LEAP

Dr. Gwen Theron
PrLArch No 97082

Landscape Architect
Environmental Planner

Imbrilinx cc 2010/089810/23
P.O. Box 13185
Hatfield 0028

FAX: 086 606 6130
012 344 3582
083 302 2116
+27784261975

gwen.theron@leapenviro.co.za

Draft

Environmental Impact Assessment

Proposed Mixed-Use Residential "Agrihood" Development with Associated Infrastructure on Portion 1, Portion 3, Portion 4, Portion 5, Portion 7, and Portion 8 of Erf 2054 Hilton, within the uMngeni Municipality

Ref.: DC22/0017/2023; KZN/EIA/0001913/2023

Prepared for:
Mount Verde (Pty) Ltd
Mount Verde Estate,
Weir Drive, Hilton, 3245
Tel: (033) 343 4303

Prepared by:
LEAP
Dr Gwen Theron
No 1 Ivy Street, Sunnyside
Fax: 012 344 3582

Submitted to:
KwaZulu-Natal Department of Economic Development, Tourism & Environmental Affairs
8 Warwick Road, Pietermaritzburg, 3202
Tel: (033) 347 1826

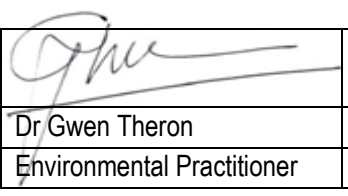
Document Control Record

Document prepared by
LEAP
P.O Box 13185, Hatfield, 0028

Tel 012 344 3582
Fax 086 606 6130
Email Gwen.theron@leapenviro.co.za
www www.leapenviro.co.za

A person using LEAP documents or data accepts the risk of

1. Using the document or data electronic form without requesting and checking them for accuracy against the original hard copy version.
2. Using the document or data for any purpose not agreed to in writing with LEAP.

DOCUMENT CONTROL						
Report Title	Proposed Mixed-Use Development with Associated Infrastructure on Portion 1, Portion 3, Portion 4, Portion 5, Portion 7, and Portion 8 of Erf 2054 Hilton, within the uMngeni Municipality					
Document ID	Draft Environmental Impact Assessment					
File Path	*U:\Main data\PROJECTS\M*Mount *Verde EIA\LEAP Submissions\Draft EIA\2023.09.09 Draft EIA gt edit.docx*					
Client	Mount Verde (Pty) Ltd		**Client Contact**		Mr Andre Voigts	
Revision	**Date**	**Revision details/Status**	**Prepared by**	**Author**	**Verifier**	**Approved by**
0	August 2023	0	Dr G Theron (EAPASA 2019/1421)			
1						
2						
3						
Current Revision						
APPROVAL						
Signature						
Name	Dr Gwen Theron		**Name**			
Title	Environmental Practitioner		**Title**			

Executive Summary

INTRODUCTION

Imbrilinx CC trading as LEAP was appointed by Mount Verde Pty Ltd as Independent Environmental Consultant to undertake the appropriate environmental process for the Proposed Mixed-Use with associated infrastructure to be called Mount Verde Village. The process was registered for an EIA (Scoping) process with the KwaZulu-Natal Department of Economic Development, Tourism & Environmental Affairs (KZN EDTEA) under Regulation 982 to 985 as amend by 324 to 327 of the National Environmental Management Act (Act No 107 of 1998) and was assigned the reference number **DC22/0017/2023; KZN/EIA/0001913/2023**.

GENERAL SITE DESCRIPTION

The proposed Mount Verde Village is situated on Portion 1, Portion 3, Portion 4, Portion 5, Portion 7, and Portion 8 of Erf 2054 Hilton, within the uMngeni Municipality. The development site is located 450 metres east of Hilton Gardens in Pietermaritzburg. Regional access to the development area is provided via N4 while local access is provided via Mount Verde Drive which is an extension of Weir Drive, within the uMngeni Municipality, KwaZulu Natal Province. The entrance area must be upgraded to allow ease of movement through the entrance gate.

The site is approximately 86 hectares in extent.

Portion	Size (sqm)	Size HA
Portion 1	184874	18.4874
Portion 3	131875	13.1875
Portion 4	220190	22.019
Portion 5	84954	8.4954
Portion 7	159247	15.9247
Portion 8	79126	7.9126
Total	**860266**	**86.0266**

The zoning, under the uMngeni Local Municipality Town Planning Scheme, for the Mount Verde Village is "Urban Agriculture".

The Proposed Mixed-Use residential development with associated infrastructure will not only benefit the future residents in the area, but it will also assist urban integration, infill development and assist to achieve the overall development strategies of the UMngeni Local Municipality.

This development represents an opportunity for this vacant land to be developed to its highest potential at an appropriate scale and in an economically viable way.

While the development will benefit the greater community, the surrounding land owners cannot be ignored. The farming communities to the east and north must be considered and their livelihoods regarded.

Market Assessment

Fernridge Residential completed a Market assessment (August 2023))

A market area is delineated to indicate the anticipated area of support for the Proposed Mixed use "Agrihood" Development. A 6km, 8km, 10km, and 12km drive distance was utilised operating under the assumption that prospective residents will consider relocating 6km – 8km from current employment or place of residence. The drive distance applied shows the level of reach from the site while the market area is delineated based on the population spread. The factors defining the market area are the different income markets, psychological barriers, drive distance, and national highways. The market area represents the areas where potential residents of the Proposed Mixed use "Agrihood" Development may come from.

To present the demographic profile and characteristics of the residents in the market area, Fernridge used information gathered from the AfricaEye dataset. The AfricaEye dataset was used to present a dwelling count for the market area. Between 2020 and 2022 the households grew at ±1.61% - this growth rate will be used in the model. This growth rate will also be applied to project a current 2023 income representation. Majority of the market area consists of middle- and upper-income dwellings. Comprising almost 55% of the market area earning R11,000+ per month. The market area represents a mostly affluent income market. With this in mind, the proposed Mixed Use Residential Development should focus its offering on this income group.

- According to 2011 Census data the market population comprises of ±91,454 persons residing in ±29,279 households, relating to an average household size of 3.1 people per household.
- 2018 AfricaEye dwelling counts indicate ± 31,256 dwellings, projected to ±33,857 dwellings in 2023.
- ±51.8% of the population is capable of generating personal income and ±44.8% can be classified as active on the residential market (aged between 20 and 49).
- It is expected that the majority of the target market and potential tenants will be drawn from the above-mentioned age group considering that it hosts the typical individuals that could apply for the Proposed Mixed use "Agrihood" Development – strong residential character.
- Average household size and age group composition indicate the possibility of a house consisting of 3 family members.
- Average household size composition indicates a high possibility of young professionals and families.
- The area exhibits high levels of formal employment – a form of financial security for retail expenditure as well as an indication of residential demand.
- On average a typical household earns ±18,000 per month. The Proposed Mixed use "Agrihood" Development will need to primarily cater to middle- to high-income groups.
- Roughly ±21% of the market earn more than R30,000 per month – high income market.
- Currently, ±64% of the market population resides in bonded units.

- The market area consists of ±65.7% of formal houses of the market area.

Recommendations

- The purpose of this research was to determine the high-level demand for a proposed Mixed Use " Agrihood" Development in Hilton, KwaZulu Natal, as part of the Mount Verde Estate Development.
- Hilton is a small town that lies between Howick and Pietermaritzburg and is perceived to be a middle- to high-income area.
- The previous market area used in the 2018 report was believed to still apply to the Hilton market and proposed residential units at Mount Vrede.
- Majority of the market area consists of the middle- to upper-income group. Constituting 55% of the market area earning R11,000+ per month.
- The market area is dominated by houses (low-density) considering that 62.9% of the supply is classified as such, and there is 15.7% classified as townhouses/clusters.
- Average household size composition indicates a high possibility of young professionals and families.
- The area exhibits high levels of formal employment – a form of financial security for retail expenditure as well as an indication of residential demand.
- On average a typical household earns R18,000 per month. The proposed Mixed Use Agrihood Development will need to primarily cater to middle- to high-income groups.
- From desktop research the market area consists of more bonded properties than rental properties. 3-Bedroom houses are the most common in the advertised bonded and rental market
- Findings from the analysis can guide recommendations regarding the development concept and the potential product price of the proposed residential units. Many properties fall within the middle- to upper-income.
- All demand projections are purely based on an affordability analysis for the market-related product costs in terms of the historic growth in households.
- Demand projections indicate a current 2023 demand for ±115 units (bonded and rental) within the specific market.
- This figure is likely to increase to ±352 units in the next 2 years (2025).
- Given the market areas' demographic data, the proposed Mixed Use Agrihood Development should aim to cater to the middle- to high-income market.

PROJECT DESCRIPTION

Simon Plunkett is the Town planner.

The greater Mount Verde Estate and Agrihood is a farming focused community inspired by simplicity, healthy living and country lifestyle, enabling the residents to forge a relationship with the land and each other amongst the working farms, planned community gardens and social amenities, in an idyllic setting that is steeped in nostalgia and mindful of nature.

For the most part, the development consists of erven which will contain a single homestead that range in size from 30 to 2ha and will be zoned appropriately.

Certain areas, due to the proposed design of the Estate and due to land formation, are better suited to sectional title development and these will be zoned Residential Only Medium Density 1 and Residential Only High Density. These tend to be smaller land parcels and thus the density of units is limited.

The proposed Mixed Use "Agrihood" Development in the various Hamlets within the Estate provides a number of options in terms of living. This will provide various price ranges to the public based on the size of land parcel, whether its freehold or sectional title and all within an excellent location. This improves equitable access to land which currently consists of a few large land parcels. This enables more people to move to the area since the Hilton Howick and uMngeni Municipality as a whole has rapidly become a highly desirable place to reside. This in turn creates significant employment opportunities in the construction sector and the various allied service providers. This will also eventually include the maintenance contracts required, security firms employed and other services such as domestic help and gardening.

It also creates a more functional and varied land market, especially taking into consideration other developments in the Hilton Howick area. With more people moving to Hamlets, this is likely to increase the business sector within uMngeni. This will be in regard to people who may move their business to the uMngeni area and in so doing create further employment.

The additional rates garnered from the properties once sold, will provide more income to the Municipality who will be enabled to increase their spending on infrastructure requirements amongst other projects.

The Mount Verde Estate's location with respect to the amenities on Hilton and Howick as well as access to the N3 further add to the suitability of this location. It allows convenient access to retail and social services as well as access to the greater region. This in turn benefits the businesses of Hilton and Howick.

Proposed development Mix

Hamlet 1

FOREST VALLEY	**18,4874HA**			
SIZE	**STANDS**	**HD Area (HA)**	**DENSITY DU/HA**	**UNITS**
Res Det 3 >900m2	3			
Res Det 4 >600-899m2	19			
Res Det 5 >300 - 599m2	25			
Res HD		1.89	25	47
Private open space				
Total number of units for Forest Valley	**47**			47

Hamlet 2

FOREST HILLS	11.1875HA			
SIZE	**STANDS**	**HD Area (HA)**	**DENSITY DU/HA**	**UNITS**
Res Det 3 >900m2	0			
Res Det 4 >600-899m2	94			
Res Det 5 >300 - 599m2	4			
Reservoir	1			
Private open space				

Total number of units for Forest Hills **99**

Hamlet 3

FOREST EDGE FARMS	4 HA			
SIZE	**STANDS**	**HD Area (HA)**	**DENSITY DU/HA**	**UNITS**
Small holding > 2h	2			

Total number of units for Forest Edge Farms **2**

Hamlet 4

SHOWGROUNDS	22.0190HA			
SIZE	**STANDS**	**HD Area (HA)**	**DENSITY DU/HA**	**UNITS**
Res HD	10			
Res Det 4 >600-899m2	2			
Agriculture Showgrounds	1			
Agriculture	2			

Total number of units for Showgrounds **15**

Hamlet 5

THE PADDOCKS	8.4954HA			
SIZE	**STANDS**	**HD Area (HA)**	**DENSITY**	**UNITS**
Res Det 3 >900m2	**0**			
Res Det 4 >600-899m2	**51**			
Res Det 5 >300 - 599m2	**0**			
Res HD	**0**			
Private open space				

Total number of units for Paddocks **51**

Hamlet 6

CARRAIGE MEWS	8.4954HA			
SIZE	**STANDS**	**HD Area (HA)**	**DENSITY DU/HA**	**UNITS**
Res HD		1.57	25	39
Total number of units for Carraige Mews	-			39

Hamlet 7

LAVENDER FIELDS	1.3310HA			
SIZE	**STANDS**	**HD Area (HA)**	**DENSITY DU/HA**	**UNITS**
Res HD		1.20	25	30
Total number of units for Lavender Fields	-			30

Hamlet 8

THE MEADOWS - LIFESTYLE VILLAGE	15.9247HA			
SIZE	**STANDS**	**HD Area (HA)**	**DENSITY DU/HA**	**UNITS**
Res HD		11.30	25	283
Open Space				
Total number of units for The Meadows	**0**			283

Hamlet 9

THE GARDENS	7.9126HA			
SIZE	**STANDS**	**HD Area (HA)**	**DENSITY DU/HA**	**UNITS**
Res Det 3 >900m2	-			
Res Det 4 >600-899m2	28			
Res Det 5 >300 - 599m2	31			
Res HD		1.80	25	45
Total number of units for The Gardens	**59**			45

Residential units excluding HD units	**HD units**
229	**444**

Total residential units	**673**

RECEIVING ENVIRONMENT

Topography and Drainage

The site is at an elevation ranging between 1000-1120 meters above mean sea level. It slopes to the north-west at an average gradient of approximately 10 %, to the Doringsrpuit that originates on Mount Verde. A small section along the southern boundary drains to the south into a tributary of the town Bush Stream.

Climatic Conditions

Hilton in Pietermaritzburg has a warm and temperate climate classified as Cfb under the Köppen climatic classification. The driest months in a year are June and the most precipitation falls in December. Pietermaritzburg experiences extreme seasonal variation in monthly rainfall.

General Geology

- According to the 1:250 000 scale geology map series 2930 Durban, the regional geology comprises of the rocks of the Karoo Supergroup. The site is predominantly underlain by the mudrock of the Volksrust Formation. Northern portion is underlain by fine- to coarse-grained sandstone, shale, coal seams of the Vryheid Formation, while the southern portion is underlain by the Karoo Dolerite Suite, which consist of an interconnected network of dolerite sills, sheets and dykes. The soils on the site tend to be acid, heavy and clay-rich and there are deposits of alluvium and landslip material.
- There are no dolomites underlying the site and will not impact the proposed development.

Agriculture

- Mottram and Associates conducted an agricultural assessment on one of the Mount Verde Farm portions and provided general information that is applicable to the conditions at Mount Verde Village.
- Cattle are allowed to roam in the area of the Mount Verde Village to keep the kikuyu under control, but the area allocated for the Mount Verde Village is currently not being utilised for any intense agricultural activities and is also located nearby other residential areas. Therefore, the property is not considered a viable farming unit and no impacts on agriculture, in respect of the proposed development, are anticipated.
- Sections of the Open spaces within each Hamlet will be used for Urban Agriculture in keeping with the theme and focus of the greater Mount Verde Farm.
- The Mount Verde Village comprise. 3.3% of the original Mount Verde Farm of approximately 2540 ha. The remainder of the land is already allocated to farming in land parcels of 5ha to 90 hectares.

Ecology

SDP Ecological and Environmental Services has been appointed to undertake a verification of the Terrestrial Biodiversity Assessment. Results of the study is herewith provided in the Draft EIA Report.

Vegetation type

- Based on Mucina and Rutherford (2006) (1986) and SANBI (2018), the study area forms part of the Grassland Biome and comprises two vegetation types namely, Moist Coast Hinterland Grassland and Midlands Mistbelt Grassland. Refer to Figure 15

Moist Coast Hinterland Grassland

- Moist Coast Hinterland Grassland is a subclass of Ngongoni Veld and is characterised as Vulnerable by Mucina & Rutherford (2006), however, the more recent and regionally appropriate assessments by Scott-Shaw and Escott (2011) have characterised it as Endangered.
- According to Mucina & Rutherford (2006), Moist Coast Hinterland Grassland can be described as dense, tall grassland that is dominated by the unpalatable grass, Aristida junciformis, and with a low plant species diversity owing to an Aristida monodominance. Other common grasses present include Chloris gayana, Hyparrhenia hirta, Sporobolus spp., Eragrostis spp., Cymbopogon validus and Themeda triandra. Various broadleaved herbs (forbs) that tend to be common include Stylochiton natalensis, Pentanisia prunelloides, Leonotis intermedia, Helichrysum spp., Senecio spp., Acalypha angustata, Vernonia tigna, Polygala virgata and Cyphostemma natalitium.
- Less than one percent is statutorily conserved in Protected Areas and the conservation target is 25% (Mucina & Rutherford, 2006)

Midlands Mistbelt Grassland

Midlands Mistbelt Grassland is Endangered and is one of the most threatened vegetation types in KwaZulu-Natal (Mucina & Rutherford, 2006; Jewitt, 2011). Only 0.5% is statutorily conserved in Protected Areas and the conservation target is 23% (Mucina & Rutherford, 2006). This vegetation and habitat type typically is dominated by forb rich, tall, sour *Themeda triandra* grassland which is often invaded by *Ngongoni grass, Aristida junciformis subsp. junciformis*

Habitat Assessment

The site has been broadly transformed for agricultural purposes, including livestock, cultivation and silviculture, with such activities having been undertaken for more than a century. Agricultural operations have been ongoing within the Hilton area, progressively 'fragmenting' natural grassland habitats and driving disturbance and habitat transformation. Such transformation has given rise to early seral graminoid states on much of the land, supporting mosaics of sourveld within affected areas.

Floral Assessment

- The site has a definitive graminoid structure with 73% of all species being grasses. Evidently the graminoid *P clandestinium* is the dominant species across all sites with *Digitaria eriantha* showing a sub-dominance. This state indicates that all grassland environments within the study area are managed with the purpose of providing suitable grazing for livestock. Notably a number of exotic species (9.7%) are evident and these species generally comprise of the herb component of the grassland, and are testimony to ongoing disturbance on these sites

- The site is considered to have 5 communities comprising two outliers comprising of Felicia *filliculoides* and *Eragrostis curvula*. There is little distinction between communities, with only a singular graminoid community being evident, while most other communities show a variation of graminoid and herb species, confirming that the grassland environments are highly manipulated through management, with varying levels of disturbance.
- The pasture lands present on site are highly disturbed due to extensive grazing. The dominant exotic species, namely, *Rubus cuneifolis* and *Bidens Pilosa*, are typical of grassland environments in the region, affected by ongoing disturbance. The latter species presents dense stands, resulting in bush encroachment within invaded areas. Other exotic species include Acacia mearnsii which is a legacy of the silviculture operations underway on neighbouring lands.
- It is evident that the properties in general, are typical of livestock intensive farming operations and have been subject to both silvicultural and pastoral land uses for an extended period. Botanical species composition is therefore the product of management and relic farming operations.

Habitat Sensitivity Mapping

The Department of Environment, Forestry and Fisheries' screening tool, indicates that the study site is of a "low to medium plant sensitivity". Evidently the site has been designated as having a "low" plant sensitivity and as such, the presence of botanical specimens of conservation importance is limited. The same tool indicates that the area has a "high terrestrial sensitivity", suggesting that the area in question presents areas of importance in the conservation of habitat and other biota.

Fauna

Faunal populations across most taxa, within the subject area at Mount Verde will be in a state of flux, given the general transition already underway within the greater study area. Such changes have been indicated above, but have given rise to the following factors which will alter faunal ethos in many taxa and lead to changes in population structures:

- The transition from a forested environment dominated by mono specific commercial species.
- The emergence of a secondary graminoid habitat (see Section 6 above).
- On going farming practices, including the cultivation of crops and pasture, with animal husbandry.
- The emergence of a number of open aquatic systems through the establishment of attenuation structures.
- The establishment of an "urbanising" environment, with increased human settlement associated with general disturbances.

Summary

An assessment of the wetland and terrestrial environments at Mount Verde residential estate was undertaken to inform and support decision making by the appointed EAP, LEAP Environmental. The following salient findings can be stated in respect of this assessment:

1. The subject area can be described as highly transformed on account of widespread historical and contemporary silvicultural and agricultural activities. In addition, other changes to the systems within the site including the establishment of instream dams and the establishment of roads and services have served to alter the environment.
2. The graminoid environments on the property do not align with Midlands Mistbelt Grassland veld type. The graminoid environment on this property is in a depauperate state with a moderate level of exotic plant invasion.
3. Two catchments are evident on the site, draining to the east and west of the property. These watercourses and wetland environments are moderately to highly disturbed, with a singular maturing system associated with irrigation being evident.
4. The identified HGM units, whilst disturbed and transformed do provide several ecosystem services. Thus, these natural features (except for HGM N4) are recommended to be preserved and subject to rehabilitation in order to improve functionality.
5. A 25 m wetland buffer is recommended around all wetland systems within the estate as per DWS guidelines.
6. A 15-meter wetland setback buffer along the boundaries of natural wetlands has been recommended as per DWS guidelines.
7. While limited information is available in respect of the treatment and disposal of sewerage from the site, other than the use of wastewater for irrigation, a number of measures have been proposed which include basic measures for pre-disposal discharge.
8. Given the artificial nature of HGM N4, a cautionary buffer of 10 meters is proposed as inundation of this low point may arise during high precipitation events.

The proposed Mount Verde Mixed Use "Agrihood" Development, as presented in Figure 2, has taken due consideration of the various wetland and related features evident on the site and as such, no variation to the proposed layout is recommended. It follows that direct impacts on wetland and riverine environments may emanate from the disposal of waste waters through irrigation, therefore this matter would require further consideration in terms of treatment and the nature of receiving environments. Subject to the above and implementation of sound construction management and monitoring on the site, it is recommended that the proposed development in its present layout be sanctioned by the relevant authorities.

Wetland Assessment

A Wetland Assessment was completed by SDP Ecological and Environmental Services (2022). Results of the study is herewith included in the Draft EIA Report.

The summary of the conducted Wetland Assessment by SDP Ecological and Environmental Services (2022) is presented below.

NFEPA Wetlands

Five HGM units were identified namely: 1) HGM N1 lies within a deeply incised channel; 2) HGM N2 is a small wetland habitat, driven by sub surface seep; 3) HGM N3 is largely driven by sub surface flows; 4) HGM N4 (maturing artificial wetland system); and 5) HGM S1 is a channelled valley bottom wetland.

These HGM units are divided by a watershed with the northern catchment flowing into the Doringspruit River, whilst the comparatively smaller system along the southern periphery of the estate flows into a low-lying dam.

PES Category

The Present Ecological Status (PES) of the northern system comprising of 4 HGM units has a Category 'D', where wetlands are 'largely modified' whilst the southern system, comprising of a single HGM unit has been attributed with a PES category of 'C' indicating a moderately modified catchment.

EIS Category

The wetlands on site are of ***Moderate*** ecological importance and sensitivity, suggesting 'little' significance at a local scale and that the system is not highly sensitive to flow modifications with a substantial capacity for 'use'. The establishment of dams, as well as broad cultivation, have consequently affected the integrity of the wetland system

Functionality Assessment of Wetlands

Most channels identified in the northern system, presented evidence of seasonal and perennial flow, sustained by lateral seepage and surface runoff from the upper catchment. Broad manipulation of this system has arisen, because of extensive anthropogenic activities, both past and present and including the establishment of dams and roadways resulting in flow retardation and alteration of natural hydrological processes. The state of the 4 HGM units also varies considerably due to intensity and proximity of disturbance.

The southern wetland system has scoured and incised channels, which has altered the hydrology and geomorphology of this system. Given such manipulation, the effectiveness of physical services of this wetland system, such as sediment trapping, and erosion control are likely to be impaired.

Buffer Recommendation

Given the poor, modified state of the watercourses and wetland environments within Mount Verde as well as the limited ecological risk posed by the proposed development, a moderately conservative non-development buffer of 15 meters is recommended.

Conclusion

Rehabilitation of the wetlands, which is strongly encouraged, may also necessitate controlled encroachment, during which care must be taken not to further impact negatively on the systems. Water Quality Deterioration, Alien Vegetation Encroachment, and Erosion and Sedimentation measures have been provided in this report to aid in guiding the planning process.

Cultural Heritage Impact Assessment

A cultural Phase 1 Heritage Impact Assessment and Desktop Palaeontological Assessment for the proposed site has been undertaken by Umlando (2022) in accordance with the National Heritage Resources Act 25 of 1999 (NHRA). Detailed results of the study will be included in the Draft EIA Report.

Field Survey

- Based on the assessment of the area it is clear that there are no sites of cultural heritage origin and significance located here. The buildings identified have been demolished and some buildings have 'Corobrick' and not "Coronation' stamps. The property has high to very palaeontological sensitivity, due to Permian aged sedimentary rocks of the Volksrust and Vryheid formations underlying the site.

Conclusion

- From a cultural heritage point of view the development should therefore be allowed to continue. However, the subterranean presence of archaeological or historical sites, features or objects must always be taken into consideration. If any are uncovered during the development process a heritage specialist/archaeologist should be called in to investigate and recommend on the best way forward.

INFRASTRUCTURE AND SERVICES

Traffic

Zutari (Pty) Ltd have been appointed by Mount Verde (Pty) Ltd to prepare a Traffic Impact Assessment for the proposed residential component of the Mount Verde development on a site described as Portions 1 to 5 of the Farm Mt Verde No. 18081. The residential component of this development will consist of 295 single dwelling units and 491 high density units.

The proposed development is located on Weir Drive, Hilton which falls under the jurisdiction of the UMngeni Municipality north-west of Pietermaritzburg. A boom/gatehouse access off Weir Drive is proposed to serve the entire development. The current zoning is Agriculture.

.

The proposed development, described as Portions 1,2,3,4,5,7 of erf 2054 Hilton, is situated in the Hilton area of the UMngeni Municipality, in the vicinity of the Hilton interchanges on the N3. Vacant land is located to the north and east of the Mount Verde estate and a residential estate is located to the south and the west of the Mount Verde estate.

The traffic generated by this proposed development may have an impact on Weir Drive from the location of the proposed access, then southbound through the Elizabeth Drive intersection, through the Monzali Drive intersection and through to Hilton College Avenue. The formal controlled access gatehouse is located off the end of Weir Drive and is not expected to have an impact on the surrounding intersections.

The proposed residential component of the Mount Verde Estate on a site described as 1,2,3,4,5,7 of erf 2054 Hilton can therefore be supported from a traffic and transportation perspective.

Civil

Umsunguli Project Management cc was appointed by Mount Verde (Pty) Ltd to undertake an Engineering Report on the provision of Infrastructure Services and Storm Water Management for the proposed development

- Where bulk services are not available, the infrastructure will be provided by the Developer. In terms of bulk services, the following will be implemented or provided:
  - Bulk Water – Provided by UMDM as a single bulk connection at the main entrance, in terms of the existing Service Level Agreement
  - Bulk Sewer – Provided by the Developer
  - Bulk Roads – Provided by the Developer, which includes the upgrade of certain municipal roads, as per TIA recommendation
  - Bulk Stormwater – Provided by the Developer
  - Bulk Electricity – Partially provided by Eskom, with additional capacity by Developer through off-grid and energy saving mechanisms
- the provision of services to the proposed development will be designed to norms and standards in accordance with the "Guidelines for Human Settlement Planning and Design" (Red Book) or to municipal standards in terms of the bulk roads or any service level agreement concluded, where applicable.

The conclusion is that the Mount Verde Development can proceed, subject to the following conditions:

- Implementing the recommendations of the Traffic Impact Assessment prepared by Zutari.
- Concluding an agreement between the Developer and uMngeni Municipality regarding the upgrade of municipal roads, based on specific traffic trip generation triggers, as well as the timing of the upgrades and associated costs, as per TIA recommendations.
- Consultation with the Engineers of the Shared Infrastructure Committee (SIC) on the proposed upgrades of the main gate house entrance and Mount Verde Avenue.
- Upgrading the bulk water storage facility, based on the implementation programme of the various development nodes.
- Constructing a modular Waste Water Treatment Works, including a buffer tank, based on the implementation programme of the various development nodes to ensure the quality of the treated effluent complies with standard limits.
- Implement stormwater management through the construction of multiple stormwater attenuation ponds, including the implementation of rainwater harvesting.

Electrical Supply

EG Africa Consulting engineers were appointed by Mount Verde (Pty) Ltd to undertake an Electrical Engineering investigation.

The developer has obtained a bulk supply from Eskom at 11000V on the eastern side of the development. The developer will reticulation to the new development and the line will consist of a combination of overhead and underground MV line (11000V) and underground LV (400/230V) electrical cable. These services will be installed in the road servitudes and omnibuses as far as possible.

The LV reticulation will be fed from the ground mounted miniature substations to the Distribution kiosk strategically positioned to feed each stand via underground LV cable.

At the Distribution kiosk a 3/1pole 40A MCCB and space for the meter will be provided for connection to each stand.

Each homeowner will be metered via a pre-payment meter. The meter will be purchased from the Developer's service provider and the meter must be installed in the distribution kiosk along the site boundaries.

An LV cable will be installed from the metering kiosk to the closest point on each property. The supply cable to the dwelling will be joined to this cable at the homeowner's cost.

IMPACTS AND MITIGATION MEASURES

As approved by KZN EDTEA through the acceptance of the Scoping report, the relevant issues were evaluated in terms of the most important parameters applicable to the environmental management. Several mitigation measures have been identified that could manage the impacts or mitigate them successfully.

CONCLUSION

The development proposal accommodates and avoids the sensitive areas, and in the areas, that have been identified as development land, has no fatal flaws in terms of the institutional, bio-physical, or socio-economic environments.

RECOMMENDATION

It is that recommended the proposed Mixed Use "Agrihood" Development with associated infrastructure situated on Mount Verde Village within uMngeni Local Municipality is Authorised and that the preferred alternative is utilised.

Furthermore, it is recommended that this application be authorised, subject to the recommendations of the:

- The Environmental Impact Assessment Report
- The Environmental Management Program (EMPr)
- The Professional Team
- Specialist studies
- Requirements of the uMngeni Local Municipality
- Specific requirements from other statutory bodies

Table of Contents

LIST OF FIGURES

List of Tables

ANNEXURES

1.0 NEMA REQUIREMENTS

In accordance with the NEMA Regulations Chapter 5, 1998, Section 31 Environmental Impact Assessment Reports require the following:

Environmental impact assessment reports

An environmental impact assessment report must contain the information that is necessary for the competent authority to consider and come to a decision on the application, and must include-

(a). details of-
- *(i). the EAP who prepared the report; and*
- *(ii). the expertise of the EAP, including a curriculum vitae;*

(b). the location of the activity, including:
- *(i). the 21-digit Surveyor General code of each cadastral land parcel;*
- *(ii). where available, the physical address and farm name; and*
- *(iii). where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;*

(c). a plan which locates the proposed activity or activities applied for as well as the associated structures and infrastructure at an appropriate scale, or, if it is-
- *(i). a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken;*
- *(ii). on land where the property has not been defined, the coordinates within which the activity is to be undertaken;*

(d). a description of the scope of the proposed activity, including-
- *(i). all listed and specified activities triggered and being applied for; and*
- *(ii). a description of the associated structures and infrastructure related to the development;*

(e). a description of the policy and legislative context within which the development is located and an explanation of how the proposed development complies with and responds to the legislation and policy context;

(f). a motivation for the need and desirability for the proposed development, including the need and desirability of the activity in the context of the preferred location;

(g). a motivation for the preferred development footprint within the approved site;

(h). a full description of the process followed to reach the proposed development footprint within the approved site, including:
- *(i). details of the development footprint alternatives considered;*
- *(ii). details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;*
- *(iii). a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;*
- *(iv). the environmental attributes associated with the development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;*
- *(v). the impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts-*
  - *(aa) can be reversed;*
  - *(bb) may cause irreplaceable loss of resources; and*
  - *(cc) can be avoided, managed or mitigated;*

(vi). the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks;

(vii). positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;

(viii). the possible mitigation measures that could be applied and level of residual risk;

(ix). if no alternative development locations for the activity were investigated, the motivation for not considering such; and

(x). a concluding statement indicating the preferred alternative development location within the approved site;

(i). a full description of the process undertaken to identify, assess and rank the impacts the activity and associated structures and infrastructure will impose on the preferred location through the life of the activity, including-

(i). a description of all environmental issues and risks that were identified during the environmental impact assessment process; and

(ii). an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures;

(j). an assessment of each identified potentially significant impact and risk, including-

cumulative impacts;

(i). the nature, significance and consequences of the impact and risk;

(ii). the extent and duration of the impact and risk;

(iii). the probability of the impact and risk occurring;

(iv). the degree to which the impact and risk can be reversed;

(v). the degree to which the impact and risk may cause irreplaceable loss of resources; and

(vi). the degree to which the impact and risk can be mitigated;

(k). where applicable, a summary of the findings and recommendations of any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final assessment report;

(l). an environmental impact statement which contains-

(i). a summary of the key findings of the environmental impact assessment:

(ii). a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and

(iii). a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;

(m). based on the assessment, and where applicable, recommendations from specialist reports, the recording of proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as conditions of authorisation;

(n). the final proposed alternatives which respond to the impact management measures, avoidance, and mitigation measures identified through the assessment;

(o). any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation

(p). a description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed;

(q). a reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;

(r). where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required and the date on which the activity will be concluded, and the post construction monitoring requirements finalised;

(s). an undertaking under oath or affirmation by the EAP in relation to:

(i). the correctness of the information provided in the reports;

(ii). the inclusion of comments and inputs from stakeholders and I&APs;

(iii). the inclusion of inputs and recommendations from the specialist reports where relevant; and

(iv). any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties;

(t). where applicable, details of any financial provisions for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts;

(u). an indication of any deviation from the approved scoping report, including the plan of study, including-

(i). any deviation from the methodology used in determining the significance of potential environmental impacts and risks; and

(ii). a motivation for the deviation;

(v). any specific information that may be required by the competent authority; and

(w). any other matters required in terms of section 24(4)(a) and (b) of the Act.

2.0 INTRODUCTION

Imbrilinx CC trading as LEAP was appointed by Mount Verde Pty Ltd as Independent Environmental Consultant to undertake the appropriate environmental process for the Proposed Mixed-Use "Agrihood" Development with associated infrastructure to be called Mount Verde Village. The process was registered for an EIA (Scoping) process with the KwaZulu-Natal Department of Economic Development, Tourism & Environmental Affairs (KZN EDTEA) under Regulation 982 to 985 as amend by 324 to 327 of the National Environmental Management Act (Act No 107 of 1998) and was assigned the reference number **DC22/0017/2023; KZN/EIA/0001913/2023**.

The Scoping report was accepted by EDTEA on the 12 July 2023.

The process is indicated in **Figure 1** and the current step of the process comprise of the Public review process of the Draft Environmental Impact Assessment.

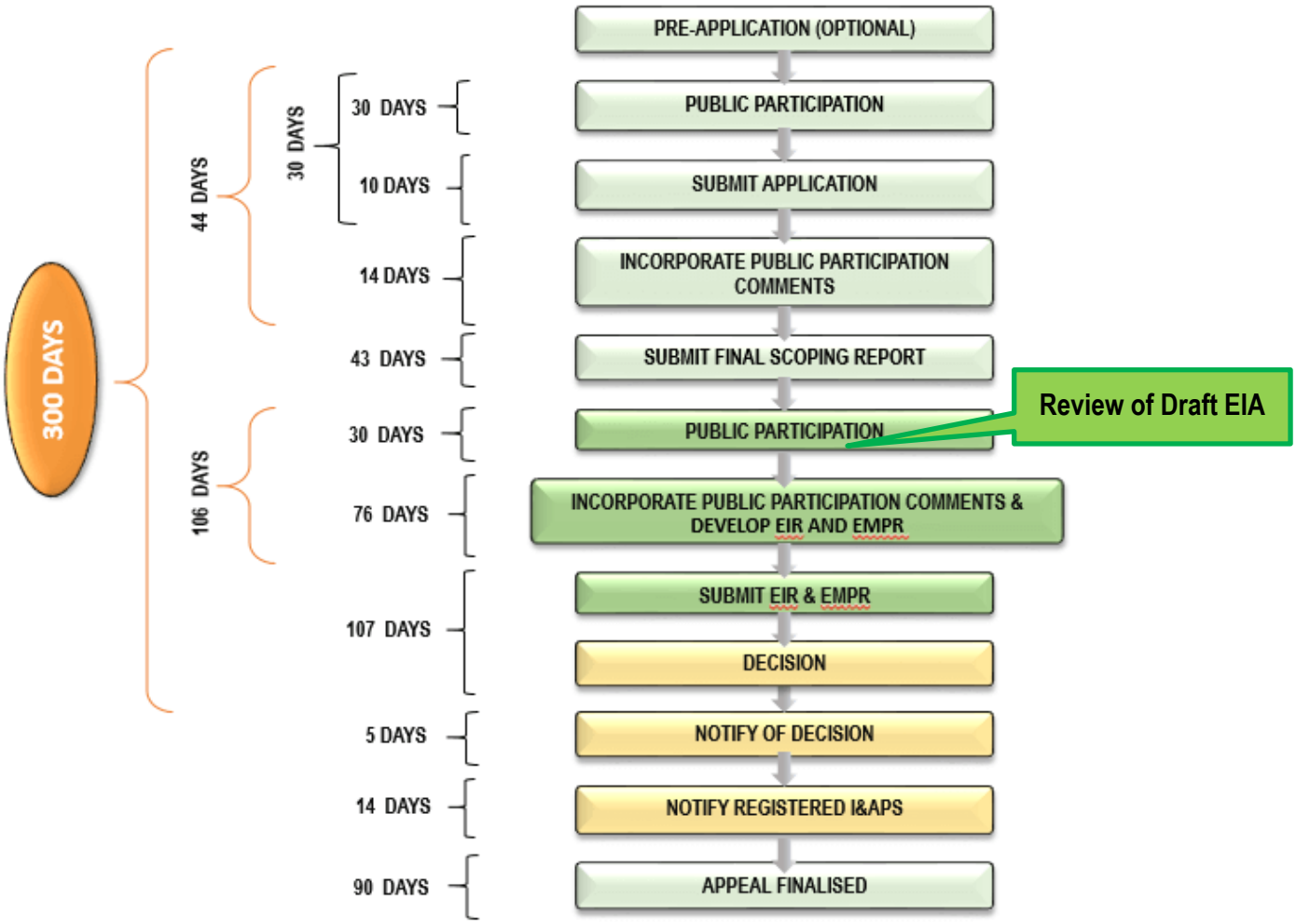


Figure 1: NEMA Process for Scoping / EIA (Source: ENVASS)

3.0 OBJECTIVES

The following objectives have been set:

- Preparation of the Environmental Impact Assessment Report by describing the context of the proposed development, including the bio-physical, socio-economic and institutional environments.
- Identification of impacts that the proposed development could have on the bio-physical and social environment.
- Assessment of the attitudes of the surrounding landowners and other interested and affected parties (I&APs) to such a proposed development.
- Recommendation of measures that will reduce, mitigate, or eliminate identified negative impacts and improve the positive impacts; and; therefore, and
- Determine whether the proposed development site is deemed suitable for the proposed development from an environmental perspective.

4.0 ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)

The Environmental Assessment Practitioner is Dr Gwen Theron who is a registered professional member of the following associations:

- SACLAP 97208 (South African Council for Landscape Architectural Profession)
- ILASA (Institute of Landscape Architects South Africa)
- IAIA (International Association for Impact Assessments)
- EAPASA 2019/1421(Environmental Assessment Practitioners South Africa)

Please refer to **Annexure M** – Dr Gwen Theron's Curriculum Vitae

5.0 LOCATION

The proposed Mount Verde Village is situated on the original Mount Verde Farm. The development site is located 450 metres east of Hilton Gardens in Pietermaritzburg. Regional access to the development area is provided via N34 while local access is provided via Mount Verde Drive which is an extension of Weir Drive, within the uMngeni Municipality, KwaZulu Natal Province. Portion 1, Portion 3, Portion 4, Portion 5, Portion 7, and Portion 8 of Erf 2054 Hilton, within the uMngeni Municipality

The site is approximately 86 hectares in extent which is 3.3 % of the original 2540 Ha.

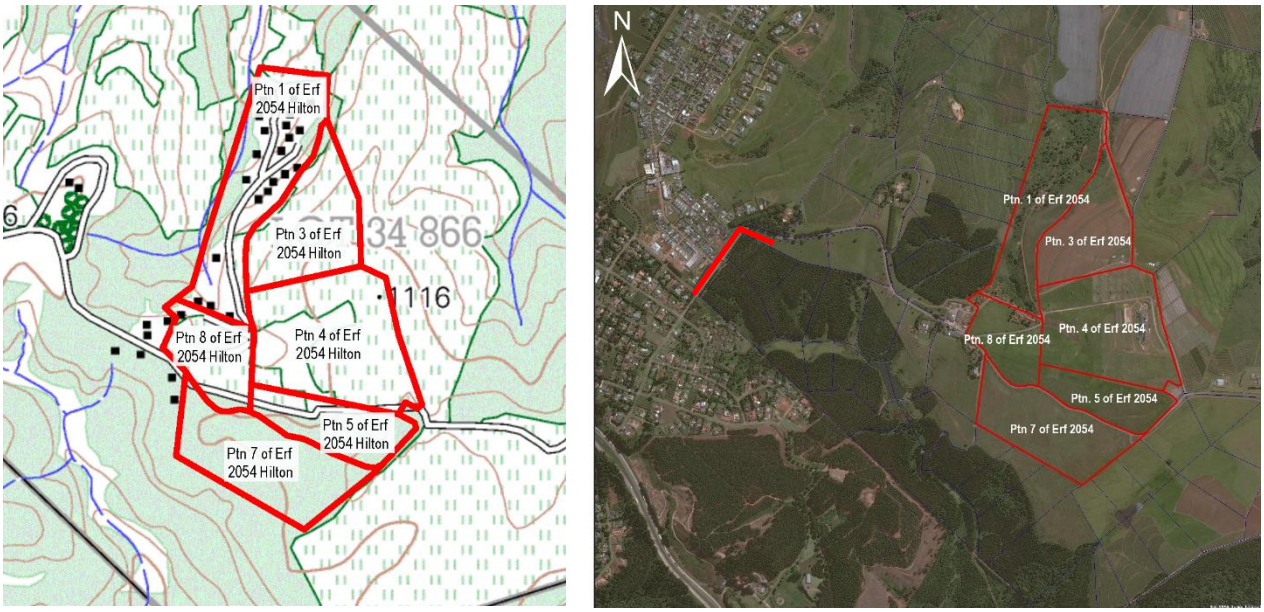


Figure 2: Google location maps of Portion 1, Portion 3, Portion 4, Portion 5, Portion 7, and Portion 8 of Erf 2054 Hilton, within the uMngeni Municipality, and upgrade of main entrance.

6.0 BRIEF DESCRIPTION OF THE PROPOSED DEVELOPMENT

6.1 PROPOSED LAND USES

Land use development proposals for Mount Verde Village were made, considering the creation of a sustainable urban environment and the management of natural resource.

Mixed-use planning blends residential, commercial, cultural, institutional, or entertainment uses into one area, where those functions are to some degree physically and functionally integrated. This variety of uses allows people to live, work, play and shop in one place, which in turn enables its residents to meet their needs without using a car due to the proximity and variety of uses. If activated, a mixed-use area can become a destination for people from other neighbourhoods. A mixed-use area is activated through urban design that creates attractive and vibrant places.

6.1.1 Need and Desirability

a. Market Assessment*:*

Fernridge Residential completed the Market Assessment – August 2023.

A market area is delineated to indicate the anticipated area of support for the proposed Mixed Use "Agrihood" Development. A 6km, 8km, 10km, and 12km drive distance was utilised operating under the assumption that prospective residents will consider relocating 6km – 8km from current employment or place of residence. The drive distance applied shows the level of reach from the site while the market area is delineated based on the population spread. The factors defining the market area are the different income markets, psychological barriers, drive distance, and national highways. The market area represents the areas where potential residents of the proposed Mixed Use "Agrihood" Development may come from.

To present the demographic profile and characteristics of the residents in the market area, Fernridge used information gathered from the AfricaEye dataset. The AfricaEye dataset was used to present a dwelling count for the market area. Between 2020 and 2022 the households grew at ±1.61% - this growth rate will be used in the model. This growth rate will also be applied to project a current 2023 income representation. Majority of the market area consists of middle- and upper-income dwellings. Comprising almost 55% of the market area earning R11,000+ per month. The market area represents a mostly affluent income market. With this in mind, the proposed Mixed Use "Agrihood"Development should focus its offering on this income group.

- According to 2011 Census data the market population comprises of ±91,454 persons residing in ±29,279 households, relating to an average household size of 3.1 people per household.
- 2018 AfricaEye dwelling counts indicate ± 31,256 dwellings, projected to ±33,857 dwellings in 2023.
- ±51.8% of the population can generate personal income and ±44.8% can be classified as active on the residential market (aged between 20 and 49).
- It is expected that the majority of the target market and potential tenants will be drawn from the above-mentioned age group considering that it hosts the typical individuals that could apply for the proposed Mixed Use "Agrihood" Development – strong residential character.
- Average household size and age group composition indicate the possibility of a house consisting of 3 family members.
- Average household size composition indicates a high possibility of young professionals and families.

- The area exhibits high levels of formal employment – a form of financial security for retail expenditure as well as an indication of residential demand.
- On average a typical household earns ±18,000 per month. The proposed Mixed Use "Agrihood" Development will need to primarily cater to middle- to high-income groups.
- Roughly ±21% of the market earn more than R30,000 per month – high income market.
- Currently, ±64% of the market population resides in bonded units.
- The market area consists of ±65.7% of formal houses of the market area.

Recommendations

- The purpose of this research was to determine the high-level demand for a proposed Mixed Use "Agrihood" Development in Hilton, KwaZulu Natal, as part of the Mount Verde Estate Development.
- Hilton is a small town that lies between Howick and Pietermaritzburg and is perceived to be a middle- to high-income area.
- The previous market area used in the 2018 report was believed to still apply to the Hilton market and proposed residential units at Mount Verde.
- Majority of the market area consists of the middle- to upper-income group. Constituting 55% of the market area earning R11,000+ per month.
- The market area is dominated by houses (low-density) considering that 62.9% of the supply is classified as such, and there is 15.7% classified as townhouses/clusters.
- Average household size composition indicates a high possibility of young professionals and families.
- The area exhibits high levels of formal employment – a form of financial security for retail expenditure as well as an indication of residential demand.
- On average a typical household earns R18,000 per month. The proposed Mixed Use "Agrihood" Development will need to primarily cater to middle- to high-income groups.
- From desktop research the market area consists of more bonded properties than rental properties. 3-Bedroom houses are the most common in the advertised bonded and rental market
- Findings from the analysis can guide recommendations regarding the development concept and the potential product price of the proposed residential units. A large number of properties fall within the middle- to upper-income.
- All demand projections are purely based on an affordability analysis for the market-related product costs in terms of the historic growth in households.
- Demand projections indicate a current 2023 demand for ±115 units (bonded and rental) within the specific market.
- This figure is likely to increase to ±352 units in the next 2 years (2025).
- Given the market areas' demographic data, the proposed Mixed Use Residential Development should aim to cater to the middle- to high-income market.

b. Project Description

Mount Verde Estate and Agrihood is a farming focused community inspired by simplicity, healthy living and country lifestyle, enabling you to forge a relationship with the land and each other amongst the working farms, planned community gardens and social amenities, in an idyllic setting that is steeped in nostalgia and mindful of nature.

For the most part, the development consists of erven which will contain a single homestead and these range in size from 30 to 2ha and will be zoned appropriately.

Mixed use developments are in general considered more sustainable as they provide abundant land uses that support and complement each other, thus making them more self-reliant. The activities in the proposed development will be integrated into the bigger regional context and not operate in isolation, increasing competitiveness for the area and integration of existing activities.

While the development will benefit the greater community, the surrounding landowners cannot be ignored. The farming communities to the east and north must be secured and their livelihoods protected.

The residential component will include a high density residential, medium density 1 residential, different typologies of dwelling house with ancillary uses as approved by the uMgneni Municipality. The development includes low impact mixed use, show grounds, reservoir, small holdings, hospitality and agricultural open space. The layout of the development will also accommodate an environmental component (active open space and passive open space). Refer to **Figure 3** for the proposed development.

c. Employment and Economic Opportunities

Kwa Zulu Natal is in dire need for employment although great strides have been made since the end of Apartheid, there remain significant structural challenges to be addressed. The proposed development is estimated to create more than 2 000 jobs during the construction and operational phase, which will bring much needed job creation in the region. This Mount Verde Village development will also promote the expansion of SMME's as it will offer maximum exposure to many residents. The agglomeration of activities will promote optimal use of existing infrastructure and take advantage of the surrounding road network.

The Municipality must ensure their economic development plan extend to the area where new housing is proposed. The residential area cannot be established without permanent career and work opportunities.

d. Addressing the Dispersed City through Integrated Development

The challenge of South African dispersed cities puts pressure on engineering services and increases travel time from residential to workplaces. KwaZulu Natal is working towards an integrated region with mixed use development along transport routes. The Dispersed City guides growth towards a spatial structure that addresses the dispersed city though a polycentric model anchored by nodes of different

sizes. The framework indicates that these nodes serve dedicated functions appropriate to their position in the metropolitan system, set within strongly configured urban corridors.

Mount Verde Village will function as a node that is supported by a larger farming community with the existing farm operations and cooperative.

e. Motivation

The proposed development will contribute towards diversifying land use and economic activities in the sub-region catering for a diverse resident community and attracting investment into the area. See **Annexure G** for Town planning motivations

The proposed residential development in the various Hamlets within the Estate provides a number of options in terms of living. This will provide various price ranges to the public based on the size of land parcel, whether its freehold or sectional title and all within an excellent location. This improves equitable access to land which currently consists of a few large land parcels. This enables more people to move to the area since the Hilton Howick and uMngeni Municipality has rapidly become a highly desirable place to reside. This in turn creates significant employment opportunities in the construction sector and the various allied service providers. This will also eventually include the maintenance contracts required, security firms employed and other services such as domestic help and gardening.

It also creates a more functional and varied land market, especially taking into consideration other developments in the Hilton Howick area. With more people moving to Hamlets, this is likely to increase the business sector within uMngeni. This will be in regard to people who may move their business to the uMngeni area and in so doing create further employment.

The additional rates garnered from the properties once sold, will provide more income to the Municipality who will be enabled to increase their spending on infrastructure requirements amongst other projects. The Mount Verde Estates location with respect to the amenities on Hilton and Howick as well as access to the N3 further add to the suitability of this location. It allows convenient access to retail and social services as well as access to the greater region. This in turn benefits the businesses of Hilton and Howick.

Mount Verde Village is committed to sustainable development, and subscribe to the three pillars of sustainable development–economic growth environmental stewardship, and social inclusion carry across all sectors of development, from:

- subsistence agriculture,
- infrastructure,
- energy development and use,
- waste management,
- water availability, and
- transportation

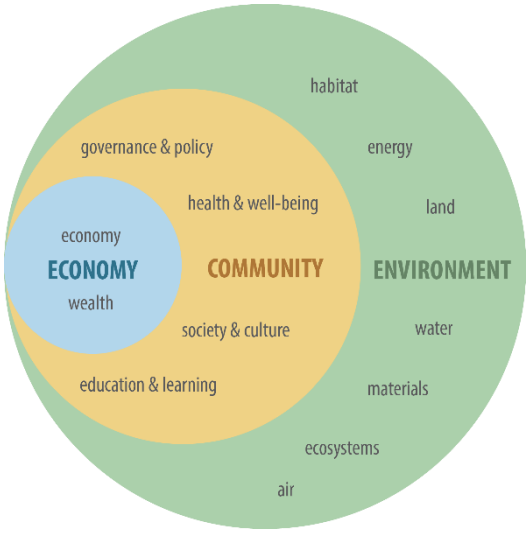


Figure 3: International diagram of sustainability

f. Conclusion and recommendations for the application:

The Proposed Mount Verde Village development will not only benefit the future residents in the area, but it will also assist urban integration, infill development and assist to achieve the overall development strategies of the uMngeni Local Municipality.

6.2 TOWNSHIP LAYOUT

The conceptual layout of the proposed development is indicated on **Figure 4**. However, to fully understand the layout it is important to review the remainder of the report specifically the environmental factors, and the town planning components. Also see **Annexure B** for an A1 copy of the township layout plan. The proposed development consists of the following land uses:

Table 1: Development Proposal

Hamlet 1 — **FOREST VALLEY** — **18,4874HA**

SIZE	STANDS	HD Area (HA)	DENSITY DU/HA	UNITS
Res Det 3 >900m2	3			
Res Det 4 >600-899m2	19			
Res Det 5 >300 - 599m2	25			
Res HD		1.89	25	47
Private open space				
Total number of units for Forest Valley	**47**			47

Hamlet 2

FOREST HILLS	11.1875HA			
SIZE	**STANDS**	**HD Area (HA)**	**DENSITY DU/HA**	**UNITS**
Res Det 3 >900m2	0			
Res Det 4 >600-899m2	94			
Res Det 5 >300 - 599m2	4			
Reservoir	1			
Private open space				

Total number of units for Forest Hills **99**

Hamlet 3

FOREST EDGE FARMS	4 HA			
SIZE	**STANDS**	**HD Area (HA)**	**DENSITY DU/HA**	**UNITS**
Small holding > 2h	2			

Total number of units for Forest Edge Farms **2**

Hamlet 4

SHOWGROUNDS	22.0190HA			
SIZE	**STANDS**	**HD Area (HA)**	**DENSITY DU/HA**	**UNITS**
Res HD	10			
Res Det 4 >600-899m2	2			
Agriculture Showgrounds	1			
Agriculture	2			

Total number of units for Showgrounds **15**

Hamlet 5

THE PADDOCKS	8.4954HA			
SIZE	**STANDS**	**HD Area (HA)**	**DENSITY**	**UNITS**
Res Det 3 >900m2	**0**			
Res Det 4 >600-899m2	**51**			
Res Det 5 >300 - 599m2	**0**			
Res HD	**0**			
Private open space				

Total number of units for Paddocks **51**

Hamlet 6

CARRAIGE MEWS	8.4954HA			
SIZE	**STANDS**	**HD Area (HA)**	**DENSITY DU/HA**	**UNITS**
Res HD		1.57	25	39
Total number of units for Carraige Mews	-			39

Hamlet 7

LAVENDER FIELDS	1.3310HA			
SIZE	**STANDS**	**HD Area (HA)**	**DENSITY DU/HA**	**UNITS**
Res HD		1.20	25	30
Total number of units for Lavender Fields	-			30

Hamlet 8

THE MEADOWS - LIFESTYLE VILLAGE	15.9247HA			
SIZE	**STANDS**	**HD Area (HA)**	**DENSITY DU/HA**	**UNITS**
Res HD		11.30	25	283
Open Space				
Total number of units for The Meadows	**0**			283

Hamlet 9

THE GARDENS	7.9126HA			
SIZE	**STANDS**	**HD Area (HA)**	**DENSITY DU/HA**	**UNITS**
Res Det 3 >900m2	-			
Res Det 4 >600-899m2	28			
Res Det 5 >300 - 599m2	31			
Res HD		1.80	25	45
Total number of units for The Gardens	**59**			45

Residential units excluding HD units	**HD units**
229	**444**

Total residential units	**673**

6.3 DESIGN APPROACH FOR THE MOUNT VERDE ESTATE

The intended design of Mount Verde Estate situates the Village and Village Harvest Farm in the middle of the community, with residential hamlets radiating outward. A system of greenways and trails surround the community and connect residents to the village, harvest farm and parks. A variety of planned housing types include 2 – 9ha farms, high-end luxury homes on 1ha & smaller stands, clustered homes with full backyards, rowhouses that share a common space, apartments and a senior living hamlet.

The agricultural amenities in Mount Verde Estate include the planned 3ha Village Harvest Farm, edible landscaping throughout the various Hamlets and produce farmed on the individually owned Mount Verde Ridge 2 – 9ha Farmettes and 21 – 90ha Maqwood farms. The Village Harvest shall produce various row crop vegetables, orchards for seasonal fruit to sell to the community and farm store.

It is envisaged residents shall enjoy numerous monthly events planned by an on-site lifestyle director; many of which are centred on a healthy lifestyle and feature produce from the Harvest Farm, Farms and Farmettes within the Estate.

The Village Harvest will be located at the centre of Mount Verde Estate, surrounded by curated retail, restaurants, coffee shop, butchery, brewery, distillery, amphitheater and events lawn, art gallery and activity centre. The formal gardens link to a chapel and boutique hotel, with additional bespoke revamped farmworker accommodation as luxury stand-alone hospitality cottages.

Residential Hamlets provide a variety of different housing typologies and deliver opportunities for a variety of income groups.

The envisioned architecture on Mount Verde Estate shall be diverse, celebrating spatial experience, the interconnectedness of farming, living and landscapes. Where possible retaining an agrarian aesthetic, integrated into the community for both utilitarian and aesthetic purposes.

Architecture within South Africa, and found in Hilton, is extremely diverse, incorporating various European styles. Drawing on history, working within the natural landscape, incorporating traditional and existing farm building archetypes, reinterpreting local vernacular into adjusted contemporary rural, contemporary barn architecture which shall appeal to those looking for a contemporary rural lifestyle; shall be the intended character for Mount Verde Estate.

Mount Verde Estate shall be refined into a village, residential hamlets integrated with traditional rural/agricultural development. Outside of the intentionally developed mixed-use nodes – the village and hamlets – the Estate will be rural, with a strong focus on agriculture and preservation of the rural public realm and rural vistas that are highly valued by the community.

The purpose of the character is to encourage creativity ensuring a harmonious degree of uniformity of plant materials and finishes.

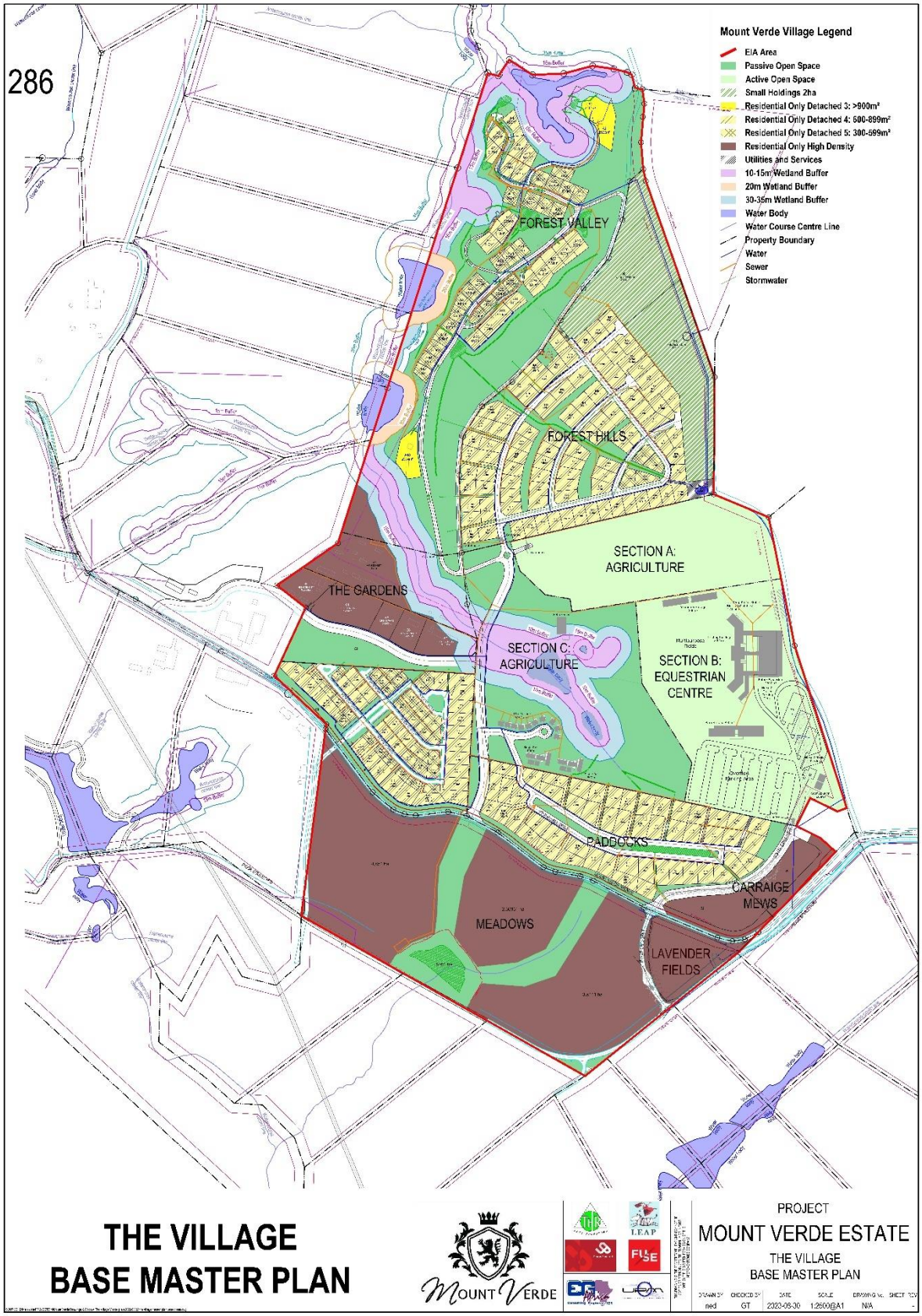


Figure 4: Proposed layout plan of the Mount Verde Village

7.0 NEMA LISTED ACTIVITIES TO BE APPLIED FOR

In April 2006 the Minister of Environmental Affairs and Tourism passed Environmental Impact Assessment Regulations in terms of Chapter 5 of the National Environmental Management Act, 1998 (NEMA). The regulations replaced the Environmental Impact Assessment (EIA) regulations which were promulgated in terms of the Environment Conservation Act, 1989 in 1997. The most recent regulations came into place on 18 June 2010 and, therefore, all application must be made in terms of these NEMA regulations. The purpose of this process is to determine the possible negative and positive impacts of the proposed development on the surrounding environment and to provide measures for the mitigation of negative impacts and to maximise positive impacts.

Notice No. R 982 to 985, specifically 983, 984 and 985 as amended by Notice No. R 324 to 327 list activities that must be considered in the process to be followed. The Activities listed in Notice No. R 984 as amended by 325 requires that the Scoping and EIA process be followed. However, the draft guidelines document supplied by DEAT states that if any activity being applied for is made up of more than one listed activity and the scoping and EIA process is required for one or more of these activities, the full EIA process must be followed for the whole application.

The proposed development includes several listed activities and therefore it will be necessary to follow a full EIA process (as an independent process) in terms of NEMA. The applicant is therefore applying for the following listed activities. Note the sections of the listed activities that are applicable to the proposed development have been marked as bold.

Table 2: Listed activities to be applied for

Indicate the number of the relevant Government Notice:	**Activity No (s) (relevant notice): e.g. Listing notices 1, 2 or 3**	**Describe each listed activity as per the wording in the listing notices:**	**Applicability to the application**
GN. R 983, 8 December 2014 as amended by GN R 327, 7 April 2017	Listing Notice 1 Activity 9	The development of infrastructure exceeding 1 000 metres in length for the bulk transportation of water or storm water— (i) with an internal diameter of 0,36 metres or more; or (ii) with a peak throughput of 120 litres per second or more;	The development will require the bulk infrastructure on and off the site. The extent of the infrastructure is provided in the engineering report which is included in this Draft EIR
GN. R 983, 8 December 2014 as amended by	Listing Notice 1 Activity 10	The development and related operation of infrastructure exceeding 1 000 metres in length for the bulk transportation of sewage, effluent,	The development will require the upgrading of bulk infrastructure on and off the site. The extent of the infrastructure is provided in the

GN R 327, 7 April 2017		process water, wastewater, return water, industrial discharge or slimes – (i) with an internal diameter of 0,36 metres or more (ii) with a peak throughput of 120 litres per second or more	engineering report which is included in Draft EIR
GN. R 983, 8 December 2014 as amended by GN R 327, 7 April 2017	Listing Notice 1 Activity 12	The development of— (i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs – (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse	The development is planned to accommodate a 32 m buffer from any wetland and stream area. The wetland delineation indicated that it is necessary to conduct rehabilitation in the wetlands and buffers. These include: Rehabilitation of small weirs, steam banks and other deteriorated stream and wetland areas. Where stream crossings are required, they will be implemented according to the DWS requirements.
GN. R 983, 8 December 2014 as amended by GN R 327, 7 April 2017	Listing Notice 1 Activity 19	The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse.	The development is planned to accommodate a 32 m buffer from any wetland and stream area. The wetland delineation indicated that it is necessary to conduct rehabilitation in the wetlands and buffers.. These include: Rehabilitation of small weirs, steam banks and other deteriorated stream and wetland areas. Where stream crossings are required, they will be implemented according to the DWS requirements.
GN. R 983 8 December 2014	Listing Notice 1 Activity 24	The development of a road – (i) for which an environmental authorisation was obtained for the	The proposed mixed-use development will include the development of a roads.

as amended by GN. R 327 7 April 2017		route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Government Notice 545 of 2010; or (ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 meters;	The length of roads that are anticipated. Main entrance – 2 km Internal roads – 9km **Total length of road –11 km**
GN. R 983 8 December 2014 as amended by GN. R 327 7 April 2017	Listing Notice 1 Activity 25	The development and related operation of facilities or infrastructure for the treatment of effluent, wastewater or sewage with a daily throughput capacity of more than 2 000 cubic metres but less than 15 000 cubic metres.	The development will require infrastructure for the treatment of sewage with a daily throughput capacity of more than 2 000 cubic metres but less than 15 000 cubic metres. The overall capacity of the WWTW at full development will be 1500kl/day, although it will be constructed in modular stages, as development nodes are developed and become active. However, the applicant wishes to switch the existing farm and offices that are on septic at the moment to the treatment facility and the size may increase in time. It is therefore necessary to make application for a plant of at least 2500lk/day Mitigation and monitoring measures are provided for the maximum size of the plant.
GN. R 984, 8 December 2014 as amended by GN R 327, 7 April 2017	Listing Notice 2 Activity 15	The clearance of an area of 20 hectares or more of indigenous vegetation.	Clearance of vegetation of more than 20 hectares will be required. It must be noted that since the development area extend to approximately 86 ha, and since the land is in a state of re-establishment of indigenous vegetation, the 20 ha is scattered across the 80 ha and is not in one concentrated area.

GN. R 985 8 December 2014 as amended by GN. R 325 7 April 2017	Listing Notice 3 Activity 6	The development of resorts, lodges, hotels, **[and]** tourism or hospitality facilities that sleeps 15 people or more **d. KwaZulu Natal** xii) Outside urban areas: (cc) Areas within a watercourse or wetland; or within 100 metres from the edge of a watercourse or wetland;	The proposed mixed-use development will consist of facilities that sleep 15 people or more
GN. R 985, 8 December 2014 as amended by GN R 324, 7 April 2017	Listing Notice 3 Activity 12	The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation. **d. KwaZulu Natal** xii) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority.	Clearance of vegetation of more than 300 sqm or more will be required for the proposed development.

8.0 DESCRIPTION OF THE INSTITUTIONAL ENVIRONMENT

The land development proposal of the proposed development site is influenced by the varying scales of institutional environments. The institutional context that is considered and reflected upon ranges from that of international, national, provincial, and local / municipal, while each institutional arena as it decreases in scale, requires development planning that is more detailed and responsive to the proposed development site and the surrounding environment.

The following institutional framework documents are relevant to the proposed township and development site.

8.1 INTERNATIONAL CONTEXT

Relevant International Conventions to which South Africa is part of and which should influence the proposed site development:

Table 3: International context

CONVENTION	RESPONSE
▪ Ramsar Convention on Wetlands, 1971	The site traverses between U20J and U20E quaternary catchments. 5 HGM units are located within the subject site on

▪ Framework for national action and international cooperation for the conservation and wise use of wetlands and their resources.	Mount Verde. These HGM units are divided by a watershed with the northern catchment flowing into the Doringspruit River, whilst the comparatively smaller system along the southern periphery of the estate flows into a low-lying dam. These identified wetlands within Mount Verde were considered in terms of their respective hydrology, geomorphology as well as vegetation and were found to have been subject to long term disturbance which has perpetuated modification of this system from its natural state. ▪ Development to occur outside of the 1:100-year floodline and the 36-meter buffer of the wetland ▪ Rehabilitation of the wetland and drainage line on the site should be implemented as far as possible. Development and particularly storm water management, to be responsive to surrounding hydrological systems. The implementation of attenuation and dissipation measures to minimise the velocity and quantity of storm water and therefore minimising environmental impacts is essential. Please refer to the **Environmental Management Programme (EMPr) – Annexure L** for further information in this regard.
▪ Agenda 21 adopted at the United Nations Conference on Environment and Development (UNCED) in 1992 ▪ Action plan and blueprint for sustainable development.	The proposed development is to be planned, constructed, and operated with sustainability as a key prerequisite and baseline standard. Please refer to **Annexure L –EMPr** for practical steps in achieving best practice methodologies.
▪ Convention on Biological Diversity, 1995 ▪ Provided and added stimulus for a re-examining and harmonization of its activities relating to biodiversity conservation.	An ecological specialist completed an assessment of the proposed development site to determine the biodiversity and habitat value. This assessment is to inform the planning and design phases as far as possible.

8.2 NATIONAL CONTEXT

The following national legislature is to be considered and applied to the development proposal during the environmental process:

Table 4: National Context

LEGISLATURE	RESPONSE
8.2.1 Spatial Planning Land Use Management (SPLUMA) Act No. 16 of 2013	
The Spatial Planning Land Use Management (SPLUMA) Act intends to provide a uniform framework for spatial planning and land use management in the republic. It seeks to promote consistency and uniformity in procedures and decision-making in spatial planning. The objectives of the Act are:	SPLUMA, has great importance with respect to good planning and development and are therefore to be aligned to as far as possible.
Provide for a uniform, effective and comprehensive system of spatial planning and land use management for the Republic.	The developer has identified this strategically located, inactive land parcel to develop an inclusionary mixed land use development, which will cater for a variety of income groups. Integral to this development will be high densities of residential and commercial uses, innovation and a new way of providing educational and learning facilities in UMngeni . The development will improve ownership for previously disadvantaged individuals. The proposal of a mixed-use establishment will provide for a cohesive social and economic environment, meeting basic needs of local residents as well as addressing past spatial imbalance. The proposed development will improve access and employment opportunities for previously excluded/disadvantaged groups, ensuring a development that is integrated, functional and environmentally sustainable human settlement.
Ensure that the system of spatial planning and land use management promotes social and economic inclusion;	The mixed-use establishment process and the environmental impact assessments are transparent and offer the opportunity for interested and affected parties to participate / comment on the proposed development. The processes have been designed to ensure that people's rights in respect of a healthy and economically viable environment are protected. All these aspects are considered during the environmental process to ensure a sustainable development.

LEGISLATURE	RESPONSE
Provide for the sustainable and efficient use of land.	Diverse land use is key to the success of this proposal as a mixed-use nodal development.
Discourage urban sprawl and promote a compact city	The proposed development site is strategically located along accessible transport corridors and urban amenities. In many instances, the legacy of Apartheid planning practices has resulted in sprawling urban areas characterized as being uneconomical and offering one-dimensional opportunities to residents. The proposed development is partly classified as infill development in terms of the Provincial Spatial Development Framework on vacant land within the urban environment (Provincial Economic Core). The proposed development therefore will contribute to the re-engineering of the existing urban form, the establishment of a more compact city and contribute to the optimization of the use of existing infrastructure such as bulk sewer lines, bulk roads and water.
Redress the imbalances of the past and to ensure that there is equity.	The proposed development will provide for inclusionary housing to those who were previously not able to own/buy property in competitive residential market. Inclusionary Housing is considered the central theme of the development and the proposed development will promote the above principle by making provision for previously disadvantage persons to participate in the property market.
Ensure that special consideration is given to the protection of prime and unique agricultural land.	The land presents undeveloped and underutilised land within an urban setting. Surrounding agricultural areas will not be negatively affected by this proposed township. Furthermore, no natural features like streams and wetlands will be destroyed by the development to the detriment of rural areas. The proposed development strives for the optimum utilization of this site delivering much needed housing and employment opportunities, while increasing the land value.

LEGISLATURE	RESPONSE
Uphold consistency of land use measures in accordance with environmental management instruments	The proposed development is structured in a manner that is in accordance with the environmental framework of the UMngeni Municipality which aims at managing Mount Verde Estate, scarce environmental resources to achieve sustainable development. The application has taken into consideration the existing natural environment and how best to develop the land with minimal impact. The development is aimed at providing a high-quality interface between urban elements and the natural environment in a controlled manner to ensure that these elements benefit from one another. The natural landscape will act as a green strip flowing through the entire development and linking up with the open space in surrounding developments.
8.2.2 National Environmental Management Act (NEMA), 1998 (Act No 107 of 1998) and the Environmental Impact Assessment Regulations	
NEMA aims to provide for co-operative environmental governance by establishing principles for decision-making on matters affecting the environment, institutions that will promote cooperative governance and procedures for coordinating environmental functions exercised by organs of state and to provide for matters connected therewith. The Act recognises that many inhabitants of South Africa live in an environment that is harmful to their health and wellbeing and focuses on the following:	NEMA principles are to be adhered to, with specific reference to development that promotes integrated environmental management, while being socially, environmentally, and economically sustainable. The proposed development layout must reflect NEMA principles, such as protection of the environment for present and future generations by preventing pollution and ecological degradation, promoting conservation, and securing ecologically sustainable development and utilisation of natural resources.
Everyone has the right to an environment that is not harmful to his or her health or well-being	Please refer to the **EMPr** (**Annexure L**) which discusses health and safety issues during the construction phase.
The State must respect, protect, promote, and fulfil the social, economic and environmental rights of everyone and strive to meet the basic needs of previously disadvantaged communities	This development will provide employment opportunities (construction and operational phase therefore forming an inclusive environment with employment opportunities in close proximity to accommodation.
Inequality in the distribution of wealth and resources, and the resultant poverty, are among	Good integration is ensured due to the mixed land use character of the proposed development, as well as its location within the

LEGISLATURE	RESPONSE
the important causes as well as the results of environmentally harmful practices;	urban realm along public and private transport corridors. Several communities and individuals will be able to access and invest in the proposed development.
Sustainable development requires the integration of social, economic, and environmental factors in the planning. implementation and evaluation of decisions to ensure that development serves present and future generations.	Social and environmental aspects are taken into consideration during the environmental impact assessment process, along with appropriate market feasibility research, to ensure that the project is viable and sustainable. The proposed development responds to the Regional Spatial Development Framework of the local municipality.
Everyone has the right to have the environment protected, for the benefit of present and future generations through reasonable legislative and other measures that: ▪ prevent pollution and ecological degradation ▪ promote conservation ▪ secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development	The proposed development plan ensures that areas of cultural and ecological value are maintained. Also, please refer to the **EMPr** (**Annexure L**) which thoroughly discusses aspects that are related to ecological preservation, conservation, and sustainable development.
The environment is a functional area of concurrent national and provincial legislative competence, and all spheres of government and all organs of state must co-operate with, consult and support one another	Applicable national, provincial, and municipal legislation is taken into account and aligned to during the environmental impact assessment process
Furthermore, this act develops a framework for integrating good environmental management into all development activities, while establishing principles guiding the exercise of functions affecting the environment. Integrated Environmental Management (IEM) is designed to ensure that the environmental consequences of development proposals are understood and adequately considered in the planning, implementation, and management of all developments. It is intended to guide, rather than impede the development process by providing an approach to gathering and analysing information and ensuring that it can be easily understood by all interested and affected parties in the development. The purpose of IEM is to resolve or lessen any	A thorough impact assessment process has been undertaken – derived from: ▪ Public Participation ▪ Specialist studies ▪ Map assessments ▪ Institutional and legal assessment This process allows for adequate planning and mitigation. Please refer to the section of this report which provides information on the assessment process.

LEGISLATURE	RESPONSE
negative environmental impacts and to enhance positive aspects of development proposals.	
8.2.3 The National Water Act, 1998 (Act No 36 of 1998)	
The National Water Act: ■ Recognizes that water is a scarce and unevenly distributed national resource which occurs in many different forms which are all part of a unitary, inter-dependent cycle ■ Recognizes that while water is a natural resource that belongs to all people, the discriminatory laws and practices of the past have prevented equal access to water, and use of water resources ■ Acknowledges the National Government's overall responsibility for and authority over the nation's water resources and their use, including the equitable allocation of water for beneficial use, the redistribution of water, and international water matters ■ Recognizes that the ultimate aim of water resource management is to achieve the sustainable use of water for the benefit of all users ■ Recognizes that the protection of the quality of water resources is necessary to ensure sustainability of the nation's water resources in the interests of all water users ■ Recognizes the need for the integrated management of all aspects of water resources and, where appropriate, the delegation of management functions to a regional or catchment level so as to enable everyone to participate	In essence, the proposed development should align to the purpose of this Act, therefore ensuring that the nation's water resources are protected, utilised, developed, conserved, managed and controlled in ways that take the following into account: ■ Meeting basic human needs of present and future generations ■ Promoting equitable access to water ■ Promoting efficient, sustainable and beneficial use of water in the public interest ■ Reducing and preventing pollution and degradation of water resources ■ Facilitating social and economic development ■ Providing for the growing demand for water use The Act requires that (where applicable) the 1:50 and 1:100-year flood line be indicated on all the development drawings that are being submitted for approval. These flood lines have been indicated, the proposed development is situated outside the 1:50 and 1:100-year flood lines. Where services infrastructure is required to cross the wetland and stream, an application for a Water Use Licence will be submitted to the Department of Water and Sanitation.
8.2.4 National Environmental Management: Biodiversity Act, (Act No 10 of 2004)	
The National Environmental Management: Biodiversity Act aims to provide for the management and conservation of South Africa's biodiversity within the framework of the National Environmental Management Act1, 1998; including the – ■ Protection of species and ecosystems that warrant national protection	An ecological specialist was appointed to undertake the biodiversity assessment, with specific attention to Red Data Listed species, habitats and biodiversity. The specialist study is aligned to requirements of this act.

LEGISLATURE	RESPONSE
▪ The sustainable use of indigenous biological resources ▪ The fair and equitable sharing of benefits arising from bioprospecting involving indigenous biological resources ▪ The establishment and functioning of a South African National Biodiversity Institute; and for matters connected therewith	The proposed development aligns to the purpose of this Act and the above-mentioned specialist report. The sustainable utilisation of indigenous biological resources, i.e. indigenous vegetation species will be reintroduced to the newly created urban open spaces as far as possible, thereby resulting in an ecological urban regeneration strategy. Please refer to **Annexure L – EMPr** for additional information.
8.2.5 The National Heritage Resources Act, 1999 (Act No 25 of 1999) (NHRA)	
The NHRA focuses on the following, that have reference to the development of land: ▪ To introduce an integrated and interactive system for the management of the national heritage resources ▪ To promote good government at all levels, and empower civil society to nurture and conserve their heritage resources so that they may be bequeathed to future generations ▪ To lay down general principles for governing heritage resources management throughout the Republic ▪ To introduce an integrated system for the identification, assessment, and management of the heritage resources of South Africa ▪ To establish the South African Heritage Resources Agency together with its Council to co-ordinate and promote the management of heritage resources at national level. ▪ To set norms and maintain essential national standards for the management of heritage resources in the Republic and to protect heritage resources of national significance. ▪ To provide for the protection and management of conservation-worthy places and areas by local authorities; and to provide for matters connected therewith	The proposed development should respond to the requirements of the National Heritage Resources Act as well as that of the South African Heritage Resources Agency (SAHRA). Section 38 of the NHRA makes provision for application by developers for permits before any heritage resources may be damaged or destroyed. A specialist in the field was appointed to conduct a Cultural Heritage Resources Impact Assessment. Should archaeological sites or graves be exposed during construction work, it must immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made.
This legislation aims to promote good management of the national estate, and to enable and encourage communities to nurture and conserve their legacy so that it may be bequeathed	The importance of cultural heritage and its related preservation is discussed within the EMPr (**Annexure L**).

LEGISLATURE	RESPONSE
to future generations. It recognises that our heritage is unique and precious, and it cannot be renewed as it – ■ Helps us to define our cultural identity and therefore lies at the heart of our spiritual well-being and has the power to build our nation. ■ Has the potential to affirm our diverse cultures, and in so doing shape our national character? ■ Celebrates our achievements and contributes to redressing past inequities ■ Educates and deepens our understanding of society and encourages us to empathise with the experience of others. ■ Facilitates healing and material and symbolic restitution and it promotes new and previously neglected research into our rich oral traditions and customs	The EMPr places focus on the education of people regarding places of heritage value and artefacts, should they come across them during their work activities.

8.3 PROVINCIAL CONTEXT

Please note that the below section only highlights some of the most prudent issues in this regard.

Table 5: Provincial Context

DOCUMENT	RESPONSE
8.3.1 KwaZulu Natal Spatial Development Framework 2021 (KZNSDF)	
The purpose of the KZNSDF is to communicate a shared future spatial vision and structure for the Province. The KZNSDF is clear and unambiguous about the fact that growth and development within the province should be strategically guided and directed and not purely just a consequence of spontaneous and organic growth. The KZNSDF provides an overarching spatial vision for the Province and hence provides guidance and influences the uMngeni Spatial Development Framework with specific regards to the location and nature of the physical development. The following key considerations contained within the KZNSDF are identified and highlighted due to its importance and relevance in as far as the application is concerned:	The proposed mixed-use development with associated infrastructure complies to the principles of the KZNSDF because the development concept aims to move away from the typical low-density development concepts characteristic of the surrounding area. Through the increase in development density the concept promotes a higher intensity development proposal whilst still acknowledging the importance of the sensitive environment within which the development is located and preventing urban sprawl.

DOCUMENT	RESPONSE
• Urban growth should be contained; • Resource based economic development (resulting in the identification of the economic core); • Re-direction of urban growth (stabilise/limit growth in economically non-viable areas, achieve growth on the land within the economic growth sphere); • Protection of rural areas and enhancement of tourism and agricultural related activities; • Increased access and mobility. The primary structuring elements identified within the KZNSDF are those of: • Urban mixed-use activity nodes; • Open space and green system; • Public transit and movement routes; • Urban corridors and activity spines. In addition to the above the KZNSDF sets out to guide and structure growth, in a balanced manner, towards the notion of a "sustainable city". Within the KZNSDF the notion of a "sustainable city" is explained as the focus on achieving a life-enhancing urban environment for all individuals, in which acceptable standards of living are met without compromising the ecological, cultural, social, economic, security or legal pre-conditions necessary for continued viability. In order for South African cities to achieve the status of a "sustainable city" a number of development principles need to be achieved, which include: • A more compact urban from that discourages dispersed low-density urban sprawl; • The promotion of a diverse combination of land-uses that enables a greater intensity of mixed-use development; • A more complex urban system that spawns opportunity through diversity of activity patterns and brings associated economic and employment opportunities through integrated development;	Ample private open space is provided as part of the proposed development ensuring that sensitive areas are protecting and providing recreational areas.

DOCUMENT	RESPONSE
• The integration of the historically marginalised areas into the mainstream of urban life by correcting the spatial patterns of the urban environment; • Optimising the utilisation of existing service infrastructure and social amenities particularly where space capacity exists; • Enabling accessibility to affordable and efficient means of public and private transportation; • Furthering the development of employment opportunities and residential areas in close proximity to or integrated with each other; • Promoting physical development based on ecological sound principles that bring the natural environment and the urban system into a mutually reinforcing and integrated relationship; and Understanding the open space system of a city-region as an integral part of the city-region's morphology, economic makeup and a defining element of urban quality.	
8.3.2 EDTEA - ENVIRONMENTAL PLANNING: INTEGRATION AND COORDINATION FRAMEWORK	
The five-year strategic plan presents Departmental strategic goals and objectives which are aligned with both the provincial and national priority areas. The mandate of the Department derives from the Medium Term Strategic Framework (MTSF) of this electoral term as announced by the President of the Republic of South Africa, The government priorities are as follows: • Speeding up growth and transforming the economy • Social and economic infrastructure • Rural development linked to land reform. • Skills and human resources • Improving the nation's health profile • Fight against crime and corruption • Cohesive, sustainable communities • International co-operation • Sustainable resource management • Democratic developmental State	An ecological specialist was appointed to assess the proposed development sites fauna and flora biodiversity, with specific attention to Red Data Listed species. No red data species were found to be present within the study area. Wetlands should always be conserved and/or rehabilitated. The wetlands should be excluded from development and the flow of water should not be hampered in any way by the development. The wetlands should not be transformed by e.g. landscaping unless it is aimed at rehabilitation/restoration of the habitat. A buffer zone of at least 32 m around the edge of these areas should be present

DOCUMENT	RESPONSE
The Provincial Priorities and provincial flagship programmes identified by the KwaZulu-Natal Cabinet have provided clear direction to the Department. The Department will focus its programmes in order to achieve: • the development of social and economic infrastructure to boost the economy and increase employment; food security to alleviate poverty; • land and agrarian reform to champion rural development; • human resource development to increase government capacity and • sustainable resource management to ensure the future availability of essential resources for the next generation • education and skills for all • health for all	where no development is permitted. The wetlands should be cleared of rubbish and further pollution of the streams prevented (especially at the squatter compound upstream of the site). Please refer to **Annexure D – E** Terrestrial Assessment, and Freshwater Assessment.
8.3.3 Protection of Agricultural Land in KwaZulu-Natal	
The purpose of this policy is to protect land that has been identified as high agricultural potential from development, for the exclusive use of agricultural production to: ▪ Feed the nation; ▪ Provide upcoming farmers with access to productive land; and ▪ Meet national targets set in this regard. Land with high agricultural potential is a scarce non-renewable resource and the need to protect it is a high priority for EDTEA, who applies a risk averse and cautious approach when development of such land for purposes other than agricultural production is proposed. The risk averse and cautious approach should be the basis of decision-making on the transformation of high potential agricultural land and land deemed as irreplaceable in terms of meeting Agri-BBBEE and national food security targets and thus legally protected from transformation. EDTEA is not in support of development on high potential agricultural land that resides outside the urban edge. Seven agricultural hubs have been identified in	The proposed development site, according to the Agricultural Potential Atlas contains areas with moderate agricultural potential. Open Spaces are included throughout the layout to allow urban agriculture.

DOCUMENT	RESPONSE
the KwaZulu Natal. All the hubs are located outside the urban edge. The hubs are regarded as areas with a large amount of high agricultural potential land that should be preserved for agricultural use and will accordingly be planned and managed as a holistic agricultural unit. Each of the hubs will be developed to align with its agricultural potential and preferred land use and will be supported by current economic indicators.	

8.4 LOCAL CONTEXT

The Town Planning motivation document – Annexure G2 – provides a discussion on the local strategies. Aspects that are addressed are:

- uMgungundlovu District Municipality Spatial Development Framework (SDF)
- uMngeni Municipality Integrated Development Plan
- uMngeni Municipality Local Economic Development Strategy
- uMgungundlovu Biodiversity Sector Plan

8.4.1 Conclusion and recommendations for the application:

The development is subject to numerous national, provincial, and local statutory polies and regulations. The applications will abide by the listed statutory requirements.

9.0 DESCRIPTION OF THE BIO-PHYSICAL ENVIRONMENT

When the study was initiated guidelines from the KZN Department of Economic Development, Tourism and Environmental Affairs (EDTEA), KZN Ezemvelo Wildlife and SANBI, were referred to, these guidelines were reviewed to determine which aspects of the site must be investigated further by specialists.

The findings are as follows:

The proposed development site falls within an area which is zoned for Rural Residential. The existing development adjacent to the subject property includes:

- North: Agricultural Holdings
- South: State land
- East: Agricultural Holdings; and
- West: Residential and Agricultural Holdings.

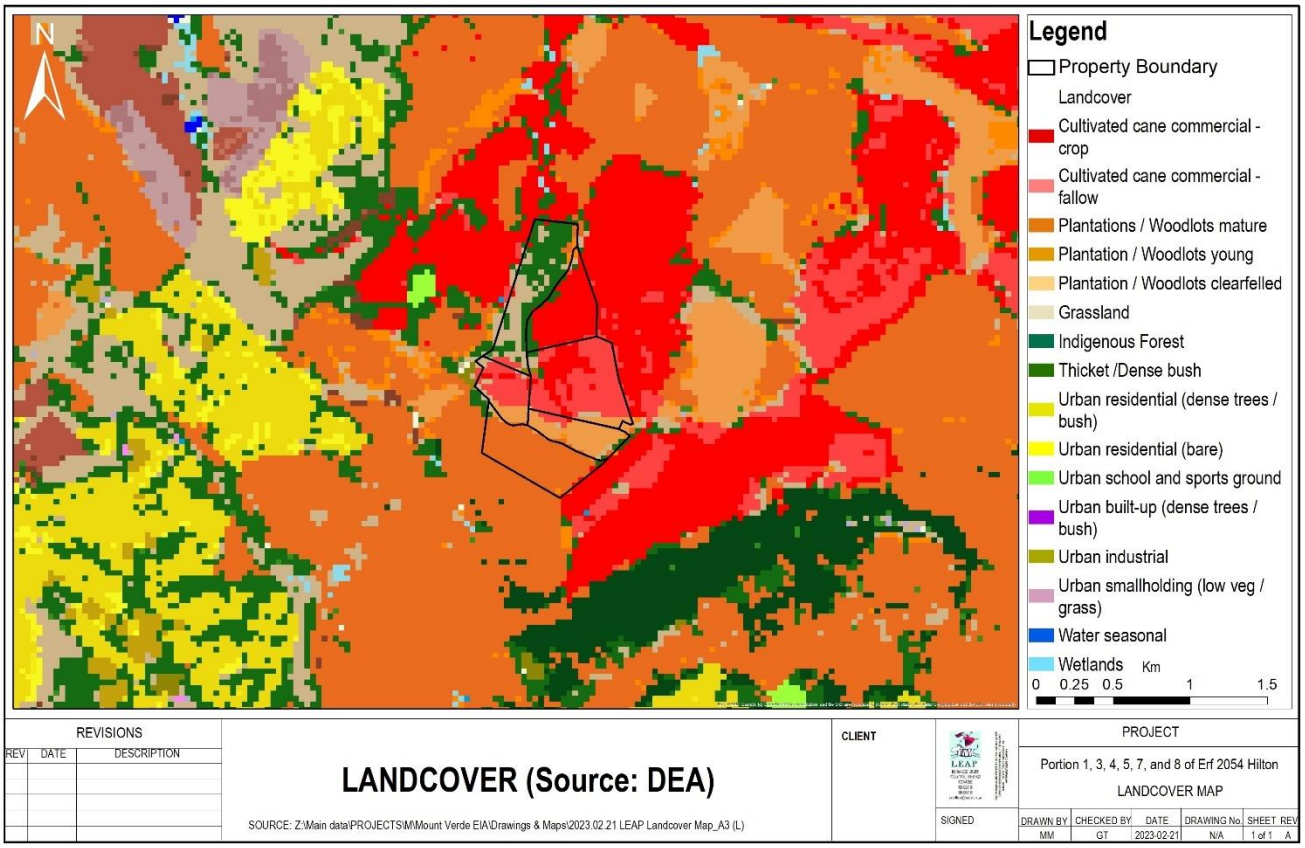


Figure 5: Landcover

9.1 UMGUNGUNDLOVU DISTRICT MUNICIPALITY(UMDM) ENVIRONMENTAL MANAGEMENT FRAMEWORK

The "KwaZulu-Natal Land Use Management System Guidelines for the Preparation of Schemes for Municipalities" dated 2011 has 8 categories of land use, and the proposed development is "mixed-use" as a land use.

The KZN EMF Decision Screening Tool (DST), web-based tool was used to define and map development sensitivity as a guidance to generate information.

9.1.1 EMF Biodiversity

The uMDM supports areas of rich and abundant biodiversity owing to a range of environmental drivers (climate, topography, soils, geology, hydrology, etc.) that give rise to a variety of vegetation types and habitats.

The uMDM Environmental Management Framework below indicates that the biodiversity within the site has low sensitivity. Moreover, the site is identified as not a priority for biodiversity conservation as it is not located in any CBA area. Should the proposed land use result in transformation of untransformed areas, mitigation measures will be implemented to retain or address any loss of goods and services such as stormwater management and aesthetics.

Figure 6: EMF Biodiversity (Source: uMDM EMF)

9.1.2 EMF Flooding Risk

According to the uMDM Environmental Management Framework a flood risk sensitivity zone is defined based on the 1:100 year flood risk area. The site is not expected to experience flooding as it is not located on any flood risk sensitivity area.

Figure 7: EMF Flooding Risk (Source: uMDM EMF)

9.1.3 EMF Water Production

The uMDM is centred on nationally and regionally strategic catchments that supply water to the economic hubs of Durban and Pietermaritzburg. Water supply is supported by a series of major

impoundments (e.g. Midmar, Albert Falls and, Spring Grove Dams) that are directly and indirectly linked to the uMngeni River.

The uMDM Environmental Management Framework below indicates that the water supply demand within the site has high sensitivity. Aquatic ecosystems will be avoided, and where possible, appropriate aquatic buffers during the developing planning process will be incorporated.

Figure 8: EMF Water Production (Source: uMDM EMF)

9.1.4 EMF Water Quality

The surface water resources of the uMgungundlovu District Municipality, which include the Mooi, Mngeni and Mkomazi Rivers are critical to the economic and environmental sustainability of the District and of KwaZulu-Natal. Water quality is severely compromised in several critical catchment areas particularly with respect to nutrient loading, bacteria and other pathogens.

The uMDM Environmental Management Framework below indicates that the water quality within the site has high sensitivity. The proposed development will abide by the requirements of the Resource Quality Objectives for the catchment and by requirements of any water use licence issued in respect of the development.

Figure 9: EMF Water Quality (Source: uMDM EMF)

9.1.5 EMF Wetlands

High levels of loss and degradation have reduced the capacity of wetlands to provide a range of important ecosystem services. Remaining wetlands form an important part of the vital ecological infrastructure within the UDM, which needs to be conserved and where possible restored.

The uMDM Environmental Management Framework below indicates that the wetlands within the site have a very high sensitivity. Site specific development buffer will be determined within which development should not be allowed to encroach.

Figure 10: EMF Wetlands (Source: uMDM EMF)

9.1.6 EMF Infrastructure or Service Constraints

The infrastructure assessment of the EMF indicates that waste services, water and sanitation infrastructure are not well developed across the UMDM. This presents constraints to developments and has implications for an overstrained natural resource base to assimilate pollution and waste and natural resource needs.

The uMDM Environmental Management Framework below indicates that the infrastructure within the site has moderate to high sensitivity. Need for new bulk services in support of the proposed development will be assessed in consideration of the capacity of existing service infrastructure.

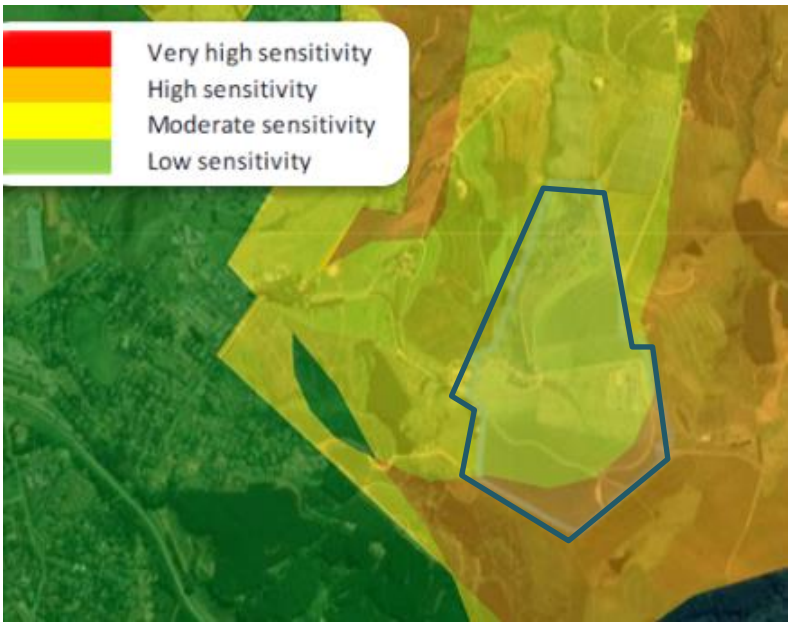


Figure 11: EMF Infrastructure or Services Constrain (Source: KwaZulu Natal EMF)

According to KZN Biodiversity Sector Plans, SANBI (2018) and KZN Ezemvelo Wildlife (2016), the site does not contain areas designated as CBA. Refer to **Figure 12**.

According to NFEPA (2011), the north western noundery of site is borderd by a river and theirs is also a wetland within the site, refer to **Figure 3**. Additionally, there are no ridges on the property.

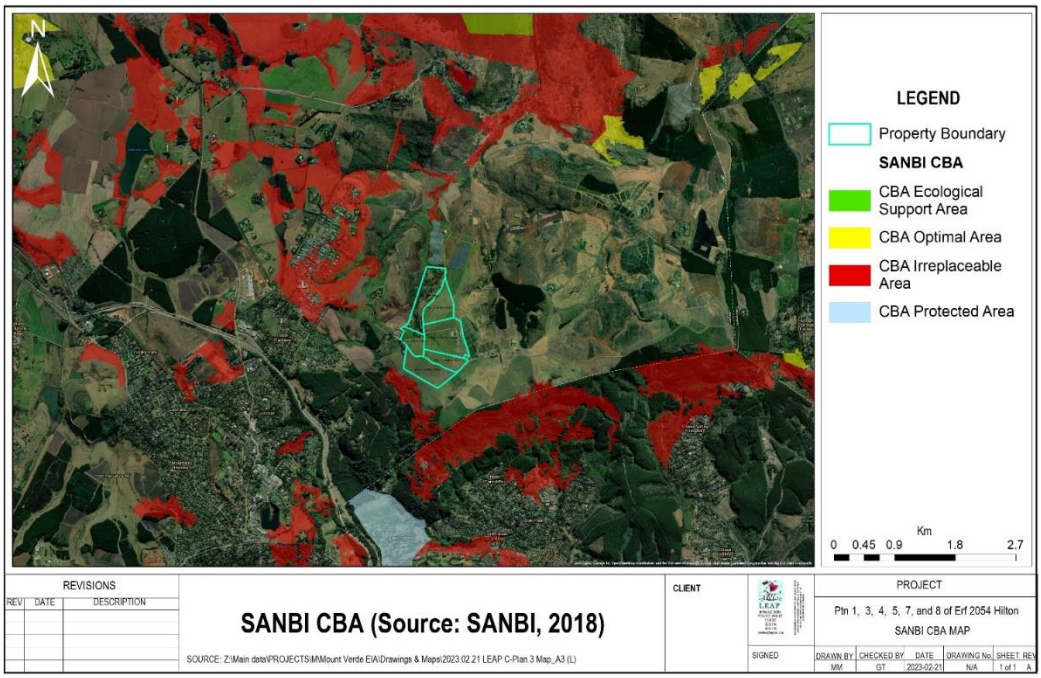


Figure 12: KZN Biodiversity Sector Plan (Source: SANBI)

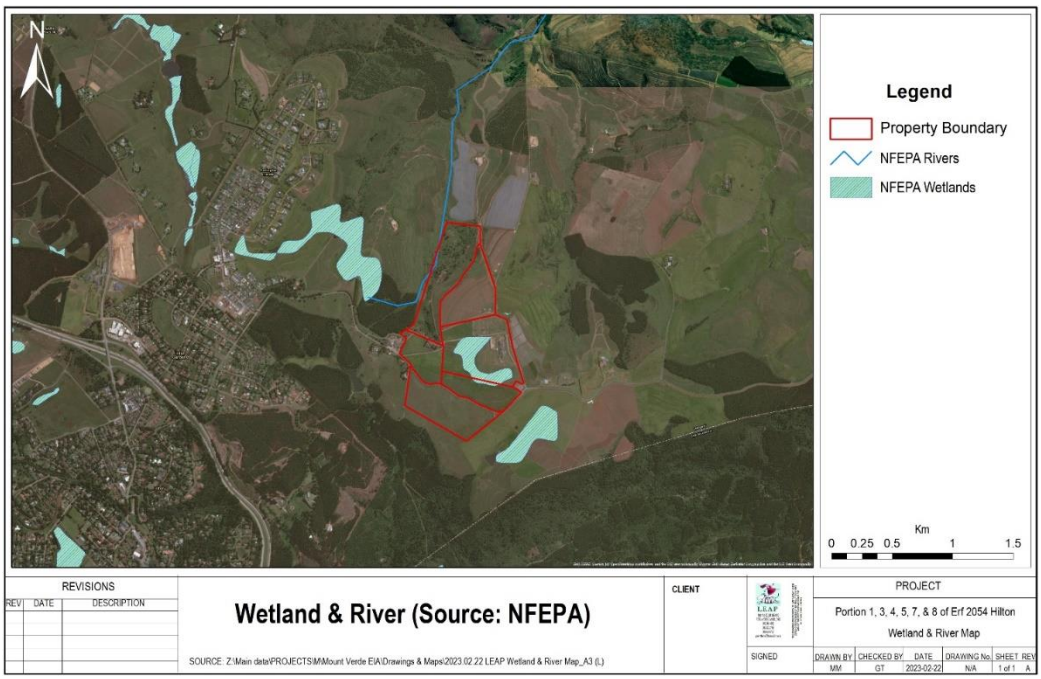


Figure 13: Rivers and Wetland (NFEPA, 2011)

9.2 SURROUNDING LAND USE, ZONING AND CHARACTER

The proposed development sites fall within an area which is zoned for Agriculture and is vacant. The existing development adjacent to the subject property includes:

- **North:** Agricultural Holdings;
- **South:** State land and residential erven
- **East:** Agricultural Holdings;
- **West:** Agricultural Holdings, and further east, residential

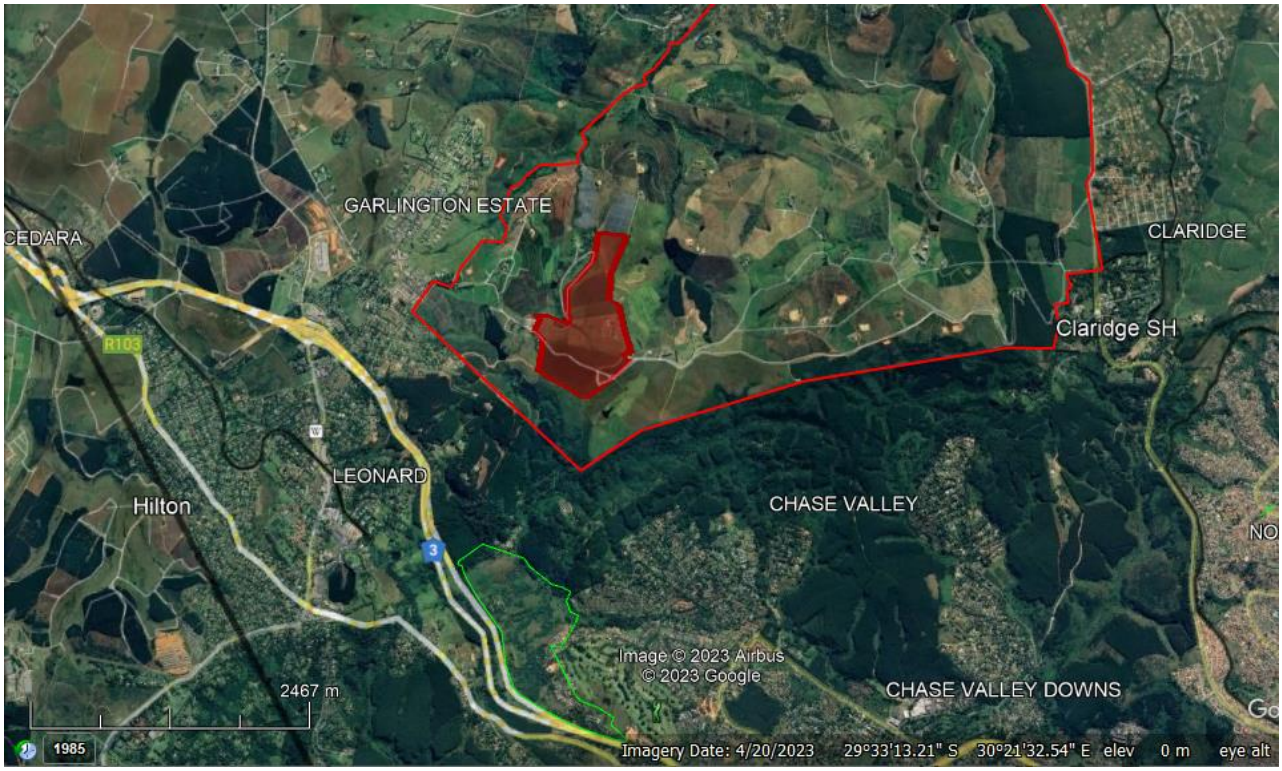


Figure 14: Location with adjacent land uses

9.3 TOPOGRAPHY & DRAINAGE

The site is at an elevation ranging between 1000-1120 meters above mean sea level. It slopes to the north-west at an average gradient of approximately 10 %, to the Doringsrpuit that originates on Mount Verde. The Doringspruit drains north along the western boundary of the Mount Verde farm for approximately 7 km and ultimately drains into the Albert Falls Dam.

A small section along the southern boundary drains to the south into a tributary of the town Bush Stream and through the Queen Elizabith Park Nature Reserve.

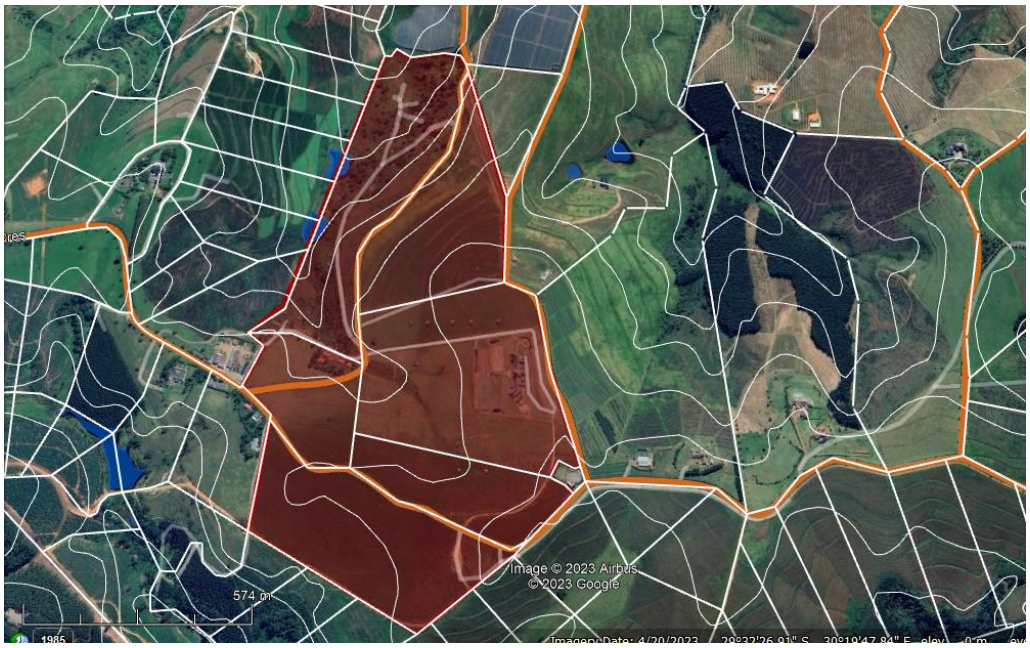


Figure 15: Topographic character.

9.3.1 Conclusion and recommendations for the application:

The topographical character of the site will not result in slope instability on the proposed development. The bylaws of the uMngeni Municipality prevent development of slopes steeper than 30 deg

Effective stormwater management will be a priority during both construction and operational phase. This will be monitored as part of the EMPr. High energy stormwater input into the watercourses will be prevented at all costs. Changes to natural flow of water (surface water as well as water flowing within the soil profile) on the site above the river area resulting from the proposed road upgrade should be taken into account.

Implementation of appropriate stormwater management around the excavation to prevent the ingress of run-off into the excavation and to prevent contaminated runoff into the watercourse.

9.4 CLIMATIC CONDITIONS

Hilton in Pietermaritzburg has a warm and temperate climate classified as Cfb under the Köppen climatic classification. The driest months in a year are June and the most precipitation falls in December. Pietermaritzburg experiences extreme seasonal variation in monthly rainfall.

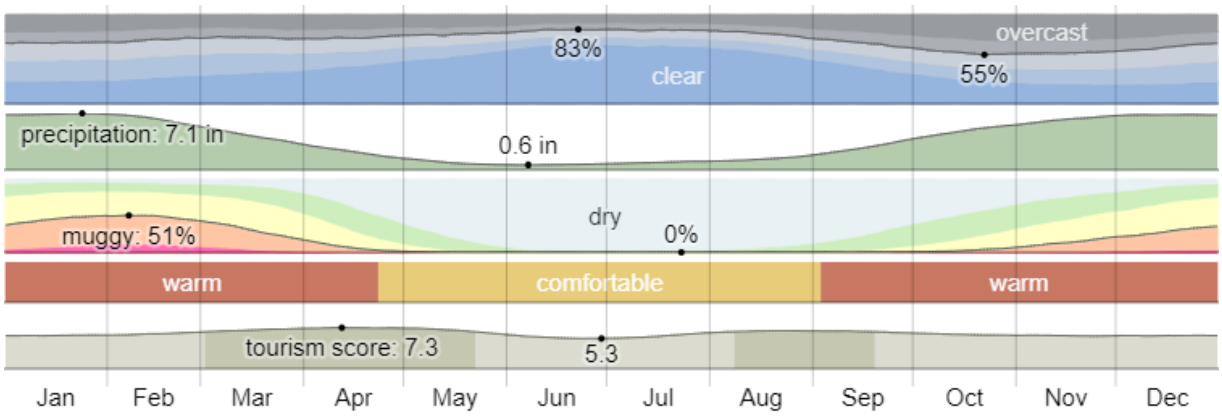


Figure 16: Hilton Climate graph (source: Weatherspark)

The climatic conditions contribute to determine:

- Positions of structures and outdoor spaces for optimum solar utilization;
- General response to climatic conditions in detail design of structures and the location of certain uses inside buildings; and
- Potential nuisance or health threat of dust from the site of development

Detailed information will be obtained during the detailed design phases of homes and structures. The South African weather service data will be used. This will include :

- Temperature, Wind direction, Rain fall, Frost days, Thunderstorm frequency;
- Identification of potential sensitive receptors in the vicinity of the site;
- Identification of existing wind-blown dust emissions;
- Characteristics of ambient air and dust fallout levels; and
- Regulatory context for air quality

9.4.1 Conclusion and recommendations for the application:

Unusualy high number of days of fog and mist are experienced in Hilton, which pose safety concernd when driving and for pedestrians. The design of roads and crossings must consider this climatic phenomena.

9.5 GEOTECHNICAL INVESTIGATIONS

- According to the 1:250 000 scale geology map series 2930 Durban, the regional geology comprises of the rocks of the Karoo Supergroup. The site is predominantly underlain by the mudrock of the Volksrust Formation. Northern portion is underlain by fine- to coarse-grained sandstone, shale, coal seams of the Vryheid Formation, while the southern portion is underlain by the Karoo Dolerite Suite, which consist of an interconnected network of dolerite sills, sheets and dykes. The soils on the site tend to be acid, heavy and clay-rich and there are deposits of alluvium and landslip material.

- There are no dolomites underlying the site and will not impact the proposed development.

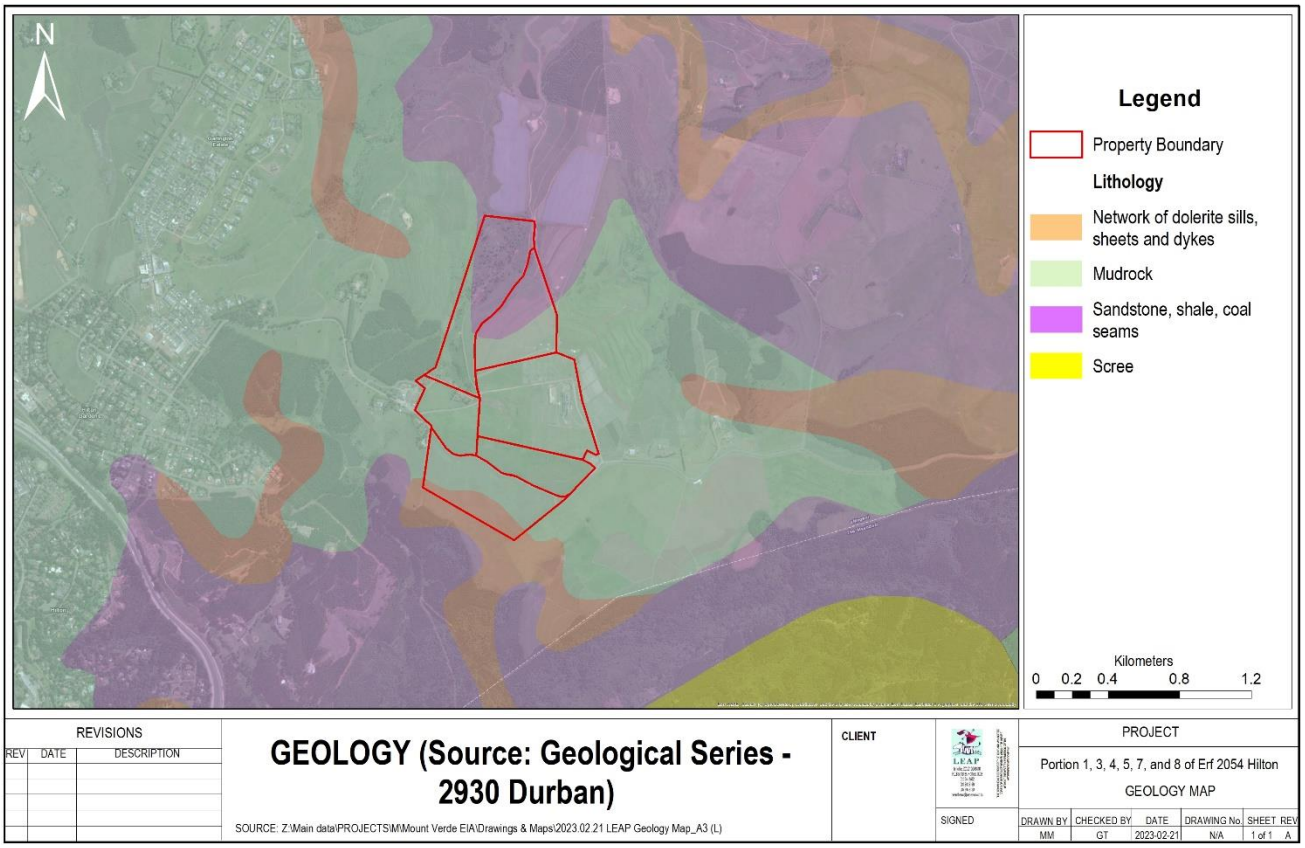


Figure 17: Geology of the study area

Gondwana Geo Solutions (Pty) Ltd conducted a geotechnical investigation (2022) on Forest Village and the area around the existing farm operations. The study revealed more detail and indicated that the site is underlain with deep soils which are completely weathered dolerite sill, occurring from ground surface as a clayey silty sand. This sill overlies completely weathered sandstone of the Volksrust Formation beneath some parts of the site.

No bedrock was encountered in geotechnical investigation.

Figure 18: Geological assessment at Mount Verde.

In an area closer to the ridge, the residual dolerite soil, occurring from ground surface generally comprises moist dark reddish-brown clay, soft becoming firm with depth, and occurs to a depth of about 2.80 to 3.00 mbegl or more. Residual sandstone soils were encountered beneath the residual dolerite soils and comprise a light brown to yellowish brown medium grained sand. The residual sandstone soils were encountered in three of the four augured holes before encountering refusal depth.

From the results of the DPL tests put down the upper colluvial soils generally exhibit a consistency of very soft to soft to an average depth of 0.90 mbegl. Below this depth the residual soils generally improve in consistency to firm to about 2.10m and improve very gradually to dense or stiff near refusal depth.

- **Findings to date and potential impacts**

Each landowner will conduct detail geotechnical investigations to determine the suitability of the land for construction. However, the general geological condition of the land is stable and suitable for development.

9.5.2 Soils and Agricultural Potential

Mottram and Associates conducted an agricultural assessment on part of the Mount Verde Farm portions and provided general information that is applicable to the conditions at Mount Verde Village.

Mount Verde Village is currently not being utilised for no significant agricultural activities and is also located nearby other residential areas. The Village comprise a small section of the overall Mount Verde Farm and no impacts on agriculture, in respect of the proposed development in the village, are anticipated.

Sections of the Open spaces within each Hamlet will be used for Urban Agriculture in keeping with the theme and focus of the greater Mount Verde Farm. High intensity urban agriculture will thus allow for the development of a variety of environmental, economic, and social benefits to the surrounding communities. Urban farming can reduce transportation costs, help reduce runoff associated with heavy rainfall, and lead to better air quality within the village.

The Mount Verde Village comprise. 3.3% of the original Mount Verde Farm of approximately 2540 ha. The remainder of the land is already allocated to farming in land parcels of 5ha to 90 hectares.

- **Findings to date and potential impacts**

The land designated for the Mount Verde Village is used for grazing but not being used for any intense agricultural activities and no impacts in respect of the proposed development are anticipated with regards to the loss of land with high agricultural potential.

9.6 TERRESTRIAL ASSESSMENT

9.6.1 General

SDP Ecological and Environmental Services has been appointed to undertake a verification of the Terrestrial Biodiversity Assessment. Results of the study is herewith provided in the Draft EIA Report.

Refer to **Annexure D** for full Terrestrial Biodiversity Report

Site investigations were undertaken on the 5th and 18th of July 2023, whereby the general landscape and specific features were evaluated, including determination of the prevailing habitat form and species dominance. To determine the nature and extent of various habitat associations across the site, linear transects were established over select study sites. The transects incorporated differing elevation across the site. Individual specimens were recorded using a drop stick method of evaluation, logged at 1-meter intervals along a transect line. A total of 260 sample points were recorded and logged using a Garmin GPS device.

The report has been prepared in alignment with Appendix 6 of the National Impact Assessment Regulations (2014), which stipulates the following:

1. The identification and delineation of environmental features of significance.
2. Detailing of the ecological state and functionality of watercourses and wetlands.
3. The determination of the suitability of the proposed development from a biophysical perspective.
4. The identification and assessment of impacts likely to arise as a consequence of the development.
5. The provision of applicable mitigation measures and monitoring practices; and
6. Specify caveats to be included in the EA and environmental management programme.

SDP Ecological and Environmental Services were appointed by LEAP Environmental Consulting, the project Environmental Assessment Practitioners (EAPs) to carry out a terrestrial and wetland assessment at Mount Verde Estate. The subject site lies within the KwaZulu-Natal Midlands and lies proximal to and within the Midlands Mistbelt veld type, a habitat of high conservation value. Site investigations were undertaken between 14 and 30 May 2022 whereby evaluation of the terrestrial environment, specifically to consider the form and structure of the grasslands present on site, as well as review of the wetland environments was undertaken.

The subject area was divided into 5 separate areas for assessment purposes. All data was subject to analysis using basic linear and comparative methods. Such information provided preliminary insight into the nature and structure of the habitat in question. The data was collated and subject to evaluation using a Two Way Indicator Species Analysis (TWINSPAN). TWINSPAN is a method of grouping species according to community structure and was utilised to classify communities within the study area. These results, in combination with field observations, such as elevation, slope and surface soil structure, were used to determine the extent and significance of habitat throughout the study site.

Mount Verde Estate lies within the KwaZulu-Natal Midlands, a sub-tropical climatic zone, which is classified as Cfb according to the Koppen-Geiger climate classification system. This classification indicates a climatic regime that is "warm temperate, fully humid, warm summer" (http://stepsa.org/climate_koppen_geiger.html). Rainfall is primarily unimodal with high and sometimes significant, precipitation events experienced during the summer months. The South Africa Weather Services (SAWS) indicates that the region has a mean annual precipitation of between 872mm and

950mm, and annual average temperature of 17.5°C. Notably, this region is prone to frosting during the winter months which has a significant impact on aquatic ecology and grassland habitats.

The underlying geology within this general area is predominantly shale, and to a lesser extent, sandstone derived from the Ecca group. The meteorological conditions and underlying geology of this region gives rise to primarily humic soils, associated with eastern seaboard of South Africa, which are distributed throughout much of the Midland Mist belt regions. Humic soils, as detailed by Fey (2010), are environmentally robust, well drained soils with high water retention characteristics thus, the risk of soil erosion is unlikely unless driven through poorly managed land use practices.

Morphological variation, primarily elevation, topography and edaphic factors determine the structure and composition of sub-escarpment grasslands prevalent within this region. These sub-escarpment grasslands support a widespread mosaic of 'sourveld', comprising of long-lived grasses and forbs that generally well adapted to fire. Notably, the heterogeneity of topography influences the natural, prevailing fire regimen, along with frost occurrence during the winter months, effectively 'curing' the grass and improving burning suitability. Such natural processes are considered as significant actions that serve to maintain biodiversity and productivity within these habitats. Although grasslands are considered relatively resilient, long-lived grasses are not well suited to extensive grazing, with a decline in forbs generally associated with such practices. Further to this, the moderate climate of sub-escarpment grasslands allows for greater vulnerability to infestation of exotic specimens as well as 'bush encroachment'.

Mount Verde estate has been broadly transformed for agricultural purposes, namely silviculture, livestock and crop cultivation. These activities have effectively 'altered' the natural grassland habitats and driven other forms of disturbance. Habitat transformation within the subject site has consequently given rise to an early seral and manipulated graminoid form, focusing on palatable grasses for livestock.

With such transformation of the land, a consequential change in faunal populations is anticipated to arise, which is expected to benefit species with a preference for graminoid and open habitat. Artificial impoundments in the area will also present alternative habitat favouring a different complex of larger mammals, anurans and birds.

9.6.2 General Findings

The Village, located within Mount Verde, in toto has remained largely under cultivation until 2019, whereafter land use changes saw the introduction of pasture, as well as the establishment of residential homesteads and an equestrian centre. However, it is clear from the historical and contemporary imagery, that the graminoid environments present within the subject area show differing forms and structure that may be associated with inter alia topography and general management practices. Because of the variable topography within the Hilton region and "The Village" development site in particular, the form and structure of grassland habitats present are dependent on various bio physical factors including aspect, soils, presence of wetland and related drainage features, as well as agricultural practices including burning and grazing by livestock.

The proposed layout of the residential development on Mount Verde will not encroach into any identified wetland habitat while impacts on the grassland habitat within the estate can be of 'low' significance, particularly when compared to the present land use regime. Notably, the proposed method of disposal of wastewater from the site will need specific consideration, with an understanding that wastewater emanating from site must be subject to some level of remediation, prior to discharge in the form of irrigation.

The proposed layout of the residential development on Mount Verde will not encroach into any identified wetland habitat while impacts on the grassland habitat within the estate can be described as of 'low' significance.


Figure 19: Exotic and managed grasslands.

9.6.3 Fauna

Notably, a number of factors must be taken into consideration in the evaluation of this environment in terms of suitable habitat for both freshwater and terrestrial fauna. In particular, it should be noted that the broader environment of Mount Verde is in a state of transition from a silvicultural (timber plantation), and pastoral (grazing) to a mix of low-to high density, urban settlement with pastoral and equestrian activities. Given such transition, it can be argued that the site is in a state of flux as both a habitat and refugia conducive to a specific faunal clade. The Fauna community is subject to:

- The transition from a forested environment dominated by mono specific commercial species.
- The emergence of a secondary graminoid habitat (see Section 6 above).
- On going farming practices, including the cultivation of crops and pasture, with animal husbandry.
- The emergence of a number of open aquatic systems through the establishment of attenuation structures.
- The establishment of an "urbanising" environment, with increased human settlement associated with general disturbances.

9.6.4 Mammals

A number of mammals are listed within GR3030CB – the Hilton region – with 82 species being identified from this particular area. Notably, only one, species, namely Ourebia ourebi, the oribi, is considered

"endangered" from a conservation perspective. This small antelope is, however, not endemic to the region and can be discounted in terms of its presence.

Notably, 15 species are considered to be either "threatened", "near threatened" or "vulnerable" from a conservation perspective.

Three species, namely Philantomba monticola, blue duiker (vulnerable), Aonyx capensis, Cape clawless otter, (NT) and Poecilogale albinucha, striped weasel (NT) are likely to be present in and around the Mount Verde Estate. The extensive timber plantation has supported the presence of P monticola and as such, plantation declines in extent, this small antelope is likely to be ousted from the area, unless suitable forest habitat arises. A capensis and P albinucha are generally associated with open waters and moist meadow and sedge environments, which have established primarily on account of the establishment of small farm dams in the region with associated sedge communities

Both spoor and spat of A capensis and Atilax paludinosus (LC) (water mongoose) were identified on site. Other species of least concern that have been noted on site are Hystrix africaeaustralis (porcupine) and Chaerephon pumilus (the little free tailed bat). Evidently, many of the murids, or small rodents as well as associated predators, such as Genetta tigrina (large spotted genet) will be favoured by the agricultural activities underway on Mount Verde and it follows hat urban settlement, on a very low-density basis, as envisioned in the scheme, together with variable habitat cover, will give rise to an increased mammalian diversity, comparative with the present state.

9.6.5 Reptiles

60 species identified as being common within the Hilton region. 5 of these species have been identified as being either "vulnerable" or "near threatened" from a conservation perspective. Chamaesaura macrolepis (large-scaled grass lizard) is noted as being "near threatened", while the balance of listed species are considered "vulnerable". Chamaesaura (Figure 33) are habitat specific, relying on an extensive graminoid environment with limited burning (Bates et al 2014). It is clear that the reduction in plantation and the move towards a more graminoid environment, should favour such species.

Other species of note include Bradypodion melanocephalum (Black-headed dwarf chameleon) and B thamnobates (Natal midlands-dwarf chameleon). These two closely related species are associated with forest edge habitats (Bates et al 2014). Such environments, which were established in and around the Mount Verde estate, will favour the establishment of these populations. It is also clear that improved ecological function around wetland environments will also favour certain reptilian taxa, including species such as Duberria-lutrix (the slug eater)

9.6.6 Fish

Electro fishing was undertaken in and around a single impoundment on the northern extent of the study site. Two species were noted, these being Pseudocrenilabrus philander (the southern mouth brooder) and Clarias gariepinus (the sharptooth catfish) (Figure 34). P philander is noted within the SANBI database for the region, however C gariepinus, surprisingly, is absent from this list. It is likely that a

number of other species are also present within the dam, (e.g., Barbus spp) as well as introduced species (e.g., Micropterus salmoides).

9.6.7 Anurans

Of the 27 species of frog identified within the region, only one species, Natalobatrachus bonebergi (the kloof frog) has been listed as "endangered". This species is however, confined primarily to coastal environments and gallery forest (du Preez 2009), and is unlikely to be present in the region. Given the recent land use on site and the evident establishment of larger impoundments within the site, it is clear that the envisaged land use will favour those species closely associated with either graminoid, sedge and open water systems in all or part of their lifecycle. Species such as Strongylopus grayii (clicking stream frog) were identified on site and Arthroleptis wahlbergi (bush squeaker) will be favoured under the proposed land use, the former being identified on the site.

9.6.8 Invertebrates

A large number of invertebrates have been attributed to the region as per Annexure A4. These include species from the Order Lepidoptera, Odonata and Arachnida. No species has been identified as being listed. As per the above taxa, it can be forecast that the move from a monospecific land use such as commercial timber, to a mixed graminoid environment, will benefit a number of the species listed including Lepidopterans and Arachnids.

Samples drawn from the dams present on the site showed a number of larvae associated with invertebrates that have parts of their lifecycles within an aquatic environment. Included in these samples are Libellulidae and Trichoptera . Notably, these species favour areas of shallow, vegetated aquatic systems and it is evident that macro invertebrates associated primarily with standing waters will be favoured in the Mount Verde environment.

9.6.9 Birds

From the SABAP Pentad 2930_3015 list it is evident that birds with affinities to a diverse array of habitats are listed, including forest, grassland, and niche environments. As discussed above, the clearance of plantation and forest environment in favour of grassland habitat will favour a number of genera, including raptors such as Buteo spp (buzzards), Accipiter spp (sparrowhawk) and Tyto capensis (African grass owl). The latter is commonly associated with meadow wetland and grassland environments (Brown, 2013) and it is therefore evident that the proposed development would favour such species. Notably, the projected increase in murids and related taxa would serve as a suitable prey for such species.

However, Stephanoaetus coronatus (African crowned eagle) has been identified as a resident of the area and is considered to be near threatened. This species is associated with a number of habitat forms including forest, woodland, savanna and shrubland, as well as some modified habitats, such as plantations and secondary growth (Ferguson-Lees et al 2001) with a variety of prey, although this is primarily focussed on small mammals (Swatridge et al. 2014). It follows that S coronatus may well be unaffected by the land use transition at Mount Verde, so long as suitable nesting areas are maintained within the broader habitat.

9.6.10 Conclusion and recommendations for the application

The proposed expansion areas within the Mount Verde Estate lies within an area of transformed silvicultural and pasturelands or generally, areas of limited ecological value. The site has historically been utilised for both plantation and grazing and the proposed land use transformation of the site is likely to have limited significance from a botanical perspective. In addition, the transition from wooded plantation to graminoid or mixed environment will alter the broader faunal populations.

The most significant impacts arising from the development of the area as a residential estate can be divided into two categories, namely:

- Latent influences and long-term transformation arising from the so-called 'edge effect" (Diamond 1975) whereby the gradual attrition of natural habitat arises through influences as diverse as "shadow effects", "noise" and 'lighting". Such impacts are likely to arise on those areas presently not transformed to urban settlement.
- Impacts on the streams, wetlands, and watercourses that dissect the site. Such impacts will primarily be on account of "stormwater discharge", "provision of sub surface services, such as sewer reticulation", "roadways" and other unknown events that may arise from time to time (chance pollution events).

However, it is evident that change has arisen on the site over an extended period of time from a natural habitat, into a timber plantation and now to the present agricultural and urban land use regime. The proposed residential land use is therefore the next stage in such transformation.

9.7 FRESHWATER ASSESSMENT

A Wetland Assessment was completed by SDP Ecological and Environmental Services (2022). Results of the study is herewith included in the Draft EIA Report.

The summary of the conducted Wetland Assessment by SDP Ecological and Environmental Services (2022) is presented below.

9.7.1 Wetlands

Five HGM units were identified namely:
1) HGM N1 lies within a deeply incised channel;
2) HGM N2 is a small wetland habitat, driven by sub surface seep;
3) HGM N3 is largely driven by sub surface flows;
4) HGM N4 (maturing artificial wetland system); and
5) HGM S1 is a channelled valley bottom wetland.

These HGM units are divided by a watershed with the northern catchment flowing into the Doringspruit River, whilst the comparatively smaller system along the southern periphery of the estate flows into a low-lying dam.

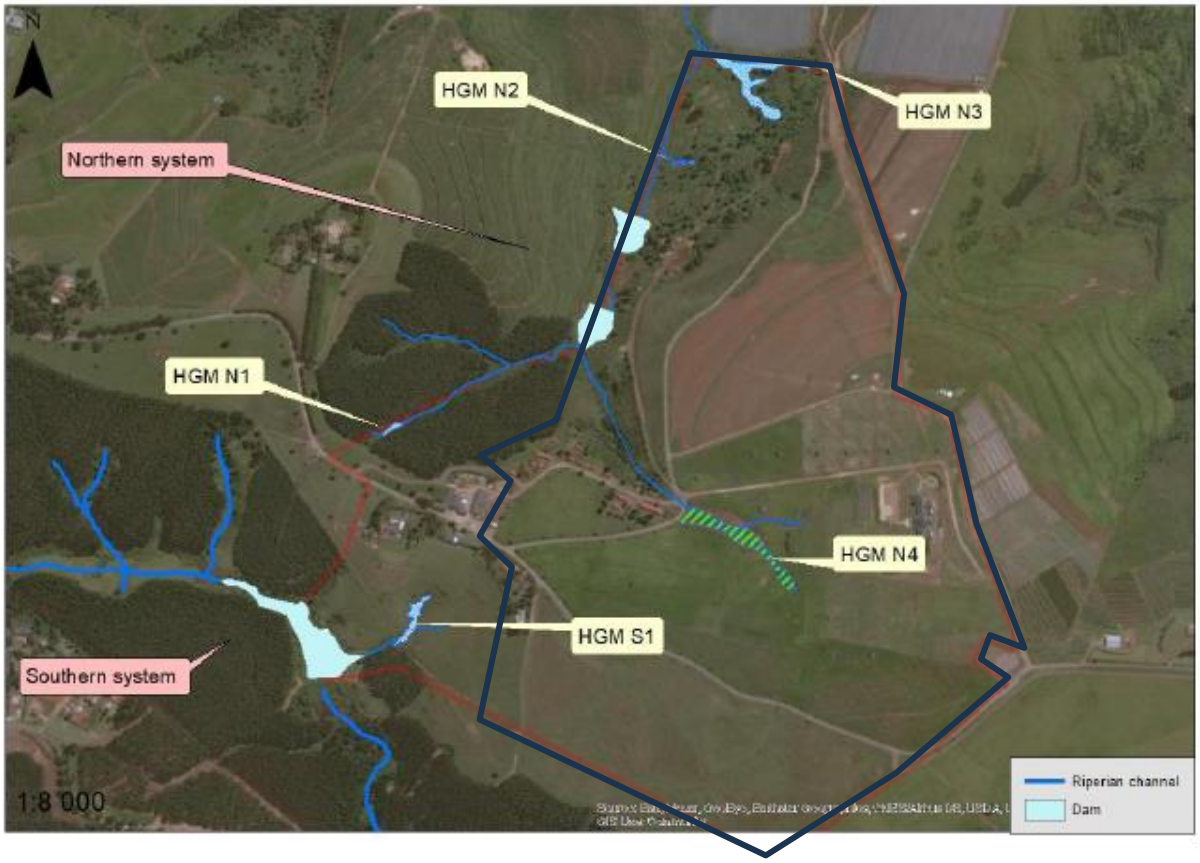


Figure 20: HGM units investigated and the Mount Verde Village development area.

Please note that HGM N1 and S1 are located outside the application site.

9.7.2 HGM N2 and N3

These wetland environments are positioned along the lower lying, northern extent of the drainage system and can be defined as valley bottom wetland environments. HGM N2 is a comparatively small wetland habitat, driven by sub surface seep. This HGM unit is characterized by a short, incised channel that supports few hydrophilic species. Much of this wetland system has been manipulated through excavation of its embankments and channeling of flow, with such transformation having arisen over an extended period of time. As such, much of the system can be a maturing and manipulated wetland environment.

HGM N3, is similar to HGM N2, being largely driven by sub surface flows. This bifurcate system presents both permanent and seasonal wetland zones. The permanent wetland zone presented pooling of surface water and at points, low level flow. Obligate and facultative hydrophilic species in particular *Gunnera purpensa, Cyperus congestus and Typha capensis* dominate this system.

Permanent wetland soils exhibit a dark or gleyed colouration with a distinct organic component. Comparatively, the temporary wetland zone, displayed a varied edaphic form ranging from dark brown to a brown, grey colouration, comprising of orange soil chroma or 'mottles' Vegetation within the temporary wetland area is dominated by grasses, rather than sedges at this point.

The immediate environment around HGM N3 has been subject to significant transformation and manipulation with historical structures over 50 years in age lining the southern extent of the wetland, and horticultural crops evident both within and adjacent to the system. Such disturbances have driven the proliferation of alien invasive species including *Lantana camara, Solanum mauritianum, Canna indica* as well as *A mearnsii*.

9.7.3 HGM N4

HGM N4 a maturing wetland system, which is driven through irrigation infrastructure lying within an easterly flowing drainage line. The drainage feature is occluded by a roadway which serves to retard flow from elevated portions of this catchment. Irrigation infrastructure also lies within this drainage feature providing water for both livestock and a small vegetable cultivation operation. The extent of HGM unit N4 is thus premised on primarily geomorphological characteristics.

Given the maturing nature of this system, edaphic state varies across this area making a definitive delineation difficult to determine. However, some levels of sporadic mottling is evident, indicating that the temporary wetland zone is broad and expansive. Should the water source be curtailed the extent of this wetland will narrow significantly from a practical perspective.

HGM N4 is evidently an artificial feature and as such provides limited ecosystem services from a functionality perspective.

Figure 21: HGM 4 which is mostly an artificial horticultural entity.

9.7.4 PES Category

The wetland assessment tool developed by Kleynhans (1993) was used to determine the Present Ecological State of the northern system in toto. All three WET-Health criteria, namely, hydrology, geomorphology as well as vegetation within this system have been adversely disposed to long term disturbance that which has perpetuated modification of this system from its natural state. Agricultural activities have cleared much of the hydrophilic vegetation in order to accommodate plantations, resulting in a cumulative impact affecting the localised hydrology of the area through decreased percolation and increased rates of surface run off. Notably, HGM N4 is an artificial wetland system, that provides largely horticultural value rather than natural functions.

The Present Ecological Status (PES) of the northern system comprising of 4 HGM units has a Category 'D', where wetlands are 'largely modified' whilst the southern system, comprising of a single HGM unit has been attributed with a PES category of 'C' indicating a moderately modified catchment.

9.7.5 EIS Category

The EIS rating for the northern wetland system is "moderate", suggesting 'little significance at a local scale and that the system is not highly sensitive to flow modifications with a substantial capacity for 'use'. This 'poor' EIS rating is a consequence of significant manipulation, consequently hindering ecoservices provision and negatively impacting ecological integrity – as indicated in Table 5, below. The establishment of dams, as well as broad cultivation, have consequently affected the integrity of the wetland system. Given the altered states of these HGM units, the proposed residential development may further influence these environmental features should no mitigation measures be implemented as additional impacts may further reduce functionality and integrity.

Thus, the wetlands on site are of ***Moderate*** ecological importance and sensitivity, suggesting 'little' significance at a local scale and that the system is not highly sensitive to flow modifications with a substantial capacity for 'use'. The establishment of dams, as well as broad cultivation, have consequently affected the integrity of the wetland system.

9.7.6 Functionality Assessment of Wetlands

It is evident that the northern system is comparatively more complex than the southern system, with an extensive riparian zone comprising of 3 distinct HGM units. Site reconnaissance confirmed most channels identified, presented evidence of seasonal and perennial flow, sustained by lateral seepage and surface runoff from the upper catchment. Permanent and seasonal wetland zones are present. Broad manipulation of this system has arisen, because of extensive anthropogenic activities, both past and present and including the establishment of dams and roadways resulting in flow retardation and alteration of natural hydrological processes. The state of the 4 HGM units also varies considerably due to intensity and proximity of disturbance.

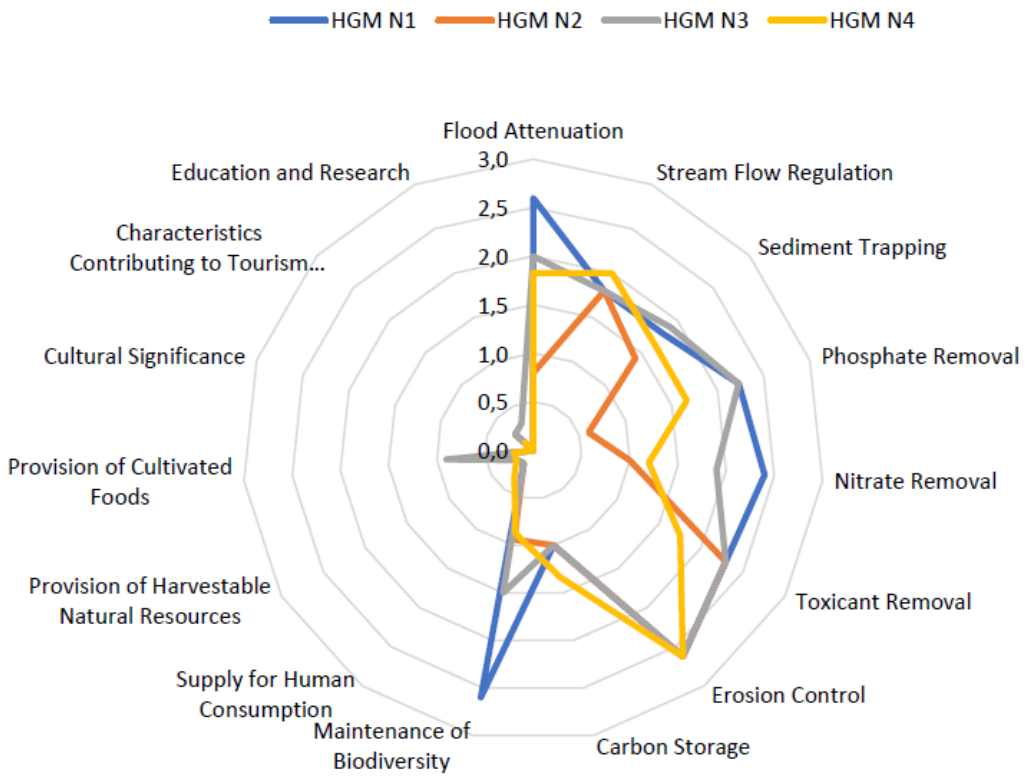


Figure 22: Radar diagram presenting the Rapid Functionality Assessment of each HGM unit within the northern wetland system at Mount Verde.
(HGM S1 is not discussed since it is not in the application area.)

Most channels identified in the northern system, presented evidence of seasonal and perennial flow, sustained by lateral seepage and surface runoff from the upper catchment. Broad manipulation of this system has arisen, because of extensive anthropogenic activities, both past and present and including the establishment of dams and roadways resulting in flow retardation and alteration of natural hydrological processes. The state of the 4 HGM units also varies considerably due to intensity and proximity of disturbance.

The southern wetland system has scoured and incised channels, which has altered the hydrology and geomorphology of this system. Given such manipulation, the effectiveness of physical services of this wetland system, such as sediment trapping and erosion control are likely to be impaired.

9.7.7 Buffer Recommendation

Given the poor, modified state of the watercourses and wetland environments within Mount Verde as well as the limited ecological risk posed by the proposed development, a moderately conservative non-development buffer of 15 meters is recommended.

9.7.8 Conclusion and recommendations for the application

Rehabilitation of the wetlands, which is strongly encouraged, may also necessitate controlled encroachment, during which care must be taken not to further impact negatively on the systems. Water

Quality Deterioration, Alien Vegetation Encroachment, and Erosion and Sedimentation measures have been provided in this report to aid in guiding the planning process.

10.0 DESCRIPTION OF SOCIO-ECONOMIC ENVIRONMENT

10.1 CULTURAL HERITAGE ASSESSMENT

A cultural Phase 1 Heritage Impact Assessment and Desktop Palaeontological Assessment for the proposed site has been undertaken by Umlando (2022) in accordance with the National Heritage Resources Act 25 of 1999 (NHRA).

The desktop study consisted of analysing various maps for evidence of prior habitation in the study area, as well as for previous archaeological surveys. The general area is known for its open archaeological sites and historical buildings. Anderson (2016) undertook a desktop survey for the Initial Mt Verde development proposal that occurred adjacent to the current proposed area. This desktop noted that the area was under afforestation since the 1930s and that several built structures occurred within the current development area dating from the 1930s.

The 1937 aerial photograph indicates that the area is under afforestation and that several labourers' houses occur. These houses appear to be of the built structures and not of the wattle-and-daub construction. There appears to be at least five groups of houses.

The 1964 topographical map indicates that there are built structures within the study area. These occur in the same place as the farm labourer's houses from 1937, but fewer in number. Between 1964 and 1978 more houses were built. These houses occur on the 2017 Google Earth map, but all appear to have been abandoned by 2018. The contemporary Google Earth image indicates that these original houses have been demolished.

10.1.1 Field Survey

A field survey was undertaken on the 18 October 2022. Ground visibility was poor to good; however, there were enough tracks and open areas to undertake a survey. Most of the site is on a steep slope and covered with grass. A road has been graded allowing for an assessment of potential artefacts.

No historical built structures, nor artefacts, were noted in the main development area. The buildings noted from the desktop study have been demolished. Some of the buildings have 'Corobrick' and not "Coronation' stamps, suggesting they post-date the 1977: the date when the name changed (https://www.corobrik.co.za/our-story). No Coronation bricks were noted. Alternatively, the buildings were rebuilt after 1977.

Based on the assessment of the area it is clear that there are no sites of cultural heritage origin and significance located here. The buildings identified have been demolished and some buildings have 'Corobrick' and not "Coronation' stamps. The property has high to very palaeontological sensitivity, due to Permian aged sedimentary rocks of the Volksrust and Vryheid formations underlying the site.

10.1.2 Conclusion

From a cultural heritage point of view the development should therefore be allowed to continue. However, the subterranean presence of archaeological or historical sites, features or objects must always be taken into consideration. If any are uncovered during the development process a heritage specialist/archaeologist should be called in to investigate and recommend on the best way forward.

10.1.3 Paleontology Sensitivity

The development is in an area of high to very high paleontological sensitivity. A desktop PIA was undertaken by Dr. G Groenewald for the initial Mt Verde Development in 2016. The initial assessment covers the borders of this development; however, the same geology occurs across both developments and the results can be extrapolated.

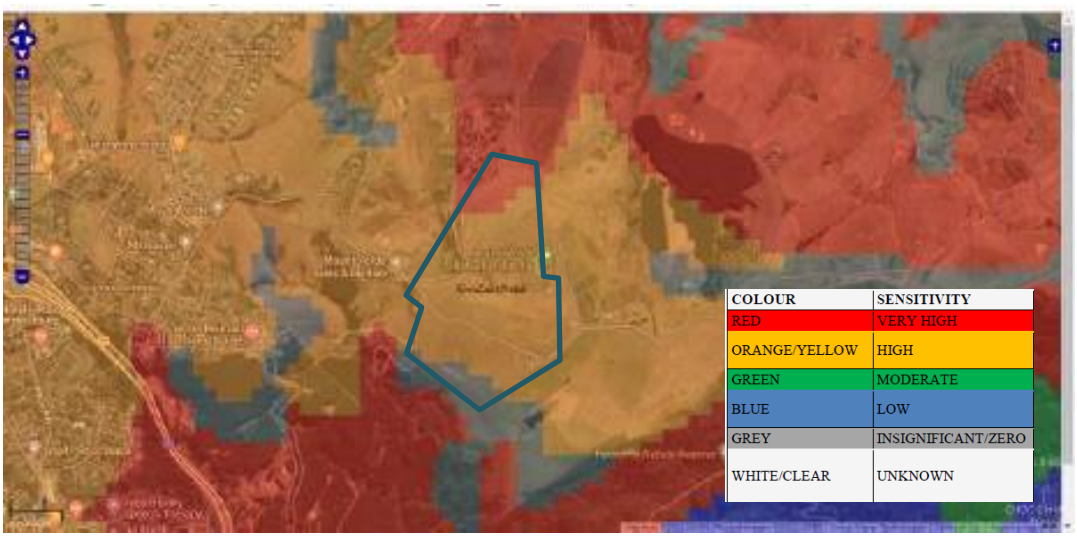


Figure 23: Extract of the 1 in 250 000 SAHRIS PalaeoMap map (Council of Geosciences)

Dr Groenewald states: "Although rare, significant fossils have been described from the Volksrust Formation, with specific reference to trace fossils. A High Paleontological sensitivity is allocated to these areas. Very rich assemblages of plant fossils, coal beds and significant trace fossils have been described from the Vryheid Formation and a Very High Paleontological sensitivity is allocated to areas underlain by this formation. No fossils will be found in the Dolerite. Field experience and studying of Google Image indicates that there are only a few significant outcrops on the site now and a phase 1 PIA is therefore recommended during excavations of infrastructure deeper than 1,5m during the initial phases of the construction."

Thus, any excavations more than 1.5m in depth will require an assessment by a qualified paleontologist.

10.1.4 Conclusions and recommendations for the application

The recommendations made in the heritage impact assessment and paleontological desktop assessment must be implemented long before construction commences. Should the development footprints change or be altered in any way, these changes must be assessed in the field by a heritage specialist/archaeologist before construction commences.

From a heritage perspective it is subsequently recommended that the proposed development be approved on the condition that the general recommendations and mitigation measures outlined in the specialist report are adhered to, and in cognisance of the assumptions and limitations contained in the report.

10.2 SOCIO – ECONOMIC ASPECTS

The proposed development is located in the uMngeni Local Municipality.

10.2.1 General description

Fernridge Residential completed a Market assessment (August 2023) and with it an economic and demographic assessment

- To present the demographic profile and characteristics of the residents in the market area, Fernridge used information gathered from the AfricaEye dataset.
- The AfricaEye dataset was used to present a dwelling count for the market area.
- Between 2020 and 2022 the households grew at ±1.61% - this growth rate will be used in the model.
- This growth rate will also be applied to project a current 2023 income representation.
- Majority of the market area consists of middle- and upper-income dwellings. Comprising almost 55% of the market area earning R11,000+ per month.
- The market area represents a mostly affluent income market.
- With this in mind, the proposed residential development should focus its offering on this income group.

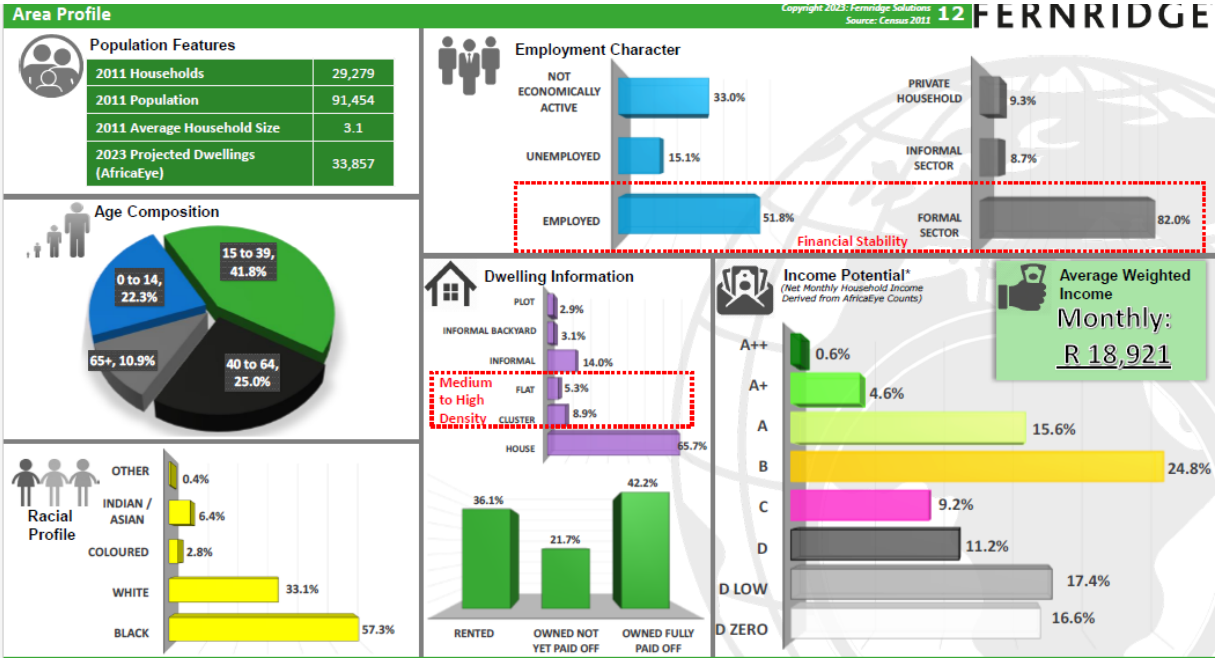


Figure 24: Demographics Summary

- According to 2011 Census data the market population comprises ±91,454 persons residing in ±29,279 households, relating to an average household size of 3.1 people per household.

- 2018 AfricaEye dwelling counts indicate ± 31,256 dwellings, projected to ±33,857 dwellings in 2023.
- ±51.8% of the population can generate personal income and ±44.8% can be classified as active on the residential market (aged between 20 and 49).
- It is expected that most of the target market and potential tenants will be drawn from the above-mentioned age group considering that it hosts the typical individuals that could apply for the proposed residential development – strong residential character.
- Average household size and age group composition indicate the possibility of a house consisting of 3 family members.
- Average household size composition indicates a high possibility of young professionals and families.
- The area exhibits high levels of formal employment – a form of financial security for retail expenditure as well as an indication of residential demand.
- On average a typical household earns ±18,000 per month. The proposed residential development will need to primarily cater to middle- to high-income groups.
- Roughly ±21% of the market earn more than R30,000 per month – high income market.
- Currently, ±64% of the market population resides in bonded units.
- The market area consists of ±65.7% of formal houses of the market area.
- All demand projections are purely based on an affordability analysis for the market-related product costs in terms of the historic growth in households.
- The demand projections are a function of local advertised properties – prevailing market preference to remain the same.
- It is believed that the sales prices and rental rates modelled are aligned with market-related prices.
- Demand projections indicate a current (2023) demand for ±75 bonded and ±40 rental dwellings within the specific market.
- This figure is likely to increase to ±229 bonded and ±123 rental units in the next 2 years (2025).
- Given the market areas' demographic data, the proposed residential development should aim to cater to the middle- to high-income market.
- Based on the demand calculations and estate setting the development should focus on houses and townhouse homes.
- Given the demand modelling, the market area can sustain 350 units by 2025 – the proposed residential development should consider 1-, 2-, 3-, 4- and 4+-bedroom homes.
- The model is based on historic growth patterns in the market area and does not consider the locational preference or typology preference of the people residing in the general area.
- This model does not consider residential migration or outflow from the market area.

10.2.2 Provision of social amenities including health, education and recreational

The proposed development is in an urban area context and will cater for both the residential and recreational need of local residents. Since the proposed development is a mixed land use residential development, by its nature, it is therefore not exclusively residential, recreational, or agricultural but in fact a combination of all.

The development is envisioned as a high quality and multi-faceted living environment including the following land uses:

- Residential
- Community Facilities
- Parks
- Open Spaces
- Agricultural

10.2.3 Identification of and mobilization of local work force

Establish a labour policy to facilitate the employment of locals where feasible and as far as possible. The appointment of local labour should be a priority issue, with clear targets during the pre-construction phase. Care should be taken to avoid potential conflict between people in the immediate surroundings seeking employment and those from elsewhere. Therefore, the criteria for "local" must be clearly stated;

The number of workers required, as well as the specific skills required in respect of each worker, should be specified as soon as possible before the commencement of construction. An employment/skills registration agency or 'labour desk' should be established to identify prospective candidates who would meet the job specifications in consultation with the relevant local authorities.

Where possible the following should be implemented:

- Create opportunities for the employment of women
- Use labour-intensive methods of construction
- Develop a community labour agreement with targets for employment and for career progression; and
- Remunerate beyond the minimum wage rate and invest in local staff

10.2.4 Possible negative impacts that may emanate from the proposed development and mitigation measures

Influx of job seekers

Job seekers, including those from areas outside the "local" area, enter the area with the hope of securing employment. When they do not secure employment, the potential exists that they will add to the usual difficulties related to informal settlement, pressure on existing resources, services and infrastructure.

Mitigation measures:

- Follow a transparent public participation process with role-players and interested and affected parties;
- Make use of local labour and local suppliers of material for the construction as far as possible.

Increase in number of informal settlements

Influx of job seekers and those in pursuit of economic gain that may arise from an increase in economic activity in the area. In particular, construction activities and a perception that these activities are

associated with job opportunities, is likely to attract work seekers who do not have accommodation and who may illegally occupy land and set up illegal informal structures while seeking employment.

Mitigation measures:

- Ensure that all discarded construction material that can be utilised to build informal structures, is properly disposed of after construction;
- Where possible, job opportunities will be provided for local community members.

Crime & violence

The possibility also exists that "new" job seekers may contribute towards crime and other social problems such as alcohol abuse and prostitution. Even if particular instances of crime are not as a result of the job seekers, these may still be attributed to them by local communities.

Mitigation measures:

- Proactive engagement by the appointed contractor(s) with local authorities/SAPS/CPFs to assist with any new criminal activities.
- Workers must not be allowed to wonder through the neighbourhood before, during or after working hours.
- Loitering must be avoided by clearly indicated signs showing NO JOBS placed around the outside of the site.

Exposure to noise, dust, risk, odour etc

Increased levels of noise and dust may impact negatively on the quality of life of people living close to the proposed development site. The movement of construction vehicles could contribute to increased levels of dust in the area and could further be aggravated by strong winds blowing in the area.

Mitigation measures:

- Construction should be limited to National Buildings Regulated working hours, and no work should be allowed on Sundays and Public Holidays, except in extreme emergencies and with the prior approval of the Project Manager and ECO and with notification to the direct surrounding landowners.
- Maintain all vehicles and construction machinery to a standard that ensures the noise levels do not cause unnecessary and avoidable nuisance to the workforce and local communities; and
- Ensure that dust suppression measures are in place.

10.3 VISUAL INTEGRITY OF THE AREA

Due to the topography and location of the study area, the proposed development will have some visual impact. However, it could have a positive impact if the development is planned well and aesthetically pleasing. The character of the buildings reflects a contemporary design and the clean lines and building style provides an upmarket sense of place.

The current residents are aware of the development which was conveyed to them in a clause in their sales agreements which states: *The Purchaser acknowledges that he is aware of the intended future development of the Mount Verde Development by the Seller. Such development is intended to involve the establishment of farming operations, residential dwellings, commercial premises, and communal activity on*

various portions of the Mount Verde Development and so designed as to facilitate an aesthetic and harmonious blending with the environment.

The original 2017 plan that was provided to all potential and actual buyers shows the area being densified and significant development taking place around the current farm buildings and along the Mount Verde Boulevard. The plan shows single family plots, high density development, apartments, commercial and open areas from the main gate to the Mount Verde Farmers Association Entrance. Efer to Figure XXX for the documents that was provided as Annexure G – Village Master Plan to the MVFA sales documents. The area currently under application is indicated on the Figure.

Figure 25: 2017 Village master plan with current area of application (yellow line)

The following visual criteria were used to determine what possible visual impact the proposed development could have on the surrounding environment:

Table 6: Visual Impact Analysis

PREDICTED IMPACT			
Visual criteria	**Low**	**Medium**	**High**

PREDICTED IMPACT			
Quality of the area	The site or surrounding environment has little or no natural quality	The site or surrounding environment has some natural quality	**The site or surrounding environment has a definite natural quality with farming in the surrounding areas**
Compatibility with **surrounding** environment	The development will blend in / compliment the surrounding environment completely	**The surrounding environment will be able to accommodate the development without however, screening and security precautions must be implemented.**	The surrounding environment will not be able to accommodate the development. Development will look abnormal in setting
Viewing distance	Continuous viewing distance to site is less than 500m	**Continuous viewing distance to site is between 500 m and 1 km**	Continuous viewing distance to site is more than 1 km
Visual acceptance capability	The environment can visually accept the type of development, due to its location adjacent to the existing CBD	**The environment can moderately accept the type of development, due to its varied topography. However, mitigation measures must be implemented.**	The environment cannot visually accept the type of development, due to its unvarying vegetation and land-uses

The visual assessment shows that the visual quality of the development can moderately fit into the surrounding areas, but screening and tree lanes must be implemented to break monotonous views and to define the various Hamlets.

However, the views from the residential areas towards the site will be different than currently experienced. Although large areas of the open spaces and agricultural fields will be retained, the

residents will not be able to see it directly from their houses as it is currently perceived. Also, the farming community must be accommodated with vegetation screens by planting trees along the boundaries and improving security with fences along the boundaries.

]

Figure 26: Some images of the proposed Development.

Figure 27: Architectural images of the proposed Development

10.3.1 Conclusions and Recommendations for the application

It can be deduced that the proposed development will benefit the greater community, but the existing residents must be acknowledged, and their requirements addressed. The area will change significantly, however the land use matches the urban development that lies to the south of the site. However, the views from the surrounding areas will largely be changed to be a developed area.

The architectural and landscape architectural guidelines for the proposed development allow for a positive aesthetic influence on the surrounding environment. Considerations include placing of buildings, aspects of finishes, lights pollution, colours to blend into the surrounding colours, heights of buildings, and roof finishes. Aesthetics and contextual appropriateness are to be a major aspect of these guidelines.

11.0 ENVIRONMENTAL COMPOSITE MAP

An Environmental Composite Map was configured to understand the various environmental characteristics and areas of significance that could be taken into consideration. This map indicates the following in relation to the proposed development site:

- Geotechnical Zones
- 1:100-year floodline delineation
- Contours

- High, medium and low ecological sensitivity
- Wetlands with buffer areas.
- Riparian areas with buffers

11.1.1 Conclusions and Recommendations for the application

The development is proposed on an area with land uses namely, vacant and agricultural holdings. Drainage / wetland system have been maintained within the vicinity of the study area and are to be protected. Applicable legislation will be followed, and applicable clearance certificates obtained prior to any construction taking place

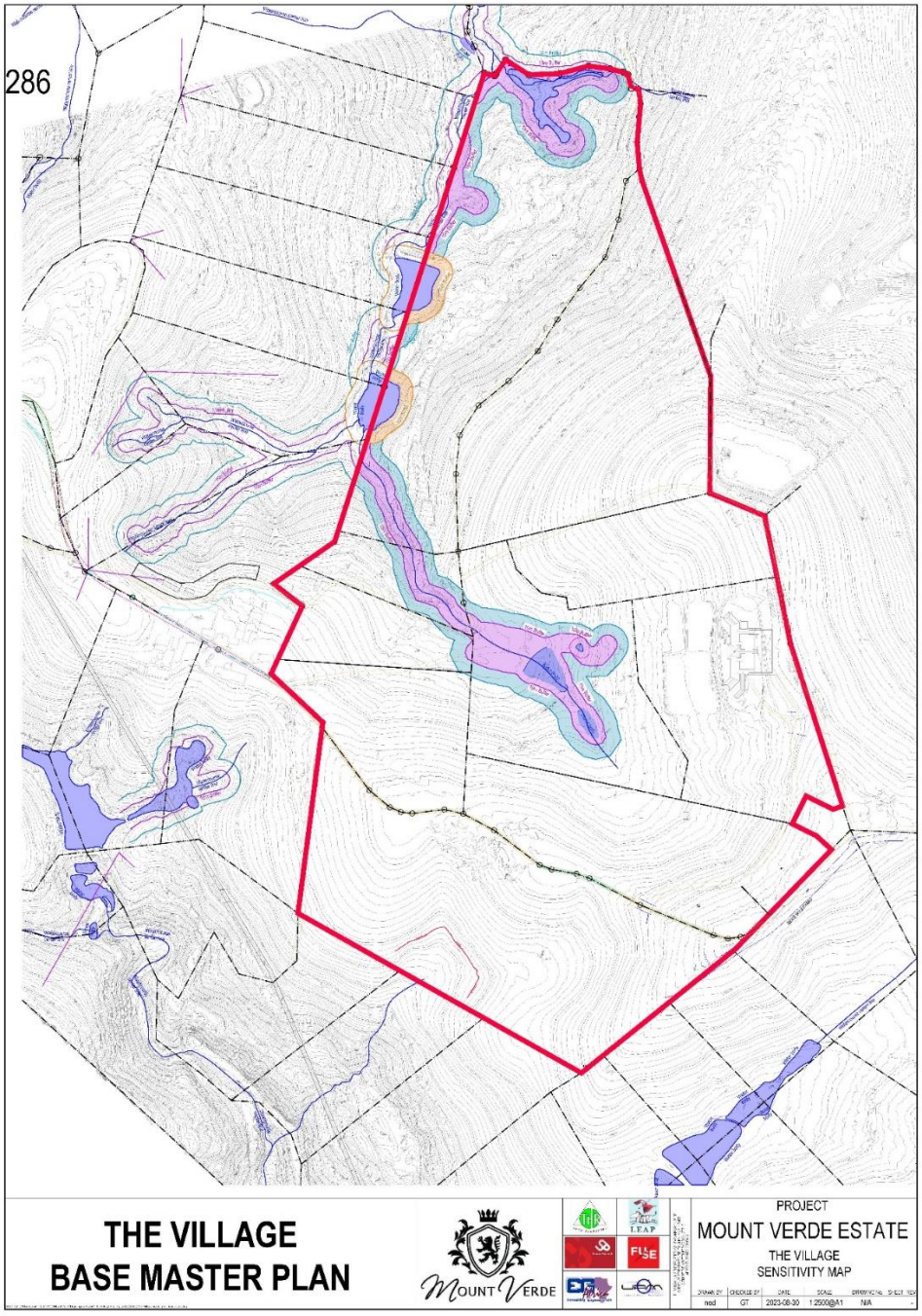


Figure 28: Sensitivity Map

12.0 INFRASTRUCTURE AND SERVICES

12.1 TRAFFIC AND ACCESS ROUTES

Zutari (Pty) Ltd have been appointed by Mt Verde (Pty) Ltd to prepare a Traffic Impact Assessment for the residential component of the Mount Verde development on a site described as Portion 1, Portion 3, Portion 4, Portion 5, Portion 7, and Portion 8 of Erf 2054 Hilton. The residential component of this development will consist of **maximum** 295 single dwelling units and 491 high density units. The existing formal access-controlled driveway off the end of Weir Drive will be used for access to this development. This driveway is located at the southwestern comer of the site. Please refer to **Annexure H** for the Traffic Impact Assessment.

PLEASE NOTE THAT THIS TRAFFIC ASSESSMENT REPRESENT THE MAXIMUM NUMBER OF TRIPS AND LAND USES AND MAY BE AMENDED TO ADDRESS THE REFINED DEVELOPMENT PROPOSALS

12.1.1 Existing conditions

Figure 29: Traffic Assessment – Area of investigation

Hilton College Avenue

Hilton College Avenue (P139) functions as a minor arterial road aligned in a north - south direction between the Old Howick Road (P367) intersection, northwards through the town of Hilton, through the Hilton interchange and continuing north towards Hilton College. It is a 7m wide, two-way single carriageway road that is priority controlled.

There are no sidewalks or street lighting provided on this road. Hilton College Road has shoulders along some of its length. The speed limit on Hilton College Avenue is 60km/h. Hilton College Avenue crosses over the N3 highway. On and off ramps to the N3 highway intersect with Hilton College Avenue and are stop street intersections.

Elizabeth Drive
Elizabeth Drive is a 7m wide, two-way single carriageway road. It is a residential road aligned in a west – east direction. Elizabeth Drive has a fairly steep gradient past the site but is relatively straight past the site. The speed limit along Elizabeth Drive is 60km/h.
Elizabeth Drive intersects with Hilton Avenue in a stop street intersection with a basic layout. An access to Grace College is located opposite Elizabeth Drive.

Monzali Drive
Monzali Drive is a 7m wide, two-way single carriageway road. It is a residential road aligned in a west – east direction. Monzali Drive is fairly flat with some gentle horizontal curves. The speed limit along Monzali Drive is 60km/h and there are speed humps along this road.

Monzali Drive intersects with Hilton Avenue in a stop street intersection. It has a short-left turn slip lane onto Hilton Avenue. There is a short right turn lane from Hilton Avenue into Monzali Drive. An access to Grace College is located opposite Monzali Drive. There is a short right turn lane from Hilton Avenue into the Grace College access.

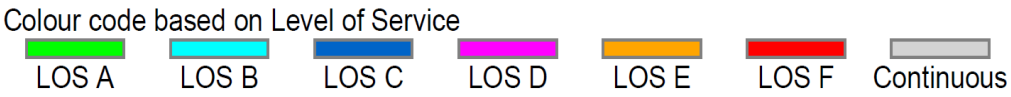
Weir Drive
Weir Drive serves as a local residential access road that also serves as access to the existing Mount Verde Estate. Weir Drive intersects with Elizabeth Drive at a four-way junction stop control intersection. Weir Drive is a 2-lane, two-way single carriageway road.

Voigts Crescent – recently renamed to Mount Verde Avenue
Voigts Crescent is a 6m wide, two-way single carriageway road. Voigts Crescent is the continuation of Weir Drive into the Mount Verde Development and serves as the main access road of the development. The speed limit along Voigts Crescent is 40km/h.

12.1.2 Method

The SIDRA computer software package was used to analyse the design year traffic conditions with and without development generated traffic and the horizon year traffic conditions with development generated traffic at the intersections within the study area. The underlying objective of intersection analysis is to quantify the performance of an intersection with regard to specified traffic volumes and environmental conditions. This traffic operational performance can be measured in terms of 'Level of Service' (LOS). Six levels of service exist, ranging from A to F. LOS A represents the best operating conditions (free-flow conditions and no delay or congestion) whereas LOS F represents the worst, (breakdown conditions with congestion and very high delays). LOS D is deemed the minimum acceptable level of service.

The legend below is used to depict the LOS of each movement at the intersections.



The trip generation was then added to the 2028 forecast traffic volumes. These combined 2028 Design Year traffic volumes and the results of these analyses are presented with the details of the assessment.

Existing pedestrian and public transport activity

During the site visit it was observed that there is considerable pedestrian activity along Hilton College Avenue, Monzali Drive and Elizabeth Drive. This can be associated with bus and minibus taxi activity along Hilton Avenue, the hospital workers and the domestic workers along Monzali Drive and Elizabeth Drive. There is minor pedestrian activity along Weir Drive and these are either domestic workers walking to and from Hilton College Avenue, construction workers or recreational walkers. It must be noted that there are no sidewalks on any of the roads other than the western section of Monzali Drive to cater for pedestrians.

Hilton College Avenue is a public transport route with buses and minibus taxis travelling along the road dropping off and picking up passengers along its length. The percentage of public transport vehicles in Elizabeth Drive and in Weir Drive are negligible.

12.1.3 Trip Generation Rates & Calculations

Based on the intention to develop this site for residential dwellings as described above, the weekday AM and PM peak hour trip generation rates as contained in the TMH 17 South African Trip Data Manual have been used to calculate the maximum potential traffic that could be generated by the proposed residential component of this development once fully developed and occupied. The manual gives the following peak hour trip generation rates and directional splits for the following land uses:

Single Dwelling Units

- AM Peak hour = 1,0 veh/h two-way per residential unit for the AM peak commuter hour with a 25: 75 directional split
- Weekday PM Peak hour = 1,0 veh/h two-way per residential unit for the PM peak hour with a 70: 30 directional split
- Multi-Level Townhouses
- AM Peak hour = 0,75 veh/h two-way per residential unit for the AM peak commuter hour with a 25: 75 directional split
- Weekday PM Peak hour = 0,75 veh/h two-way per residential unit for the PM peak hour with a 70: 30 directional split
- Townhouses
- AM Peak hour = 0,85 veh/h two-way per residential unit for the AM peak commuter hour with a 25: 75 directional split
- Weekday PM Peak hour = 0,85 veh/h two-way per residential unit for the PM peak hour with a 70: 30 directional split

Based on the above trip generation rates, directional splits, the maximum potential trip generation the proposed residential component of the Mount Verde development, for the weekday AM and PM peak hours is calculated.

Table 7: Maximum Potential Trip Generation – Mount Verde Development

Land use	Peak Hour	Total Two-Way Trips	AM PEAK HOUR		PM PEAK HOUR	
			IN	OUT	IN	OUT
Single Dwelling Units	AM: 1.0 trip / unit	295	74	221	207	89
	PM: 1.0 trip / unit	295				
Multi-Level Townhouses	AM: 0.75 trips / unit	185	46	138	129	55
	AM: 0.75 trips / unit	185				
Townhouses	AM: 0.85 trips / unit	208	52	156	146	62
	AM: 0.85 trips / unit	208				
TOTAL TRIPS			172	516	481	206

Trip Reduction Factors

According to the Coto TMH 17 South African Trip Data Manual allows trip generation discounts for the following land uses based on the Mount Verde Mixed-Use Development:

Single Dwelling Units 10%
Townhouses 15%
Multi-Level Townhouses 15%

Based on the above, the discounted trip generation for the proposed development is calculated in Table 8 below:

Table 8: Discounted Trip Generation – Mount Verde Development

Land use	Peak Hour	Total Two-Way Trips	AM PEAK HOUR		PM PEAK HOUR	
			IN	OUT	IN	OUT
Single Dwelling Units	AM: 1.0 trip / unit	266	67	199	186	80
	PM: 1.0 trip / unit	266				
Multi-Level Townhouses	AM: 0.75 trips / unit	157	39	118	110	47
	AM: 0.75 trips / unit	157				
Townhouses	AM: 0.85 trips / unit	177	44	133	124	53
	AM: 0.85 trips / unit	177				
TOTAL TRIPS			150	450	420	180

12.1.4 Traffic Improvement proposals

The following conclusions can be drawn, and recommendations made from the above traffic impact assessment of the proposed residential component of the Mount Verde development on a site described as Portion 1, Portion 3, Portion 4, Portion 5, Portion 7, and Portion 8 of Erf 2054 Hilton.

- The proposed development is located in the northern area of the town of Hilton that is situated in the uMngeni Municipality north-west of Pietermaritzburg.

- The residential component of this development will consist of 295 single dwelling units and 491 high density units.
- There are a few developments with latent rights that have been included in the Traffic Impact Assessment for the proposed residential component of the Mount Verde development as listed below:

    - There are approved plans to extend the Hilton Private Hospital and Hilton Health Medical Centre
    - A Site Traffic Assessment for the Mount Verde Village Centre which was undertaken by Zutari in August 2022
    - A Traffic Impact Assessment for the relocation of the Royal Showgrounds from Howick Road in Pietermaritzburg to the Mount Verde Estate

- In the 2028 Design Scenario without the addition of the residential component generated traffic but with the addition of the abovementioned approved developments' generated traffic, the surrounding road network operates at acceptable levels of service during the AM and PM peak hours and no upgrades are required.
- The road safety conditions on all the roads in the vicinity of the site are acceptable for the function of the road and environment through which they pass. There are no known adverse road safety conditions in any of the other roads that have been assessment as part of this TIA.
- The COTO Manual for Traffic Impact Assessments and Site Traffic Assessments gives the following peak hour trip generation rates and directional splits for the proposed uses at the proposed residential development.

    Single Dwelling Units:

    - Weekday AM Peak Hour – 1.0 veh/h two-way per room with an 25:75 directional split
    - Weekday PM Peak Hour – 1.0 veh/h two-way per room with a 70:30 directional split

    Multi-Level Townhouses

    - AM Peak hour = 0,75 veh/h two-way per residential unit for the AM peak commuter hour with a 25: 75 directional split
    - Weekday PM Peak hour = 0,75 veh/h two-way per residential unit for the PM peak hour with a 70: 30 directional split

    Townhouses

    - AM Peak hour = 0,85 veh/h two-way per residential unit for the AM peak commuter hour with a 25: 75 directional split.
    - Weekday PM Peak hour = 0,85 veh/h two-way per residential unit for the PM peak hour with a 70: 30 directional split.

- According to the Coto TMH 17 South African Trip Data Manual allows trip generation discounts for the following land uses based on the Mount Verde Mixed Use Development:

- Single Dwelling Units 10%
- Townhouses 15%
- Multi-Level Townhouses 15%

- Based on the above trip generation rates and discounts, the proposed development a total of 600 veh/h two-way trips are expected during the AM and PM peak hours.
- The distribution of the traffic generated by the proposed development is deemed to reflect the location of surrounding residential developments for the shopping centre and offices, and the surrounding employment opportunities for the residents.
- The design year analysis plus development generated traffic volumes indicate the surrounding road network will continue to provide adequate capacity during peak hours. No upgrades are required to accommodate the traffic generated by this proposed residential development.
- This proposed residential development is expected to generate additional public transport passengers that will become pedestrians on all roads within the study area. This will mainly be associated with domestic workers walking to and from work after being dropped off and before being picked up by public transport services. This increased pedestrian activity will not be to the extent that pedestrian sidewalks will now be required along these roads. Public transport activity will also increase but no additional public transport facilities will be required.

The proposed residential component of the Mount Verde Estate on a site described as Portion 1, Portion 3, Portion 4, Portion 5, Portion 7, and Portion 8 of Erf 2054 Hilton can therefore be supported from a traffic and transportation perspective.

12.1.5 Road widths, Road Surface and Congestion

Whilst these elements generally do not form part of a traditional Traffic Impact Assessment, for the sake of completeness, as it is known that the surrounding community are sensitive to these issues, they will be addressed in this traffic impact assessment report.

The above analysis showed that in traffic assessment terms the roads in the study area will not be congested and all movements at the intersections within the study area will operate at very good levels of service. Whilst the majority of the roads within the study area are generally around 6m wide, they are wide enough to accommodate two-way traffic volumes due to the cyclical nature of the traffic that travel along these roads. Predominantly outbound during the AM commuter peak period and predominantly in bound during the PM commuter peak period. Notwithstanding this, the developer has agreed to widen the Elizabeth Drive / Wier Drive intersection and the Monzali Drive / Weir Drive intersection even though these were not recommendations in this TIA. The developer will also widen some sections of Weir Drive closer to the Mt Verde gatehouse.

With the exception of one section of Weir Drive from Elizbeth Drive to Monzali Drive, which is not in very good condition due to pot holing and edge erosion, the remainder of the roads within the study area are in good condition. It is, however, the responsibility of the Mngeni Local Municipality to repair this section of Weir Drive.

12.1.6 Relevance and applicability to the Draft EIA

The current evaluation indicates that no upgrades are required at the intersections.

No NEMA listed activities are thus triggered.

Please note that after the review of the traffic study by the stake holders, the local municipality and the provincial authorities, it may be necessary to amend the traffic study.

However, it is anticipated that the potential upgrades will not trigger additional listed activities that are not already included in the application.

12.2 CIVIL SERVICES

Please refer to **Annexure I** for the Service Outline Scheme Report.
Umsunguli Project Management cc was appointed by Mr Andre Voigts from Mount Verde (Pty) Ltd to undertake an Engineering Report on the provision of Infrastructure Services and Storm Water Management for the proposed development.

Best practice requirements require that services be designed to connect to the existing municipal services infrastructure in order to accommodate the service requirements for developments of this nature. The internal services will be according to accepted engineering specifications and principles as well as acceptable environmental requirements and specifications, as provided in the approved environmental scoping, basic assessment reports and environmental management plans.
The following engineering design criteria and assumption will apply:
Where bulk services are not available, the infrastructure will be provided by the Developer. In terms of bulk services, the following will be implemented or provided:

- Bulk Water – Provided by UMDM as a single bulk connection at the main entrance, in terms of the existing Service Level Agreement
- Bulk Sewer – Provided by the Developer
- Bulk Roads – Provided by the Developer, which includes the upgrade of certain municipal roads, as per TIA recommendation
- Bulk Stormwater – Provided by the Developer
- Bulk Electricity – Partially provided by Eskom, with additional capacity by Developer through off-grid and energy saving mechanisms

The provision of services to the proposed development will be designed to norms and standards in accordance with the “Guidelines for Human Settlement Planning and Design” (Red Book) or to municipal standards in terms of the bulk roads or any service level agreement concluded, where applicable.

12.2.1 Existing services

The following existing services are known and were observed during the site inspection conducted on 11 July 2023:

- **Access** - The main access road through the development site, Mount Verde Avenue, is surfaced, this road varies between 5 and 6m wide and is shared between the Developer and MVFA. There are also numerous gravel roads through the farmland and open space which is primarily used for agriculture.
- **Water** - There is no municipal water system. However, a bulk water connection, which is metered, has been installed at the corner of Weir/Plantations Drive in terms of the Service Level Agreement with Umgungundlovu District Municipality. From this bulk water connection, there is an existing 200mm watermain that feeds into a 250kl SBS reservoir. From the reservoir a series of 75, 110 and 160mm waterpipes distribute potable water to some of the 91 subdivisions, some located within MVFA, that will further be extended to serve the balance of the sites.
- There is an existing borehole that serves the existing farm dwellings and workshop area.
- Sewer - There is no waterborne sewage within Mount Verde and all existing dwellings and ablutions are served with onsite septic tanks and soakaways.
- **Storm water** - The storm water system is rudimentary, comprising of open grass lined drains along the road and contours within the farmland. There are also existing farm dams, but they are not used as part of the formal stormwater system, although they do collect uncontrolled surface run-off.
- **Electricity** - There are numerous existing Eskom powerlines and transformers on site Below is an extract that shows watermains (light blue) and powerlines (yellow) – Refer to the Elelctrical sections of the report.

12.2.2 Bulk Services – refer to the Civil engineering report and the combined services drawing provided as Figure

Bulk Roads

The proposed development will gain access off the N3 and Hilton College Road (P139-1). These two roads under the management and control of SANRAL and Department of Transport respectively. Access to the development site will be primarily through Monzali Drive, although Elisabeth Drive will be a secondary distributary road. Both these roads link into Weir Drive, which gains direct access to the main gate. These roads (Monzali, Weir, Elisabeth) falls under the control and management of uMngeni Municipality.

The above roads and impact of the proposed development on the various intersections was undertaken by Zutari, as part of their Traffic Impact Assessment, Ref 1001894 dated 2023/07/31, which should be read in full to understand all the various calculations, trip generation, trip reduction and assessment of the Level of Service (LOS) on the various intersections.

As part of the development, the Developer proposes to upgrade the exiting gate entrance and improve the security system. The proposed layout is attached as Annexure A.3 of the Civil services report, and shows multiple entrance and exit lanes to cater for peak times and heavy vehicles, whilst public transport facilities will be provided between Plantations and the Main Gate House to create a drop-off and pick-up zones for workers, domestic workers and other pedestrians.

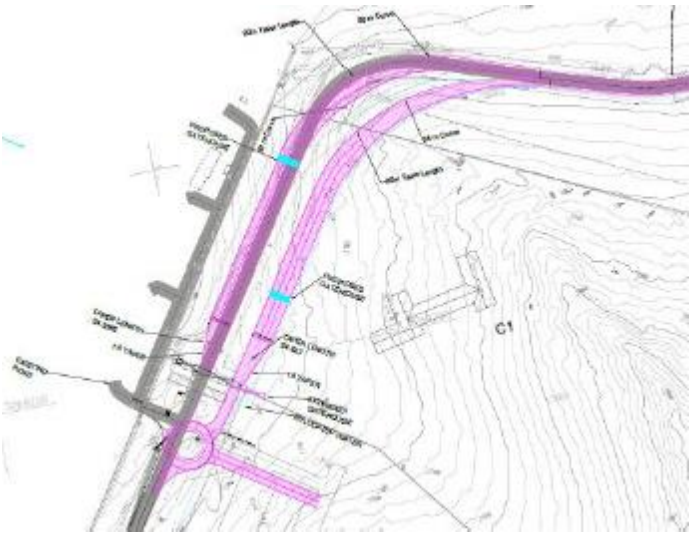


Figure 30: Upgrade of Mount Verde entrance to ease traffic movement

Bulk Water (Demand and Storage)

There is an existing bulk water system available on site. The system comprises a bulk water meter connection at Weir/Plantations, as per the approved Service Level Agreement concluded between the Developer and Umgungundlovu District Municipality, whereby by the district municipality has agreed that the Developer may abstract 750kl/day – this consumption was initially scheduled to be implemented between 2016 and 2019, but this time has since lapsed, which now allows for the full abstraction to be available.

The bulk meter connection is the only responsibility of the district, as all bulk water inside the Mount Verde Estate is managed by the Mount Verde Management Association (MVMA). The bulk water is charged by UMDM and the distribution, collection and reconciliation of water consumption and tariffs within the development is undertaken by the MVMA.

From the bulk meter connection, a 4330m long 200mm uPVC watermain was laid along Mount Verde Avenue feeding into a 250kl SBS Reservoir (ST18-2). The reservoir is served with potable, municipal water from where it distributes potable water to the existing sites and the development. The existing watermain has the capacity to provide the 750kl/day at an average flow of 8,7l/s. This is based on the current pressure in the Hilton Gardens area, which is managed by the district municipality through a Pressure Reducing Valve (PRV) located at the upper part of Elisabeth Drive and can be adjusted to allow more flow, should it be required in future.

Based on the estimated average daily water demand of 749kl/day, the total bulk water storage, excluding fire flow, will have to be increased from the existing 250kl to 1500kl. The bulk storage will be provided throughout the development, where needed based on the phases and triggers.
Residential sites will be provided with fire flow in terms of their rating and classification. Other developments such as the Showgrounds and the land that remains agriculture will be provided with water when their specific applications are lodged for development.

Bulk Sanitation

The proposed development, including all the various development nodes, will be served with waterborne sanitation. The entire system functions on a gravity sewer system, although two sewer pumpstations will be provided.

The entire development will be served with a modular waste water treatment works – the WWTW will serve all the various development nodes and will be managed by the Home Owners Association. The WWTW will be provided with a manual screen to remove solids (>75mm) as well as a buffering tank that will reduce the peak flows into the WWTW. The overall capacity of the WWTW at full development will be 1500kl/day, although it will be constructed in modular stages, as development nodes are developed and become active.

The final effluent must comply with standard limits and although it may be returned to natural stream and drainage lines, it will be diverted along a reedbed system for final polishing before being released into the drainage line below Forest Valley. It may be possible to offer the water for irrigation to the farming community.

Three pump stations are proposed – the sewer pumpstations will be located outside the environmental buffer zone. The pumpstation will be equipped with a duty and standby pump, both macerating pumps, to transfer effluent via a rising main directly into the Mount Verde WWTW

Bulk Stormwater and Storm Water Management

The proposed development is primarily located on a ridge, although there are two drainage lines that bisects the site and where there are three existing dams located. These dams are currently undergoing a Section 24G application, although none of these dams will be used for stormwater management, although they will receive controlled stormwater run-off from the development. These dams are however licensed with the Department of Water and Sanitation.

Each of the respective development nodes will be provided with their own stormwater management system. The proposed stormwater system will be designed to protect the environment, control flow and sediment, whilst introducing various methods of stormwater attenuation.

The stormwater management strategy will comprise the following mechanisms:

- Stormwater harvesting at all buildings and dwellings
- Open grass lined drains and swales with pipes/culverts along roads and at intersections
- Storm Water Attenuation Ponds
    - Manage the increase between pre and post development flows
    - 1:50 year design period
    - Time of Concentration 15 minutes
    - Rainfall Intensity 165mm per hour

Although internal stormwater system will collect and manage surface run-off the main stormwater management component will comprise the construction of individual storm water attenuation ponds. Each pond will be constructed with gravel/soil from site excavations, with embankments at slopes of 1:2 covered in Soilsaver and vegetated. The top of the embankments should be at least 2m wide and each

pond must be provided with 800mm freeboard, whilst an outlet structure will control the flow of stormwater at pre-development flows. The top of the outlet structure will be sized to receive the 1:50 year flow, whilst an overflow must be provided to accommodate the increase in flow up to a 1:100 year storm event.

12.2.3 Internal Services

All internal infrastructure services are private and managed by a Homeowners Association, with no requirements from uMngeni Municipality or Umgungundlovu District Municipality (except for the bulk water connection. Refer to the Civil Engineering report for a discussion on services in each Hamlet.

The entire development and each node will be provided with waterborne sanitation, potable water with a water meter at each stand, surfaced roads of various widths, stormwater (including attenuation measures), electricity (covered by the electrical engineer) and refuse removal.

All civil infrastructure services will be designed in accordance with "The Neighbourhood Planning and Design Guide, dated 2019" and constructed in terms of SANS 1200, as modified by the Project Civil Engineer, as required.

12.2.4 Refuse

Collection of refuse from each individual owner will be undertaken by the respective Home Owner's Association of that specific development node. It is recommended that a dedicated area is provided at the main entrance gate (Main Arch Gate) and that the area is walled and covered with an outlet connected to a soakaway to wash and disinfect the storage area to prevent smell and vermin nuisance. Refuse will be removed from the main gate under a private contract to the municipal dumpsite located in Curry's Post.

It is essential that the internal measures ensure that recyclable material is separated from general refuse and that The Homeowners Association will be responsible to contract with a recycling company to collect the recyclable material or deliver it to the respective location.

12.2.5 Conclusion on Civil Services

The civil engineering proposals have been prepared using available information and a site investigation. However, based on the existing information the development can be provided with water, sewer, roads and electricity services along with having suitable stormwater mitigation measures. The conclusion is that the Mount Verde Development can proceed, subject to the following conditions:

- Implementing the recommendations of the Traffic Impact Assessment prepared by Zutari.
- Concluding an agreement between the Developer and uMngeni Municipality regarding the upgrade of municipal roads, based on specific traffic trip generation triggers, as well as the timing of the upgrades and associated costs, as per TIA recommendations.
- Consultation with the Engineers of the Shared Infrastructure Committee (SIC) on the proposed upgrades of the main gate house entrance and Mount Verde Avenue.
- Upgrading the bulk water storage facility, based on the implementation programme of the various development nodes.

- Constructing a modular Waste Water Treatment Works, including a buffer tank, based on the implementation programme of the various development nodes to ensure the quality of the treated effluent complies with standard limits.
- Implement stormwater management through the construction of multiple stormwater attenuation ponds, including the implementation of rainwater harvesting.

12.2.6 Relevance and applicability to the Draft EIA

The Civil Engineering report identifies the bulk and internal services that will be required in the development. .

The listed activities that are triggered by the provision of these services are assessed as part of this Draft EIA .

12.3 ELECTRICAL SUPPLY

EG Africa Consulting engineers was appointed by Mount Verde (Pty) Ltd to undertake an Electrical Engineering investigation.

The developer has obtained a bulk supply from Eskom at 11000V on the eastern side of the development. The developer will reticulate to the new development and the line will consist of a combination of overhead and underground MV line (11000V) and underground LV (400/230V) electrical cable. These services will be installed in the road reserves and omnibuses as far as possible.

The LV reticulation will be fed from the ground mounted miniature substations to the Distribution kiosk strategically positioned to feed each stand via underground LV cable.

At the Distribution kiosk a 3/1pole 40A MCCB and space for the meter will be provided for connection to each stand.

Each homeowner will be metered via a pre-payment meter. The meter will be purchased from the Developer's service provider and the meter must be installed in the distribution kiosk along the site boundaries.

An LV cable will be installed from the metering kiosk to the closest point on each property. The supply cable to the dwelling will be joined to this cable at the homeowners cost.

12.4 CONCLUSIONS AND RECOMMENDATIONS FOR THIS APPLICATION REGARDING SERVICES.

The current assessments will indicate whether an authorized supplier of electricity to the property and all adjacent properties in the area has adequate services available or not.

The town planning application will thus address this aspect on the SPLUMA application, and the approvals of the Conditions of Establishment of the township will provide the requirements from the

various service departments at the uMngeni Local Municipality. These must be implemented to the satisfaction of the various departments.

13.0 PUBLIC PARTICIPATION

Please refer to **Annexure J** for the Public Participation Report**.**

The Public Participation Process is being conducted as an essential component of the Environmental Impact Assessment Process in terms of the National Environmental Management Act, 1998 (Act No.107 of 1998), as amended, and the Environmental Impact Assessment Regulations, 2006 (Version 1).

13.1 NOTIFICATION OF INTERESTED AND AFFECTED PARTIES

Interested and Affected Parties were notified of the public participation process for the proposed development in the following ways:

- A newspaper advertisement was placed in The Mercury on Friday, **14 October 2022**.
- Detailed site notices were prepared in accordance with the requirements of the Regulations and were erected at the main entrance to the property, as well as other visible points, on the **14 October 2022**
- A Background Information Document (BID) was posted, faxed, emailed or hand delivered to adjacent landowners. Written acknowledgement has been gathered from each of these landowners. The BID document provides information concerning the proposed development. Interested and affected parties were invited to submit written comments concerning the proposed development and become part of the environmental process.
- Ward Councillor Mrs. Kate Janse van Rensburg (Ward 7) was and will be kept informed of the proposed development.
- Local authority officials were contacted by the relevant consultants.

13.2 PUBLIC MEETING

If required, a public meeting will be arranged with adjacent landowners and other stakeholders that have been identified after the Draft Environmental Impact Assessment has been completed, to ensure that available information can be provided to Interested and Affected Parties.

13.3 ISSUES AND CONCERNS

Written correspondence received from I&APs by LEAP has been collected and a list of all issues and concerns compiled. These are referred to the appropriate specialists for addressing. A list of issues and concerns was drawn up from the following sources:

- Written correspondence received from I&APs
- Issues identified by specialist studies
- Comments from Ward Councillor
- Comments from municipal officers
- Field observations

The Environmental Impact Assessment aims to address these issues & concerns from the public, and those identified during all the other methods of impact identification. All issues and concerns received

throughout the entire environmental assessment process will be addressed in the Final Environmental Impact Assessment. Issues and concerns are addressed in this report.

13.4 PUBLIC INSIGHT

Written submissions received by LEAP have been attached in **Appendix 4** of this report.

SUMMARY OF PROCESS

ACTION	HOW ACHIEVED
Draft a BID, including information and describing the process including a map of the area affected by the proposed development;	This was sent to I&APs as they register. It is also included in the Public Participation Report (PPR) as submitted with the Draft EIA Report (DEIAR).
Advertise the project in the prescribed newspapers, put up site notices, identify authorities and adjacent landowners, and send them a BID (according to the legal requirements);	• The Mercury on Friday, 14 October 2022. • Site notices were put up on 14 October 2023. • BID was sent out.
As I&APs respond to the advertisements and notices, register them on a I&AP database;	I&AP Register included in PPR
Communicate relevant information to registered I&APs throughout the process, for them to respond and provide input on the proposal;	• BID was sent out. • Draft Scoping Report was circulated from mid-March 2023 until mid-April 2023. • Final Scoping Report was circulated from late May 2023 until late June 2023. • DEIAR will be circulated from mid-September 2023 until mid-October 2023.
List the issues raised in a Comment and Response Report;	Comments and Response Register (CRR) is included in the PPR
Determine the need for a public meeting and if required, arrange, advertise, and hold public meetings, and record issues raised; and	No public meeting was held. Individual meetings with I&APs were not requested.
Once the Final EIA Report (FEIAR) has been compiled, put the document out for public comment, and systematically inform registered I&APs of the opportunity to provide feedback.	• FEIAR will be circulated for review from mid-November 2023 until mid-December 2023. • Additional comments will be sent through as they may be obtained.

13.5 ISSUES AND RESPONSE REGISTER

Table 9: **Comments and response register**

	NAME	DATE RECEIVED	COMMENTS ON PORTION 77 OF THE FARM MOUNT VERDE VILLAGE 363-IR	RESPONSE
PLEASE NOTE – FOR EASE OF REFERENCE, COMMENTS RECEIVED ON THE DRAFT AND FINAL SCOPING WERE REMOVED FROM THE DEIAR DOCUMENT – BUT ARE AVAILABLE IN FULL IN THE PUBLIC PARTICIPATION DOCUMENT – ATTACHED AS APPENDIX 6				

13.5.1 Conclusion and RELEVANCE for the application:

The public participation is being conducted according to Chapter 5 of NEMA 2014 and amended 2017. The local community is not vigilant in this regard, but the process is followed to comply with the regulatory requirements.

14.0 ALTERNATIVES IDENTIFIED & MOTIVATION FOR PROPOSED DEVELOPMENT

The concept of Integrated Environmental Management suggests that an Environmental Impact Assessment process, to determine the possible impact of the proposed activity, should incorporate the consideration of feasible alternatives. A reasonable number of possible proposals or alternatives, to achieve the same objective should be assessed. The identification, description, evaluation and comparison of alternatives are important for ensuring a sound environmental scoping process.

Alternatives should be considered as a norm within the Environmental Process. These should include, as applicable, the demand alternative, scheduling alternative, land use alternative (including the NO-GO option), location alternatives and service alternatives.

14.1 TECHNOLOGY ALTERNATIVES

14.1.1 Option 1:

The UMngeni Local Municipality has minimum standards that must be followed. For instance, they do not require solar or alternative energy to be used. Also, low flowing taps or water harvesting is not a requirement. Separation at source of waste is not a requirement of the municipality. These conventional methods of construction, energy provision, water management and waste management are not in line with current day sustainable thinking and is not recommended for this project.

14.1.2 Option 2:

Conventional methods of construction, energy provision, water management and waste management are replaced with technology that, as an alternative to resource-intensive and wasteful industry, aims to utilize resources sparingly, with minimum damage to the environment, at affordable cost and with a possible degree of control over the processes.

Alternative technologies are paving the way building companies look at making new structures, whether that is a residential site, corporate building, or government establishment. As trends have evolved, there is also a need to incorporate greener practices into building methods, plus smart technology is also taking shape in construction practices.

These trends will be shaping the future of the construction industry for years to come, so look at some of the most prevalent changes that are coming into effect for a more efficient and sustainable building process.

Smart buildings

Technology is changing each industry and construction is no exception. Although there has been some resistance to changes in current working practices, the need to incorporate technology into everyday building and site management has never been more important. As buildings are being constructed, there have been a host of technological improvements in modern building design. These include incorporating the Internet of Things (IoT) to automate functions such as energy efficiency and consumption. This type of technology also makes buildings more sustainable, safe and efficient for the end user.

Prefabricated buildings

In a world which is increasingly looking towards more cost-effective building materials, prefabricated and modular buildings are the answer to a changing economic climate, particularly in the business world. A specially created modular structure offers a toolkit and building blueprint to help you get started and can usually be constructed in a short space of time with efficiency and precision. Each element is made to fit exact specifications and saves time and money in the long-term. Going one step further, these buildings are also able to be relocated easily, whether you decide to move your office across the country or simply relocate one classroom to a new wing of the school. This type of building is the best choice if you need a new facility or office for a limited time.

The use of mobile technology

As all industries see the increase of mobile technology to improve productivity, the construction sector is starting to make use of this innovative tool. Mobile technology is helping to shape the processes and methods of traditional building practices and streamline them with other areas of the business for greater visibility. Everything can be managed from software systems, and each person on a project has responsibility for the process within the job. All systems can function under one hub and includes everything from tracking and assigning tasks to reporting, which can be seen and evaluated by managers and employees for effective communication and dispute resolution.

Incorporating green practices

Green or sustainable buildings are a major talking point throughout the industry and have been a big focus for government targets. As concern for the environment and how the industry impacts on it grows, constructing green buildings is high on the agenda for many firms. Buildings that incorporate renewable energy is also the way forward, as the government aims to incorporate this type of energy into residential and commercial properties rather than dirtier fuel types.

The construction of the development will be at the forefront of major change in the building industry. which include but will not be limited to:

- Structural elements
- Thermal and energy performance and/ or efficiency of material
- Water penetration
- Quality management system
- Cost and design
- Alternative energy sources
- Alternative water management systems
- Green buildings and Green infrastructure etc
- Innovative building systems in terms of human settlements designs and delivery processes
- Use of new materials in building houses
- New ways or methods of applying traditional materials
- Improvements in designs to enhance functionality of a house
- System designs (designing for energy efficient house)
- Performance based design-fit for purpose.

Energy Alternatives

With the ever-increasing demand of electricity and rising rates, solar is an excellent means of subsidising municipal consumption to ensure cost savings. For the proposed development, it is recommended to make use of latest advancements in energy technology to create a sustainable environment by using the sun through solar energy to provide cost savings on power consumption.

How it works:

1) Solar panels on the roof generate free electricity during the day. This electricity is used to power the geyser and any excess electricity is then consumed by general loads in the estate.
2) A temperature sensor constantly measures the water temperature and communicates this to the controller.
3) Solar inverters tell us when the sun is shining, letting the controller know when to switch the geysers on to ensure all solar energy is used.
4) Based on available solar energy and the specific geyser temperature, the controller switches the geyser on to ensure that hot water is generated using the cheapest possible energy generated by the sun.
5) The grid will continue to supply electricity that can't come from the sun which means hot water is always available.

Figure 31: Household Geyser Solar System

With the solar system installed, energy is generated from the solar panels and utilised by the geyser control system to reduce energy consumption from the municipal provider to guarantee cost savings. Each element geyser will have electricity supplied to it, whether the sun is shining or not, hot water will be readily available with grid energy to maintain minimum water temperatures.

14.1.3 Conclusion and relevance for the application

The site will be developed with sustainable principles and state of the art technologies.

14.2 DEMAND ALTERNATIVES

As indicated, it is a given fact that one of the development priorities of today lies in the provision of housing. The reconstruction and development program of the Government has identified five inter-linked policy programs, whereby housing is defined as a basic need. A tremendous backlog in the provision of housing exists and has to be addressed as a matter of priority.

Development pressure in housing provision has placed enormous pressure on the development of vacant land within the urban edge in proximity of the existing transport routes. The development will assist with the creation of open space, management of storm water and will further serve as an economic centre for the area.

Immediate benefits are likely to accrue to the residents as well as to a variety of people who seeks housing in proximity to their area of work. The local community in the surrounding area will be benefited through employment opportunities available in the proposed development such as maintenance of buildings, creche facilities, and small businesses. This will also include immediate opportunities for house construction, service provision, material supplies and domestic employment.

In addition, the project will create economic activity in the area by means of supporting local churches, schools, shopping centres and associated community facilities. The demand alternative presents two logical alternatives namely:

- To retain the site as open land (the status quo); or
- To develop the land as an infill component to the established urban environment, linking the site to surrounding activities and accessible infrastructure to compliment the increasing industrialization and commercial demand in the region or by providing additional business opportunities and would align to the National and local demand for economic growth.

14.2.1 Conclusion and relevance for the application

The proposed development will not only benefit the future residents in the area, but it will also assist urban integration, infill development and assist to achieve the overall development strategies of the UMngeni Local Municipality.

14.3 PROCESS ALTERNATIVES

The process relevant to the establishment of a development area can only be achieved by way of an application in terms of the Spatial Planning and Land Use Management Act 16 of 2013 (SPLUMA) (preferred alternative).

The end result in respect of the process would the development that will result in the transformation of a portion of land into a residential and retain some agricultural uses and the show grounds development. The development process per se (in a physical sense) does not offer viable alternatives to consider other than making reference to typical construction methods relevant to the building of roads, the laying of subterranean infrastructure and the like

Clearly, methods applied may involve manual labour in certain circumstances. In the development proposal under consideration, manual labour will indeed be feasible having regard to the scale and extent of the development which, in turn, will enhance employment creation and should be preferred as the alternative construction method where practically possible.

14.3.1 Conclusion and relevance for the application

There are no other processes that can be followed than the legislated Town Planning, NEMA and NWA processes.

14.4 SCHEDULING ALTERNATIVES

The environment, scale and nature of the proposed mixed-use development is not specifically sensitive to weather patterns or cycles. There does not appear to be a preferred time to undertake the physical development. Typically, the rainy season (spring and summer) may impact negatively on the construction related activities and may result in "down time". It follows that, if possible, the construction period should accord with the winter months to avoid down time related to rain. Following this alternative, it may also result in less of an impact on the possibility of topsoil erosion during flash

thunderstorms and increased runoff where new trenches lie exposed to the elements for a restrictive period.

Following this alternative, it may also result in less of an impact on the possibility of topsoil erosion during flash thunderstorms and increased runoff where new trenches lie exposed to the elements for a restrictive period.

14.4.1 Conclusion and relevance for the application

Schedules of construction is not amendable and must comply with the National Building Regulations and the National Home Builders Regulation Council.

14.5 LOCATION ALTERNATIVES

Location alternatives for the proposed Mount Verde Village development, which constitutes a mixed-use residential development with associated infrastructure such as the preferred activity alternative, include the following and will be analysed during the Environmental Impact Assessment process:

14.5.1 Inner-city location

An inner-city location would be environmentally and socially feasible, however economically unviable, provided that the same area extent of land be found available for development as inner-city resources are very scarce.

14.5.2 Suburban location

Not socially, environmentally, or economically feasible due to the following:

- Not situated adjacent to primary movement corridors
- Not accessible to a range of socio-economic population groups
- Isolated nature of development and therefore not inclusive
- Contrasting densities and heights about the mixed-use nodal development
- Availability of land at an affordable cost minimal

14.5.3 Urban edge / rural location(preferred)

Land in this location is available as par of a larger “Agrihood” community and thus suitable for development of a Village consisting of several hamlets clustered around commune open spaces and urban agricultural uses. .

- Immediately available and in close proximity to social amenities, services and infrastructure
- Aligns to the prerequisites of the UMngeniLocal Municipality’s SDF.
- Situated within the village realm of Hilton
- Locating a nodal development close to other urban facilities
- Retaining land in Agricultural use and benefiting residents with a heathy ‘Agrihood” lifestyle
- Making affordable housing available in a rural setting

14.5.4 Conclusion and relevance for the application

The development proposal accommodates and avoids the sensitive areas, and in the areas, that have been identified as development land, has no fatal flaws in terms of the institutional, bio-physical, or socio-economic environments.

14.6 LAND USE ALTERNATIVES

The following Land Use alternatives have been investigated. Refer to **Annexure G –** Town Planning Motivation by Simon Plunkett Town Planning

14.6.1 Alternative 1: No-go Option

This implies that the site be left as is and that no development or alteration be done. If this alternative is pursued, the existing habitat on the site will be retained and no development will take place. This option has the following drawbacks:

- The potential to provide additional agricultural and associated commercial opportunities, which appears to be in accord with the prevailing land use regime in the area and the local municipal objectives, will be lost;
- A very viable opportunity to exploit the residential markets in the area and creating jobs and income for the local economy will be negated;
- If not developed, the owner will derive no income from the property and will subsequently not be able to maintain the property. This could lead the site to fall into disrepair;

Due to the lack of affordable neighborhood - like housing in the area and the fact that the area may be left undeveloped if the proposed mixed-use development is not considered, it is reasonable to state that the no-go option is less favourable than some of the other options presented. Furthermore, the historic and current disturbances within the study area, (i.e., the transformation of vegetation communities for agricultural purposes, Alien invasive plants proliferation and fragmentation from the surrounding natural vegetation communities) has resulted in a decreased habitat integrity and floral communities that are indicative of disturbance events.

14.6.2 Alternative 2: Single use, single size: Low density residential

The result of such a development will be a high-income exclusive development where no social responsibility or economic sustainability and job creation can be considered. Limited ecological land will remain as all the land will be taken up by roads or erf portions.

14.6.3 Preferred alternative: Mount Verde Village "Proposed Mixed Use "AgriHood" Development with Associated Infrastructure."

Refer to Annexure G– Town Planning Motivation

Additionally, the following aspects will be addressed within the proposed developments planning to adequately cater for service provision and management of on-site alterations to the land character:

- Retention ponds for storm water management purposes will be provided on the various erven and private development areas but may also be provided in some of the open spaces.
- Internal road reticulation will be provided to adequately feed all proposed facilities.
- External road reticulation and intersections will be improved where necessary, according to the Traffic Impact Assessment.
- Sewer and water reticulation services in the area will be improved where necessary, according to the Electrical and Civil Service Reports.

.

15.0 COMPARISON OF ALTERNATIVE LAND USES

Please refer to the **Table 17** for comparison of alternatives below, a comparison of the four alternative activities for the proposed development site with regards to layout and densities, engineering and design alternatives, road access, storm water management, waste collection, sewer disposal, impact on the surrounding environment and visual impact. Within this comparison it may be assumed that mitigation measures have been adequately implemented. The impact rating is as follows:

High - 5
Medium - 3
Low - 1
Lowest score - 8
Highest score - **40**

Table 10: **Comparison of alternatives**

	Alternative 1: No-go	**Consequence or Impact Rating**	**Alternative 2: Low Density Residential**	**Consequence or Impact Rating**	**Preferred Alternative: "Proposed Mixed Use Development with Associated Infrastructure"**	**Consequence or Impact Rating**
Layout and densities	The site will remain as it currently exists. The potential for the site to fall into disrepair is high, along with inappropriate management / control and the potential for informal settlement invasion. The No-go option is not considered desirable.	Medium – 3 No improvements will be implemented.	A low-density layout is monotonous and unresponsive to the SDF and will not create a balance between social, economic and environmental requirements for the growing urban environment.	High – 5 Due to lack of diversity and vibrancy and responsive-ness to city requirements	A mix use development with a layout that is responsive to the uMngeni Local Municipality's requirements creating a balance between environmental, social and economic requirements. Optimal utilisation of land to promote an accessible development.	Low – 1 Urban design framework that responds to city requirements
Engineering and design	This alternative will not currently require upgrading of engineering services; however, no upgrades will be implemented to the	Med-low – 2 No improvements will be implemented	Structural and design aspects can be accommodated within this proposal.	Med-low – 2 The systems will be designed to function optimally, and measures can be implemented to	Structural and design aspects can be accommodated within this proposal.	Med-low – 2 The systems will be designed to function optimally, and measures can be implemented to

	Alternative 1: No-go	Consequence or Impact Rating	Alternative 2: Low Density Residential	Consequence or Impact Rating	Preferred Alternative: "Proposed Mixed Use Development with Associated Infrastructure"	Consequence or Impact Rating
	benefit of the surrounding area.		Positioning of services will be strategically planned according to the proposed layout to prevent further impacts on the environment.	ensure effective monitoring and maintenance	Positioning of services will be strategically planned according to the proposed layout to prevent further impacts on the environment.	ensure effective monitoring and maintenance
Road access	To remain as existing. No upgrades will be required and implemented.	Medium - 3 No improvements will be implemented in an area that desperately requires road upgrades	Minimum upgrades to entrances and accesses according to the traffic engineering report. Limited public transport improvement and accessibility due to gated community.	High – 5 Due to gated community structure in an area that should be accessible	Upgrades of the intersections. Entrances and accesses as well as road upgrades according to the traffic engineering report.	Med-low – 2 Increase in traffic to be accommodated due to surrounding road upgrades
Stormwater management	The natural drainage of the site is characterized by the localized low point located in the eastern and western portion of Portions 2 and 3, respectively. The general run-off drainage (1.3 % slope average). occurs in an east to west direction towards the flood lines / low point within the site boundary. Better management options could be implemented to prevent erosion.	Medium - high– 4 No storm water management will be implemented, which could worsen erosion on the site and contribute to pollution of the watercourse situated on the eastern boundary of the proposed site.	Storm water management via a storm water drainage system composed of storm water inlets and pipes along internal roads which connecting to attenuation structures. No water will be released into natural systems without retention and slowing down of the water. Accumulated storm water can be utilised for irrigation of open spaces.	Medium – 3 Effective storm water management can be implemented.	Storm water management via a storm water drainage system composed of stormwater inlets and pipes along internal roads which connecting to attenuation structures. No water will be released into natural systems without retention and slowing down of the water. Accumulated storm water can be utilised for irrigation of open spaces	Med Low – 2 Effective storm water management can be implemented

	Alternative 1: No-go	**Consequence or Impact Rating**	**Alternative 2: Low Density Residential**	**Consequence or Impact Rating**	**Preferred Alternative: "Proposed Mixed Use Development with Associated Infrastructure"**	**Consequence or Impact Rating**
Waste collection	No waste management strategies are currently being implemented.	High – 5 No improvements will be implemented. Illegal dumping will continue	Refuse removal to be provided by the Emalahleni Local Municipality, however waste is to be minimised by the provision of waste transfer stations	Med-low – 2 Effective waste management due to structure and management by Body Corporate.	Refuse removal to be provided by the uMngeni Local Municipality, however waste is to be minimised by the provision of waste transfer stations	Med-low – 2 Effective waste management due to structure and management by individual land parcels and the incorporation of a homeowner's association, which duties will include but not be limited to supervision of waste management
Sewer disposal	No additional requirement.	Medium – 3 No improvement to system in the area	Improvement of municipal sewage reticulation system. Increase on load.	Medium – 3 Less time for expansion due to probably once-off roll out	Improvement of municipal sewage reticulation system. Increase on load	Medium – 3 Phased nature of development will ensure the correct and timeous planning associated with the potential requirements for upgrading of sewer system
Impact on surrounding environment	No change expected other than the potential degradation that could be resultant of poor site management, illegal informal occupation, illegal hunting and illegal dumping	Med – 3 No change, however, possibility of illegal squatters and illegal dumping	Impact on the environment is mitigated due to the provision of adequate open space for ecological connectivity and preservation. No surrounding community benefit as	High – 5 A definite change in land use, although strict access control with no surrounding community access	Impact on the ecological environment is mitigated due to the provision of adequate open space for ecological connectivity and preservation. The community will benefit due to the provision of various commercial	Med-low – 2 A definite change in land use, along with a mix of economic and social land uses that will benefit surrounding community

	Alternative 1: No-go	**Consequence or Impact Rating**	**Alternative 2: Low Density Residential**	**Consequence or Impact Rating**	**Preferred Alternative: "Proposed Mixed Use Development with Associated Infrastructure"**	**Consequence or Impact Rating**
			the development will most likely be gated and inaccessible with no economic and social facilities that are available for surrounding neighbourhoods.		enterprises, the improvement of bulk infrastructure as well as various job opportunities.	Mitigation measures to prevent negative impacts in respect of ecologically sensitive areas will be implemented as part of the Environmental Management Plan.
Visual impact	Visual impact will not change.	Low – 1	Unilateral and monotonous mass of development. Lack of diversity and vibrancy	Med – 3 Can potentially be mitigated with greening	Vibrancy and diversity associated with mixed-use character under an umbrella of guidelines (materials, lighting, greening, forms, etc)	Med-low – 2 Architectural guidelines and aesthetic requirements
IMPACT SCORE		25		27		**17**

15.1.1 Conclusion and recommendations for the application

A mixed-use development that allows for a variety of amenities and conveniences to the residents is the preferred option.

16.0 POTENTIAL IMPACTS

16.1 METHODS USED TO IDENTIFY POTENTIAL IMPACTS

A combination of the following methods was used to identify impacts during the Scoping and EIA Processes:

16.2 SPECIALIST STUDY FINDINGS

All the legally required specialist studies were conducted (as required by GDARD as per DEA guidelines). Often more than one study was conducted in the same discipline to verify or to supplement findings. The findings of such specialist studies highlighted potential impacts on protected or endangered species and/or environments. The following shows a list of the impacts according to specialist studies:

Table 11: **Possible impacts according to specialist studies**

SPECIALIST STUDY	IMPACT IDENTIFICATION
Flora & Fauna	The habitat within the study area ranged from well-vegetated areas to transformed areas in which indigenous vegetation was scarce. It supports a moderately low to low species richness. **Vegetation Unit 1 (Cultivated Fields)** This habitat unit makes up most of the study area and is a transformed habitat in which no specific vegetation structure was evident. **Vegetation Unit 2 (Degraded Habitat)** This habitat had modified semi-open to closed woodland characterised by moderately low species richness. It is degraded in nature, having been significantly impacted by anthropogenic activities. **Vegetation Unit 3 (Rocky Grassland)** This habitat was characterised by a moderately low to intermediate species richness. Although the habitat has not been directly impacted by cultivation activities, it has been subjected to edge effects (AIP proliferation, dumping activities, etc.). **Vegetation Unit 4 (Freshwater habitat)** The natural flow path of the wetland has been significantly altered and channelled for agricultural purposes in the surrounding area. This habitat was characterised by a moderately low to moderate species richness and was largely homogeneous in nature. AIP proliferation was noted throughout the habitat.

SPECIALIST STUDY	IMPACT IDENTIFICATION
	Anticipated Impacts • Potential failure to relocate or monitor floral SCC will lead to loss of faunal or floral SCC within the development footprint areas in the study area. • Site clearing and the removal of vegetation will an impact on faunal and floral habitat, diversity, and the possible loss of floral SCC • Proliferation of AIP species that colonise in areas of increased disturbances will lead to loss of favourable faunal and floral habitat outside of the direct development footprint, including a decrease in species diversity. • Impaired water quality and altered flow of water within Freshwater habitats due to the proposed activities will cause loss of ecologically important floral and faunal habitat and consequently a further loss of diversity and species reliant on the Freshwater Habitats • Risk of contamination from urban spills which may pollute receiving environment will cause potential displacement and /or loss of floral and faunal species and habitat. • Dumping of construction material within areas of increased sensitivity will cause loss of preferred faunal and floral habitat, diversity and SCC as AIPs outcome and replace these species. • Dust generated during construction and operational activities accumulating on the surrounding floral individuals will result in declines in plant functioning leading to loss of floral species and habitat for optimal growth. • The proposed development is likely to result in significant clearing of vegetation within the study area, leading to an unavoidable loss of habitat and altered faunal species diversity. • The proposed development will result in the clearance of vegetated areas and further isolation and displacement of faunal species. Furthermore, ineffective control and monitoring of edge effects can result in the spread of AIP species, which will further alter faunal habitat and subsequently faunal diversity both within the study area and the surrounding areas. • Numerous species will be attracted towards the light sources, and this will result in the disruption of natural cycles, such as the reproductive cycle and foraging behaviour. The lights may destabilise insect populations, which may alter the prey base, diet and ultimately the wellbeing of nocturnal insectivorous fauna. • Alteration of the vegetation of the proposed site will directly, and indirectly, impact on the smaller sedentary species (insects, arachnids, reptiles, amphibians and mammals) adapted to their ground dwelling habitats.
Wetlands	**Functional and Present Ecological State** The seriously modified ecological condition of the CVB wetland was ascribed to numerous changes to the hydraulic regime, geomorphological processes and

SPECIALIST STUDY	IMPACT IDENTIFICATION
	vegetation composition which have occurred within the wetland as well as the catchment. Impacts such as channel straightening, road crossings, hardened surfaces, historical and current agricultural activities and dense alien vegetation patches have altered the natural ecological condition of the CVB wetland. **EIS** The CVB wetland is of moderate ecological importance and sensitivity despite its seriously modified ecological condition. The CVB wetland is deemed sensitive in terms of changes in floods, low flows/dry seasons, and water quality. **Watercourse drivers and receptors** Alterations to the natural hydraulic regime and geomorphological processes of the CVB wetland have occurred. • Channel constructed to direct water away from the adjacent landowner's property. • The soil stockpiled south of the channel, alters the natural flow path and velocity of flow within the CVB wetland. This led to erosion of the banks of the CVB wetland. The natural vegetation of the CVB wetland has been highly disturbed largely due to cultivation activities. Overall, the CVB wetland is considered likely to provide minimal roosting, breeding and feeding habitat for avifauna, small mammals, amphibians, reptiles and invertebrates. **Anticipated and Cumulative Impacts** The impacts identified include: • changes to the sociocultural and ecological service provision, • loss of wetland habitat and ecological structure introduction and spread of invasive vegetation, • impacts on water quality as well as impacts on hydrology and sediment balance as the most prominent impacts during the construction and operational phases of the proposed development. • Potential smothering of the vegetation within the CVB wetland, as a result of increased sediment laden runoff leading to altered wetland habitat. • Disturbance of soil leading to potential increased alien vegetation proliferation within the CVB wetland • Altered runoff patterns within the landscape, leading to the potential for increased erosion and sediment laden runoff into the CVB wetland. • Increased hardened surfaces within the study area resulting in altered runoff patterns within the landscape, leading to increased erosion and sedimentation of the CVB wetland and associated wetland habitat

SPECIALIST STUDY	IMPACT IDENTIFICATION
	• Possible contamination of wetland habitat soil and surface water of the CVB wetland from hardened surface runoff leading to reduced ecoservice provision and ability to support biodiversity • Potential changes to the hydrological and geomorphological regime of the CVB wetland as a result of increased stormwater inputs;
Cultural Heritage	The intensive fieldwork resulted in the identification of 18 heritage sites. These were numbered from LK001 to LK018. From a heritage perspective it is subsequently recommended that the proposed Mount Verde Village Development be approved subject to the mitigation of the heritage site. The mitigation may include the exhumation and relocation of the graves to an existing cemetery or alternatively incorporate heritage sites into the development where they can be incorporated into an open space or similar use.
Social impact	The existing conservancy and farming communities that lie to the north, west and east of the site are continuously more and more impacted by increase crime, illegal hunting, loitering and theft of farming produce, equipment, fences, and other belongings. The community must be protected by limiting access and by providing a screen between the proposed development and the adjacent lands. If necessary the road access must be reduced to provide only one access to the farming community and to erect gates to create a closed community
Services provision	Communication with the applicable municipal departments will be maintained to ensure adequate supply plans without hindering the supply to the surrounding areas. Bulk services are available or will be available along with required upgrades. The appropriate links will be installed to these services. No additional impact is expected with the implementation of the Environmental Management program.

16.2.1 Conclusion and recommendations for the application

The specialist findings provide mitigation measures that will be implemented to the required standards as indicated by the legislative standards or site conditions.

16.3 SITE INSPECTION

The environmental consultant and specialists conduct several site visits and identified potential sensitive environments. These areas are then red flagged to be investigated further and excluded from development.

16.4 PUBLIC PARTICIPATION

Conducting public participation produces an issues list. Such a list needs to be screened for relevant impacts which then need to be addressed by specialist studies or identified for further investigation. A very comprehensive public participation process was followed.

16.5 EDTEA POLICIES, REVIEW / TERMS OF REFERENCE

EDTEA as well as the policies provides the red flags that must be investigated by the specialists. Furthermore, the EDTEA officials and the different sub-directorates within the department review the application and give comments to the relevant environmental officer. The issues identified are forwarded to the environmental consultant and these issues are addressed or translated as impacts.

16.6 IMPACT SUMMARY

Environmental impacts can be classified according to physical impacts, bio-physical impacts and socio-economic impacts and can occur during the construction and / or operational phases.

16.6.1 Physical Impacts

- Geological impacts
- Topographical impacts
- Air quality
- Soil and land capability
- Water quality and availability – surface and ground water

16.6.2 Biophysical

- Impacts on flora and flora habitats
- Sensitive landscapes (flood plains and or wetlands with buffers)

16.6.3 Socio-economic Impacts

- Cultural and historical significance
- Noise pollution
- Visual impact
- Sites of cultural significance
- Safety and security
- Impact on ambience of the area
- Traffic increase on roads
- Services being inadequate and malfunctioning (including electricity, waste management, water, sewage management systems)
- Improved tax base
- Bulk contributions which result in the improvement of infrastructure in the area
- Crime, hunting, loitering and theft.

16.7 ASSESSMENT OF IMPACTS

16.7.1 Definition of terms

Construction Phase: All construction or related activities, from occupation by the contractor, until the contractor leaves the site.
Operational Phase: All activities related to and including the operation and maintenance of the proposed development.
Nature: The type of effect the specific activity will have on the environment
Probability: Degree of certainty of impacts
Duration: Lifetime of the impact
Scale: Spatial scale of the impact
Magnitude: Degree/severity of impact

16.7.2 Methodology

The significance of the identified impacts will be determined using the approach outlined below. This incorporates two aspects for assessing the potential significance of impacts (terminology from the Department of Environmental Affairs and Tourism Guideline document on EIA Regulations, April 1998), namely occurrence and severity, which are further sub-divided as follows:

Table 12: Methodology to Assess Impacts

Occurrence		Severity	
Probability of occurrence	Duration of occurrence	Magnitude (severity) of impact	Scale / extent of impact

To assess each of these factors for each impact, the following four ranking scales are used:

Probability	**Duration**
5 – Definite/don't know	5 – Permanent
4 – Highly probable	4 – Long-term
3 – Medium probability	3 –Medium-term (8-15 years)
2 – Low probability	2 – Short-term (0-7 years) (impact ceases after the operational life of the activity)
1 – Improbable	1 – Immediate
0 – None	
Scale	**Magnitude**
5 – International	10 – Very high/don't know
4 – National	8 – High
3 – Regional	6 – Moderate
2 – Local	4 – Low
1 – Site only	2 – Minor

0 – None	

Once these factors are ranked for each impact, the significance of the two aspects, occurrence and severity, is assessed using the following formula:
SP (significance points) = (probability + duration + scale) x magnitude
The maximum value is 150 significance points (SP). The impact significance will then be rated as follows:

SP >75	**Indicates high environmental significance**	**An impact which could influence the decision about whether to proceed with the project regardless of any possible mitigation.**
SP 30 – 75	Indicates **moderate** environmental significance	An impact or benefit which is sufficiently important to require management, and which could have an influence on the decision unless it is mitigated.
SP <30	Indicates **low** environmental significance	Impacts with little real effect and which should not have an influence on or require modification of the project design.

16.8 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Please refer to **Table 13** which indicates the quantification of impacts related to construction activities and **Table 14** which indicates the quantification of impacts related to the operational activities, as per the methodology identified above.

Also, please refer to **Annexure L** for the Draft Environmental Management Program (EMPr).

Legend:	M:	Magnitude of impact	High	>70	**SBM**: Significance Before Mitigation
	D:	Duration of impact	Mod.	30 -70	**SAM**: Significance After Mitigation
	S:	Scale of impact	Low	0 - 30	
	P:	Probability of unmitigated occurrence occurring			

16.8.1 Construction Phase

Table 13: Quantification of impacts related to construction activities.

Environmental Component	Activity	Potential Impact	Environmental Significance Score							Mitigation Measures
			P	D	S	M	Total	Rating		
16.8.1.1	***Physical Impacts***									
Geology	There is no expected construction related impacts on the geology of the proposed development site and surrounding areas		4 3	2 2	2 1	6 4	48 24	SBM SAM	M L	• None, although geological monitoring should commence during the Construction Phase by the Geotechnical engineer
Topography	Construction activities including levelling of road and building surfaces	Erosion	4 3	2 2	2 1	6 4	48 24	SBM SAM	M L	• Demolition and construction activities should preferably take place during the dry months • All surface run-offs shall be managed in such a way so as to ensure erosion of soil does not occur • All surfaces that are susceptible to erosion shall be covered with a suitable vegetative cover as soon as construction is completed. • Where erosion may potentially occur, dissipaters such as gravel beds or straw bales must be installed to prevent erosion.
Air quality	Construction activities and vehicles on site.	Dust pollution that affects adjacent developments.	3 2	2 2	2 1	6 4	42 20	SBM SAM	M L	• Dust to be minimised by spraying down (water truck) of construction site daily when required (Hilton has a high rainfall that greatly assist in dust suppression) • Prohibit vehicles from idling when not in use • Enforce vehicle speed limits
Soils and land capability	Site clearance for road construction and construction of units and other structures	Compaction of topsoil	4 2	2 2	1 1	6 4	42 20	SBM SAM	M L	• The top (200-300mm) layer (as applicable) of all areas to be excavated for the purposes of construction shall be stripped and stockpiled in areas where this material will not be damaged, removed or compacted. • This stockpiled material shall be used for the rehabilitation of the site.

Environmental Component	Activity	Potential Impact	Environmental Significance Score							Mitigation Measures
			P	D	S	M	Total	Rating		
										• Weeds appearing on the stockpiled topsoil shall be removed by hand before seeding.
	Site vehicles and storage of fuel on site	Contamination by fuel and lubricant spillages from vehicles	3 2	2 2	1 1	5 4	30 20	SBM SAM	M L	• Provision of proper re-fueling and maintenance facilities and procedures will reduce the likelihood of soil contamination • Drip trays should be used when all construction vehicles are packed.
Water quality and availability	Storage of fuel and re-fuelling of construction vehicles	Fuel or chemical spillage and pollution of surface and/or ground water	3 1	2 2	2 2	8 4	56 20	SBM SAM	M L	• Good housekeeping by contractor • Store new and used oils in bunded areas • No co-handling of reactive liquids or solids should be allowed • Create and monitor an inventory of chemicals held on site
	There will be no construction related impact on the quantity of groundwater available to surrounding borehole users									• None, although groundwater monitoring should commence during the Construction Phase
Generation of Waste	The building rubble and solid construction waste (such as sand, gravel, concrete and waste material)		3 3	2 2	1 1	4 4	24 24	SBM SAM	L L	• The building rubble and solid construction waste (such as sand, gravel, concrete and waste material) that cannot be used for filling and rehabilitation and other litter and waste generated during the construction phase will be removed from site and be disposed of safely and responsibly at a licensed landfill site, i.e. a landfill licensed in terms of Section 20 of the Environmental Conservation Act, 1989 (Act No. 73 of 1989).

Environmental Component	Activity	Potential Impact	Environmental Significance Score							Mitigation Measures
			P	D	S	M	Total	Rating		
16.8.1.2	***Biophysical Impacts***									
Flora	Site clearing for construction activities	Loss of species diversity and habitat characteristics	5 4	2 2	1 1	10 8	80 56	SBM SAM	H M	• A search and rescue exercise will be conducted prior to any construction. • The wetland and riparian zones with associated flood lines to be retained • The Environmental Control Officer (ECO) is to be trained to be able to identify any possible red data species • Set up a planting list together with the ecologist from which all rehabilitation in the development must be done – only indigenous and non-invasive species • Further information will be provided in the EMP which will be attached to the Environmental Impact Assessment Report.
Fauna	Site clearing for construction activities	Loss of species diversity and habitat characteristics	5 4	2 2	1 1	10 8	80 56	SBM SAM	H M	• A search and rescue exercise will be conducted prior to any construction. • The wetland and riparian zones with associated flood lines to be retained • Fauna species will be relocated when found and if they can be caught. • The Environmental Control Officer (ECO) is to be trained to be able to identify any possible red data species
16.8.1.3	***Socio-economic Impacts***									
Noise pollution	All construction activities	Nuisance to surrounding landowners	3 3	2 3	2 1	6 4	42 28	SBM SAM	M L	• Locate noisy machines and equipment maintenance areas as far away from sensitive receptors as possible • Adherence to acceptable working hours • Adherence to Occupational Health and Safety Act • Ear protection for workers that may be affected by noise • Further information will be provided in the EMP which will be attached to the Environmental Impact Assessment Report.

Environmental Component	Activity	Potential Impact	Environmental Significance Score							Mitigation Measures
			P	D	S	M	Total	Rating		
Visual integrity	Construction activities	Visibility of dust and construction activities from surrounding roads, properties and tourist locations	3 2	2 3	2 2	6 4	48 28	SBM SAM	M L	• Apply dust control measures diligently, especially on provincial roads • Apply recommendations of specialist regarding colour and construction of site structures during the Construction Phase
Sites of cultural significance	The Heritage Impact Assessment has been undertaken and no sites, features or objects of cultural significance exist in the proposed site.		4 3	4 4	2 2	8 4	80 36	SBM SAM	H M	• Should any other potentially culturally significant artefacts or graves, etc. be found during construction activities all activities should be stopped until an assessment by a Cultural Heritage practitioner has been completed
Safety and security	Construction workers in the area	Increase in crime in area and increase in squatters of vacant land	4 2	3 3	3 2	8 4	80 28	SBM SAM	H L	• Proper management and planning • No construction work will be allowed on Sundays • A limited number of workers along with security guards will be allowed to sleep on site, however within a cordoned-off secure area • All staff will carry identification, access control will be enforced, and the site will be swept, and a search will be done each night • The development will have 24-hour access control and security • A CLO (Community Liaison Officer) should be employed
	Construction works	Migration of job seekers into the area in search of employment	3 2	3 3	2 2	6 4	48 28	SBM SAM	M L	• No on-site recruitment is to take place • The CLO (Community Liaison Officer) to be consulted regarding employment of members of the surrounding communities.

Environmental Component	Activity	Potential Impact	Environmental Significance Score							Mitigation Measures
			P	D	S	M	Total	Rating		
		Increase in construction traffic	4 3	3 3	3 2	8 4	80 32	SBM SAM	H M	• The access of large trucks will be investigated to provide a suitable access route that does not become an unreasonable nuisance to existing residents • Only a specified number of trucks at any one time will be allowed onto the property • Construction vehicles and activities must aim to avoid peak hour traffic times (weekdays 7-8am and 5-6pm) • Establish an all-weather site access and wheel wash or shake down to prevent soil and materials from being trekked onto the road
		Decrease in safety due to increased traffic	4 3	3 3	2 2	10 6	90 48	SBM SAM	H M	• Security fencing and barriers • Perimeter fence patrols
Local services	Construction activities that utilise local services	Inadequate service provision to adjacent properties and malfunctioning of services	2 1	3 3	2 2	4 2	28 12	SBM SAM	L L	• The service systems are to be designed according to the minimum requirements of and submitted to the Local authority for approval. • No construction activities must commence on site prior to obtaining the necessary approval
Fire	Cooking fires by construction workers	Veld fires	3 1	3 3	3 2	6 4	54 24	SBM SAM	M L	• A designated area shall be assigned for fire making by the construction workers, so as to ensure that run-away veld fires do not occur • This will reduce air pollution by excessive smoke
Improved tax base for local municipality	Employment of construction workers	Decrease in unemployment and crimes related to unemployment	4 5	3 3	2 2	8 8	72 80	SBM SAM	M H	• Local labour to use as far as possible for the installation of services and the construction of the retirement village and associated infrastructure • Local training and capacity building programmes • Construction timeframe could be lengthy due to the extent and phased nature of the proposed development

Environmental Component	Activity	Potential Impact	Environmental Significance Score							Mitigation Measures
			P	D	S	M	Total	Rating		
		BEE development opportunities	2 3	3 3	2 2	4 6	28 48	SBM SAM	L M	• Contract requirements to involve and train BEE companies
	Local demand for goods and services	Decrease in unemployment and empowerment of local trade and industry	2 3	3 3	2 2	4 6	28 48	SBM SAM	L M	• Local products, goods and services to be utilised as far as possible during the construction phase • Local training and capacity building programmes

16.8.2 Operational Phase

Table 14: Quantification of impacts related to the operational phase.

It must be noted that the Mount Verde estate has very strict management codes that are issued as part of the Sales Documents and are enforced by the Mount Verde Management Association (MVMA). Prior to commencement of the construction, a design review committee as well as a agricultural review committee must sign off on the designs and land management.

Environmental Component	Activity	Potential Impact	Environmental Significance Score							Mitigation Measures
			P	D	S	M	Total	Rating		
16.8.2.1	***Physical Impacts***									
Geology	There are no expected operational related impacts on the geology of the proposed development site and surrounding areas		4 3	2 2	2 1	6 4	48 24	SBM SAM	M L	• None, although geological monitoring should possibly commence during the Construction Phase by the Geotechnical engineer.

Environmental Component	Activity	Potential Impact	Environmental Significance Score							Mitigation Measures
			P	D	S	M	Total	Rating		
Topography	Construction activities including levelling of road and building surfaces continued during operational phase	Erosion	3 2	2 2	2 1	6 4	42 20	SBM SAM	M L	• Demolition and construction activities should preferably take place during the dry months. • All surface run-offs shall be managed in such a way to ensure erosion of soil does not occur. • All surfaces that are susceptible to erosion shall be covered with a suitable vegetative cover as soon as construction is completed. • Where erosion may potentially occur, dissipaters such as gravel beds or straw bales must be installed to prevent erosion.
Air quality	Construction activities and vehicles on site continued during operational phase	Dust pollution that affects adjacent developments Dust from the slims dams	2 3	2 2	2 1	6 4	48 24	SBM SAM	M L	• Roads will be paved, and dust will thus be eliminated
Soils and land capability	There are no expected operational related impacts on soils and land capability of the proposed development site and surrounding areas		2 0	1 1	1 0	4 2	16 2	SBM SAM	L L	• Weeds appearing in the area must be maintained and eradicated.
Water quality and availability	General usage of water (household, business, irrigation, etc)	Water wastage	4 2	4 1	3 2	6 4	66 20	SBM SAM	M L	• Wastewater to be recycled and re-used as far as possible to ensure that minimum amounts are required for aspects like irrigation. • Good monitoring and management measurements to be set in place by facilities managers
	There will be no operational activities that should impact on the quantity of groundwater available to surrounding borehole users									

Environmental Component	Activity	Potential Impact	Environmental Significance Score							Mitigation Measures
			P	D	S	M	Total	Rating		
16.8.2.2	***Biophysical Impacts***									
Flora	General human interference and impact	Loss of species diversity and habitat characteristics	4 2	4 1	1 1	6 4	54 16	SBM SAM	M L	• Walkways throughout the open spaces and conservation zones will be strategically placed and users will be enforced to only use delineated walkway areas so as not to damage surrounding habitats • Landscaping guidelines which include an allowable indigenous vegetation list that attracts fauna is to be formulated and made a condition of sale • No exotic vegetation will be allowed
Fauna	General human interference and impact	Loss of species diversity and habitat characteristics	4 2	4 1	1 1	6 4	54 16	SBM SAM	M L	• Walkways throughout the open spaces (drainage line area) will be strategically placed and users will be enforced to only use delineated walkway areas so as not to damage surrounding habitats • Landscaping guidelines which include an allowable indigenous vegetation list that attracts fauna is to be formulated and made a condition of sale • Minimal to no exotic vegetation will be allowed
Sensitive landscapes	General human interference and impact	Loss of valuable landscape and habitat associated to drainage line to the west of the proposed development site	4 2	4 1	1 1	6 4	54 16	SBM SAM	M L	• Walkways through sensitive landscapes will be strategically placed and users will be enforced to only use delineated walkway areas so as not to damage surrounding habitats • Individuals will be enforced to only use delineated walkway areas so as not to damage surrounding habitats

Environmental Component	Activity	Potential Impact	Environmental Significance Score							Mitigation Measures
			P	D	S	M	Total	Rating		
Conservation	Delineation of conservation corridor associated to flood lines	Rehabilitation, conservation and maintenance of this landscape and habitat – benefit to local and regional biodiversity by minimising fragmentation of ecological systems	2 4	1 4	2 5	4 8	20 88	SBM SAM	L H	• Conservation management to be done in collaboration with the local municipality
16.8.2.3	***Socio-economic Impacts***									
Impact on Adjacent farming community	• Increased crime • Hunting with packs of dogs. • Lack of jobs for residents. • Lack of activity for youngsters • Conflict between farming community, vagrants and loitering. • Lack of quality of life for both residents and farming community. • Continuous social despair at informal		4 3	4 4	2 2	8 4	80 36	SBM SAM	H M	• Dependable policing services to be provided in the new community. • Surveillance of the boundaries of the farming community. • Full title stands for the beneficiaries to ensure the residents are also concerned about safety and security and deter vagrant and loitering. • Provide industrial and commercial services to alleviate unemployment under new residents. • Allow areas for agricultural farming to allow residents to farm the land adjacent the water course. • Provide large regional park adjacent to water course to accommodate youngsters and give the community a place to gather, picnic and recreate.
Noise pollution	As the site will be established no major impacts are expected, however, due to the phased nature of the project		4 3	4 4	2 2	8 4	80 36	SBM SAM	H M	• Please refer to the noise mitigation measures during construction phase

Environmental Component	Activity	Potential Impact	Environmental Significance Score							Mitigation Measures
			P	D	S	M	Total	Rating		
	construction activities will continue for a lengthy period									
Visual integrity	Higher density caused by development and change in land use	Change in sense of place of the specific site, however appropriate and good design will result in an improved urban character and will positively enhance the site and surrounding urban context potentially raising economic value of surrounding areas	4 3	4 4	2 2	8 4	88 36	SBM SAM	H M	• Architectural guidelines (including aspects of roof and wall finishes, colors, heights of buildings, and lighting), as well as Landscape Architectural guidelines (screening, buffering, functioning, aesthetics etc.) for the development will be developed to promote the enhancement of this urban area and therefore creating new and valuable places with a modified and positive urban mixed-use sense of place that is vibrant and diverse.
Sites of cultural significance	The Heritage Impact Assessment was undertaken		4 3	2 2	2 1	6 4	48 24	SBM SAM	M L	• Should any potentially culturally significant artefacts or graves, etc. be found during the operational phase, the development management is to be informed and a Cultural Heritage practitioner is to be contacted to decide on a way forward
Safety and security	Active operational phase with variety of functions and activities ranging from residential,	Decrease in crime due to the creation of a more secure environment and	2 4	2 4	1 2	4 8	20 80	SBM SAM	L H	• Security provided via passive surveillance • Appropriate environmental design to address safety and security issues (CSIR publication) • Good accessibility for emergency and police services

Environmental Component	Activity	Potential Impact	Environmental Significance Score							Mitigation Measures
			P	D	S	M	Total	Rating		
	business and commercial	minimising of vacant land								
Traffic increase	Increase of residents and users of the area	Additional vehicles on road	5 3	4 4	2 2	8 4	96 36	SBM SAM	H L	• All requirements of local municipality to be adhered to • All improvements to road infrastructure as recommended by traffic engineer to be adhered to
Local services	Operational activities not to influence the availability of services to surrounding landowners									• The engineers compiling the services report and designing services are to ensure that adequate measures are in place to ensure adequate service delivery that does not influence surrounding areas • All requirements by local municipality to be adhered to regarding service reticulation and delivery
Fire	There are no expected operational related occurrences other than normal urban activities that may result in site fires.									• Adequate positioning of fire hydrants according to Municipality's standards.
Improved tax base for local municipality	Employment of workers during the operational phase – business sector, landscaping and maintenance, cleaning, medical staff, etc.	Decrease in unemployment and crimes related to unemployment	4 5	2 4	2 3	4 8	32 96	SBM SAM	M H	• Local labour and employees to be made use of as far as possible for all aspects of the operational phase • Local training and capacity building programs

Environmental Component	Activity	Potential Impact	Environmental Significance Score							Mitigation Measures
			P	D	S	M	Total	Rating		
		BEE development opportunities	2 3	2 4	2 2	4 6	24 54	SBM SAM	L M	• BEE companies to be trained and involved in during the operational phase of the development – e.g. Management of retail facilities, maintenance, landscaping, etc.
	Local demand for goods and services	Decrease in unemployment and empowerment of local trade and industry	2 3	2 4	2 2	4 6	24 54	SBM SAM	L M	• Local products, goods and services to be utilised as far as possible during the operational phase – shops, craft centre, etc. • Local training and capacity building programs
	Increase in service delivery and number of erven	Increase in taxes raised on property								• None required
Bulk Contributions	Improvement of infrastructure	Increased service provision, minimisation of traffic congestion								• Should be well planned and strategically implemented in coordination with the Municipality and the provincial authority

16.8.3 Conclusion and relevance for the application

The mitigation measures that are proposed must be implemented and monitored- both during the construction and operations phases.

The EMPr includes the measures but will be updated during both processed if required, and will be carried over to the Body Corporate and home owners for implementation after handover to them.

17.0 CONCLUSIONS

The development proposal has no fatal flaws in terms of the institutional, bio-physical or socio-economic environments. The proposed development compliments the required and desired balance to be achieved between socio-economic and ecological / environmental factors, if the existing communities are considered and their concerns adequately addressed.

The key issue possible impact is the destruction of sensitive / significant environments. Since the majority of land has previously been farmed and the land is covered with Kikuyu, at minimum the 1:100-year flood line, wetland and associated wetland buffer areas are to be mitigated to an acceptable level.

The key issue related to land use has been addressed and the preferred alternative is recommended due to the balance that is retained between ecological and socio-economic factors, which align to the UMngeni Local Municipality's Regional Spatial Development Framework which includes the development area into he Urban Edge as a rural residential area.

Risks and potential impacts related to the construction and operational phases have been addressed within the quantification of impacts process. The Environmental Management Program (EMPr) should be strictly adhered to, therefore mitigating impacts as far as possible.

18.0 RECOMMENDATIONS

It is recommended that the "Proposed Mixed use "Agrihood" Development with associated Infrastructure" option which has been identified as the preferred alternative is used. It is further recommended that this application be approved with the following conditions:

- Requirements from the uMngeni Local Municipality be adhered to.
- The concerns of the adjacent conservancy and farming community must be addressed.
- Engineering services report addressing provision of services must be implemented
- Other state departments' comments and input be adhered to, including but not limited to:/
  - Department of Water and Sanitation
  - South African Heritage Resource Agency
- Mitigation measures as described in this report and specialist reports are adhered to by the developer (these measures will be made part of the Environmental Management Program (EMPr).
- The conditions of the Record of Decision from the EDTEA be written into the Environmental Management Program (EMPr) and be implemented as such.
- The EMPr, as attached to this document, and as amended after the Environmental Authorisation is received, should be made part of the contractual documents of contractors. The project manager must also account for the cost of this document's implementation before construction takes place.
- An Environmental Control Officer (ECO) should be appointed to audit the Environmental Management Plan on a two-weekly basis during construction phase.
- A penalty system is set up for non-compliance to the Environmental Management Program (EMPr) to be severe enough to practically control construction and operational activities on site.
- The Environmental Management Program (EMPr) must be issued to individual stand developers for implementation

- That the surrounding community be kept up date through the Town Planning Application process and during Construction Phase of the project.

Prepared
by Dr Gwen Theron
PrLArch 97082
EAPASA 2019/1421

U:\Main data\PROJECTS\M\Mount Verde EIA\LEAP Submissions\Draft EIA\Word documents for submission\2023.09.15 Draft EIA gt edit.docx