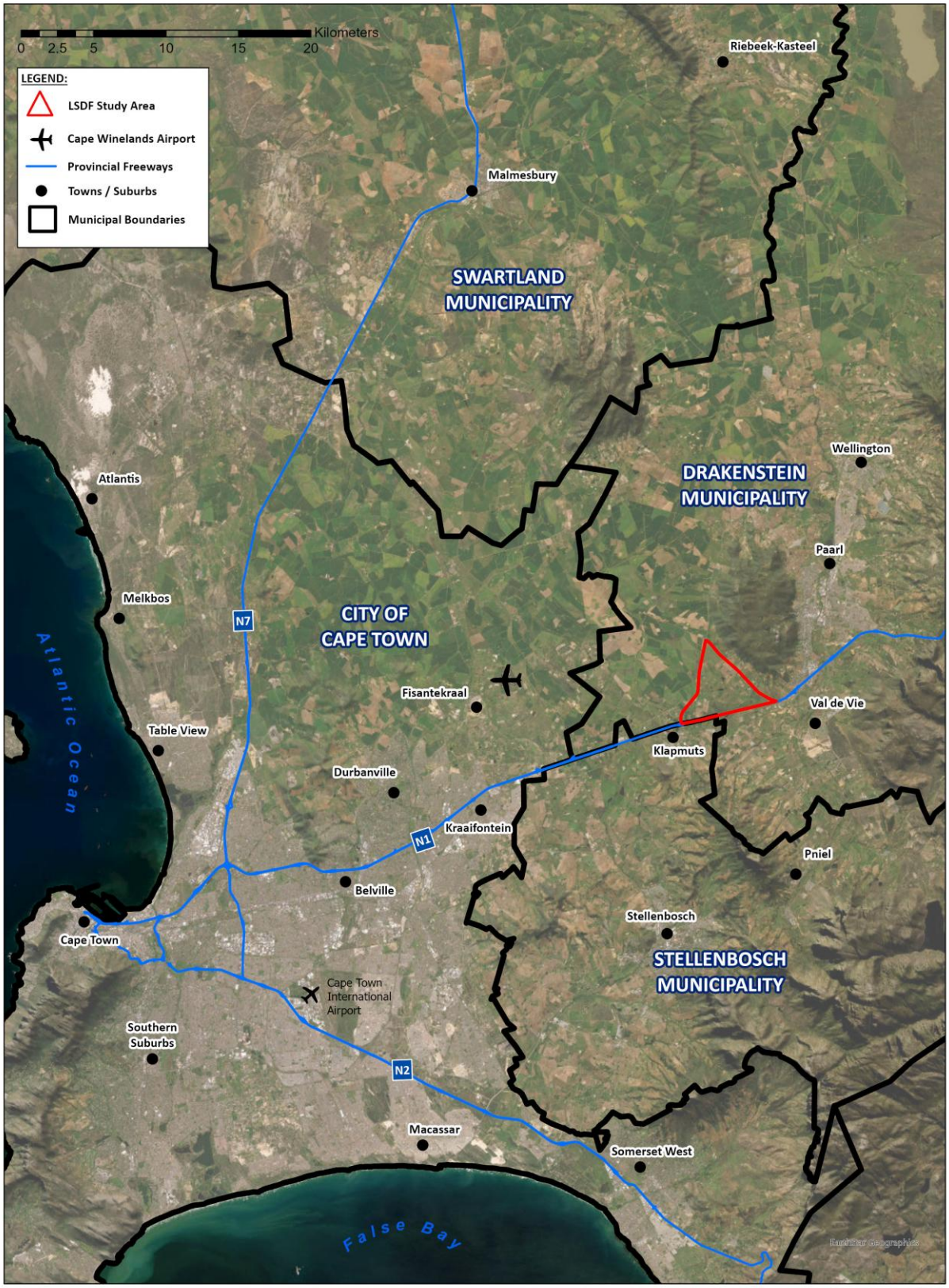
1.3 The Study Area

The Drakenstein West area, hereon referred to as the study area, measures approximately ±1,600 hectares in extent. From a regional perspective, the study area is located within the south-western region of Drakenstein Municipality, where the municipal jurisdictions of Drakenstein Municipality, Stellenbosch Municipality, and City of Cape Town converge. Map 1.1 illustrates the location of the study area in relation to Stellenbosch Municipality and City of Cape Town.

From a municipal perspective, the study area is located west of Paarl Mountain, between the Suid Agter-Paarl Road (eastern boundary), the N1 National Road (southern boundary), and the R44 (the western boundary). Map 1.2 illustrates the location of the study area in relation to Paarl Mountain and the major roads. The study area falls solely within Ward 1 of Drakenstein Municipality.

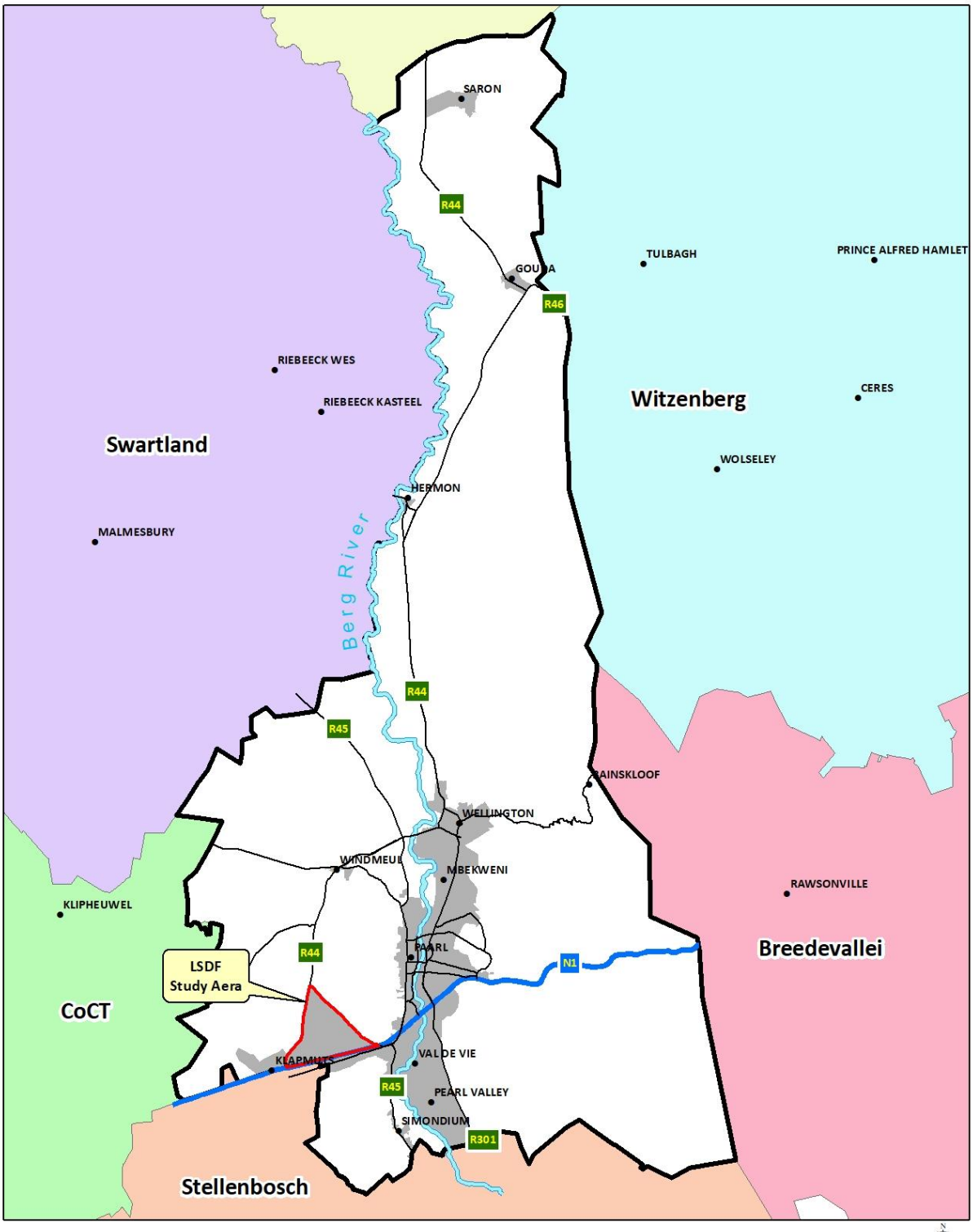
The triangular shaped study area currently consists of several farms that accommodates various agricultural activities, ranging from vineyards to wheatfields, and livestock grazing.

Several single homesteads and associated buildings are dispersed throughout the study area in an unstructured rural pattern. However, the most south-western portion of the study accommodates small scale industrial activities.



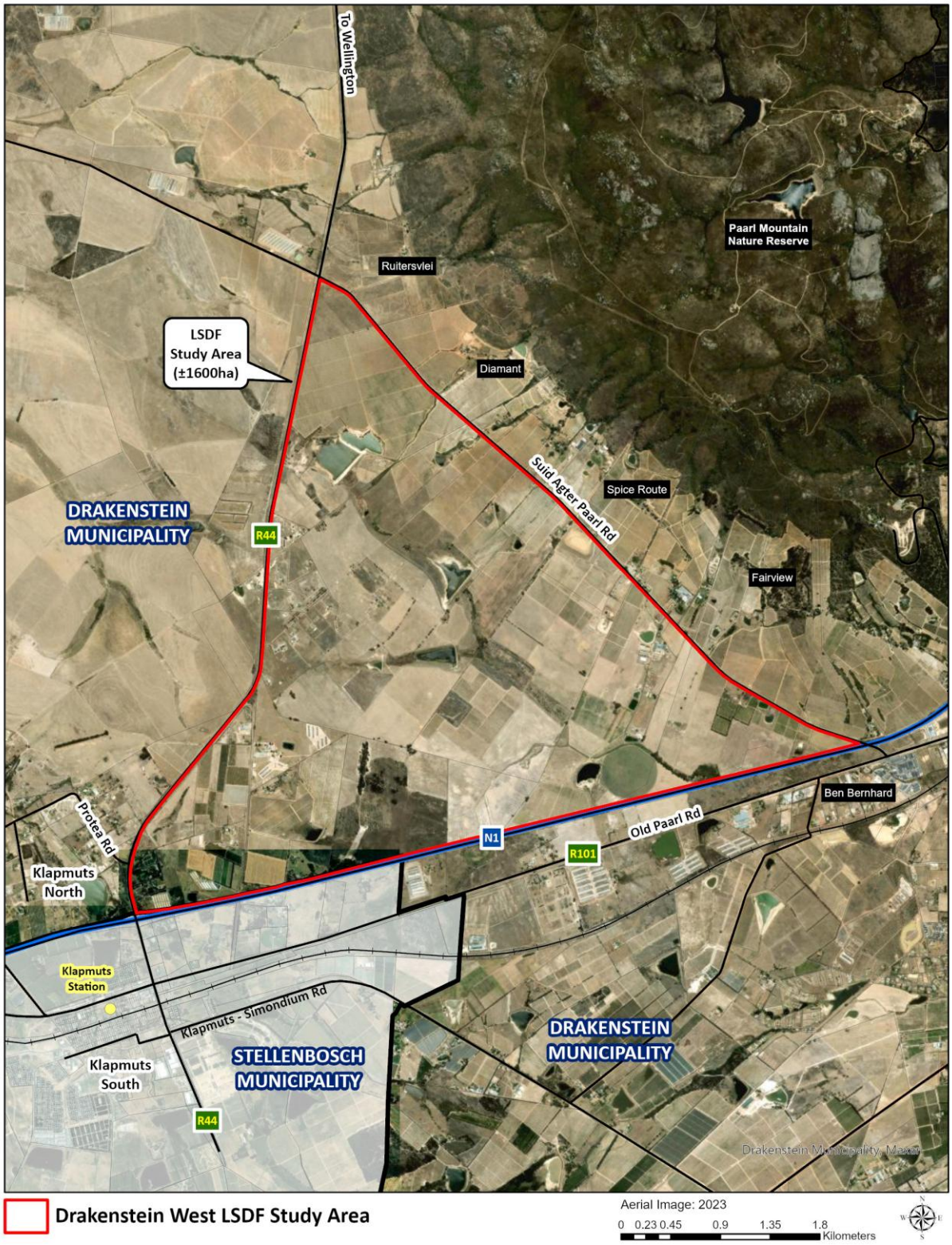
Greater Cape Meto Region in relation to the Drakenstein West LSDF Study Area

Map 1.1: The location of the Drakenstein West LSDF study area in relation to Stellenbosch Municipality and City of Cape Town.



Study Area: Locality Map (Municipal Context)

Map 1.2: The location of the Drakenstein West LSDF study area in relation to Drakenstein Municipality.



Map 1.3: The location of the Drakenstein West LSDF study area in relation to Klapmuts, N1 and Paarl Mountain.

2 LEGISLATIVE AND POLICY CONTEXT

2.1. Applicable legislation

2.1.1 Municipal Systems Act (Act 32 of 2000) (MSA)

The MSA defines critical systems necessary for the realisation of a developmental local government. The Act furthermore provides guidance on municipal powers and functions, public participation, performance management, public administration and human resources.

The MSA requires that an integrated development plan must reflect a municipal spatial development framework, which must include the provision of basic guidelines for a land use management system for the municipality.

The Drakenstein West LSDF must supplement Drakenstein SDF and provide geographical area-based guidelines for land use management.

2.1.2 Local Government: Municipal Planning and Performance Management Regulations, 2001

The Regulations were adopted to provide more clarity on integrated development plans. Section 4 of the Regulations stipulates that a spatial development framework reflected in a municipality's integrated development plan must:

a) Give effect to the principles contained in Chapter 1 of the Development Facilitation Act, 1995 (Act 67 of 1995);
b) Set objectives that reflect the desired spatial form of the Municipality;
c) Contain strategies and policies regarding the manner in which to achieve the objectives referred to in paragraph (b), which strategies and policies must:
    (i) Indicate desired patterns of land use within the community;
    (ii) Address the spatial reconstruction of the municipality; and
    (iii) Provide strategic guidance in respect of the location and nature of development within the municipality.
d) Set out basic guidelines for a land use management system in the municipality;
e) Contain a strategic assessment of the environmental impact of the spatial development framework;
f) Identify programmes and projects for the development of land within the municipality;

g) Be aligned with the spatial development framework reflected in the integrated development plans of neighbouring municipalities; and

h) Provide a visual representation of the desired spatial form of the Municipality, which representation:

(i) Must indicate where public and private land development and infrastructure investment should take place;

(ii) Must indicate desired and undesired utilisation of space in a particular area;

(iii) May delineate the urban edge;

(iv) Must identify areas where strategic intervention is required; andMust indicate areas where priority spending is required.

Although the abovementioned are requirements for a municipal spatial development framework, the Drakenstein West LSDF will also comply with the requirements.

2.1.3 Spatial Planning and Land Use Management Act, 2013 (Act 16 of 2013) (SPLUMA)

SPLUMA provides a framework for spatial planning and land use management in South Africa. This Act regulates the spatial planning system, including principles, spatial plans, land use management and development management. This Act provides five principles that must be applied in all aspects of spatial development planning, land development and land use management. These principles are as follows:

a) Spatial Justice: Past spatial and other development imbalances must be redressed through improved access to, and use of, land by disadvantaged communities and persons;

b) Spatial Sustainability: Spatial planning and land use management systems must promote the principles of socio-economic and environmental sustainability by encouraging the protection of prime and unique agricultural land; promoting land development in locations that are sustainable and limit urban sprawl; consider all current and future costs to all parties involved in the provision of infrastructure and social services to ensure the creation of viable communities;

c) Efficiency: Land development must optimise the use of existing resources and the accompanying infrastructure, while development application procedures and timeframes must be efficient and streamlined to promote growth and employment;

d) Spatial Resilience: Ensure sustainable livelihoods in communities that are likely to suffer the impacts of economic and environmental shocks; and

e) Good Administration: All spheres of government must ensure an integrated approach to land development and all departments must provide their sector inputs and comply with prescribed requirements during the preparation or amendment of SDFs.

Furthermore, the Act stipulates that the municipal council of a municipality must adopt a municipal spatial development framework for the municipality. The municipal spatial development framework must assist in integrating, coordinating, aligning and expressing development policies and plans emanating from the various sectors of the spheres of government as they apply within the municipal area. SDFs must furthermore outline specific arrangements for prioritising, mobilising, sequencing and implementing public and private infrastructural and land development investment in the priority spatial structuring areas identified in the SDF.

The Drakenstein West LSDF will be based on the development principles of the SPLUMA and will assist in integrating, coordinating, aligning and expressing development policies and plans emanating from the various sectors of the spheres of government.

2.1.4 National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA)

Under the NEMA the Environmental Impact Assessment Regulations were adopted. These regulations identify activities that would have an environmental consequence. Should any of the identified activities be triggered by a proposed development, an environmental impact assessment process must be followed before the activity can executed.

Considering the fact that the study area is currently being utilised for agriculture, and contains watercourses and indigenous vegetation, an environmental impact assessment process will in all probability be required.

2.1.5 National Heritage Resources Act, 1999 (Act 25 of 1999) (NHRA)

The NHRA is the legislation in South Africa which seeks to ensure that the national heritage is conserved and protected for future generations. The NHRA sets out general principles for governing heritage resources management, including an integrated system for the identification, assessment and management of the heritage resources in the country.

In addition, the NHRA mandates Heritage Impact Assessments (HIAs) for development projects that could affect heritage resources. An HIA must identify potential impacts, provide mitigation measures to lessen those impacts, and assess the significant of any heritage resources present.

The location of the study area within a unique rural-agricultural landscape that includes important visual and cultural qualities, an HIA process will in all likelihood be required.

2.1.6 Subdivision of Agricultural Land Act, 1970 (Act 70 of 1970) (SALA)

The main purpose of SALA is the regulation of the subdivision of agricultural land in order to prevent the creation of smaller farming portions that would ultimately be regarded as uneconomical and cause damage to the agricultural sector. Under this Act, any subdivision of agricultural land requires written consent from the Minister of Agriculture before proceeding with any transfer or registration of the subdivided portions.

In the light of the fact that the study area consists largely of agricultural land, any proposed application to subdivide the agricultural land must require approval from the provincial and national agricultural authorities.

2.2. Applicable bylaws

2.2.1 Drakenstein Municipality: Municipal Land Use Planning Bylaw, 2018

The Bylaw provides for procedures that are applicable to municipal spatial and land use planning. Under Section 9(1) of the Bylaw, 2018, it is stipulated that the Municipality may adopt a local spatial development framework for a specific geographical area of the municipal area. Section 9(2) stipulates the purpose of a local spatial development framework is to, for a specific geographical area:

a) Provide detailed spatial planning guidelines;
b) Provide more detail in respect of a proposal provided for in the municipal spatial development framework;
c) Meet specific land use planning needs;
d) Provide detailed policy and recommended development parameters for land use planning;
e) Provide detailed priorities in relation to land use planning and, in so far as they are linked to land use planning, biodiversity and environmental issues; and
f) Guide decision-making on land use applications.

In addition, Section 11(2) of the Bylaw, 2018 states that *a local spatial development framework guides and informs decisions made by the Municipality relating to land development, but it does not confer or take away rights.*

2.2.2 Drakenstein Municipality: Municipal Zoning Scheme Bylaw, 2018

The purpose of the Bylaw is to manage land use and development throughout the entire jurisdiction of the Municipality. The Bylaw divides the entire municipal area into different zones, each with its own rules and regulations.

The entire Drakenstein West area is zoned as Agriculture Zone. The purpose of the zone is to make provision for the following:

a) Use of land for purposes of bona fide agricultural production;
b) Buildings and structures which may be developed for reasonable and normal agricultural purposes; and
c) A range of ancillary and subservient uses and which provides for more intensive agricultural use, agricultural industry or agri-tourism with the objective of creating variety, ensuring sustainability and providing diversified income to landowners, without adversely impacting on the primary use of the land for agricultural production.

Should the envisioned development of the LSDF study area not be consistent with the existing zoning, a land use change process in terms of the Drakenstein Municipality Bylaw on Municipal Land Use Planning, 2018, must be followed.

2.3 Applicable policies

2.3.1 National Spatial Development Framework, 2022

The purpose of the NSDF includes the following:

a) Target and direct all infrastructure investment and development spending decisions by all national sector departments and state owned enterprises;
b) Guide and align plan-preparation, budgeting and implementation in and across the three spheres, and between sectors of government; and
c) Frame, guide and coordinate provincial, regional and municipal spatial development frameworks.

The NSDF introduces "National Spatial Outcomes" that will realise its Vision. The outcomes include:

a) "Inter-Regional Connectivity": A network of consolidated, transformed and well-connected national urban nodes, regional development anchors, and development corridors that enable South Africa to derive maximum transformative benefits from urbanization, urban living, and inclusive economic development;

b) "National Systems of Nodes and Corridors": National-scale corridors and regions of opportunity enable sustainable and transformative urbanization, urban consolidation, mutually beneficial urban and rural linkages, and ecological management;

c) "National Resources Economy Region": National connectivity and movement infrastructure systems are strategically located, extended and maintained to support a diverse, adaptive and inclusive economy, and a set of key national and regional gateway cities and towns;

d) "National Movement and Connectivity Infrastructure System: Productive rural regions, supported by sustainable resource economies and strong and resilient regional development anchors that provide access to people living in rural area to the national and global economy; and

e) "National Ecological Infrastructure and National Resource System": The national ecological infrastructure and natural resource foundation are well-protected and managed to enable sustainable and just access to water and other natural resources, both for current and future generations.

The study area is situated adjacent, or within very close proximity, of the NSDF identified key Inter-regional Road and Rail Corridors. The study area is also located within the National Greater Cape Town Urban Region. The spatial development and investment guidance for this region include:

(i) Consolidate urbanization in compact, productive, sustainable, inclusive and well-governed core regions;

(ii) Prioritise infrastructure maintenance to (1) mitigate against the expected impact of natural and climate change-related hazards on the inhabitants of these regions, especially the poor and most vulnerable members of society, and (2) avoid repetitive infrastructure repair costs;

(iii) Manage demand and maintain, expand and refocus the infrastructure network to enable and sustain bulk water supply and energy distribution to and within urban regions;

(v) Effectively utilise, protect and manage high-value agricultural lands, ecological infrastructure and national manmade and natural environmental assets, mitigate downstream impacts on water bodies, water catchments and other natural resources;

(vi) Actively support national and international programmes aimed at climate change mitigation of CO2 emissions, and introduce local policies and measures to assist such programmes;

(vii) Pursue, create and support innovation, enterprise development and job creation opportunities are (1) agro-eco-industries, (2) tertiary and service sectors, (3) tourism, (4) knowledge – creation, and (5) cultural and entertainment industrial; and

(viii) Maintain and upgrade road and rail routes in urban regions, prioritise rail for bulk freight, and improve the affordability of intercity public passenger transport.

Furthermore, the study area is situated with a "National Agri-Enterprise and Small-scale Farming Resource Region". The spatial development and investment guidance for this region include:

- Productive use of high-value agricultural land to support national food security;
- Rehabilitation of degraded land and effective land use management;
- Improvement of rural-rural connections, market accessibility and key agricultural-production infrastructure; and
- Enhancement of connectivity through well-planned infrastructure investment and settlement consolidation in well-connected regional development anchors.

2.3.2 Western Cape Provincial Spatial Development Framework, 2014 (PSDF)

The PSDF gives spatial expression to the Provincial Spatial Plan, and takes the Western Cape on a path towards:

a) Greater inclusivity, productivity, competitiveness and opportunities in its urban and rural space-economies;

b) Better protection of its place-based (i.e. spatial assets); and

c) Improved effectiveness in spatial governance and on-the-ground delivery of public services, facilities and amenities.

Focused development priorities include growing the economy, opening opportunities for inclusive economic growth in urban and rural areas, as well as moving towards inclusivity, competitiveness and opportunities in the rural-urban space economies with better protection of spatial assets such as cultural and scenic landscapes of the region.

The PSDF calls for targeted public investment towards regional infrastructure to unlock the potential of emerging economic centres. The PSDF also aims to establish a highly skilled innovation driven, resource efficient, connected, high opportunity and collaborative society.

The '*Settlement Toolkit'* that is an Annexure to the PSDF, has *inter alia* the following design guidelines to Precincts:

a) Settlement Morphology and Sense of Place:
   (i) Ensure that development in heritage contexts is appropriate in terms of scale, massing, form and architectural idiom;
   (ii) Ensure that hard and soft landscaping complement existing character of streets and squares (such as sensitive engineering standards regarding kerb and channel treatments; and
   (iii) Ensure positive building-street relationships through human-scaled setbacks from the street edge, through avoiding high boundary walls, and through limiting garages/parking along the street façade.

b) Accessibility:
   (i) Ensure that settlement layouts provide clear and direct pedestrian linkages and routes;
   (ii) Promote streets as multi-purpose spaces designed to accommodate all modes of transport and a range of activities;
   (iii) Encourage walking and cycling by providing safe, legible and attractive environments free from traffic and ensure that these routes are edged by buildings that overlook space rather than black walls and backs of buildings; and
   (iv) Manage parking so that it is used more efficiently and does not dominate the streetscapes of the town by placing it behind or to the side of the building to avoid impeding pedestrian access.

c) Activities Patterns and Land Use:
   (i) Local precincts within towns must be mixed use, with properly scaled residential and commercial development to make transportation systems more efficient and affordable, to create economic opportunity and to enhance the community;

(ii) Ensure that all communities and neighbourhoods have access to the full range of services, amenities and opportunities;
(iii) Aim for 'neighbourhood completeness' through clustering to increase the liveability, accessibility and vitality of settlements; and
(iv) Group public facilities, services and government offices to increase convenience and efficiency and align this with higher densities.

d) Informality, Housing Delivery, Inclusion and Urban Land Markets:
(i) Improve the spatial design qualities of new housing projects through improved layout and unit design and appropriate orientation of buildings;
(ii) Consider sustainable urban systems and infrastructure through green building technologies and infrastructure options; and
(iii) Prioritise investment into community facilities, public infrastructure and public space rather than a single focus on housing or top structures.

e) Facilities and Social Services:
(i) Encourage multi-functionality, safety, legibility and access through well-designed community facilities;
(ii) Edge community facilities with functional public spaces, housing or retail activities – not vast vacant land; and
(iii) Always consider positive edges and public interfaces, accessible and well-defined entrances when designing the form and layout of education and health facilities.

2.3.3 The Greater Cape Metro Regional Spatial Implementation Framework, 2019 (GCMRSIF)

The Drakenstein Westy area is situated between Cape Town, Stellenbosch and Paarl/Wellington. From an Urban Space-Economic perspective, the GCMRSIF defines the towns as follows:

Cape Town: "Globally connected city, gateway to intenational and Southern African markets, economic hub of the GCM region, diversified economic base, well-developed services economy, specialist and high order facilities and amenities, evolving network of intra-city economic nodes reducing primacy of CBD. Very high growth potential.

Stellenbosch: Southern Winelands service and administration centre, tertiary education and research, agri-processing, multi-national headquarters, tourism destination, tech industry. Very high growth potential.

Paarl/Wellington: Northern Winelands service and administration centre, tertiary education, agri-processing and distribution, tourist destination, tech industry. Very high growth potential.

Furthermore, Klapmuts, which is located directly west of the Drakenstein West area is identified as a possible new regional node that seeks to improve the performance of existing business nodes by infrastructural upgrading, improved connectivity, and enhancing urban management, safety and mobility.

2.3.4 City of Cape Town Northern District Plan, 2023

The City of Cape Town's Municipal SDF was council-approved in January 2023. The SDF has the following spatial strategies:

a) Plan for inclusive economic growth and improve access to economic opportunities;
b) Manage urban growth, create a balance between urban development, food security and environmental protection; and
c) Build an inclusive, integrated, vibrant and healthy city.

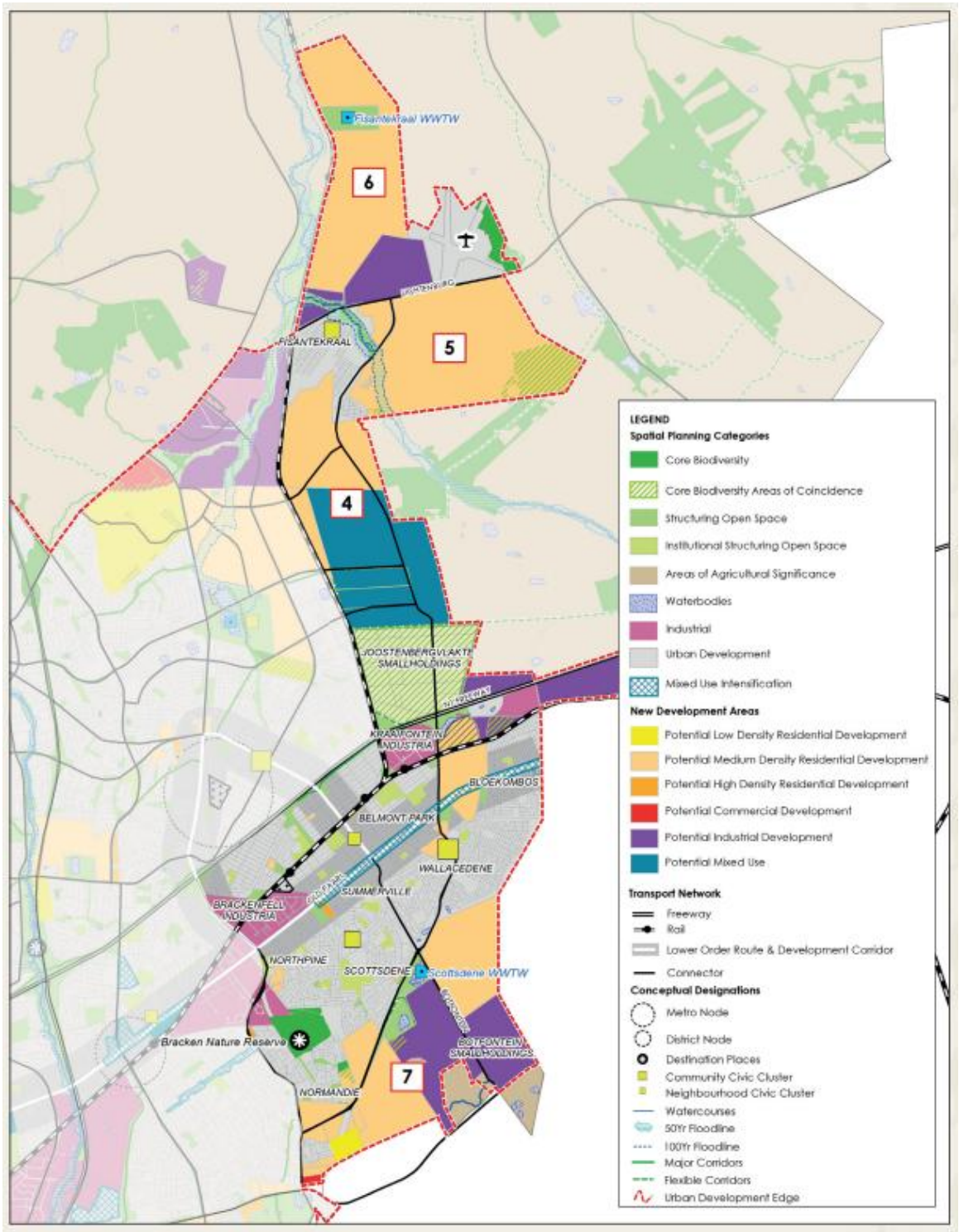
Eight District SDFs were developed for each of the eight planning districts that fall within the City of Cape Town. The Northern District SDF (January 2023) borders on Drakenstein Municipality. The strategic focus of the Northern District SDF is primarily the following:

(i) Accommodating growth through targeted intensification and infill development;
(ii) Conserving threatened habitats;
(iii) Providing a range of housing and job opportunities; and
(iv) Enhancing natural assets and green infrastructure and adopting to and mitigating climate change impacts.

The Northern District is further divided into 5 subdistricts. The Agricultural / Rural Hinterland Subdistrict borders directly onto the western municipal boundary of Drakenstein Municipality. However, it must also be noted that the Fisantekraal / Joostenbergvlakte / Bloekombos and Scottsdene Area Subdistrict is situated less than 15km west of the study area.

In terms of the district plan, one of the objectives is to encourage development to the north of Joostenbergvlakte that responds positively to higher-density forms of residential development, which may include mixed-use development, but also respond positively to future rails stations along the Malmesbury line.

Furthermore, the Cape Winelands Airport is highlighted as 'New Development Area' as the extension of the operations are foreseen. The area directly south of the Cape Winelands Airport and east of Lords Walk and Lucullus Road, which measures approximately 520ha, is designated for 'Potential Medium Density Residential Development'. Map 2.1 below is an extract from the City of Cape Town Northern District Plan.



Map 2.1: Extract of the City of Cape Town Northern District Plan, 2023.

2.3.5 Cape Winelands District Municipality Spatial Development Framework, 2021-2026

The CWD SDF, as a sector plan of the Cape Winelands District Integrated Development Plan (CWD IDP), adopts the CWD IDP's vision, which is "*A unified Cape Winelands of Excellence for sustainable development*", and its mission, *"All structures of the Cape Winelands co-operate together towards effective, efficient and economically-sustainable development*". The objectives of CWD SDF are as follows:

a) To improve the quality of life for the people of the region by ensuring principle led responses;
b) To plan in advance by considering future population growth, economic and climatic changes;
c) To manage the impact and exposure of external and internal threats to growth and development;
d) To restructure urban settlements through compaction and densification;
e) To promote sustainable resource use and responsible rural development; and
f) To improve and conserve the district's natural environment.

2.3.6 Stellenbosch Municipality Spatial Development Framework, 2023

The study area lies just outside the Klapmuts precinct (Stellenbosch Municipality), positioned within a Primary Node along a primary development axis corridor linking the N1 and N2.

Drakenstein Municipality emphasises that where different transport modes intersect—particularly where pedestrians and non-motorised transport users connect to public transport—prioritised, safe, and accessible development is essential.

Stellenbosch Municipality supports the development of Klapmuts (north and south) as a significant area of economic opportunity – located on the metropolitan area's major freight route – and place of settlement close to work opportunities.

The area stretching from Klapmuts to Paarl, situated between the N1 and Old Paarl Road (including Ben Bernhard) appears to have significant metropolitan-wide potential for enterprises depending on good freight access. Its future should also be the subject of inter-municipal planning.

2.3.7 Drakenstein Municipality: Integrated Development Plan, 2025 (IDP): Five Year 2022-2027: Review 2025/2026

On page 31 of the Drakenstein Municipality IDP, it is noted that in February 2017, Vision 2032 was initiated, a long-term strategic plan encompassing key initiatives, programs and projects which were allocated to a series of 'Big Moves'. The Big Moves are proposals which will, over the next ten years dramatically alter and improve the space, economy and sustainability of Drakenstein.

In addition, the Big Moves have been located spatially within five Catalytic Zones, and strategically within the Key Performance Areas and the Spatial Focus Area as identified in the Drakenstein SDF. The Catalytic Zones are intra-municipal zones of spatial and economic activity. They cut across wards and administrative boundaries of the five towns in Drakenstein. The five Catalytic Zones identified are:

a) N1 Corridor;
b) South City Corridor;
c) Paarl East/West Corridor;
d) North City Corridor; and
e) Hinterland – Saron, Gouda, Hermon, Windmeul and Rural Areas.

The Catalytic Zones are largely aligned to the Spatial Development Framework as well as the Capital Expenditure Framework (CEF). Certain Catalytic Zones overlap and therefore share specific Big Moves (including Projects, Programmes and Key Initiatives). As stated in the IDP, the Drakenstein Municipal vision is 'A City of Excellence'.

2.3.8 Drakenstein Municipal SDF, 2025/2026: Five Year 2022-2027 Drakenstein Spatial Development Framework (SDF)

The Drakenstein SDF adopted and shares the IDP vision of a 'City of Excellence' and therefore is the spatial representation of the IDP vision. The SDF provides the guidance for the development trajectory and development decisions of Drakenstein Municipality.

In terms of the 2025/2026 Drakenstein SDF, the study area is proposed to accommodate the future spatial growth demand of Drakenstein Municipality, as well as the wider Cape Winelands District and abutting Cape Town over the next 20 years. The development of the study area is regarded as a medium to long-term spatial intervention that will address the projected long-term population growth of approximately 40,000 households over the next 20 years.

The intervention should also be seen in the context of the envisaged Klapmuts North Industrial Node and the Ben Bernard Industrial Corridor that will provide a considerable amount of employment opportunities.

The SDF also highlights the following two aspects that should receive attention:

a) The area must be carefully managed from a land use perspective to prohibit the development of the area into an exclusive high-income residential development; and
b) Considering that the study area is situated within an area where the municipal jurisdictions of Drakenstein Municipality, Stellenbosch Municipality, and City of Cape Town converge, collaborative planning for the region must occur between the three local authorities, as well as the provincial government.

Furthermore, emphasis is also laid on the location of the study area in relation to the proposed Cape Winelands International Airport. Due to the close proximity of the planned airport, the study area should be utilised to maximise on the positive spin-offs.

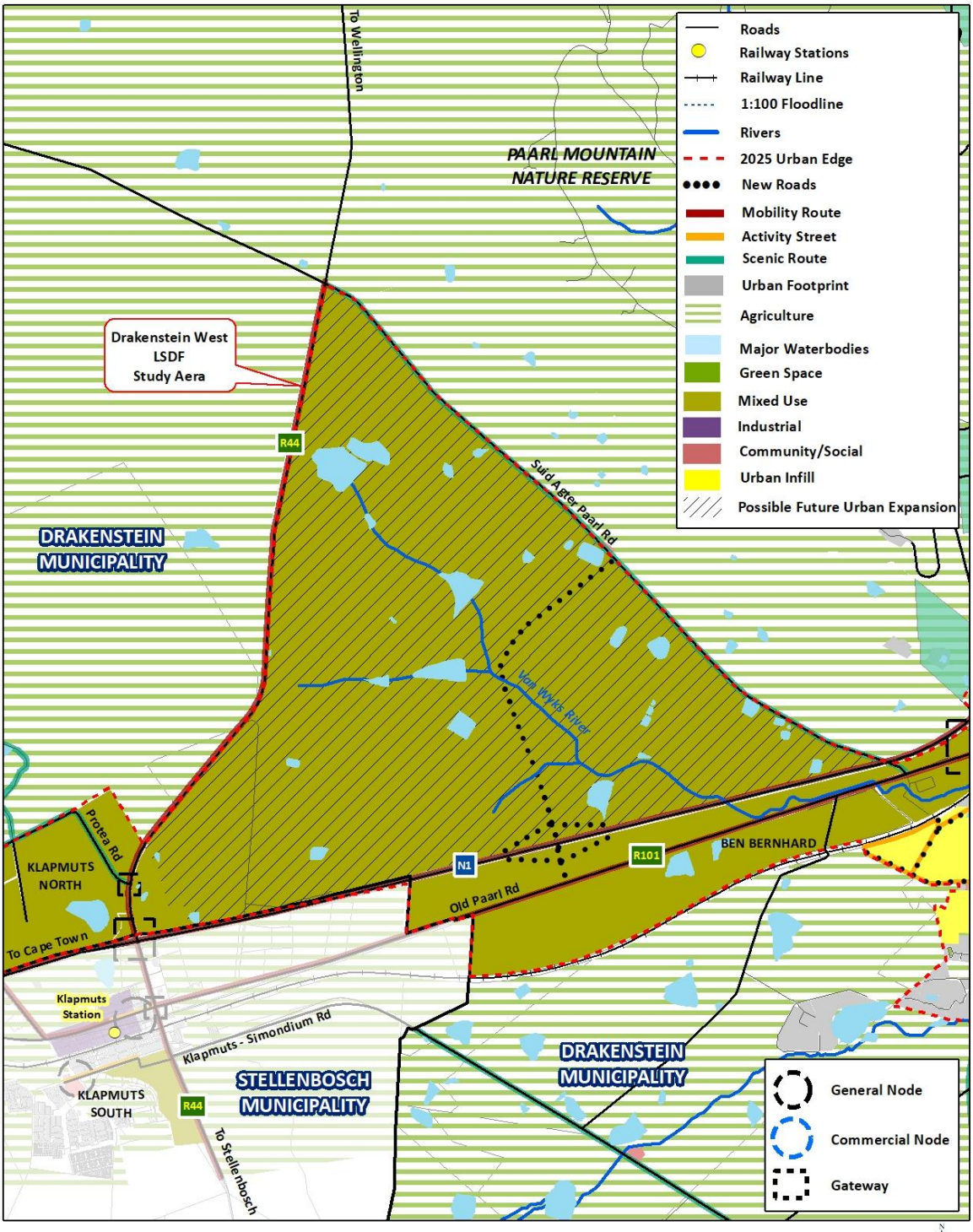
The 2025/2026 Drakenstein SDF identifies the study area as being situated within the urban edge and earmarks the study area for 'Mixed-Use' purposes. The 'Mixed-Use' designation combines the land uses of the following spatial elements: 'Urban Infill' (residential, business, commercial, retail, public, community, social, school, and education) and 'Industrial'.

However, the development of the study area is subject to the formulation of a local spatial development framework. Refer to Map 2.2 below indicating the location of the LSDF study area in relation to the 2025 Drakenstein SDF.

2.3.9 Drakenstein Heritage Survey, 2012

In terms of the Drakenstein Heritage Survey (2012), the study area falls within the Agter Paarl-Paardeberg Landscape Character Zone. This landscape character zone stretches from Paarl Mountain in the east to the Paardeberg in the west, and is characterised by the following defining qualities:

a) An open, gentle undulating plain flanked by the slopes of Paarl Mountain to the east and the Paardeberg to the west;
b) A dispersed pattern of rural settlement on the undulating plains flanked by a more intensive pattern of settlement on the mountain slopes;



Study Area: SDF Spatial Framework Plan

Map 2.2: The LSDF study area in relation to the 2025 Drakenstein SDF.

c) A pattern of cultivation of wheat fields interspersed by vineyards on the undulating plain and flanked by an intensive pattern of vineyard planting on the mountain slopes. This reflects a pattern of overlap and interpenetration of the Swartland and Boland cultural landscapes; and

d) The landmark qualities of the Paarl Mountain, the Paardeberg and the Simonsberg.

In addition, the study area borders on the 'Agter Paarl Heritage Overlay Zone' that consists of a landscape of considerable heritage significance in terms of *inter alia* the following (some of the aspects mentioned below has reference to the study area):

(i) Its concentration of historical farmsteads, a significant number of which are located against the southern, western and northern slopes of Paarl Mountain. Many have spectacular outlooks into broad valley settings. Homesteads and farm werfs of high heritage value overlooking the LSDF study area include Seidelberg, Fairview, Diamant, Spice Route, etc.;

(ii) Its distinctive, legible, intact, and enduring pattern of historical farm werfs set in a vineyard landscape with dramatic mountain backdrops;

(iii) Its high scenic value as part of the Paarl Mountain landscape which is of at least regional, if not national significance. In addition, in terms of its relationship with the scenic route network, i.e., R44, R43 and Suid Agter-Paarl Road, ranging from dramatic views towards Paarl Mountain, distant views across the valley and focused views towards landmark buildings;

(iv) The high iconic heritage value of Paarl Mountain in terms of its visual dominance, distinctive granite outcrops, and historical associations as a place of recreation, refuge and reflection, and being a Grade 2 heritage resource; and

(v) Its combination of elements representative of the Cape Winelands Cultural Landscape, including farm werfs, vineyards and a dramatic setting of great historical significance.

2.3.10 Drakenstein Mountain Slope Study and Sensitivity Analysis Tool, 2019

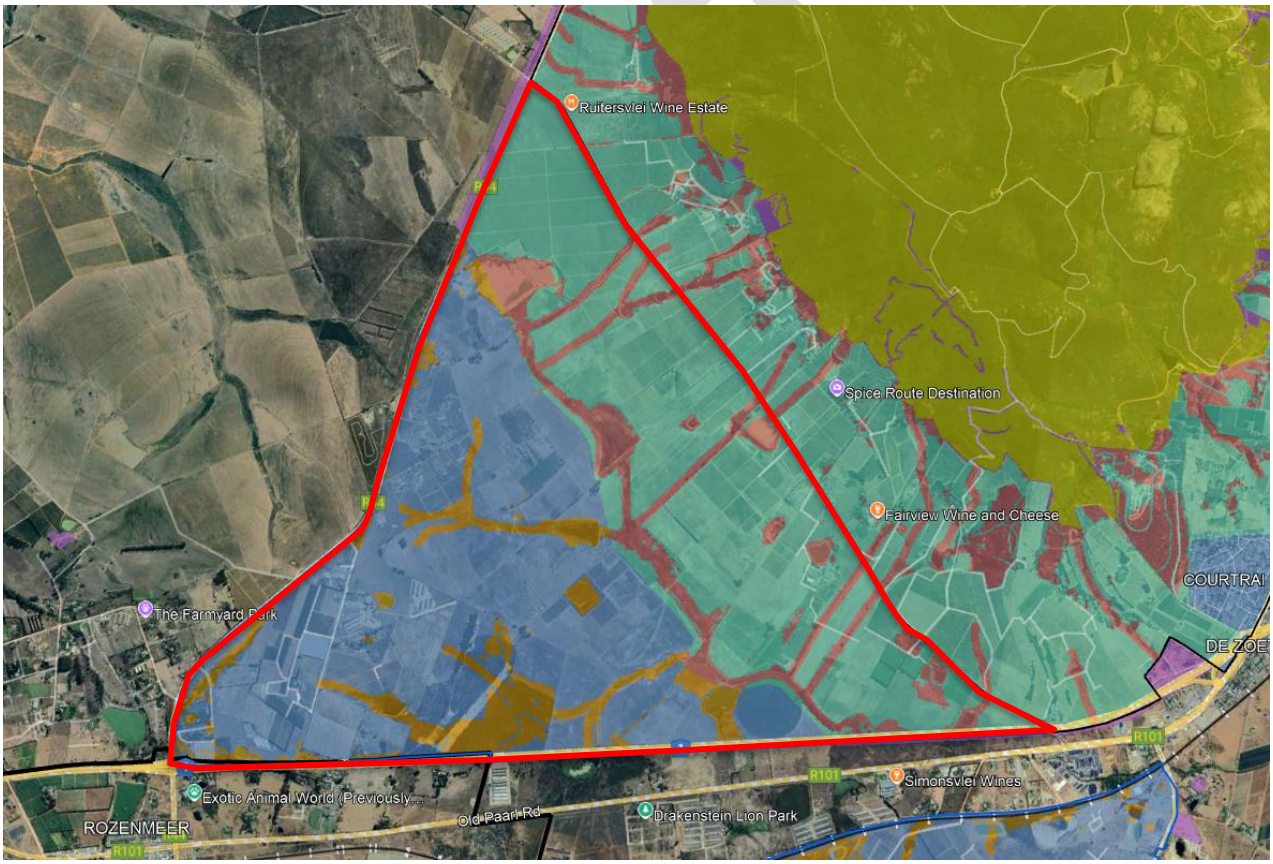
In terms of the Drakenstein Mountain Slope Sensitivity Analysis Tool (MSSAT), the following sensitivities must be considered within the study area with regards to any proposed development (refer to Map 2.2 below):

a) The orange-shaded areas located in the western portion of the LSDF study area indicate that the visual and environmental sensitivities must be considered. The aforementioned areas correspond to existing CBAs and ESAs;

b) The green-shaded areas located to the east indicate that the visual and heritage sensitivities must be considered;

c) The red-brown-shaded areas (includes *inter alia* the Van Wyk's River, small dams, and other meandering non-perennial rivers originating from the Paarl Mountain) indicate that the visual, heritage and environmental sensitivities must be considered; and

d) The large blue-shaded portion to the west of the LSDF study area indicate that the visual sensitivities must be considered.



Map 2.3: Visual, heritage and environmental sensitivities to be considered with any development proposed within the LSDF study area. (Source: Drakenstein Mountain Slope Study, 2019).

3 SITUATIONAL ANALYSIS

3.1 Biophysical Characteristics

3.1.1 Climate

The study area has a Mediterranean climate of cool wet winters and hot dry summers. Rainfall peaks between May and August and is variable depending on the precise location, but averages (mean annual rainfall) about 765 mm per annum.

Median Winter rainfall is 553 mm and summer median rainfall of 113 mm. The mean annual temperature is 17.3°C, typically reach a maximum of ±29°C in the summer and a minimum of 6.9 °C in the winter (CapeFarmMapper, 2024).

3.1.2 Topography

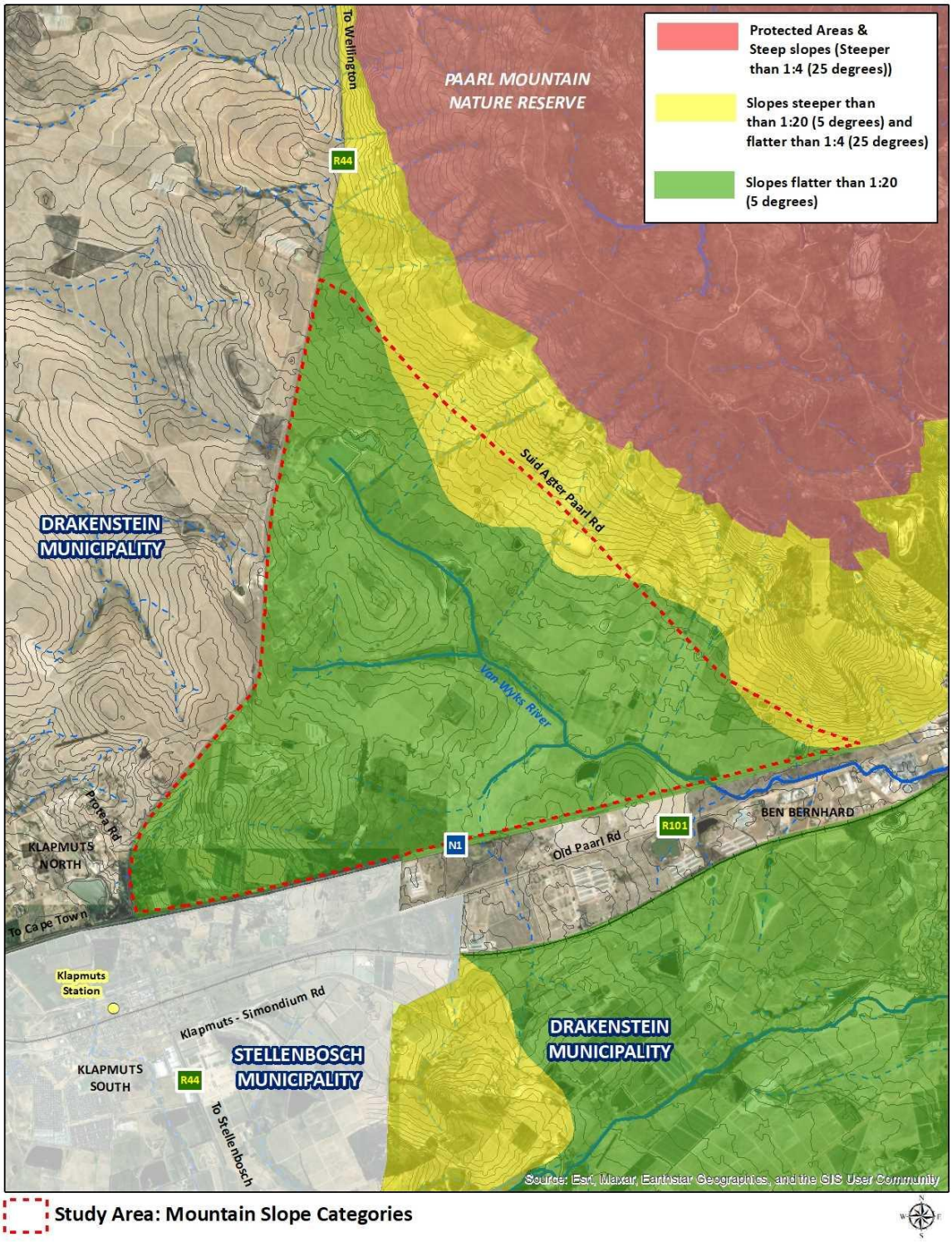
The study area is located between ±130m and ±230m above sea level. The slopes of the area range between 0% and 10%, sloping towards the southeast (towards the N1) (refer to Map 3.1 below that indicates that slope elevation of the LSDF study area).

3.1.3 Geology

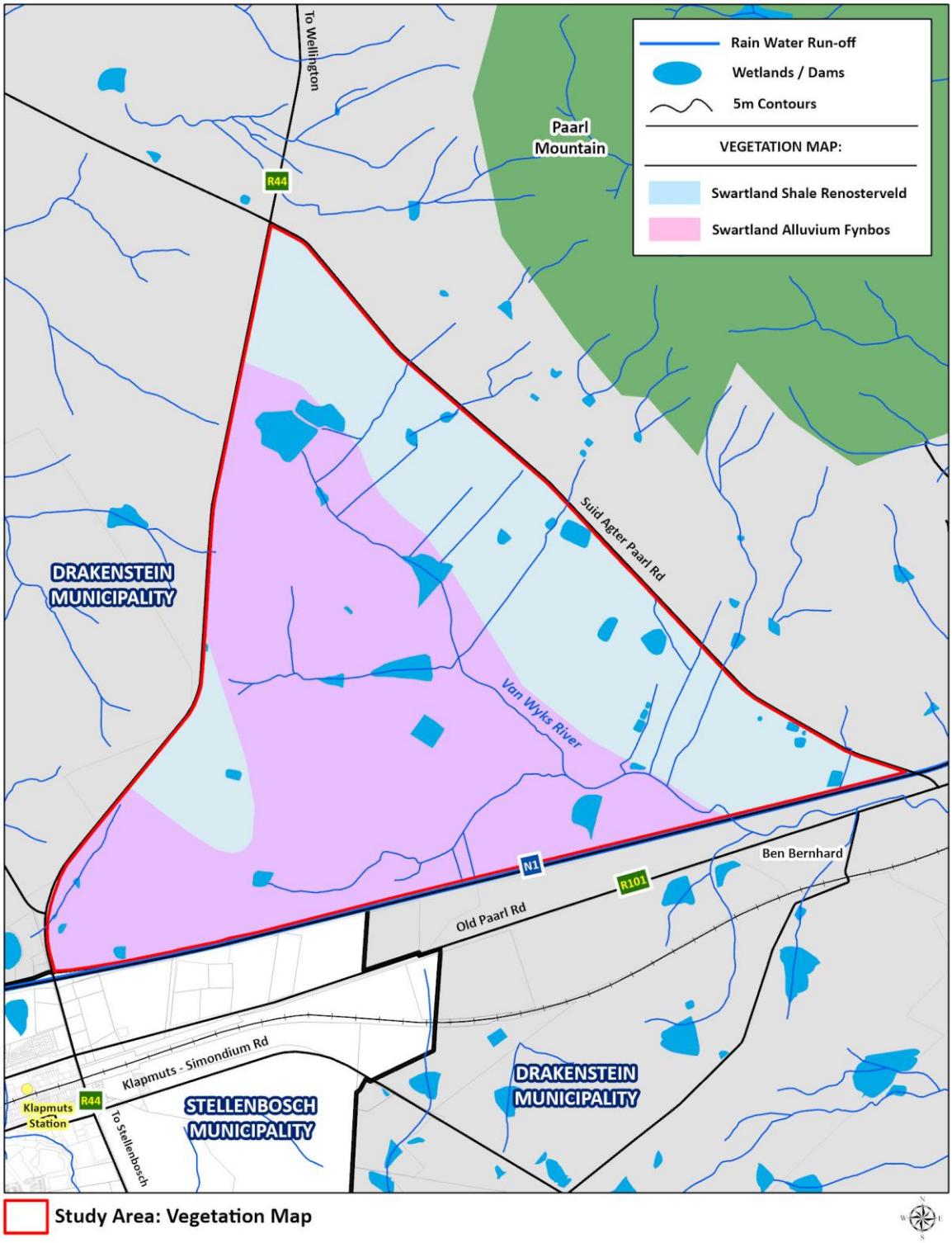
Soils across the study area consist mostly of clay to gritty and sandy soils most likely alluvial but derived from the Cape Granites, although shale-derived heavy clay soil is present towards the north-eastern portion of the study area. These soils contain predominantly prismacutanic and pedocutanic diagnostic horizons (Capensis, 2025).

3.1.4 Botany and Vegetation

The majority of the study area consists of cultivated land, mostly either under vineyards, pasture or fallow land that was recently cultivated. However, numerous fragments between cultivated areas, mostly following drainage lines or rocky areas with shallow soils, were determined to be likely to contain indigenous vegetation (Capensis, 2025). According to Capensis (2025), the vegetation types occurring in the study area are 'Swartland Alluvium Renosterveld and 'Swartland Shale Renosterveld' (refer to Map 3.2 below).



Map 3.1: Slope elevations of the LSDF study area.



Map 3.2: Two vegetation types occurring in the LSDF study area.

The landscape and vegetation ecosystems of 'Swartland Alluvium Fynbos' and 'Swartland Alluvium Renosterveld' is described as follows (Capensis, 2025):

a) Swartland Alluvium Fynbos are largely located in the centre and to the west of study area. This is an endangered vegetation type since ±65.6% of the historical context has been transformed primarily by cultivation; and

b) Swartland Shale Renosterveld are mostly situated along the east of the study area adjacent to the Suid Agter-Paarl Road. This is a critically endangered vegetation type since between ±87.6% and ±93.7% of the historical extent has been transformed mostly by cultivation and almost none is protected in formal conservation areas.

An assessment of the vegetation and habitat conditions within the Drakenstein West area was undertaken. The assessment concluded that habitat conditions varies between transformed and highly degraded to degraded and semi-intact areas. The following habitats were observed:

(i) Transformed habitat: Areas dominated by alien grasses and forbs, or sparse vegetations with few or no indigenous species present;

(ii) Highly Degraded habitat: Areas dominated by mostly alien forbs and grasses, interspersed with a limited diversity of pioneer indigenous shrubs;

(iii) Highly Degraded to Degraded habitat: Dominated by a limited number of indigenous pioneer shrub species, or sparse indigenous cover overall, considered to be indigenous vegetation but lacking habitat structure representative of the historically mapped vegetation type;

(iv) Degraded habitat: Vegetation with limited species and structural diversity, but representative of Swartland Alluvium Fynbos or Swartland Shale Renosterveld, including some species of conservation concern, but lacking the full complement of species that should be present;

(v) Semi-intact habitat: Vegetation with a higher species and habitat structural diversity than degraded vegetation, and apparently limited past disturbance, as well as multiple species of conservation concern; and

(vi) Recently cleared vegetation: Two areas within the Drakenstein West area were recently cleared of standing vegetation. However, remnant species present suggest that both areas contained degraded vegetation.

Sensitivity ratings, ranging from very low to very high, were assigned to the observed habitats based on their conservation value, together with the degree of resilience to disturbance. Table 3.1 below indicate the sensitivity rating (constraints) of the observed habitats.

Table 3.1: Areas in the study area rated according to their sensitivity in terms of the botanical perspective (Source: Capensis, 2025).

Serial No.	Habitat	Sensitivity/ Constraints	Botanical opportunities and limitations
1	Transformed vegetation	Very low	No limitations to development, very unlikely that loss of these areas will result in any negative botanical impacts.
2	Highly degraded vegetation	Low	These areas exhibit very low restoration potential although in places they may have shown limited recovery of some opportunistic indigenous species cover after being cultivated.
3	Highly degraded to degraded vegetation	Medium	These areas exhibit moderate restoration potential since they shown some recovery or persistence of indigenous vegetation cover. However, conservation value is limited and loss of these area will result in low negative botanical impacts. Nevertheless, this presents an opportunity to be retained as open spaces or corridors within proposed developments with some conservation and aesthetic value.
4	Highly degraded to degraded vegetation (containing species of conservation concern or forming important corridors)	Medium to high	These areas exhibit moderate restoration potential since it has shown some recovery or persistence of indigenous vegetation cover. These are important in connecting or buffering areas of higher botanical integrity (can also include some areas of low botanical sensitivity), and a few species of conservation concern have been recorded. Loss of these areas would have a medium botanical impact.
5	Degraded vegetation	High	These areas contain moderate species and vegetation structural diversity which are representative of Swartland Alluvium Fynbos. Multiple species of conservation concern have been recorded. Therefore, conservation value is high and loss of these areas will be likely to result in high negative botanical impacts.
6	Semi intact vegetation	Very High	These areas exhibit high species and vegetation structural diversity representative of Swartland Alluvium Fynbos, as well as multiple species of conservation concern. These areas are of the highest conservation value and the loss of these areas will be likely to result in high negative botanical impacts.

Taking the above into consideration it can be concluded that no constraints to development exist from a botanical perspective within the cultivated land or transformed areas of very low sensitivity.

Within low sensitivity areas development would have a low negative botanical impact, except where some areas provide connectivity between habitats of higher conservation value on either side.

Proposed development within the medium sensitivity areas would have low negative impacts, but where possible these areas could be considered for incorporating into spaces or corridors within the development as these areas have some botanical integrity.

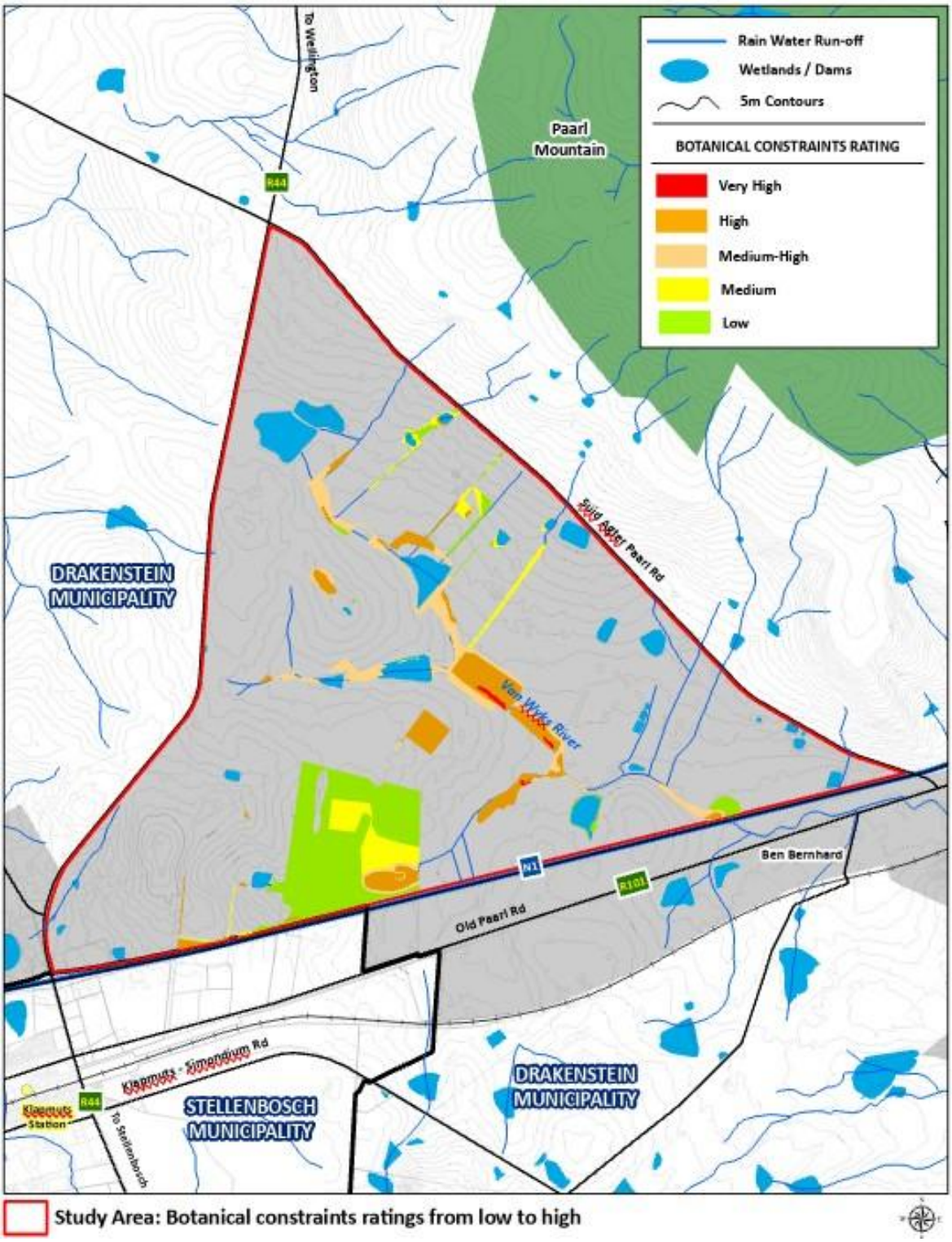
Medium-high sensitivity areas should be carefully considered, as these areas do appear to provide connectivity between areas of higher botanical integrity and do contain some indigenous plant diversity, as well as moderate restoration potential.

High and very high sensitivity areas should not be considered for development as they provide a valuable opportunity to conserve a significant area of Swartland Alluvium Fynbos within the Drakenstein West area. Refer to Map 3.3 below that indicate botanical constraints rating in the LSDF study area.

3.1.5 Hydrology

According to FEN Consulting (2025), numerous seasonal drainage lines were identified which all originate from the Paarl Mountain catchment area and drains in a south-western direction across the study area towards the valley-bottom running along the centre of the area. These seasonal drainage lines either drain into the existing instream farm dams or directly into the vast channelled valley bottom (CVB) wetland running in the centre of the study area draining from north to south. The Van Wyks River (which forms part of the CVB wetland system) roughly dissects the study area into an eastern portion and western portion. Map 3.4 below illustrate the water bodies located in the study area.

The small drainage lines originating in the Paarl Mountain catchment area and their connection with the vast CVB wetland system are considered important ecological corridors for the free movement of biota in a landscape dominated by intensive agriculture and formalisation. Several instream farm dams are present and delineated in the study area that are either associated with the aforementioned drainage lines originating from the Paarl Mountain or the vast centrally located CVB wetland system. It is uncertain when these instream farm dams were constructed but they can be considered as natural portions of the landscape because they provide habitats for numerous waterfowl species as well as aquatic and terrestrial vertebrates and invertebrates.



Map 3.3: Botanical constraints ratings from low (allow development) to very high (no development allowed). (Source: Capensis, 2025).

Numerous wetland systems are present, and these include the aforementioned CVB wetland systems draining from the north to the south. The vast CVB wetland consists of numerous habitat units as well as large instream farm dams, Van Wyks River, etc. creates a heterogeneous system which is considered a critically important ecological corridor.

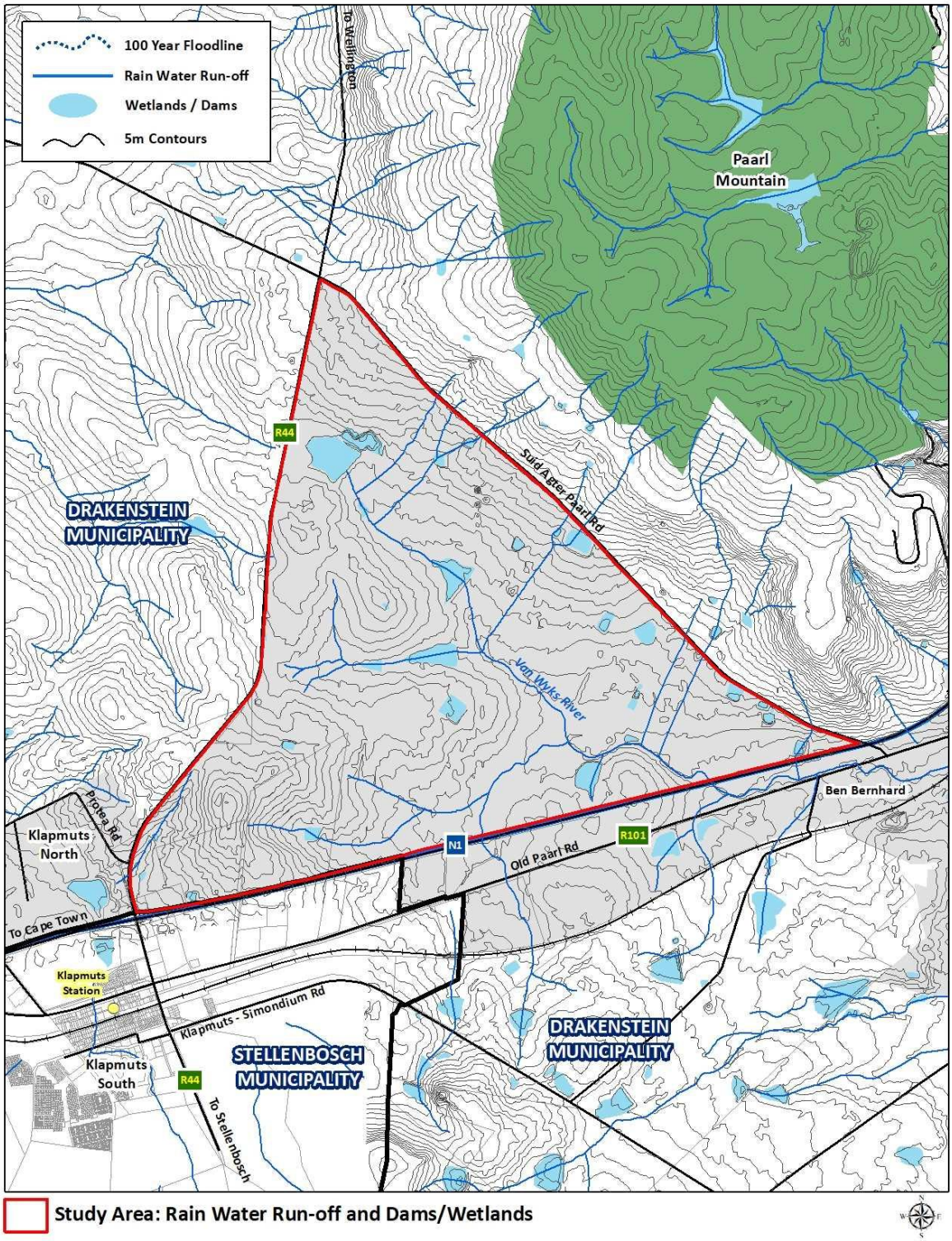
Several seep wetland areas are located in the study area that are primarily associated with either hillslopes or farm dam seepage. It is anticipated that the extent of these seep wetland areas has been modified from their historical reference state in order to make space for agricultural activities.

By identifying the key ecological corridors and water bodies, FEN Consulting compiled a freshwater constraints and opportunities assessment (refer to Map 3.5 below).

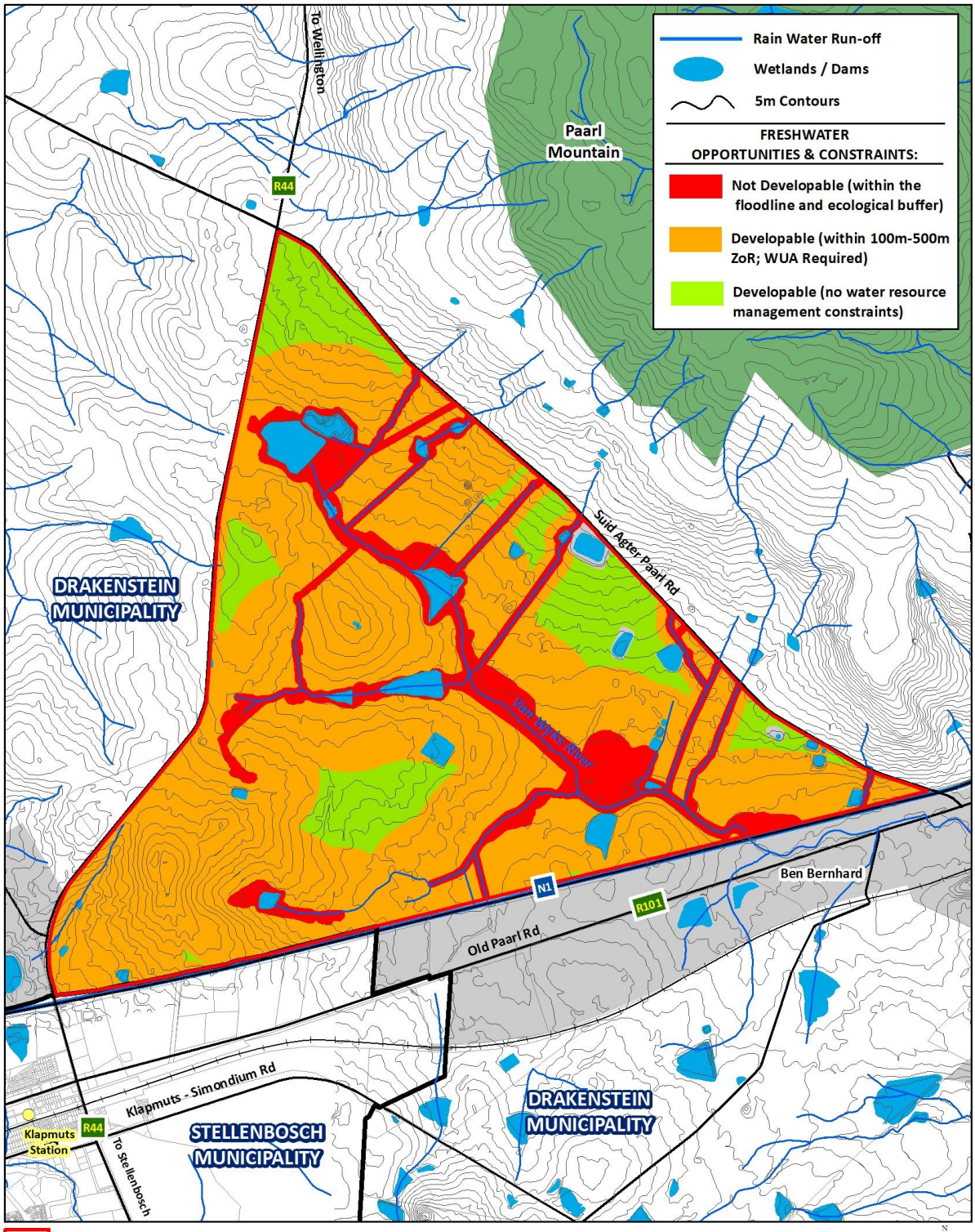
Zones of Regulation (ZoR) are imposed by legislation to regulate freshwater ecosystems, not to restrict all development, but to require Environmental Impacts Assessments (EIA) and Water Use Authorisation (WUA) for activities within or near these areas to protect and manage freshwater resources.

With reference to Map 3.5 below the following is important to note:

a) A 'no developable area' (indicated as red on the aforementioned map) with a minimum extent of a 20m ecological protection buffer should be excluded from development;
b) A 'developable area' (indicated as yellow on the aforementioned map) that has a 32m ZoR (development allowed outside the 32m ZoR) around freshwater systems and dams, and EIA and WUA are required;
c) A 'developable area' (indicated as light green on the aforementioned map) within 100m and 500m ZoR where WUA is required; and
d) A 'developable area' (indicated as dark green on the aforementioned map) where no water resource management constraints are found.



Map 3.4: Waterbodies found in the LSDF study area.



Map 3.5: Freshwater Constraints and Opportunities. In terms of the Map, no development should occur in the red shaded areas.

With reference to Map 3.5 above, the following is important to note:

a) A 'no developable area' (indicated as red on the aforementioned map) with a minimum extent of a 20m ecological protection buffer should be excluded from development;
b) A 'developable area' (indicated as orange on the aforementioned map) that has a 32m ZoR (development allowed outside the 32m ZoR) around freshwater systems and dams, and EIA and WUA are required;
c) A 'developable area' (indicated as light green on the aforementioned map) within 100m and 500m ZoR where WUA is required; and
d) A 'developable area' (indicated as light green on the aforementioned map) where no water resource management constraints are found.

Bigen Africa Services (Pty) Ltd (2025) conducted a 1:100-year floodlines study of the Van Wyk's River, and the results of the delimitation the 1:100-year floodlines were incorporated into the constraints plan. In addition, Bigen Africa Services (Pty) Ltd (2025) recommended that non-perennial streams be manually surveyed in the future to establish accurate water flood levels along these seasonal channels.

These seasonal channels could also be modified and realigned in future should it be required. Importantly, the realignment of these channels should be done in consultation with freshwater and botanical specialists.

3.1.6 Agriculture and Soils

"Various agricultural activities form the predominant land use in the area. This ranges from vineyards to wheat fields, livestock grazing to secondary production facilities (cheese factory). In terms of the CapeFarmMapper (2024), the crop census of 2023 indicates the following crops that are grown in the study area: Wine grapes, wheat, oats and lucerne (various areas dispersed over the study area). There are also pockets indicated as fallow land and weeds dispersed within the agricultural area and a few small pockets of lemon orchards (southeast corner), almonds (northern corner), canola (mainly in the centre of the study area) and peach and nectarine orchards (both in the southwest corner).

An agricultural soil investigation study was conducted by Ellis and Schloms (2025) to determine the suitability of the soils in the study area for the growing of a perennial crop (in this case wine grapes). The study specifically focussed on the physical limitations of the soil in the study area.

The limitations that were considered includes: low clay content in topsoil, dense subsoil clay layers, wetness, underlying weathering rock, cemented hardpans, coarse fragments in top- and /or subsoils, and salinity. Based on the assessment a suitability rating ranging from 1 to 10, with 1 being the lowest and 10 equal to the highest, was formulated. It was concluded that soils with a suitability rating of 5 or more must be preserved.

The agricultural soil investigation concluded that numerous pockets of soil with a suitability rating of 5 or more are dispersed throughout the study area. The combined extent of the pockets amounts to approximately 173ha in extent. Map 3.6 below illustrates the suitability rating for growing perennial crops.

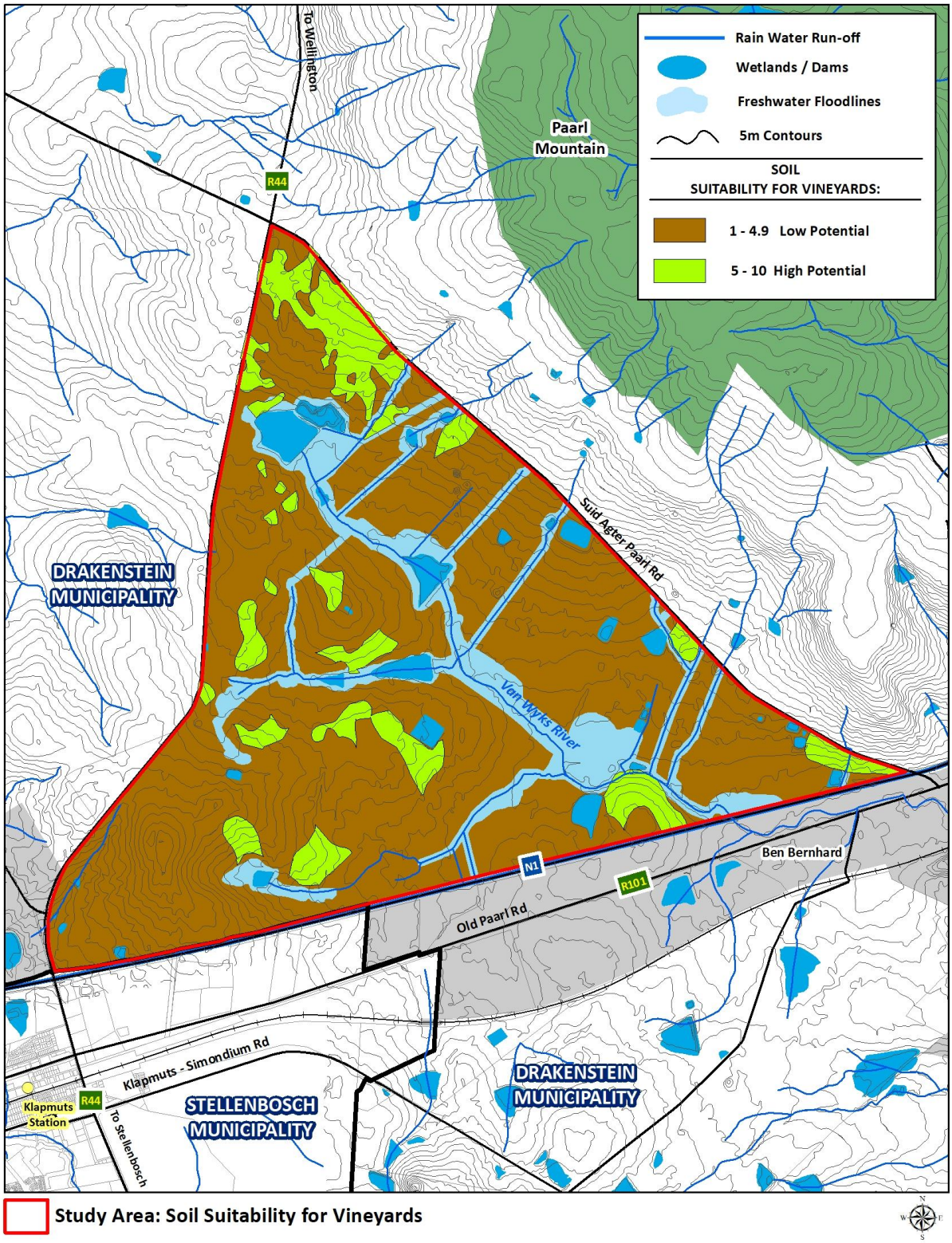
3.2 Socio-Economic Characteristics

3.2.1 Archaeology and History

According to the Drakenstein Heritage Survey, 2012, from ±30 000 years ago the area was occupied by San hunter-gatherers. At ±2 000 years ago, the Khoekhoe herders moved into the area resulting in competition for natural resources, which eventually led to the displacement of the San towards the mountainous area. Khoekhoe groups known to frequent the area, included the Cochoqua, Chainouqua and the Hawequa.

Stone artefacts dating to the Early Stone Age (ESA) (±700 000 yeas ago) and the Middle Stone Age (MSA) (±150 000 to 30 000 years ago) have been found in the agricultural fields, along river banks and mountain slopes. As early as 1657, the Paarl Valley was identified as an important and fertile land area appropriate for colonial settlement. The arrival of the French Huguenots at the Cape, initiated a new wave of settlement in the Drakenstein valley. By the early 18th century, fertile areas of Drakenstein were largely under cultivation.

Traditionally, the Drakenstein area is associated with wine farming, but initially, the production of vines was restricted in order to ensure that enough grain necessary for the settlements' survival was cultivated. The mid to late 19th century is marked by the development of industries related to the agricultural sector. In the 1830s, the first wine operatives and brandy distilleries were established in the area. A wool washery, various wagon building enterprises with the related paint shops and upholsterers as well as a mill were already established industries by the end of the 19th century.



Map 3.6: Soil Suitability for perennial crops (i.e. vineyards).

3.2.2 Population

a) Drakenstein Municipality

According to the Drakenstein Municipality's Spatial Development Framework, May 2025, the population for Drakenstein Municipality was estimated to be 311,600 in 2024. It is expected that the population will grow by an average annual growth rate of 1.46%.

From a household perspective, it was estimated that in 2024, a total of 77,900 households reside within Drakenstein Municipality. The average household size for the Municipality is estimated to be 4 persons.

b) Stellenbosch Municipality

According to the Stellenbosch Municipality's Integrated Development Plan, May 2025, the population for Stellenbosch Municipality was estimated to be 209,831 in 2024. It is expected that the population will grow by an average annual growth rate of 1.7% until 2029.

From a household perspective, it was estimated that in 2024, a total of 57,520 households reside within Stellenbosch Municipality. The average household size for the Municipality was 2.9 persons in 2022.

c) City of Cape Town

According to the City of Cape Town's Northern District Spatial Development Framework, January 2023, the population for the Northern District was estimated to be 424,945 at the end of 2018. An average annual growth rate of 5.31% was experienced from 2011 until 2018. This growth rate far exceeded the entire City's growth rate of 2.52% per annum.

Considering that no population forecasts are contained within the district framework, it can only be assumed that City of Cape Town expects that the average annual growth rate will remain high.

Furthermore, the number of households within the Northern District was estimated to be 112,590 at the end of 2016. The average household size for the district was 3.22 persons in 2016.

3.2.3 Economy

a) Drakenstein Municipality

According to the Municipal Economic Review and Outlook (MERO) 2024/25, the economy of Drakenstein Municipality is the leading economy in the Cape Winelands District, contributing 32.6% of the District's Gross Domestic Product per Region (GDPR), amounting to R22.3 billion in 2023. The economy is characterized by a strong tertiary sector, with finance, insurance, real estate, and business services being the largest contributors, accounting for 30.5% of the total GDPR.

Wholesale and retail trade, catering, and accommodation, along with community services, play vital roles in the economy as well. The secondary sector, driven by manufacturing (13.5%) and construction (5.2%), supports industrial growth and infrastructure development. Agriculture remains an important component of the primary sector, contributing 7.4% to the GDPR.

b) Stellenbosch Municipality

The economy of Stellenbosch Municipality contributes 24% of the District's total GDPR, amounting to R16.4 billion in 2023. The economy is dominated by a vibrant tertiary sector with finance, insurance, real estate and business services being the largest contributor at 29.3%, amounting to R4.8 billion. Wholesale and retail trade, catering, and accommodation contribute 16.2% to the GDPR, followed by transport, storage, and communication at 11.3%, and community services at 11.3%.

The secondary sector, led by manufacturing (15.5%) and construction (3.7%), plays a crucial role in driving economic development and supporting infrastructure (MERO 2024/25). The primary sector, while smaller in comparison, is anchored by agriculture, forestry and fishing, contributing 6.2% to Stellenbosch's GDPR.

c) City of Cape Town

City of Cape Town dominates the provincial economic landscape, recording a GDPR of R441 billion in 2023, accounting for 72.5% of the provincial GDPR. The tertiary sector, led by finance, insurance, real estate, and business services, accounted for the highest share of GDPR at 32.2% (R159.8 billion). The wholesale and retail, catering and accommodation contribute 13.1% (R58 billion) to GDPR.

The secondary sector, driven by manufacturing plays a key role, contributing 19.5% to economic output. Although the primary sector, dominated by agriculture, forestry and fishing makes a smaller contribution to GDPR at 1.6%, it remains a vital part of the economic landscape, underscoring the importance of agriculture in supporting economic diversification (MERO 2024/25).

3.2.4 Employment

a) Drakenstein Municipality

In 2023, Drakenstein Municipality had an unemployment rate of 15.2% with the workforce distribution illustrating a significant portion of employees that are low-skilled (36.8%) and semi-skilled (37.3%), with skilled workers making up to 25.9% of the employed population. This reflects the broad economic base, with a substantial number of workers in sectors like trade, personal services and manufacturing.

Furthermore, in 2023, the number of employed people surpassed the high of 2019. There were approximately 5 522 jobs created, bringing the total of employed individuals to 111 547. This improvement represented a significant step towards restoring pre-pandemic economic conditions. Concurrently, the labour force participation increased slightly in 2023 to reach 66.6 per cent from 66.3 per cent recorded in 2022 while labour absorption rates increased by 1.9 per cent in 2023 to reach 56.5 per cent. Gains were also noted in unemployment rates, decreasing by 2.8 per cent between 2022 and 2023.

The number of Full-time Equivalent (FTE) jobs analysed using the spatial tax data shows a slight upward movement in 2023. In 2023, the number of employed people surpassed the high of 2019.

The manufacturing sector, in particular, has experienced job losses, especially in bakery products and animal feed, while personal services and employment placement agencies have seen growth. To achieve balanced and sustainable growth, Drakenstein must invest in both high-value and labour-intensive sectors, enhancing productivity and resilience across the economy (MERO, 2024/25).

b) Stellenbosch Municipality

The Municipality accounts for 19.8% of the District's employment. A substantial portion of the labour force are semi-skilled workers (42.5%), with notable workers that are skilled (26.2%) and low-skilled (31.3%).

The agriculture sector continues to be a key employer, absorbing a considerable number of workers. Beyond agriculture, Stellenbosch is a significant hub for the financial sector. The tertiary sector generated the majority of new employment. Conversely, the agricultural sector (viticulture and mixed farming) faced significant job losses, highlighting the adverse impacts of climate change.

In 2023, the unemployment rate was 12.6%, whilst 27.9% of the working age population are not economically active. However, the Stellenbosch Municipality has achieved a substantial increase in employment with a 12.9% year-on-year growth, translating to more than 11 000 FTE jobs in 2023 alone (MERO 2024/25). The growth of FTE jobs has been on a steady increase due to Stellenbosch' strong tourism, banking and financial institutions and education facilities.

c) City of Cape Town

In 2023, City of Cape Town added over 65 000 new jobs, contributing to a noticeable drop in the unemployment rate. The unemployment rate, which has peaked at 28.5% in 2021, improved to 24.5% by the end of 2023, reflecting the region's growing economic stability. The labour market is diverse, with 33.8% of employment population in skilled positions, 47% in semi-skilled roles, and 19.2% in low-skilled positions. Semi-skilled and low-skilled workers are particular prominent in the manufacturing, wholesale trade, and service sectors, while skilled workers are increasingly found in finance, real estate and business services.

The FTE jobs grew by 1.8% in 2023. The expansion of residential and commercial developments has created numerous job opportunities in construction, real estate, and related services. In the Cape Metro, employment is predominantly concentrated in the tertiary sector, with retail, public administration, and personal services leading job creation. Retail trade, particularly in non-specialised stores, employs 135 000 people, followed by provincial and local government roles. While tertiary sector dominates, agriculture and manufacturing employ fewer people despite contributing significantly to GDPR (MERO 2024/25).

3.2.5 Housing

During 2022 the Western Cape Department of Environmental Affairs and Development Planning undertook the compilation of housing market studies for the Paarl/Wellington/Mbekweni town area, as well as the Stellenbosch town area.

The market studies concluded that within the Paarl/Wellington/Mbekweni town area there is an overwhelming undersupply in properties that are valued between R0 and R600,000.00 to accommodate the households within this area. The housing market for properties valued at more than R600,000 are functioning well.

From a Stellenbosch town perspective, an undersupply was notice in properties that are valued between R0 and R1.2m to accommodate the households within the area. The undersupply is specifically noticed in the segment that accommodates properties that are valued between R0 and R600,000.

3.3 Built Environment

3.3.1 Existing built environment

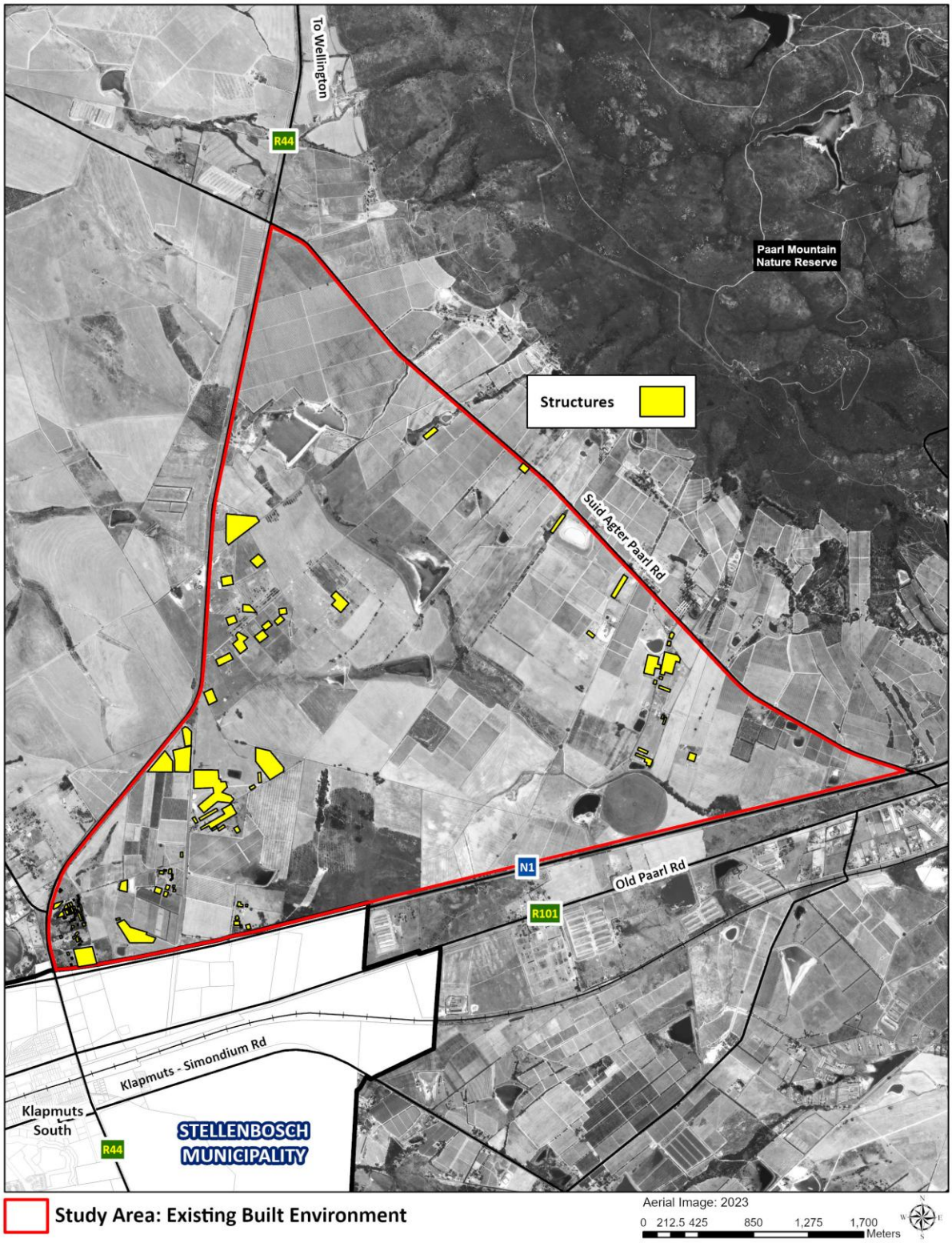
The Bergendal library, church building (Zions NG Sending Gemeente, also used as a community hall) and Bergendal Primary School is located in a cluster east of and abutting the Suid Agter-Paarl Road just outside and abutting the LSDF study area. The Bergendal Primary School is located on the southern corner of Spice Route (i.e. De Leeuwenjagt) and the church building on the eastern corner of Fairview.

The following farms are dissected by the Suid Agter-Paarl Road and crosses the road in a southwestern direction from the Paarl Mountain slopes into the LSDF study area: Diamant, Fairview, Spice Route (Leeuwenjagt), Landskroon, Vrymansfontein and the Ruitersvlei Wine Estate (i.e. Farm 483).

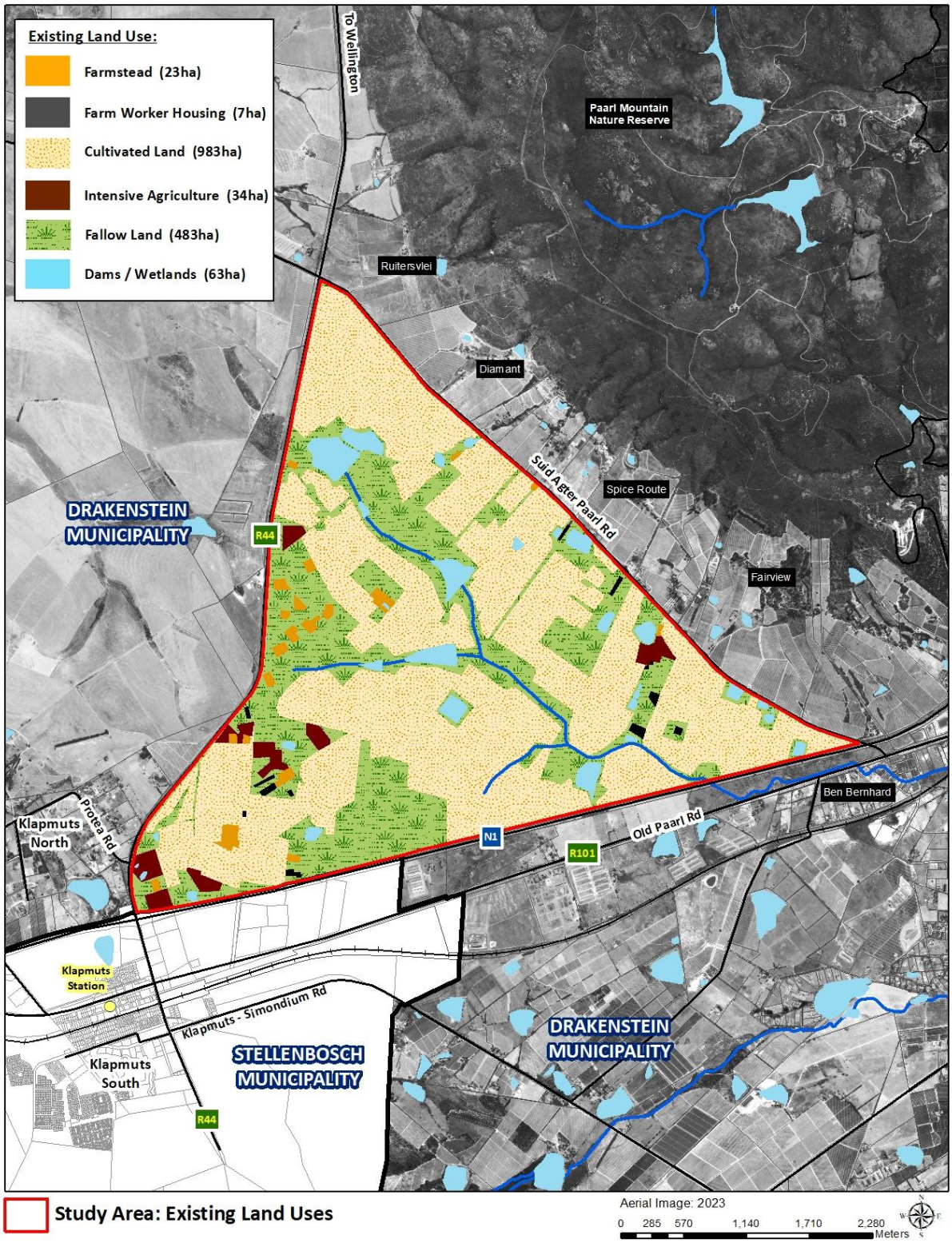
The 'De Uitzicht Estate' (i.e. gentlemans estate) abuts the eastern side of the R44 halfway between the R44/N1 intersection and the R44/Suid Agter-Paarl Road intersection. This estate comprises of ten smallholdings varying between ±6.2 hectares and ±7.8 hectares in extent. Refer to Map 3.7 below illustrating the existing structures in the study area, whilst Map 3.8 below indicates the existing land uses in the study area.

3.3.2 Planned built environment

Within the Klapmuts North area, Drakenstein Municipality facilitated the alienation of approximately 190ha of vacant land to Heineken Breweries in order to consolidate their brewery, storage and distribution facilities. The land transaction was made subject to the implementation of certain bulk infrastructure by Heineken Breweries.



Map 3.7: Existing built environment in the LSDF study area.



Map 3.8: Existing land uses in the LSDF study area.

Subsequent to the aforementioned land transaction, the Municipality has been inundated with requests and enquiries from numerous prominent businesses who intend to relocate to the Klapmuts North area. The aforementioned phenomenon has resulted in a situation where Heineken Breweries can partner with various developers and businesses to implement the required bulk infrastructure.

Ben Bernhard area is developing into a mixed-use corridor along the Old Paarl Road (R101) and N1. From a regional transport and logistics perspective, the corridor is ideally located to accommodate industrial associated uses. The development of this corridor for labour intensive industrial and commercial development is envisioned for the short-and-medium term. The aforementioned goal is already coming to fruition through the submission and approval of several land development applications. It is important to note that pressure for residential development within this corridor is not experienced.

It must be noted that the Caspe Winelands Airport is less than 15km away from the study area. The planned airport expansions will have a significant impact on the study area.

Refer to Map 3.9 below indicating the planned development around the LSDF study area.

3.4 Municipal Services

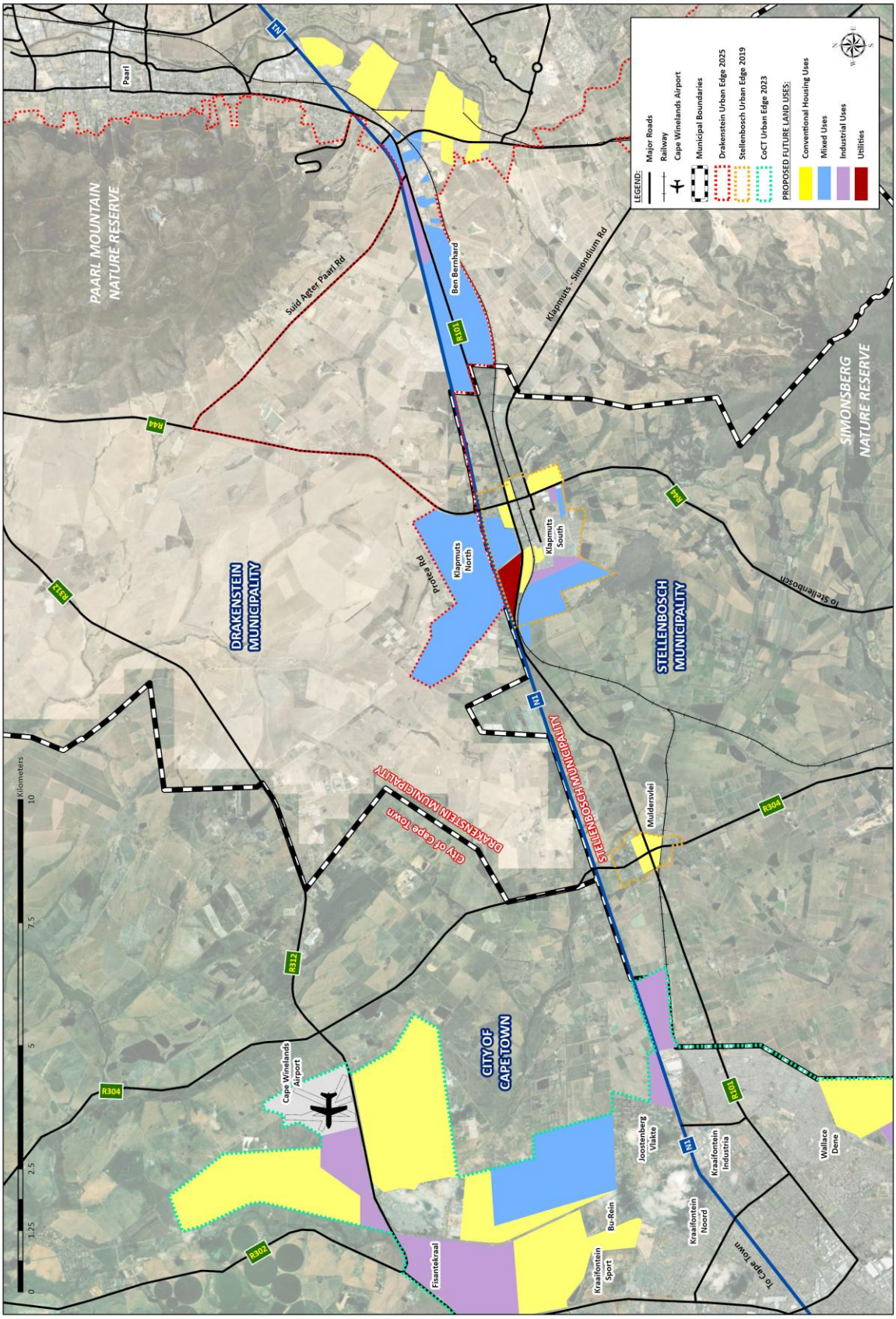
3.4.1 Bulk Water Supply

The Water Services Authority for the study area is Drakenstein Municipality. Drakenstein Municipality does not have bulk water infrastructure available in the study area. Within the immediate proximity of the study area, the following bulk water infrastructure exists:

a) The Courtrai Reservoir that is located directly south of Paarl Mountain; and
b) The City of Cape Town's Wemmershoek Bulk Water pipeline that is located along the Old Paarl Road.

3.4.2 Bulk Sewer Network

The Sewer Services Authority for the study area is Drakenstein Municipality. Drakenstein Municipality does not have a bulk sewer system available in the study area.



Regional Map: Future Built Environment (Drakenstein Municipality, Stellenbosch Municipality and the City of Cape Town Metro)

Map 3.9: Planned development in the LSDF study area.

3.4.3 Stormwater

The Van Wyks River, which transverses through the centre of the study area in a south easterly direction, currently plays a major role in stormwater management on the site.

3.4.4 Roads

The study area is regarded as highly accessible due to its proximity in relation to the following roads:

a) The N1 National Road, which is a Class 1 freeway with two lanes per direction. Currently two interchanges link the N1 with the external road network in this vicinity. The Klapmuts interchange links the R44 between Wellington and Stellenbosch, and the Paarl interchange connects Main Road and the R45 with Paarl North and South, respectively;
b) The R44 (Main Road 27), which is a Class 2 Provincial Main Road with one lane per direction and a posted speed limit of 100km/h. Currently shoulders are provided on both sides of the R44. This provincial main road links Strand in the south with Hermon in the north;
c) Suid Agter-Paarl Road (DR1108), which is a Class 3 Provincial Minor Road with one lane per direction. Shoulders are provided on both sides of the road;
d) Anyswortelrug Road (OP5246), which is a Class 4 Provincial Minor Road with one lane per direction. There are no shoulders on the sides of the road.

The existing access points along the R44 and the Suid Agter-Paarl Road are priority-controlled intersections.

3.4.5 Electrical infrastructure

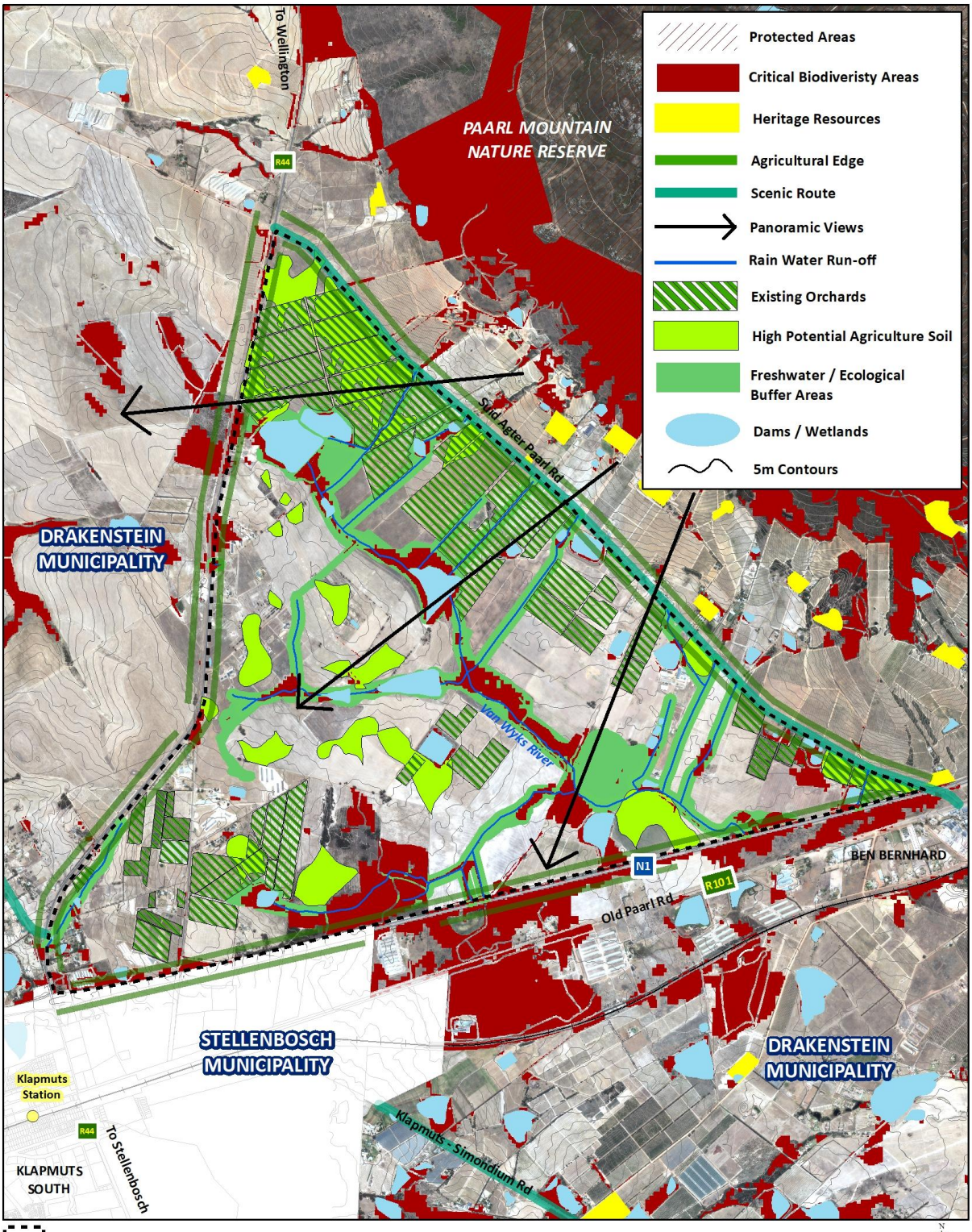
From an electricity perspective, the study area is serviced by Drakenstein Municipality. Currently, the Municipality does not have sufficient capacity to accommodate the development of the study area.

Within the immediate proximity of the study area, the following bulk electricity infrastructure exists:

a) A 132kV overhead line is situated along Old Paarl Road between the Klapmuts Substation and the Safariland Substation; and
b) A 11kV overhead line is situated along the Suid Agter-Paarl Road. The farms within the study area are serviced by this line.

3.5 Constraints and Opportunities

Map 3.10 below indicates the major constraints in the LSDF study area where development can take place and where development is not allowed.



Map 3.10: Constraints Plan for the LSDF study area.

It must be noted that the constraints plan is only a guiding mechanism in order to identify and map out the physical and environmental limitations that may affect land use, development and development applications.

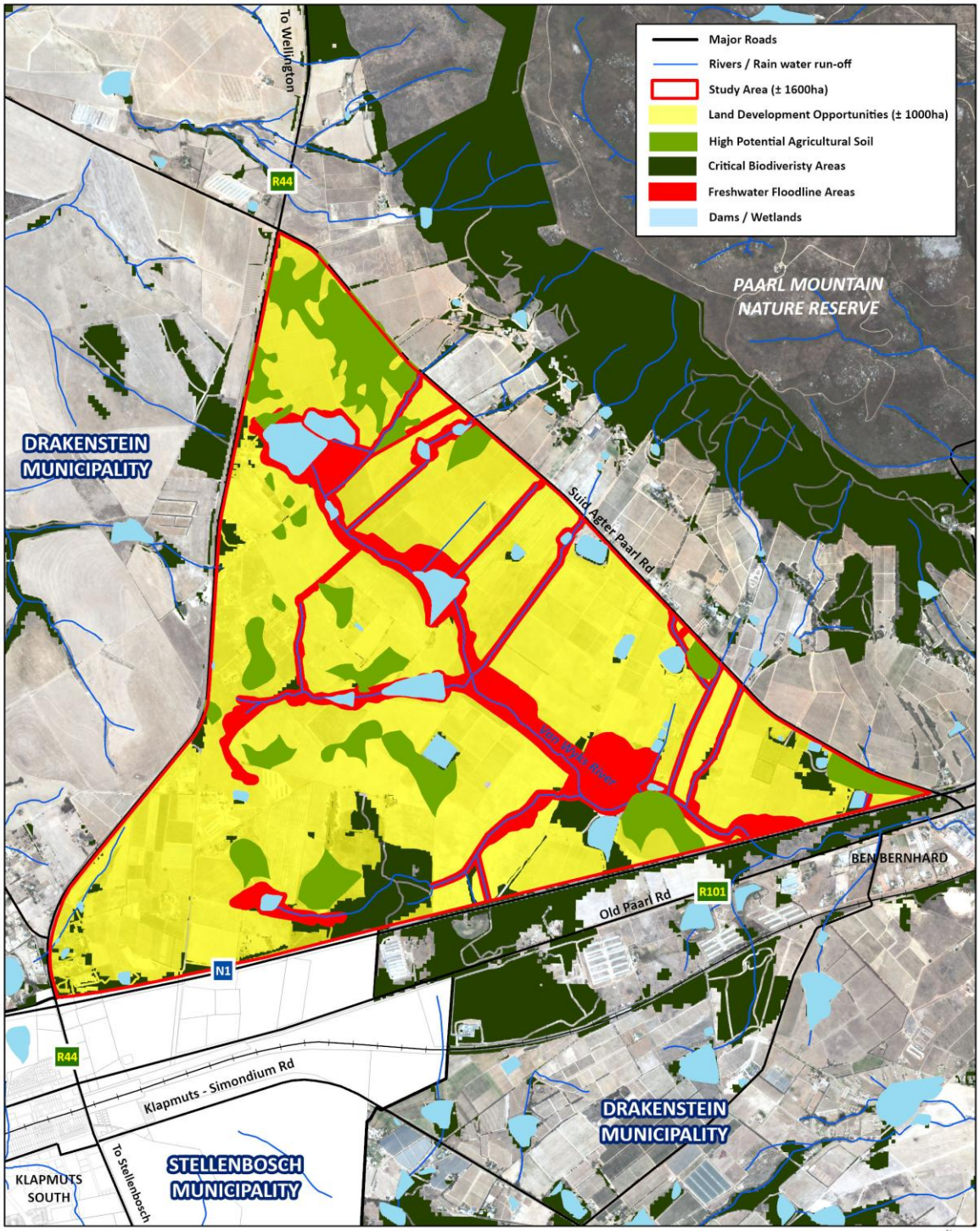
The physical constraints mapped in Map 3.10 will assist developers, planners and decision-makers which areas are restrictive or sensitive due to factors such as high potential agricultural land (green shading); hydrological indicators including the 1:100 year floodline, non-developable 20m ecological buffer and developable (not preferred) 32m Zone of Restriction and dams where EA and WUA are required (blue shading); and medium-high to very-high botanical considerations (light brown shading). The aforementioned restrictive areas must be avoided for any development purposes.

Furthermore, Map 3.10 above indicates the heritage resources, the scenic route (i.e. Suid Agter-Paarl Road) and other visual considerations that must also be taken into consideration with regards to proposed development in the LSDF study area. Map 3.10 also indicates existing orchards in the LSDF study area.

Map 3.11 below, illustrates the opportunities map for the LSDF study area, whereby the land development opportunities are indicated by yellow shading.

Both maps provide guidance where development must be avoided and what areas in the LSDF study area are more desirable for development. Apart from the provisions of this LSDF, it must be remembered that any future development in the LSDF study area must still follow the mandatory land use application process. The aforementioned land use application process may include more ground-truthing and more detailed specialist studies that may further limit development in certain areas of the LSDF study area. In addition, as part of the aforementioned land use planning process approvals will be required from various provincial and national departments.

Furthermore, Chapter 4 below has identified 'Development Objectives' and 'Development Guidelines' in order to successfully realise the development of the LSDF study area. The aforementioned 'Development Objectives' and 'Development Guidelines' must be considered with any development proposal in the LSDF study area in order to guide future development in a sustainable, open, just and orderly manner.



Map 3.11: Opportunities Plan for the LSDF study area.

4 VISION AND GUIDELINES

In lieu of the above situational analysis, this chapter describes and illustrates the vision, development objectives and development guidelines of the LSDF. In addition, parameters are given in order to determine the number of social/community facilities that must be provided as part of the development process.

4.1 Background in formulating a Vision for the LSDF Study Area

Based on the content of the aforementioned Situational Analysis Chapter, it can be deducted that the LSDF study area consists of an extensive agricultural area. The current land uses of the study area consist mainly of farmed land with farm worker housing and farm related buildings, factories, additional dwellings and businesses.

The study area of the LSDF has a valuable rural-agricultural character with accompanying scenic views over the rural landscape. The rural area borders one Scenic Route (Suid-Agter Paarl Road) running along the lower southwestern slopes of Paarl Mountain which forms the eastern boundary of the study area. Furthermore, the study area borders two major Mobility Routes namely, the N1 and R44, forming the southern and western borders of the study area. The LSDF study area can largely be regarded as a greenfield site with very limited urban land uses and/or urban development.

Over the past two decades, the Western Cape Province, especially the City of Cape Town and the Cape Winelands District have become popular destinations for people to live, work and travel. This significant influx of people to the area largely attributed to internal semigration between provinces accompanied investments has translated into substantial urban expansion demands with associated property development pressure. Drakenstein Municipality has been at the forefront of the aforementioned trend having to accommodate a continues growth in the total population.

Currently and in future, both regions to the north of Paarl and south of the N1 are facing mounting pressure to allocate more land for urban development, resulting in a sprawling and decentralised urban landscape that contributes to traffic congestion, encroaches on valuable agricultural land, pressure on environmental resources, and erodes the sense of community and urban character. In addition, to the east of Paarl, the potential for further development is constrained by the presence of high-value agricultural land, and the Du Toitskloof mountains.

Therefore, the aforementioned limitations which characterises the existing spatial development context in Drakenstein Municipality, necessitates an alternative spatial growth area for future urban expansion.

In lieu of the above, the Drakenstein West LSDF study area is envisaged to accommodate the growing population trend and future urban expansion of Drakenstein Municipality. The LSDF study area is regarded, due to its' large size (±1 600 hectares), as essentially a new settlement area, which will roll-out developments over many years in a phased manner. In addition, the study area is strategically located to integrate and link with Paarl, Ben Bernhard and Klapmuts North within the Drakenstein Municipal area and further regionally with the City of Cape Town, Klapmuts South and the major future development of the Cape Winelands Airport .

However, guidance is required to prevent the LSDF study area from becoming a stand-alone, inward-looking settlement area that promotes the creation of a spatially, socially and economically fragmented entity within the Drakenstein Municipal area. Therefore, the planning and development of the LSDF study area must address the economic, social, environmental and infrastructural aspects of urban growth and renewal. Strong emphasis on coordination and collaboration between the various stakeholders, decision-makers, role-players as well as aligning various policies, strategies and projects in order to create a sustainable, liveable, inclusive and resilient urban environment.

Components and principles underpinning future development in the LSDF study area must include:

a) Holistic Planning: A holistic integrated urban development approach considers all facets of urban life, including transportation, housing, public spaces, infrastructure, natural environment, and social/community services to create an urban landscape that is well-balanced;
b) Multi-Stakeholder Collaboration: The approach for development of the area will focus on collaboration and continuous interaction between all the surrounding and applicable municipalities, provincial and national departments, community organisations, businesses, and other stakeholders into the planning process in order to ensure that the needs and aspirations of all residents are considered;
c) Sustainable Design: An approach centred on sustainability by promoting practices that reduces the environmental impact, conserve natural resources and agricultural land, and promote resilience to climate change.

This will include the incorporation of energy-efficient buildings, green infrastructure, nature-based solutions, and eco-friendly transportation options;

d) Social Inclusion: An integrated urban development approach that will prioritise social equity and inclusion, striving to ensure that the urban development benefits all members of the community, including vulnerable or marginalized groups;

e) Compact and Efficient Development: Promotion of the compact and efficient use of land in order to reduce urban sprawl, minimise transportation needs, and promote walkability and public transportation use;

f) Mixed-Use Neighbourhoods: Emphasis on creating a mixed use development areas that combine residential, commercial and recreational areas in close proximity to one another to reduce the need for long commutes, and foster vibrant communities;

g) Transit-Orientated Development: The proposed developments will be designed around public transit routes/nodes to reduce dependency on private vehicles and promote sustainable transportation options;

h) Cultural Conservation: The cultural and heritage significance of the area must be retained, integrated within the urban design and planning in order to ensure the conservation of the Scenic Routes, panoramic views and agricultural-rural landscapes;

i) Economic Development: An important focus is on creating and establishing economic growth by attracting businesses and investments;

j) Resilience: Emphasis to be placed on creating an urban environment that is resilient to natural disasters, climate change and other challenges; and

k) Green Spaces: The incorporation of parks, green corridors and open spaces into the urban development spaces of development proposal must be regarded as crucial to enhance the quality of life experience of the future residents and provide opportunities for recreation.

4.2 Vision for the LSDF Study Area

Taking the aforementioned into consideration, the following vision is put forward for the study area:

'An inclusive and resilient settlement that identifies with Paarl and Drakenstein, as well as the wider region outside municipal borders.'

It is important to note that the Ben Bernhard Industrial Corridor and the Klapmuts North Industrial Node is located directly adjacent to the study area. Therefore any future development within these areas must complement the developmental vision of the study area.

4.3 Development Objectives

In order to successfully realise the Vision for the study area, 'Development Objectives' have been identified. These 'Development Objectives' should always be considered when decisions are made regarding the layout and structure of the development of the settlement area. The following five interlinked 'Development Objectives' are put forward:

a) Inclusivity;
b) Resilience;
c) Aesthetics and Character;
d) Convenience; and
e) Efficiency.

4.3.1 Inclusivity

As stated in the Red Book (The Neighbourhood Planning and Design Guide) (Department of Human Settlements, 2019), an inclusive neighbourhood values all people, embraces diversity and acknowledges the contributions and needs of all. Inclusivity means that residents are presented with options from which to choose. It relates to universal access, which refers to environments that aim to accommodate all users regardless of their age, gender, ability or specific circumstances.

The overwhelming majority of settlements within South Africa, including Drakenstein Municipality is marred by the remnants of historical planning practices in the form of unjust social, economic and ecological places and neighbourhoods.

Therefore, the layout and structure of a neighbourhood should encourage and facilitate inclusivity by, for instance (Department of Human Settlements, 2019):

a) Allowing all residents to participate in their daily activities, including specific cultural, religious and traditional requirements;
b) Making provision for supporting homeless and indigent residents;

c) Creating an environment that accommodates all and allows residents to move around with relative ease by applying universal (inclusive) design principles; and
d) Promoting environments that provide a range of options, so that people do not have 'either/or' choices but rather choices between options that they feel comfortable with.

4.3.2 Resilience

Resilience refers to the capacity of a settlement/neighbourhood to bounce back from and adapt to various shocks and stresses, such as natural disasters, economic downturns, and social challenges[1]. Building a greater sense of connection to the people and places where we live is important. Resilient communities/neighbourhoods proactively prepare for and respond to these changes and challenges while also improving their overall quality of life and well-being[2].

In recent years, Drakenstein Municipality has been exposed to bouts of droughts, fires, the COVID-19 epidemic, and intense flooding that has impacted groundwater levels, availability of potable water, a drop in agricultural crop yields, property damage, loss of life, closure of numerous roads, etc. In addition, climate variability due to climate change will lead to increased frequency and intensity of extreme weather events in Drakenstein Municipality.

Neighbourhoods are subject to change over time. Therefore, it is better to anticipate change rather than merely respond to it, the ways in which a neighbourhood may be required to change should be anticipated and planned. The layout and structure of a new development should enhance the neighbourhood's capacity to adapt to change. It should also contribute to the creation of resilient settlements, for example through the provision of essential services and facilities, dependable, robust and well-maintained infrastructure and reliable movement networks (Department of Human Settlements, 2019).

4.3.3 Aesthetics and Character

Residents spend a great deal of time in their individual neighbourhoods and often identify more strongly with the neighbourhood than with the settlement as a whole.

[1] www.e-zihurat.com/en/blog/urban-resilience-sustainable-cities/
[2] www.resilientneighbourhoods.ca

An attractive, aesthetic pleasing physical environment could add to the quality of the neighbourhood. A characterful neighbourhood is more pleasant and interesting for residents and visitors and gives it a unique identity (Department of Human Settlements, 2019).

The visual and sensory characteristics of neighbourhoods enhances the beauty and cultural significance of the urban space. It integrates architecture, street and urban design, green spaces, natural features, etc. to create engaging and liveable places. Understanding aesthetics and character helps develop more attractive, functional and sustainable urban areas, contributing to improved quality of life for residents.

Drakenstein Municipality has a unique sense of place, and the LSDF study area is characterised by the Van Wyks River and the 1:100-year flood line, Suid-Agter Paarl Road, the Scenic Route and Mobility Routes bordering the LSDF study area, and vistas towards the Paardeberg, Simonsberg, Paarl Mountains, Klapmutskop and agricultural-rural landscapes.

Neighbourhoods with good aesthetic qualities and a pleasant character contribute to people feeling comfortable and safe. It is essential to consider the following when making decisions regarding the layout and structure of a development (Department of Human Settlements, 2019):

a) Acknowledge the local context and identify features that could be incorporated into a development to create a distinct character or identity;
b) Recognise traditional, cultural or religious views and customs, and sensitively incorporate places of significance, natural and cultural assets, and heritage sites into a development where appropriate;
c) Enhance the legibility of an area by helping people to orientate themselves, for instance through the use of a street network that is easy to understand and the incorporation of structuring elements such as landmarks, vistas and other distinct natural or built environmental features; and
d) Pay special attention to the interaction between open spaces and the buildings shaping these spaces and recognise what can be achieved through creative architecture and the innovative use of building materials, paving, landscaping and so forth to create distinctive, attractive and vibrant outdoor areas with a sense of place.

4.3.4 Convenience

According to the Department of Human Settlements (2019), neighbourhoods that are convenient allow residents to conduct daily activities efficiently, that is with ease and without undue delays. This means that services, retail facilities and public amenities, for instance, should be easily accessible.

Access lies at the heart of convenience and is one of the main factors that influence the location, growth and functions of neighbourhoods. The object of convenience is understood in the form of various economic, social and recreational amenities to be given to the residents.

Due to past injustices and poor spatial planning, accessibility to services was for many residents in Drakenstein Municipality not convenient and/or available.
The layout and structure of a new development could contribute to creating a convenient environment in several ways, for instance by:

a) Providing an interconnected network of streets that provide people with a choice of routes that are safe, efficient and pleasant to use whether they are walking, cycling or driving;
b) Creating permeable neighbourhoods by providing frequent connections between existing and new streets and pathways; and
c) Linking social facilities with movement systems, in order for people to walk, cycle and use different transport modes to access economic opportunities, community, education and healthcare facilities, commercial and entertainment areas, open spaces, places of recreation, etc.

4.3.5 Efficiency

The development of neighbourhoods requires the use of a wide range of resources including land, funds, building materials and human capital. Neighbourhoods should be planned and designed to use these resources efficiently (Department of Human Settlements, 2019).

The layout and structure of a neighbourhood could improve resource efficiency by, for instance applying the principles of water sensitive urban design and sustainable drainage systems, encouraging walking and the use of non-motorised transport, and considering long-term maintenance and life-cycle costing during planning and design. Therefore, encourage integrated settlement and neighbourhood planning and design, to promote sound urban planning and design principles and to assist in improving the efficiency of engineering services and infrastructure.

4.4 Development Guidelines

In order to achieve the aforementioned Development Objectives and subsequently realise the Vision for the LSDF study area, Development Guidelines have been formulated. The Development Guidelines provides the necessary design and spatial details that must be considered when assessing development proposals.

As previously stated, the LSDF study area constitutes greenfield sites only. It is therefore not necessary to put forward Development Guidelines for brownfield sites.

A greenfield site can be defined as land or sites on which no urban development has previously taken place[3]. Therefore, it refers to land that is not necessarily constrained by existing buildings or infrastructure. As stated in the Red Book (Department of Human Settlements, 2019), greenfield projects can theoretically accommodate most housing types. The deciding factor would normally be the income level of the anticipated residents of the new development.

Greenfield sites often raise concerns regarding urban sprawl. Decisions regarding housing types would play a role in determining densities and could therefore assist in addressing these concerns.

The Development Guidelines are aligned with the aforementioned Development Objectives.

4.4.1 Inclusivity

a) Community engagements:
   (i) Involve local communities from the beginning of the planning process and consider the social impact of developments on existing communities.

b) Affordable housing and Urban Design:
   (i) Design developments with a mix of affordable housing types, catering to different income levels, and housing preferences;
   (ii) Create functional and sustainable urban open space networks;
   (iii) Incorporate energy-efficient solutions such as solar panels on buildings;

[3] www.eea.europa.ur/help/glossary/eea-glossary/greenfiled-site

(iv) Create a mixed use and mixed-income development projects that include housing, businesses and community spaces to foster social diversity and provide economic opportunities for various income levels;
(v) Design neighbourhoods with pedestrian-friendly streets, cycling infrastructure, and recreational facilities; and
(vi) Ensure that affordable housing is distributed evenly within the development.

c) Environmental Sustainability:
(i) Incorporate green building practices, renewable energy sources, and sustainable materials to ensure that developments are environmentally responsible;
(ii) Maintain open spaces, parks and areas for recreation to ensure access to nature amenities for all residents; and
(iii) Protect and conserve natural ecosystems, wildlife habitats and water resources.

d) Culture and History Conservation:
(i) Acknowledge and conserve the local history and cultural heritage of the area. This includes the preservation of historic buildings, landmark sites; and
(ii) Design public spaces that accommodate a diverse range of cultural, social and recreational activities.

4.4.2 Resilience

a) Environmental Resilience:
(i) Ensuring the conservation of biodiversity, natural habitats, and local ecosystems by considering the site's natural features and integrating green spaces into development proposals;
(ii) Avoid development on good agricultural soils which are essential to maintaining productive landscape qualities;
(iii) Prevent piecemeal subdivision and the fragmentation of farmland into unviable units or 'agricultural islands' resulting in farming activities;
(iv) Designing infrastructure to be adaptable to changing climate conditions, such as flooding, heatwaves, or drought. This includes stormwater management, flood risk reduction, and the use of climate-resilient materials;
(v) Incorporating renewable energy sources, like solar and wind power, and making buildings energy-efficient to reduce dependence on non-renewable resources;

(vi) Protect and conserve CBAs and ESAs extending to the Van Wyk's River and its non-perennial tributaries;
(vii) Limit urban development above the 1:100-year flood line of the Van Wyk's River;
(viii) Promote practices such as crop diversification, soil preparation, and improved irrigation techniques to enhance agricultural resilience;
(ix) Use alternative methods to farm agricultural land close to housing in order to minimise pesticides and herbicides;
(x) Promote green roofs and green belts; and
(xi) Prohibit the privatisation of the Van Wyk's River banks, since this can act as a green park.

b) Social Resilience:
(i) Ensuring that the developments include diverse housing options that can cater for various income groups; and
(ii) Planning for essential services such as healthcare, schools and public transportation to ensure that the area remains liveable and accessible for all residents;

c) Economic Resilience:
(i) Developing mixed-use spaces that offer a combination of residential, commercial, and industrial options, thus reducing dependency on a single economic sector; and
(ii) Ensuring reliable transport links, communication networks, and utilities, so the greenfield sites remain connected to larger economic systems and can adapt to changes in demand.

d) Climate Resilience and Adaptation:
(i) Evaluate the development site's vulnerability to flooding, especially in the 1:100-year flood line area. Implement flood prevention measures like stormwater management, green infrastructure, and flood barriers. Create buffer zones and/or wetland habitats to absorb excess water;
(ii) Employ strategies like rainwater harvesting and sustainable drainage systems to reduce water wastage and improve resilience during droughts or water scarcity;
(iii) Reduce the 'urban heat island effect' by incorporating urban cooling strategies such as tree planting, green roofs, cool pavements, use materials with high albedo (reflectivity) for pavements and roofs, and shaded public areas;
(iv) Incorporate climate adaptation strategies, such as heat resistant materials, green roods, and the planting of indigenous plants/vegetation that can withstand extreme weather conditions; and

(v) Design buildings and infrastructure that are energy efficient. This includes solar panels and other energy efficient systems.

By taking an integrated approach that addresses environmental, social, economic and urban aspects, greenfield sites can become resilient assets. Their development not only helps mitigate environmental hazards but also fosters community well-being, economic opportunity, and urban sustainability.

4.4.3 Aesthetics and Character

a) Conservation of the Natural Environment:
   (i) Maintain the natural contours and topography of the land, especially, along rivers and streams (etc. Van Wyk's River and its non-perennial tributaries). This conserves the natural beauty and minimizes the environmental impact of development;
   (ii) Increase infiltration capacity in river corridors and wetlands through water sensitive urban design practices and sustainable urban drainage systems such as permeable paving, sustainable wate storage systems and appropriate landscaping;
   (iii) Use indigenous plant species to blend developments into the surrounding landscape, maintaining ecological balance and supporting local fauna and flora;
   (iv) Ecosystem management, catchment management, pollution control, alien vegetation control;
   (v) Include parks, green corridors, and community gardens that enhance the sense of tranquillity and connection to nature;
   (vi) Well-designed walking or biking trails through the site can promote outdoor activity while preserving natural spaces. These pathways should encourage exploration while minimizing disruption to the environment; and
   (vii) Aesthetically pleasing and environmentally friendly approaches, like bio-swales and rain gardens, can be integrated into site planning for efficient water management.

b) Design and Urban Layout Characteristics:
   (i) If the site has cultural or historical significance, such as old buildings, or traditional agricultural landscapes, any development should preserve and honour these elements;
   (ii) Provide and maintain sidewalk paving, hard and soft landscaping (paving – including patterns, murals, colours, etc.), plants, trees, shrubs, street furniture (seating and benches), crossings, bins, LED lighting, etc.

(iii) Develop layouts that capitalize on the stunning views of the natural surroundings—whether it's a mountain range, a river, or open fields;
(iv) Use strategic landscaping or architectural elements to maintain the visual connections with the landscape;
(v) Ensure that new developments are of an appropriate scale and design to complement the rural/agricultural character of the area, its surrounds and its settings;
(vi) Support the protection/conservation of the views relating to the Scenic Views (Suid-Agter Paarl Road) overlooking the rural-agricultural landscape towards Klapmuts and Windmeul. In addition conserve the scenic and panoramic view from the LSDF study area towards Paardeberg, Paarl Mountain and Simonsberg;
(vii) Choose architectural styles that reflect or complement the local environment. For example, rural-inspired designs with natural materials like wood, stone, and glass allow buildings to blend harmoniously with their surroundings;
(viii) The aesthetic appeal of sites can be enhanced by using sustainable and environmentally friendly construction materials and energy-efficient designs, creating buildings that look forward to the future while respecting the past;
(ix) Features like green roofs, solar panels, and rainwater harvesting can be both practical and beautiful, adding a modern character;
(x) Public spaces that encourage social interaction can be designed with a harmonious blend of nature and modern infrastructure; and
(xi) Consider integrating art that reflects the local culture, nature, or history, contributing to a unique character.

c) Cultural and Community Integration:
(i) Incorporate local traditions and crafts into the design of public spaces, buildings and even streetscapes. This connection to local culture can provide a sense of belonging for the community;
(ii) Create focal points for public events, markets, and social gatherings. This may include plazas, amphitheatres, or markets that promote a sense of community and activity;
(iii) Design walkable streets and pathways that encourage foot traffic and community interaction. Incorporating wide sidewalks, bike lanes, and outdoor seating areas can add vibrancy to the area; and
(iv) Greenfield developments can feature spaces that are adaptable to multiple uses—community centers, markets, workspaces, and more. Such multi-functional areas can add diversity to the environment, reflecting a modern, fluid use of urban spaces.

By creatively combining these elements, greenfield sites can be transformed into visually appealing and character-driven environments that celebrate both their history and their future potential. The integration of green spaces, community involvement, and respect for the area's history (i.e. winemaking, farming history dating back some centuries, etc.) can make the development a success, giving it a lasting aesthetic and functional appeal.

4.4.4 Convenience

a) Urban Design and Layout Considerations:
   (i) Incorporate mixed-use buildings and areas that allow for residential, retail, commercial, social facilities and business spaces in close proximity, encouraging walkability and reducing vehicular movement;
   (ii) Promote higher density development to reduce urban sprawl and preserve natural areas;
   (iii) Design infrastructure to handle increased rainfall and runoff, such as improved drainage systems and retention basins;
   (iv) Cluster social and community facilities together with commercial and transport land uses;
   (v) Ensure that essential services (schools, medical facilities, civic facilities, shops, businesses, etc.) are strategically located within walking or cycling distance from residential areas;
   (vi) Integrate green infrastructure like rain gardens, permeable pavements, and energy-efficient buildings. Incorporate climate-resilient strategies, such as tree canopies, green roofs, and natural cooling, to improve liveability and comfort;
   (vii) Focus on compact, walkable neighbourhood layouts with smaller blocks and mixed housing options to ensure easy access to public spaces and services; and
   (viii) Design parks, gardens, playgrounds, and other green spaces within easy walking distance of all residential areas. Green spaces should be interwoven into the fabric of the urban environment serving both recreational areas and natural buffers.

b) Sustainability, Safety and Accessibility:
   (i) Implement green infrastructure solutions like stormwater management systems, smart grid technology, and waste sorting and recycling systems to ensure long-term sustainability;

(ii) Plant and maintain urban road plants, trees and shrubs, and use planter and drought-tolerant landscaping on road reserves, sidewalks, centre medians, etc. (including drainage);
(iii) Design streets with clear sight lines, well-lit public spaces, and pedestrian environments that promote natural surveillance;
(iv) Plan for community hubs, cultural centres, and social gathering spaces to promote interaction and inclusivity; and
(v) Create infrastructure that can be easily upgraded or modified to meet changing demands. This might include spaces that can be repurposed, streets that can accommodate future modes of transport or buildings designed with sustainability in mind (e.g. solar panels or energy-efficient systems).

By focusing on these key areas, greenfield sites can be developed into urban environments that are accessible, convenient, sustainable, and conducive to healthy, balanced living.

4.4.5 Efficiency

The assessment of all the constraints and opportunities has estimated that approximately 652ha of the study area should be retained for agricultural purposes. Furthermore, approximately 281ha must be retained for biodiversity purposes. The remainder of the study area (approximately 654ha) is available for residential and commercial development purposes. Based on an assessment of the potential development envelope, it was determined that the following bulk infrastructure will be required to provide services for the study area.

Consideration should also be given to the fact that it is highly improbable that the entire study area will be developed at once. The implementation of bulk infrastructure can therefore occur in a phased manner as the need arises. However, it is important to not loose sight of the complete suite of bulk infrastructure needs to unlock all the developable areas.

Taking the above into consideration, it can be concluded that it is of critical importance that the Municipality update its infrastructure master plans to plan for the implementation of the required bulk infrastructure for the study area.

The following studies were undertaken in the LSDF study area pertaining to the required bulk infrastructure and engineering services:

1) Bigen Africa Services (Pty) Ltd, 2025: Fijnland Development: Engineering Services Report, March 2025 (includes a studies on bulk water, sewer water, roads, stormwater management strategy, irrigation, and electrical); and
2) Bigen Africa Services (Pty) Ltd, 2025: Fijnland Development: Proposed Development Transport Review, April 2025.

a) Water

(i) Water can be supplied from the existing Courtrai Reservoir or from the City of Cape Town's Wemmershoek Bulk Pipeline;
(ii) Based on an annual average daily demand (AADD) of 12,181 kilolitres per day (kl/d), with a 48-hour storage allowance, it is estimated that two 12.5 megalitre (ML) reservoirs will be required;
(iii) A new water connection to the Wemmershoek Pipeline is already planned for the Klapmuts North Industrial Node. A new booster pumpstation, with sump, will pump the water to the new 22.5ML bulk water reservoir at the Klapmuts North Industrial Node. This new reservoir will have sufficient capacity to partially service the study area;
(iv) The existing Courtrai Reservoir has sufficient capacity to service the entire study area. However, only the low-lying areas of the study area is proposed to be serviced by this reservoir. A new bulk water pipeline from the Courtrai Reservoir to the study area will be required;
(v) The Klapmuts North Reservoir will eventually be supplemented by two 12.5ML reservoirs;
(vi) Furthermore, in order to provide greater flexibility and ensure continuous water supply, it is proposed to link the Klapmuts North Reservoir with the Courtrai Reservoir through a new bulk water pipeline and include a zone value;
(vii) Additionally, in order to effectively service the entire study area, new pressure towers with separate reticulation networks will have to be developed to service the high-lying areas of the study area.

b) Sewer

(i) It is estimated that the developable areas will render an annual daily dry weather flow (ADDWF) of 7,466 kilolitres per day (kl/d). A new wastewater treatment plant (WWTP) with a capacity of at least 8ML/day will be required to service the study area;
(ii) The treated effluent could be discharged directly into the Van Wyks River or pumped for irrigation purposes;
(iii) New bulk and link sewer reticulation pipelines to collect sewer and drain towards the WWTP will be required.

c) Stormwater

(i) A Sustainable Drainage System (SuDS) is recommended for the study area. The system should consist of rainwater harvesting, green roofs, detention ponds, retention ponds, grass swales, constructed wetlands, and roads and piped systems;

(ii) Rainwater harvesting from the roofs of houses, combined with grey water from the houses could be used for irrigation around properties;

(iii) Additional stormwater run-off will be collected (via roads, channels, swales, pipes and permeable paving) into either detention ponds or retention ponds;

(iv) The collected stormwater can be circulated to agricultural areas or a series of ponds into a larger retention pond that collects stormwater for a large basin;

(v) Furthermore, the existing dams within the study area must be assessed to possibly form part of the SuDS.

d) Road

(i) The major road infrastructure required to service the study area include a new interchange and off-ramp along the N1. The implementation of the interchange will allow for the construction of a future road link through the study area;

(ii) In addition the R45 will require re-alignment and rehabilitation;

(iii) It will be important to limit the number of access points on the R44 and the Suid Agter-Paarl Road. The existing access point will have to be consolidated and the Western Cape Government: Access Management Guidelines, 2020, must be utilised to implement new access points;

(iv) According to the aforementioned guidelines, for the R44, the minimum required access spacing is 1,200m for signalised intersections and 305m for unsignalised intersections. For the Suid Agter-Paarl Road, the minimum required access spacing in 800m for signalised intersections and 260 for unsignalised intersections.

e) Electricity

(i) In order to service the entire study area, a new centrally located 132kV/66kV/11kV Step Down Substation will be required;

(ii) In addition, Eskom will require a 132kv Bulk Metering yard directly adjacent to the new substation;

(iii) A new link line from the existing 132kV overhead line, which is situated along Old Paarl Road, must be introduced to connect the new substation;

(iv) It will be possible to, in the interim, utilise the existing 11kV overhead line, which is located along the Suid Agter-Paarl.

(v) Should the interim solution be considered and a capacity constraint exists, prior to the completion of the required substation, a new 66kV feeder bay can be constructed at Suid-End Substation and the network be extended to the required portion of the study area along. This will require the extension of the electrical network along Old Paarl Road and then crossing the N1. A new 11kvV switching station will finally be required to serve the specific area of the study area.

4.5 Determining the demand of required Social/Community Facilities in the LSDF study area

As stated above, the LSDF study area is a greenfield site and any future development must not only accommodate residential, commercial, industrial and/or retail development but must also include the provision of the required social and community facilities such as educational, civic, cultural, health, recreation, etc. facilities.

Access to social/community facilities is a key characteristic of positive settlements and neighbourhoods. A social/community facility is any place where a social (or public) service is offered by the government or private and non-profit organisation. The Red Book (Department of Human Settlements, 2019) outlines the following factors to consider when making more detailed decisions regarding the provision of housing and social services:

a) The characteristics of the development, including the nature of the proposed neighbourhood, the anticipated number of residents and specific features that would have to be incorporated or requirements that would have to be met;
b) The existing features of the site and immediate surroundings (built and natural environment) as determined by the physical location of the proposed development; and
c) Options related to housing and social/community facilities that are available for consideration.

As stated by the Red Book (Department of Human Settlements, 2019), three inter-related aspects should be considered when making decisions regarding the size and distribution of social/community facilities, namely population thresholds, access to distances and population densities.

Population thresholds refer to the size of the population that could be effectively served by a specific social facility. Therefore, the population size of a proposed development is one of the factors that would influence decisions about the number, the size and the range of social/community facilities that may have to be provided.

Another aspect to be considered is the access distance, which is the distance that people need to travel to reach a social/community facility. Access distances differ depending on the type of facility. Access distances are influenced by a range of factors including the topography (e.g. flat or hilly terrain), street layout (e.g. permeable or impermeable for pedestrians), the availability of public transport, and the setting of the area (rural).

Social/community facilities that are accessed frequently by a large portion of the community should ideally be located relatively close to the target population to ensure short travelling distances and walkability for potential users of the service.

Population density should also be considered when making decisions regarding the provision of social/community facilities. Population density refers to the number of people in an area. It has an impact on population thresholds and access distances and should influence the spatial distribution and size of social/community facilities.

4.5.1 Calculating the number and type of Social/Community facilities required

The number of social/community facilities that are required/recommended in the LSDF study area are calculated via the number of the estimated new residential units/dwellings to be proposed/planned. The number of residential units/dwellings are calculated on the density of dwelling units per hectare as per a preferred development density scenario.

The 'development density scenario' refers to a proposed development planned within the LSDF study area (for example a development proposal with a density of 50 dwelling units per hectare over an area measuring ±1 600 hectares in extent) (refer to Annexure A below).

The estimated population of the LSDF study area is then calculated by multiplying the dwelling units with the factor of '3.6' (the estimated average household size of 3.6, as calculated by Statistics South Africa Census, 2022)

4.5.2 Parameters used to Determine/Calculate the required Social and Community Facilities

The parameters used to determine the required social and community facilities is referenced from the Department of Environmental Affairs and Development Planning's (DEADP)'s '*Development Parameters: A Quick Reference for the Provision of Facilities within Settlements of the Western Cape'* document.

Annexure A below refers to a table that illustrates an example of a development scenario comprising of ±80 000 units with an estimated population of ±288 000 people (with a density of 50 dwelling units per hectare). Therefore, the required social/community facilities are determined per the number of residential units that are proposed by a specific development scenario.

4.5.3 General Explanation of the Table on the number of Social and Community Facilities

As stated above, the table under Annexure A indicates the Social and Community facilities that are required for a development scenario example (in this case a development scenario consisting of ±80 000 units). In order to understand the calculations indicated in the table under Annexure A, an explanation is hereby given.

The Social and Community table consists of four columns which from left to right list the following:

a) Different types of social and community facilities;
b) The provision threshold guideline (in terms of the number of dwelling units and population) for the provision of a social and community facility;
c) The example of the development growth density scenario and the number of social and community facilities required in terms of the specific dwelling unit growth; and
d) A guideline for the extent of the land to be provided except for the development scenario example in which the size of the building is applicable.

The following assumptions are applied to generate the data as reflected in the Annexure A indicating the number of social and community facilities required for the future residential development example and subsequent estimated population growth:

(i) This is an example of a medium to high density development scenario within the LSDF study area consisting of ±80 000 dwelling units;
(ii) The number of new dwelling units per hectare threshold and not the population size threshold is used to determine the number of social/community facilities required;
(iii) The estimated average household size of 3.6, as calculated by Statistics South Africa Census, 2022, is used to determine/estimate the population for the development scenario;
(iv) Some of the thresholds for social/community facilities are not reached in terms of the estimated dwelling units, and therefore are not required as indicated in the table;
(v) The estimated number of the social/community facilities has been rounded up or down to provide a whole number of social/community facilities;
(vi) Where a range in the threshold is recommended, this range is reflected in the number of social/community facilities required, as well; and
(vii) The estimated building size is doubled to make provision for aspects such as parking, open areas, landscaping, building lines, etc.

5 REVIEW, MONITORING AND AMENDMENT OF THE LSDF

5.1 Implementation Considerations

Urban management is a central issue in urban development. Urban management refers to the planning, coordination, implementation, and regulation of growth and transformation in urban areas. It involves balancing infrastructure needs, housing, economic development, environmental sustainability, and social equity fast-changing urban environments.

The proposed future urban management response of the study area must be based on three strategies:

5.1.1 Effective Planning: This includes information management, monitoring and trends identification, and alignment with the Municipality's policies. Therefore, it is important to identify and profile urban management areas, establish baseline information, and define responses and sequence of interventions;

5.1.1 Effective Service Delivery: This refers to inspections, special operations, responses on services breakdowns, infrastructure provision, and maintenance coordination. Furthermore, this entails an implementation programme consisting of operational plans and action plans in order to provide the necessary service delivery; and

5.1.2 Effective Communication: This includes stakeholder engagements and management but also the promotion and support of community and place-making events and activities.

Stakeholders in the urban management of the LSDF study area include Drakenstein Municipality, the landowners, the private sector, NGOs, various interest groups, etc. whereby the decision-making process is participatory and inclusive of all groups in the community.

Therefore, the urban management process should be collaborative and negotiated among stakeholders. Other principles of the urban management process include accountability, transparency, responsiveness, efficiency, the rule of the law, and consensus decision-making.

Taking the above into consideration, it is recommended that an urban management committee be established for the study area.

5.2 Monitoring and Review of the LSDF

The Municipality must review the LSDF at least every five years in terms of its performance and changing circumstances.

In order to assist with the gathering and assessing of implementation, management and performance information, a guideline checklist has been developed. This checklist must be complete when new urban developments area proposed.

The Guideline Checklist is attached as Annexure B to this LSDF.

5.3 Amendment of the LSDF

Based on the findings of the aforementioned review of the LSDF, the Municipality may decide to amend the LSDF. Changing circumstances can be regarded as a general directive that is uncontrollable to the Municipality that may have a substantive impact on municipal policies, plans and frameworks and could include the following:

5.3.1 Changes in legislation, policy, norms, and standards;

5.3.2 Disasters (e.g., floods, droughts, pandemics, etc.); and

5.3.3 Thresholds being reached in terms of certain parameters (e.g., air quality standards, water quality standards, water supply levels, etc.,).

6 CONCLUSION

The Drakenstein West LSDF strives to preserve the character of the area, while simultaneously proposing development objectives and guidelines in order guide future planning in a direction that is sustainable and resilient.

Through the application of above-mentioned development tools, it is envisioned that the study area will become an integrated urban area that is integrated with the natural resources, heritage resources, urban landscape and the surrounding area.

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ANENXURE A

EXAMPLE OF TABLE FOR THE REQUIRED SOCIAL/COMMUNITY FACILITIES IN TERMS OF THE ESTIMATED DWELLING UNITS (BASED ON A DEVELOPMENT SCENARIO) AS CALCULATED BY APPLYING THE DEADP DEVELOPMENT PARAMETERS

DEADP DEVELOPMENT PARAMETERS FOR THE RECOMMENDED PROVISION OF SOCIAL & COMMUNITY FACILITIES (50 dwelling units per hectare)			
Type of Social and Community Facility	**Recommended Provision Threshold (per units and population [residents])**	**Development Scenario: 50 du/ha X 1600 ha = 80 000 Units** **Population: 3.6 residents per dwelling unit X 80 000 Units = 288 000** Notes: 1. Residential Units are used to determine the recommended number of Social/Community Facilities; 2. The calculated number of facilities below are rounded up or down; and **3.** For '*Parks'* & *'Play Lots'* : The total extent for each type of park is included in brackets.	**Recommended Erf size for each facility (ha = hectares)** ***building size when no Erf extent is recommended.** (Double the building size for parking, open areas, landscaping, building lines, etc.)
Pre-Primary Schools & ECD Centres	900 units (3 600 residents) - high income areas 600 units (2 400 residents) - low income areas	89 133	130m^2 - 500m^2*****
Primary Schools	1 000 units (3 000-4 000 residents)	80	2.8 ha (with sport fields) 1.4 ha (without sport fields) maximum 1 100 learners
Secondary Schools	2 500 units (10 000 residents) –metropolitan areas 1 500 units (6 000 residents) – non-metropolitan areas	32 53	2.6 ha (max. 1 200 learners)
Colleges, skills centres, education centres, etc.	37 500 units (150 000 residents)	2	Unspecified
Traditional Universities	250 000 units (1 000 000 residents)	Not at threshold	Not applicable

Tertiary Hospitals	600 000 units (2 400 000 residents)	Not at threshold	Not applicable
Regional Hospitals	442 500 units (1 770 000 residents)	Not at threshold	Not applicable
District Hospitals	300 000 - 900 000 units (75 000 - 225 000 residents)	Not at threshold	Not applicable
General Hospitals	112 500 units (450 000 residents)	1 (0.7)	250m^2 – 300m^2 per bed
Local Public Clinics / Community Health Centre	5 000 units (20 000 residents) - non-metropolitan areas 30 000 units (120 000 people) – larger metropolitan areas	16 3 (2.6)	0.5 ha/20 000 residents*
Mobile Clinics	1 250 units (5 000 residents)	Not required (health services provided by public clinics above)	Not applicable
Children's Homes	15 000 - 10 500 units (42 000 - 60 000 residents)	5 – 8 (7.6)	2 ha
Homes for the aged	16 250 units (65 000 residents)	5	Unspecified
Community Halls/Centres	6 250 units (10 000 residents) -metropolitan context 2 500 units (25 000 residents) – non-metropolitan context	13 32	2 000m^2 - 5 000m^2 (0.2 – 0.5 ha)
Libraries	17 500 (70 000 residents) – metropolitan context 2 500 units (10 000 residents) – non-metropolitan context	5 (4.57) 32	1 000m^2 - 2 000m^2 (0.1 – 0.2 ha)
Places of Worship	500 units (2 000 residents)	160 (dependant on religious diversity, practice and adherence)	150m^2 - 3000m^2
Municipal Offices	12 500 units (50 000 residents)	6	3000m^2 (minimum)
Post Offices	2 500 units (10 000 residents)	32	100m^2 (minimum)*
Police Stations	15 000 units (60 000 residents) – metropolitan contexts 6 250 units (25 000 residents) – non-metropolitan contexts	5 13	0.1 – 1 ha
Fire Stations	15 000 units (60 000 residents)	5	1.2 ha
Magistrates' Courts	Determined by the Department of Justice	Determined by the Department of Justice	0.6 – 2.3 ha
High Courts	50 000 units (200 000 residents)	2 (1.6)	0.5 – 1.2 ha

Cemeteries (2 000 graves/ha)	25 000 units (100 000 residents) 1 250 units (5 000 residents)	3 64	17.2 ha 0.88 ha
Small Neighbourhood Play Lots	0.9 ha per 250 units (1 000 residents)	320 (0.9 ha X 320 = 288 ha)	400m^2 - 2 ha/lot
Community/Functional Play Parks	1.8 ha per 500 units (2 000 residents) 9 ha per 2 500 units (10 000 residents) 18 ha per 5 000 units (20 000 residents)	160 (1.8 ha X 160 = 288 ha) 32 (9 ha X 32 = 288 ha) 16 (18 ha X 16 = 288 ha)	1.5 – 12 ha/park
Regional Parks	5 000 units (20 000 residents)	16	2 ha - 40 ha/park
Community Sport Fields (including smaller Stadia)	15 000 - 1 250 units (60 000 - 5 000 residents)	5 - 64	0.2 – 2 ha/per field
Stadiums	25 000 units (100 000 residents)	3 (parking bays at 3.5% of the seating capacity)	3 ha

SOURCE DOCUMENTS USED FOR THE COMPILATION OF THE DEADP SOCIAL AND COMMUNITY THRESHOLD/PARAMETER GUIDELINES

1. **Steering Committee members for the compilation of this document were primarily senior officials of the Environmental and Land Management Chief Directorate of DEADP**
2. **'*Red Book*' – Guidelines for Human Settlement Planning and Design (CSIR 2012, under patronage of Department of Housing)**
3. **Guidelines for the Provision of Social Facilities in South African Settlements (CSIR, 2012)**
4. **Summary Guidelines and Standards for the Planning of Social Facilities and Recreational Spaces in Metropolitan Areas (CSIR, 2012)**
5. **Schedule of Standards and Guidelines for the Spatial Provision and Development of Social Facilities, Public Institutions and Public Open Space in Cape Town (CSIR, 2007)**
6. **Manual for providing Spatial Guidelines for the Consideration of Applications (compiled by DEADP in terms of LUPO)**
7. **Various zoning scheme regulations, parking by-laws and parking policies**

ANENXURE B
DEVELOPMENT GUIDELINE CHECKLIST

Serial No.	Development Objective	Development Objective Subsection	Development Guideline	Check mark or cross
1	Inclusivity	a) Community engagements	(i) Involve local communities from the beginning of the planning process and consider the social impact of developments on existing communities.	
		b) Affordable housing and Urban Design:	(i) Design developments with a mix of affordable housing types, catering to different income levels, and housing preferences;	
			(ii) Create functional and sustainable urban open space networks;	
			(iii) Incorporate energy-efficient solutions such as solar panels on buildings;	
			(iv) Create a mixed use and mixed-income development projects that include housing, businesses and community spaces to foster social diversity and provide economic opportunities for various income levels;	
			(v) Design neighbourhoods with pedestrian-friendly streets, cycling infrastructure, and recreational facilities; and	
			(vi) Ensure that affordable housing is distributed evenly within the development.	
		c) Environmental Sustainability	(i) Incorporate green building practices, renewable energy sources, and sustainable materials to ensure that developments are environmentally responsible;	
			(ii) Maintain open spaces, parks and areas for recreation to ensure access to nature amenities for all residents; and	
			(iii) Protect and conserve natural ecosystems, wildlife habitats and water resources.	
		d) Culture and History Conservation	(i) Acknowledge and conserve the local history and cultural heritage of the area. This includes the preservation of historic buildings, landmark sites; and	
			(ii) Design public spaces that accommodate a diverse range of cultural, social and recreational activities.	
2	Resilience	a) Environmental Resilience	(i) Ensuring the conservation of biodiversity, natural habitats, and local ecosystems by considering the site's natural features and integrating green spaces into development proposals;	
			(ii) Avoid development on good agricultural soils which are essential to maintaining productive landscape qualities;	
			(iii) Prevent piecemeal subdivision and the fragmentation of farmland into unviable units or 'agricultural islands' resulting in farming activities;	
			(iv) Designing infrastructure to be adaptable to changing climate conditions, such as flooding,	

			heatwaves, or drought. This includes stormwater management, flood risk reduction, and the use of climate-resilient materials;	
			(v) Incorporating renewable energy sources, like solar and wind power, and making buildings energy-efficient to reduce dependence on non-renewable resources;	
			(vi) Protect and conserve CBAs and ESAs extending to the Van Wyk's River and its non-perennial tributaries;	
			(vii) Limit urban development above the 1:100-year flood line of the Van Wyk's River;	
			(viii) Promote practices such as crop diversification, soil preparation, and improved irrigation techniques to enhance agricultural resilience;	
			(ix) Use alternative methods to farm agricultural land close to housing in order to minimise pesticides and herbicides;	
			(x) Promote green roofs and green belts; and	
			(xi) Prohibit the privatisation of the Van Wyk's River banks, since this can act as a green park.	
		b) Social Resilience	(i) Ensuring that the developments include diverse housing options that can cater for various income groups; and	
			(ii) Planning for essential services such as healthcare, schools and public transportation to ensure that the area remains liveable and accessible for all residents;	
		c) Economic Resilience	(i) Developing mixed-use spaces that offer a combination of residential, commercial, and industrial options, thus reducing dependency on a single economic sector; and	
			(ii) Ensuring reliable transport links, communication networks, and utilities, so the greenfield sites remain connected to larger economic systems and can adapt to changes in demand.	
		d) Climate Resilience and Adaptation	(i) Evaluate the development site's vulnerability to flooding, especially in the 1:100-year flood line area. Implement flood prevention measures like stormwater management, green infrastructure, and flood barriers. Create buffer zones and/or wetland habitats to absorb excess water;	
			(ii) Employ strategies like rainwater harvesting and sustainable drainage systems to reduce water wastage and improve resilience during droughts or water scarcity; (iii) Reduce the 'urban heat island effect' by incorporating urban cooling strategies such as tree planting, green roofs, cool pavements, use materials with high albedo (reflectivity) for pavements and roofs, and shaded public areas;	
			(iv) Incorporate climate adaptation strategies, such as heat resistant materials, green roods, and the	

			planting of indigenous plants/vegetation that can withstand extreme weather conditions; and	
			(v) Design buildings and infrastructure that are energy efficient. This includes solar panels and other energy efficient systems.	
3	Aesthetics and Character	a) Conservation of the Natural Environment:	(i) Maintain the natural contours and topography of the land, especially, along rivers and streams (etc. Van Wyk's River and its non-perennial tributaries). This conserves the natural beauty and minimizes the environmental impact of development;	
			(ii) Increase infiltration capacity in river corridors and wetlands through water sensitive urban design practices and sustainable urban drainage systems such as permeable paving, sustainable wate storage systems and appropriate landscaping;	
			(iii) Use indigenous plant species to blend developments into the surrounding landscape, maintaining ecological balance and supporting local fauna and flora;	
			(iv) Ecosystem management, catchment management, pollution control, alien vegetation control;	
			(v) Include parks, green corridors, and community gardens that enhance the sense of tranquillity and connection to nature;	
			(vi) Well-designed walking or biking trails through the site can promote outdoor activity while preserving natural spaces. These pathways should encourage exploration while minimizing disruption to the environment; and	
			(vii) Aesthetically pleasing and environmentally friendly approaches, like bio-swales and rain gardens, can be integrated into site planning for efficient water management.	
		b) Design and Urban Layout Characteristics	(i) If the site has cultural or historical significance, such as old buildings, or traditional agricultural landscapes, any development should preserve and honour these elements;	
			(ii) Provide and maintain sidewalk paving, hard and soft landscaping (paving – including patterns, murals, colours, etc.), plants, trees, shrubs, street furniture (seating and benches), crossings, bins, LED lighting, etc. (iii) Develop layouts that capitalize on the stunning views of the natural surroundings—whether it's a mountain range, a river, or open fields;	
			(iv) Use strategic landscaping or architectural elements to maintain the visual connections with the landscape;	
			(v) Ensure that new developments are of an appropriate scale and design to complement the rural/agricultural character of the area, its surrounds and its settings;	
			(vi) Support the protection/conservation of the views relating to the Scenic Views (Suid-Agter Paarl	

			Road) overlooking the rural-agricultural landscape towards Klapmuts and Windmeul. In addition conserve the scenic and panoramic view from the LSDF study area towards Paardeberg, Paarl Mountain and Simonsberg;	
			(vii) Choose architectural styles that reflect or complement the local environment. For example, rural-inspired designs with natural materials like wood, stone, and glass allow buildings to blend harmoniously with their surroundings;	
			(viii) The aesthetic appeal of sites can be enhanced by using sustainable and environmentally friendly construction materials and energy-efficient designs, creating buildings that look forward to the future while respecting the past;	
			(ix) Features like green roofs, solar panels, and rainwater harvesting can be both practical and beautiful, adding a modern character;	
			(x) Public spaces that encourage social interaction can be designed with a harmonious blend of nature and modern infrastructure; and	
			(xi) Consider integrating art that reflects the local culture, nature, or history, contributing to a unique character.	
		c) Cultural and Community Integration	(i) Incorporate local traditions and crafts into the design of public spaces, buildings and even streetscapes. This connection to local culture can provide a sense of belonging for the community;	
			(ii) Create focal points for public events, markets, and social gatherings. This may include plazas, amphitheatres, or markets that promote a sense of community and activity;	
			(iii) Design walkable streets and pathways that encourage foot traffic and community interaction. Incorporating wide sidewalks, bike lanes, and outdoor seating areas can add vibrancy to the area; and	
			(iv) Greenfield developments can feature spaces that are adaptable to multiple uses—community centers, markets, workspaces, and more. Such multi-functional areas can add diversity to the environment, reflecting a modern, fluid use of urban spaces.	
4	Convenience	a) Urban Design and Layout Considerations	(i) Incorporate mixed-use buildings and areas that allow for residential, retail, commercial, social facilities and business spaces in close proximity, encouraging walkability and reducing vehicular movement;	
			(ii) Promote higher density development to reduce urban sprawl and preserve natural areas;	
			(iii) Design infrastructure to handle increased rainfall and runoff, such as improved drainage systems and retention basins;	
			(iv) Cluster social and community facilities together with commercial and transport land uses;	
			(v) Ensure that essential services (schools, medical facilities, civic facilities, shops, businesses, etc.) are strategically located within walking or cycling distance from residential areas;	

			(vi) Integrate green infrastructure like rain gardens, permeable pavements, and energy-efficient buildings. Incorporate climate-resilient strategies, such as tree canopies, green roofs, and natural cooling, to improve liveability and comfort;	
			(vii) Focus on compact, walkable neighbourhood layouts with smaller blocks and mixed housing options to ensure easy access to public spaces and services; and	
			(viii) Design parks, gardens, playgrounds, and other green spaces within easy walking distance of all residential areas. Green spaces should be interwoven into the fabric of the urban environment serving both recreational areas and natural buffers.	
		b) Sustainability, Safety and Accessibility	(i) Implement green infrastructure solutions like stormwater management systems, smart grid technology, and waste sorting and recycling systems to ensure long-term sustainability;	
			(ii) Plant and maintain urban road plants, trees and shrubs, and use planter and drought-tolerant landscaping on road reserves, sidewalks, centre medians, etc. (including drainage);	
			(iii) Design streets with clear sight lines, well-lit public spaces, and pedestrian environments that promote natural surveillance;	
			(iv) Plan for community hubs, cultural centres, and social gathering spaces to promote interaction and inclusivity; and	
			(v) Create infrastructure that can be easily upgraded or modified to meet changing demands. This might include spaces that can be repurposed, streets that can accommodate future modes of transport or buildings designed with sustainability in mind (e.g. solar panels or energy-efficient systems).	
5	Efficiency	Water	(i) Water can be supplied from the existing Courtrai Reservoir or from the City of Cape Town's Wemmershoek Bulk Pipeline;	
			(ii) Based on an annual average daily demand (AADD) of 12,181 kilolitres per day (kl/d), with a 48-hour storage allowance, it is estimated that two 12.5 megalitre (ML) reservoirs will be required;	
			(iii) A new water connection to the Wemmershoek Pipeline is already planned for the Klapmuts North Industrial Node. A new booster pumpstation, with sump, will pump the water to the new 22.5ML bulk water reservoir at the Klapmuts North Industrial Node. This new reservoir will have sufficient capacity to partially service the study area;	
			(iv) The existing Courtrai Reservoir has sufficient capacity to service the entire study area. However, only the low-lying areas of the study area is proposed to be serviced by this reservoir. A new bulk water pipeline from the Courtrai Reservoir to the study area will be required;	
			(v) The Klapmuts North Reservoir will eventually be supplemented by two 12.5ML reservoirs;	

			(vi) Furthermore, in order to provide greater flexibility and ensure continuous water supply, it is proposed to link the Klapmuts North Reservoir with the Courtrai Reservoir through a new bulk water pipeline and include a zone value;	
			(vii) Additionally, in order to effectively service the entire study area, new pressure towers with separate reticulation networks will have to be developed to service the high-lying areas of the study area.	
		Sewer	(i) It is estimated that the developable areas will render an annual daily dry weather flow (ADDWF) of 7,466 kilolitres per day (kl/d). A new wastewater treatment plant (WWTP) with a capacity of at least 8ML/day will be required to service the study area;	
			(ii) The treated effluent could be discharged directly into the Van Wyks River or pumped for irrigation purposes;	
			(iii) New bulk and link sewer reticulation pipelines to collect sewer and drain towards the WWTP will be required.	
		Stormwater	(i) A Sustainable Drainage System (SuDS) is recommended for the study area. The system should consist of rainwater harvesting, green roofs, detention ponds, retention ponds, grass swales, constructed wetlands, and roads and piped systems;	
			(ii) Rainwater harvesting from the roofs of houses, combined with grey water from the houses could be used for irrigation around properties;	
			(iii) Additional stormwater run-off will be collected (via roads, channels, swales, pipes and permeable paving) into either detention ponds or retention ponds;	
			(iv) The collected stormwater can be circulated to agricultural areas or a series of ponds into a larger retention pond that collects stormwater for a large basin;	
			(v) Furthermore, the existing dams within the study area must be assessed to possibly form part of the SuDS.	
		Road	(i) The major road infrastructure required to service the study area include a new interchange and off-ramp along the N1. The implementation of the interchange will allow for the construction of a future road link through the study area;	
			(ii) In addition the R45 will require re-alignment and rehabilitation;	
			(iii) It will be important to limit the number of access points on the R44 and the Suid Agter-Paarl Road. The existing access point will have to be consolidated and the Western Cape Government: Access Management Guidelines, 2020, must be utilised to implement new access points;	
			(iv) According to the aforementioned guidelines, for the R44, the minimum required access spacing is 1,200m for signalised intersections and 305m for unsignalised intersections. For the Suid Agter-Paarl	

			Road, the minimum required access spacing in 800m for signalised intersections and 260 for unsignalised intersections.	
		Electricity	(i) In order to service the entire study area, a new centrally located 132kV/66kV/11kV Step Down Substation will be required;	
			(ii) In addition, Eskom will require a 132kv Bulk Metering yard directly adjacent to the new substation;	
			(iii) A new link line from the existing 132kV overhead line, which is situated along Old Paarl Road, must be introduced to connect the new substation;	
			(iv) It will be possible to, in the interim, utilise the existing 11kV overhead line, which is located along the Suid Agter-Paarl.	
			(v) Should the interim solution be considered and a capacity constraint exists, prior to the completion of the required substation, a new 66kV feeder bay can be constructed at Suid-End Substation and the network be extended to the required portion of the study area along. This will require the extension of the electrical network along Old Paarl Road and then crossing the N1. A new 11kvV switching station will finally be required to serve the specific area of the study area.	