6.3.2 RETAIL MARKET DEMAND ESTIMATIONS

The retail market is a derived demand. The primary demand drivers are community income and expenditure profiles. An important concept in retailing is the fact that different order size shopping centres cater to different consumer needs and hence, do not compete directly for market share. In this context, the objective of this sub-section is to access the magnitude of retail development that can be sustained by the node and the new resident community.

The retail demand estimations are conducted based on prevalent population and income growth trends (all values: 2016 constant prices). The demand estimations are considered conservative and realistic. Subsequent paragraphs indicate the market potential analysis of the proposed development. The retail market estimations are based on a trade area based technique.

The following tables summarise the current and forecast market expenditure and the retail floor space for retail facilities within the retail node. Demand values are presented for **2016, 2021 and 2026 (all values: constant 2016 prices).** *The LSM 1 to 6 market was used for the modelling calculations.*

❖ RETAIL EXPENDITURE

Table 6.3: Market Area Retail Expenditure, 2016, 2021 and 2026

Retail Category	2016 R/annum	2021 R/annum	2026 R/annum
Bulk groceries	R 569 305 721	R 762 238 369	R 1 020 554 177
Top-up groceries	R 170 189 276	R 227 864 909	R 305 086 302
Clothing, shoes, accessories	R 251 518 665	R 336 756 105	R 450 879 755
Furniture and home ware	R 73 798 890	R 98 808 677	R 132 294 060
Hardware goods	R 27 109 796	R 36 297 065	R 48 597 818
Gifts, books and confectionary	R 55 725 692	R 74 610 634	R 99 895 515
Specialty / value goods	R 18 073 197	R 24 198 043	R 32 398 545
Restaurants, entertainment	R 186 756 374	R 250 046 449	R 334 784 968
Personal care	R 58 737 892	R 78 643 641	R 105 295 272
Other personal goods & services	R 94 884 287	R 127 039 728	R 170 092 363
TOTAL	**R 1 506 099 790**	**R 2 016 503 622**	**R 2 699 878 775**

Source: Demacon Retail Demand Model, 2016

❖ MARKET RETAIL FLOOR SPACE DEMAND

The above expenditure patterns translate into the demand for retail floor space as summarised in Table 6.4.

Table 6.4: Retail Floor Space Demand, 2016, 2021 and 2026

Retail Category	2016 (m^2 GLA)	2021 (m^2 GLA)	2026 (m^2 GLA)
Bulk groceries	12 119	13 997	16 165
Top-up groceries	3 623	4 184	4 832
Clothing, shoes, accessories	7 401	8 548	9 872
Furniture and home ware	2 172	2 508	2 897
Hardware goods	798	921	1 064
Gifts, books and confectionary	1 467	1 695	1 957
Specialty / value goods	476	550	635
Restaurants, entertainment	5 496	6 347	7 330
Personal care	1 728	1 996	2 306
Other personal goods & services	2 792	3 225	3 724

Retail Category	2016 (m^2 GLA)	2021 (m^2 GLA)	2026 (m^2 GLA)
TOTAL	**38 072**	**43 970**	**50 783**

Source: Demacon Retail Demand Model, 2016

❖ TENANT COMPOSITION & APPORTIONMENT

Given the above market potential estimation, based on the Residual Demand Technique, the Market Share Model could assist in refining the tenant composition of the proposed centre. PhD research conducted by the author indicates that the share technique should not be applied in isolation, but only once market potential has been established, to inform centre composition and tenant mix.

In the context of the market potential analysis, empirical data was utilised to estimate the apportionment of additional floor space. Table 6.5 indicates the retail tenant mix apportionment and findings provide guidelines for centre tenanting and merchandising.

Table 6.5: Retail tenant mix apportionment, 2016

Retail Category	Min Demand (m^2)	Max Demand (m^2)	Midpoint (m^2)	Floor space apportionment (%)
Bulk groceries	606	1 212	909	31,8%
Top-up groceries	181	362	272	9,5%
Clothing, shoes, accessories	370	740	555	19,4%
Furniture and home ware	109	217	163	5,7%
Hardware goods	40	80	60	2,1%
Gifts, books and confectionary	73	147	110	3,9%
Specialty / value goods	24	48	36	1,2%
Restaurants, entertainment	275	550	412	14,4%
Personal care	86	173	130	4,5%
Other personal goods & services	140	279	209	7,3%
TOTAL	**1 904**	**3 807**	**2 855**	**100%**

Source: Demacon Retail Demand Model, 2016

Table 6.5 indicates that the market potential for retail (in 2016) is in the region of approximately **2 855m^2 retail GLA**. The potential is calculated on average benchmark trading densities and market shares for similar centres in comparable market areas. The centre will, however, not be operational in 2016 and optimum centre size should take in account the short-term growth in demand, as well as the acceptable addition of 10% – 20% for non-retail services.

Based on the demand modelling results, the following table indicates the recommended centre options.

Table 6.6: Ideal tenant mix apportionment at optimum point of market entry

Retail Category	Min Demand (m^2)
Groceries	1 887
Clothing, shoes, accessories	887
Furniture and home ware	260
Hardware goods	96
Gifts, books and confectionary	176
Specialty / value goods	57
Restaurants, entertainment	659
Personal care	207
Other personal goods & services	335
Total	**4 565**

Source: Demacon Retail Demand Model, 2016

❖ TOTAL RETAIL EXPENDITURE & DEMAND

Table 6.7 summarises the total retail expenditure of the markets and the total retail demand in the market.

Table 6.7: Summary of Total Expenditure - 2016, 2021 and 2026

	2016 Rand/annum	2021 Rand/annum	2026 Rand/annum
Retail Expenditure	R 1 506 099 790	R 2 016 503 622	R 2 699 878 775

Source: Demacon Retail Demand Model, 2016

Table 6.8: Summary of Total Demand - 2016, 2021 and 2026

	2016 m^2 GLA	2021 m^2 GLA	2026 m^2 GLA
Retail Demand	38 072	43 970	50 783
Services	7 614	8 794	10 157
Total	**45 686**	**52 764**	**60 940**

Source: Demacon Retail Demand Model, 2016

❖ SUMMARY OF RETAIL MARKET DEMAND ESTIMATIONS

In the context of the demand modelling calculations, indications suggest, that the optimum centre size could ideally measure a centre of approximately **±4 565m² GLA (say 4 500 to 5 000m² GLA**. Refer to table below.

Table 6.9: Summary of market demand estimations (both scenarios)

	(Rand / sqm)
Total annual growth in market demand (sqm/a)	1 180
Centre share of growth (sqm/a)	88
Point of market entry	2019+
Additional growth in demand for centre (sqm)	796
Retail GLA at OPME	3 652
Services GLA at OPME	913
Cinemas & entertainment	-
OPME Centre Size (sqm)	**4 565m²**
On-site job creation	152
Retail Sales potential (R2016 value)	R 170 632 306
Total capital investment (R2016 value)	R 86 728 025
Additional Parking bays required	183
Parking infrastructure & landscaping cost	R 4 345 531

Source: Demacon Retail Demand Model, 2016

6.4 SYNTHESIS

The findings of the preceding Chapter are integrated into an empirical assessment of retail market potential.

❑ RETAIL MARKET SUPPLY

Findings:

- ✓ Total *existing supply* of shopping centre retail floor space within a 10-minute drive time, amounts to approximately **209 952m²** (as built).
- ✓ Total *proposed supply* of shopping centre retail floor space within a 10-minute drive time, amounts to approximately **70 000m²**.

- ✓ *To conclude, the above supply figures can not directly be correlated with the demand of the market area due to the fact that most of the centres are trading off multiple trade areas and trade area overlap occurs.*

The Peach Tree industrial precinct is not yet surrounded by residential development in the immediate vicinity. On account of this, the scope for convenience orientated development within the park, is limited. A 200m^2 to 250m^2 filling station based convenience store with restaurant / take-away facility may be better positioned to cater to such needs.

However, in the context of the densely populated Diepsloot and the economic dynamics of the area, the Peach Tree industrial precinct would be ideally positioned to provide a destination orientated Cash & Carry-type bulk and discount retailer.

❑ GAP ANALYSIS

Development Type	Effective Market Gap	Development Prospects
Cash & Carry-Type Discount Retailer	Yes	Moderate to High

The development and overall sustainability of a retail facility relies strongly on its location. The following **location requirements** determine the success of a retail facility:

- ✓ **Sufficient buying power –** this refers to the disposable income per household in the catchment area of a retail facility, which is available to be spent at the specific retail facility.
- ✓ **Competition –** this plays an important role in the location of a retail facility. The sustainability and viability of a retail facility is higher with no competition than in an area with competition.
- ✓ **Competitive shopping / clustering –** this refers to the location of similar retail facilities in close proximity of each other. The result is lower prices as well as the improvement of services and products to the benefit of the consumer.
- ✓ **Accessibility –** the accessibility of a retail location to the labour force as well as consumers is an important locational factor in the development of retail facilities.
- ✓ **Land –** land as a locational factor refers to the market value of land or the lease value of structures. Lower values provide better development opportunities.
- ✓ **Role and function in shopping centre hierarchy –** retail facilities in a given geographical area are ranked in a hierarchy that services a given portion of the consumer population, according to each centre's unique size, composition, role and function.

❑ SUMMARY OF THE DEMAND ANALYSIS

The following table summarises the demand analysis for the retail component.

Table 6.10: Recommended centre options

	LSM 1 – 6+ (Rand / sqm)
Total annual growth in market demand (sqm/a)	1 180
Centre share of growth (sqm/a)	88
Point of market entry	2019+
Additional growth in demand for centre (sqm)	796
Retail GLA at OPME	3 652
Services GLA at OPME	913
Cinemas & entertainment	-
OPME Centre Size (sqm)	**4 565m^2**
On-site job creation	152

	LSM 1 – 6+ (Rand / sqm)
Retail Sales potential (R2016 value)	R 170 632 306
Total capital investment (R2016 value)	R 86 728 025
Additional Parking bays required	183
Parking infrastructure & landscaping cost	R 4 345 531

Source: Demacon Retail Demand Model, 2016

❑ CENTRE SIZE AND RECOMMENDATIONS

Size and parking:

- ✓ In the context of the above calculations, indications suggest, that the optimum centre size for the proposed centre could ideally measure approximately **4 565m² (say 4 500 to 5 000m² GLA**. This would be a **Cash & Carry-type discount retailer.**
- ✓ The optimum point of market entry is **2019+**
- ✓ The proposed centre will be able to attain annual sales of approximately **R170 632 306** (based on benchmark trading densities) and permanent on-site jobs to **±152**.
- ✓ Performance will be dependent on, *inter alia*, appropriate tenant composition.
- ✓ Ample parking should be provided at a ratio of **4 bays per 100m² retail GLA**
- ✓ The parking area should be accessible, convenient, paved and well-lit in the evenings
- ✓ Land should be reserved for future expansion phase
- ✓ Performance will be dependent on, *inter alia*, appropriate tenant composition.

Main Tenants:

- ✓ Large Cash and Carry
- ✓ One or two small convenience stores
- ✓ Butchery
- ✓ Liquor Store
- ✓ ATM

The challenge will be to find a **balance** between **market demand** (as revealed by consumer income and spending patterns) and **tenant demand** (i.e. the expressed desire by tenants to occupy space in the centre) and **investor demand** (i.e. the need for capital growth).

CHAPTER 7: SUMMARY & RECOMMENDATIONS

7.1 INTRODUCTION

Mixed-use developments are a development concept that is becoming increasingly popular and preferred with its appeal attributed to the benefits of the power of agglomeration, the ease of service provision and the vibrancy of this type of development. From the investigation, it is evident that the site is suitable for a mixed-use development. Subsequent sections provide concise recommendations of the following markets.

- Industrial Market
- Retail Market

7.2 SUMMARY OF DEMOGRAPHICS AND KEY LOCATION ATTRIBUTES

- ✓ The Peach Tree Residential Project is located within a primary market area of approximately 237 680 people / 100 782 households and 2.4 people per household. (45.1% within LSM 4 to 10+).
- ✓ The trade area refelects a dualistic profile with high income considerations around the Copperleaf Golf Estate and lower to middle incomes in and around the Diepsloot area.
- ✓ The site is situated adjacent to the N14 Highway, bordering the Centurion Flight Academy which is to the right of the property. The roads surrounding the site are Koedoe Road (R114) on the northern side, Fig Road on the western side and Imbovane Road to the eastern side of the site. The total size of the property is approximately **45 hectares.**
- ✓ It is anticipated that the proposed development will have a positive impact on the local and district economy as well as on the municipal.

7.3 INDUSTRIAL MARKET RECOMMENDATIONS

❑ INDUSTRIAL DEMAND MODELLING - GAP ANALYSIS

Development Type	Effective Market Gap	Development Prospects
Industrial, warehousing & distribution	Yes	Moderate to High

Demacon's Demand Modelling results illustrate that the consumer market can sustain light industrial, warehousing & distribution development up to**±35 to 40 hectares (±175 392m^2)** in the market area over the medium to longer term and up to **±40 to 45 hectares (±205 646m^2)** over the long term. The optimum point of market entry would be **2018+.**

Industrial development is characterised by passive assimilation and it would take the Peach Tree industrial estate 15 to 20 years to achieve full take-up.

❑ SPACE DEMAND RESULTS

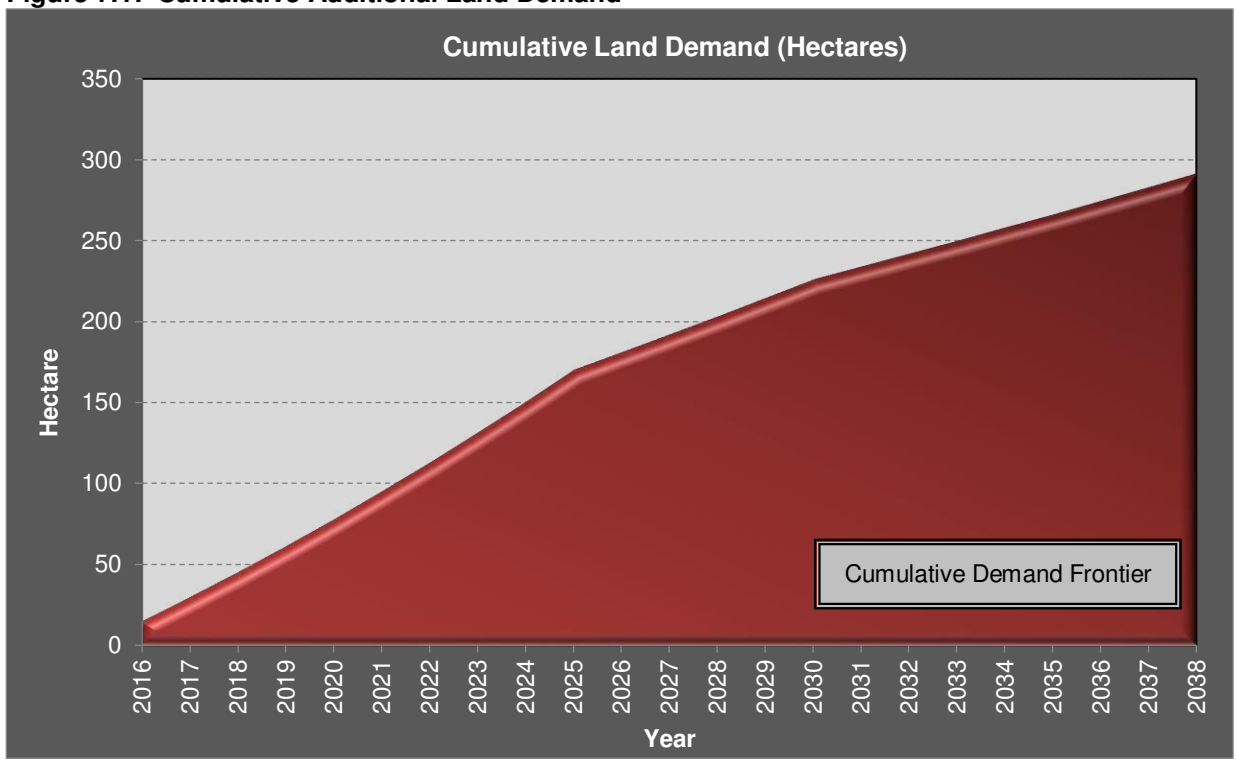
The following table provides a synthesis of space demand modelling results presented in this chapter.

Table 7.1: Synthesis of Space Demand Modelling results, 2021 - 2036

Cumulative Additional Land Demand	Up to 2021	2021 – 2026	2026 - 2031	2031 - 2036
Total Manufacturing (Hectares)	38,14	71,05	90,49	105,28
Total Warehousing (Hectares)	56,74	109,80	143,37	168,91
Total Hectares (Centurio Local Economy)	**94,88**	**180,85**	**233,86**	**274,19**
Minimum Share	9,49	18,08	23,39	27,42
Maximum Share	18,98	36,17	46,77	54,84
Total Hectares	**14,23**	**27,13**	**35,08**	**41,13**
Development Bulk (sqm)	**78 272**	**135 636**	**175 392**	**205 646**

Source: Demacon, Industrial Demand Modelling, 2016

Figure 7.1: Cumulative Additional Land Demand



Source: Demacon, Industrial Demand Modelling, 2016

Table 7.2: Recommended space options

Forecast	Hectares
Up to 2021	10 hectares – 15 hectares
2021 – 2026	25 hectares – 30 hectares
2026 – 2031	35 hectares – 40 hectares
2031 - 2036	40 hectares – 45 hectares

Source: Demacon, Industrial Demand Modelling, 2016

Table 7.3: Recommended sizes (20-year timeframe)

Recommended sizes	Rand (R') / m^2
Capital investment (2016 constant values)	R 2 879 037 622
Employment opportunities	3 739
Parking	4 113
Parking infrastructure & landscaping cost (2016 constant values)	R 92 129 204
Optimum point of market entry	2018+
Size of Industrial (sqm) - 2036	**41.13ha (205 646m^2)**

Source: Demacon, Industrial Demand Modelling, 2016

The following is evident from the preceding paragraphs:

- ✓ The total development potential of Centurion Local Region up to 2021, amounts to approximately 94.88 hectares increasing cumulatively to 274.19 hectares in 2036.
- ✓ The recommended size of industrial development for the project amounts to **±35 to 40 hectares (±175 392m^2)** to be phased.
- ✓ Optimum point of market entry could be developed in **2018+.**
- ✓ The recommended type of development: **Industrial** / **commercial** / **warehousing** / **distribution** / **storage.**
- ✓ The long-term industrial take up potential amounts to **±40 to 45 hectares (205 646m^2).**

Freeway based industrial / commercial parks typically position larger stands adjacent to highways / main roads to optimise exposure and visibility. Stands closer to the entrance are typically configured as sectional title offices.

Smaller stands are internalised and provide more affordable space for smaller business enterprises. Such business parks are often configured as hybrid industrial / business parks and may contain a component of office space. The office space in such office parks, tend to perform well as these facilities can be brought to the market at rentals that are far more competitive when compared with conventional office parks. Proximity to upmarket estates is considered to be a distinct benefit and secure business premises tends to attract business / industrial occupancy from residents of these high-end business owners residing in these high-end estates.

Route 21 Corporate Park and Linbro Business Park serve as examples.

Map 7.1: Aerial photo of Route 21 Corporate Park

Map 7.2: Aerial photo of Linbro Business Park

The following table and figure indicates the schedule of stands within the Route 21 Corporate Park situated in Centurion, Rietvlei Dam area for consideration.

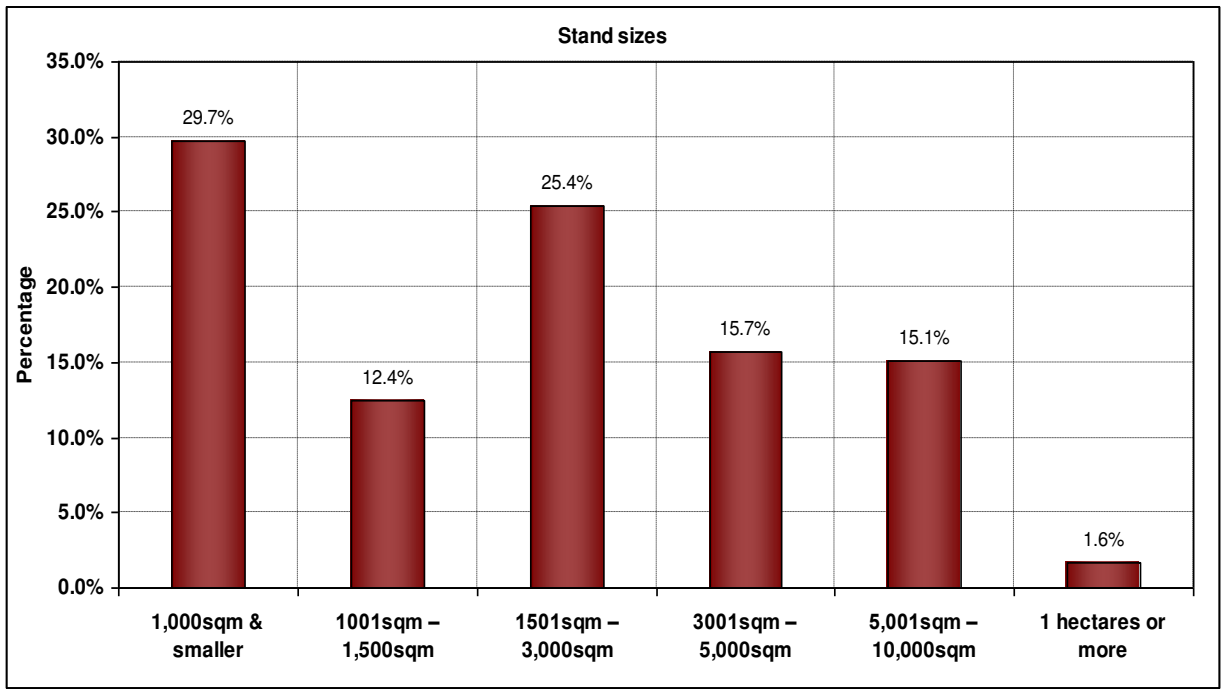
Table 7.4: Route 21 – Schedule of stands

Schedule of stands	Number of stands	Percentage
1,000m^2 & smaller	55	29.7%
1001m^2 – 1,500m^2	23	12.4%
1501m^2 – 3,000m^2	47	25.4%
3001m^2 – 5,000m^2	29	15.7%
5,001m^2 – 10,000m^2	28	15.1%
1 hectares or more	3	1.6%

Source: Demacon 2016

As seen from the above, the R21 Corporate Park consists of stands ranging from **1,000m^2 and smaller stands** to **1 hectare** and more. The table indicates that the greatest percentage (***29.7%***) of stands developed in R21 Corporate Park is **1,000m^2 and less** and ***25.4%*** of the stands are ranging from **1,501m^2 – 3,000m^2**.

Figure 7.2: Route 21 Stand Sizes



Source: Demacon, 2016

❑ RECOMMENDED SIZES / PRICES FOR THE PROJECT

Table 7.5: Industrial Sizes / Prices

Variables	Rand per square metre / square metre
Recommended Stand Prices	1 000m^2: R625 to R1 100 2 000m^2: R625 to R1 000 5 000m^2: R625 to R925 10 000m^2: R600 to R917 Average of R800 per m^2 – R900 per m^2
Recommended Stand Sizing	30% - up to 1 000m^2 40% - 1 000m^2 to 3 000m^2 15% - 3000m^2 to 5 000m^2 15% - upwards 5 000m^2+
Recommended Gross Industrial Rentals (excl VAT)	250m^2: 500m^2: } R55 to R65 1 000m^2: 2 500m^2: 5 000m^2: } R45 to R55 Average of R55 per m^2

Source: Demacon, 2016

7.4 RETAIL MARKET RECOMMENDATIONS

❑ FACTORS THAT INFLUENCE CONSUMER BEHAVIOUR

It has been established through empirical research that the factors listed below impact directly on a centres power of attraction. In addition to proven market demand, centre design should accommodate these values (Diagram 7.1).

These aspects affirm that physical factors are only one dimension of consumer behaviour patterns. Other factors such as cognitive, emotional and experiential factors are increasingly contributing to the viability of retail centres. The sustainability of a centre is dominated by level one, thus the importance of providing the correct tenant mix as part of the shopping centre. The tenant mix should adhere to the demands and preferences of the market population.

Diagram 7.1: Factors that Influence Consumer Behaviour

❑ RETAIL MARKET SUPPLY

- ✓ Total *existing supply* of shopping centre retail floor space within a 10-minute drive time, amounts to approximately **209 952m²** (as built).
- ✓ Total *proposed supply* of shopping centre retail floor space within a 10-minute drive time, amounts to approximately **70 000m².**
- ✓ *To conclude, the above supply figures can not directly be correlated with the demand of the market area due to the fact that most of the centres trade off multiple trade areas and trade area overlap occurs.*

In terms of the retail demand modelling, the recommended market gap analysis indicates the options for the project according to the retail demand modelling.

❑ GAP ANALYSIS

Development Type	Effective Market Gap	Development Prospects
Cash and Carry Discount Retailer	Yes	Moderate to High

The development and overall sustainability of a retail facility relies strongly on its location. The following **location requirements** determine the success of a retail facility:

- ✓ **Sufficient buying power –** this refers to the disposable income per household in the catchment area of a retail facility, which is available to be spent at the specific retail facility.
- ✓ **Competition –** this plays an important role in the location of a retail facility. The sustainability and viability of a retail facility is higher with no competition than in an area with competition.
- ✓ **Competitive shopping** / **clustering –** this refers to the location of similar retail facilities in close proximity of each other. The result is lower prices as well as the improvement of services and products to the benefit of the consumer.
- ✓ **Accessibility –** the accessibility of a retail location to the labour force as well as consumers is an important locational factor in the development of retail facilities.
- ✓ **Land –** land as a locational factor refers to the market value of land or the lease value of structures. Lower values provide better development opportunities.
- ✓ **Role and function in shopping centre hierarchy –** retail facilities in a given geographical area are ranked in a hierarchy that services a given portion of the consumer population, according to each centre's unique size, composition, role and function.

❑ SUMMARY OF THE DEMAND ANALYSIS

The following table summarises the demand analysis.

Table 7.6: Recommended centre options

	LSM 1 to 6+ (Rand / sqm)
Total annual growth in market demand (sqm/a)	1 180
Centre share of growth (sqm/a)	88
Point of market entry	2019+
Additional growth in demand for centre (sqm)	796
Retail GLA at OPME	3 652
Services GLA at OPME	913
Cinemas & entertainment	-
OPME Centre Size (sqm)	**4 565m²**
On-site job creation	152

	LSM 1 to 6+ (Rand / sqm)
Retail Sales potential (R2016 value)	R 170 632 306
Total capital investment (R2016 value)	R 86 728 025
Additional Parking bays required	183
Parking infrastructure & landscaping cost	R 4 345 531

Source: Demacon Retail Demand Model, 2016

❑ CENTRE SIZE AND RECOMMENDATIONS

Size and parking:

- ✓ In the context of the above calculations, indications suggest, that the optimum centre size for the proposed centre could ideally measure approximately **4 565m² GLA**. This would be a **Cash and Carry Discount Retailer.**
- ✓ The optimum point of market entry is **2019+**
- ✓ The proposed centre will be able to attain annual sales of approximately **R170 632 306** (based on benchmark trading densities) and permanent on-site jobs to **±152**.
- ✓ Performance will be dependent on, *inter alia*, appropriate tenant composition.
- ✓ Ample parking should be provided at a ratio of **4 bays per 100m² retail GLA**
- ✓ The parking area should be accessible, convenient, paved and well-lit in the evenings
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- ✓ Performance will be dependent on, *inter alia*, appropriate tenant composition.

Main Tenants:

- ✓ Large Cash and Carry
- ✓ One or two small convenience stores

The challenge will be to find a **balance** between **market demand** (as revealed by consumer income and spending patterns) and **tenant demand** (i.e. the expressed desire by tenants to occupy space in the centre) and **investor demand** (i.e. the need for capital growth).

Appendix G8

Heritage Impact Assessment

PHASE 1 HERITAGE IMPACT ASSESSMENT (HIA) FOR THE PROPOSED PEACH TREE X 23 DEVELOPMENT ON A PART OF PORTION 109 AND A PART OF REMAINDER OF PORTION 331 OF THE FARM KNOPJESLAAGTE 385 – JR, GAUTENG PROVINCE

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Accredited member: SA Society for Cultural History (CH002)

For:

BOKAMOSO LANDSCAPE ARCHITECTS
& ENVIRONMENTAL CONSULTANTS
P.O. BOX 11375
MAROELANA
0161

February 2017

DISCLAIMER:

Although all possible care is taken to identify/find all sites of cultural importance during the initial survey of the study area, the nature of archaeological and historical sites are as such that it is always possible that hidden or sub-surface sites could be overlooked during the study. Leonie Marais-Botes Heritage Practitioner will not be held liable will not be held liable for such oversights or for the costs incurred as a result thereof.

ACKNOWLEDGEMENTS

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ABOUT THIS REPORT

The heritage report must reflect that consideration has been given to the history and heritage significance of the study area and that the proposed activities is sensitive towards the heritage resources and does not significantly alter or destroy the heritage significance of the study area.

The heritage report must refer to the heritage resources currently in the study area.

The opinion of an independent heritage consultant is required to evaluate if the proposed work generally follows a good approach that will ensure the conservation of the heritage resources.

The National Heritage Resources Act (Act 25 of 1999), the National Environmental Management Act (Act 107 of 1998), Ordinance on Exhumations (no 12 of 1980) and the Human Tissues Act (Act 65 of 1983 as amended) are the guideline documents for a report of this nature.

Leonie Marais-Botes was appointed by Bokamoso Landscape Architects and Environmental Consultants to carry out a Phase 1 Heritage Impact Assessment (HIA) for the proposed Peach Tree X 23 Development that is situated on part of Portion 109 and a part of the Remainder of Portion 331 of the Farm Knopjeslaagte 385 - JR. The site visit took place on 8 February 2017.

DEFINITION OF TERMS:

‘‘alter’’ means any action affecting the structure, appearance or physical properties of a place or object, whether by way of structural or other works, by painting, plastering or other decoration or any other means.

“archaeological’’ means—
(a) material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years, including artefacts, human and hominid remains and artificial features and structures;
(b) rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation;
(c) wrecks, being any vessel or aircraft, or any part thereof, which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the Republic, as defined respectively in sections 3, 4 and 6 of the Maritime Zones Act, 1994 (Act No. 15 of 1994), and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation; and
(d) features, structures and artefacts associated with military history which are older than 75 years and the sites on which they are found.

‘‘conservation’’, in relation to heritage resources, includes protection, maintenance, preservation and sustainable use of places or objects so as to safeguard their cultural significance.

‘‘cultural significance’’ means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance.

‘‘development’’ means any physical intervention, excavation, or action, other than those caused by natural forces, which may in the opinion of a heritage authority in any way result in a change to the nature, appearance or physical nature of a place, or influence its stability and future well-being, including—
(a) construction, alteration, demolition, removal or change of use of a place or a structure at a place;
(b) carrying out any works on or over or under a place;
(c) subdivision or consolidation of land comprising, a place, including the structures or airspace of a place;
(d) constructing or putting up for display signs or hoardings;
(e) any change to the natural or existing condition or topography of land; and
(f) any removal or destruction of trees, or removal of vegetation or topsoil; object that is specifically designated by that state as being of importance.

‘‘grave’’ means a place of interment and includes the contents, headstone or other marker of such a place, and any other structure on or associated with such place.

‘‘heritage resource’’ means any place or object of cultural significance.

‘‘heritage resources authority’’ means the South African Heritage Resources Agency, or in respect of a province, a provincial heritage resources authority.

‘‘heritage site’’ means a place declared to be a national heritage site by SAHRA or a place declared to be a provincial heritage site by a provincial heritage resources authority.

‘‘improvement’’, in relation to heritage resources, includes the repair,
restoration and rehabilitation of a place protected in terms of Act 25 of 1999.
‘‘living heritage’’ means the intangible aspects of inherited culture, and may include—
(a) cultural tradition;

(b) oral history;
(c) performance;
(d) ritual;
(e) popular memory;
(f) skills and techniques;
(g) indigenous knowledge systems; and
(h) the holistic approach to nature, society and social relationships.

‘‘local authority’’ means a municipality as defined in section 10B of the Local Government Transition Act, 1993 (Act No. 209 of 1993).

‘‘management’’, in relation to heritage resources, includes the conservation, presentation and improvement of a place protected in terms of Act 25 of 1999.

‘‘meteorite’’ means any naturally-occurring object of extraterrestrial origin.

‘‘object’’ means any movable property of cultural significance which may be protected in terms of any provisions of Act 25 of 1999, including—
(a) any archaeological artefact;
(b) palaeontological and rare geological specimens;
(c) meteorites; and
(d) other objects.

‘‘palaeontological’’ means any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trance.

‘‘place’’ includes—
(a) a site, area or region;
(b) a building or other structure which may include equipment, furniture, fittings and articles associated with or connected with such building or other structure;
(c) a group of buildings or other structures which may include equipment, furniture, fittings and articles associated with or connected with such group of buildings or other structures;
(d) an open space, including a public square, street or park; and
(e) in relation to the management of a place, includes the immediate surroundings of a place.

‘‘presentation’’ includes—
(a) the exhibition or display of;
(b) the provision of access and guidance to;
(c) the provision, publication or display of information in relation to; and
(d) performances or oral presentations related to, heritage resources protected in terms of Act 25 of 1999.

‘‘public monuments and memorials’’ means all monuments and memorials—
(a) erected on land belonging to any branch of central, provincial or local government, or on land belonging to any organisation funded by or established in terms of the legislation of such a branch of government; or
(b) which were paid for by public subscription, government funds, or a public-spirited or military organisation, and are on land belonging to any private individual.

‘‘site’’ means any area of land, including land covered by water, and including
any structures or objects thereon.
‘‘structure’’ means any building, works, device or other facility made by people and which is fixed to land, and includes any fixtures, fittings and equipment associated therewith.
‘‘victims of conflict’’ means—

(a) certain persons who died in any area now included in the Republic as a direct result of any war or conflict as specified in the regulations, but excluding victims of conflict covered by the Commonwealth War Graves
Act, 1992 (Act No. 8 of 1992);
(b) members of the forces of Great Britain and the former British Empire who died in active service in any area now included in the Republic prior to 4 August 1914;
(c) persons who, during the Anglo-Boer War (1899-1902) were removed as prisoners of war from any place now included in the Republic to any place outside South Africa and who died there; and
(d) certain categories of persons who died in the ‘‘liberation struggle’’ as defined in the regulations, and in areas included in the Republic as well as outside the Republic.

EXE**CUTIVE SUMMARY**

Leonie Marais-Botes Heritage Practitioner was requested by Bokamoso Landscape Architects and Environmental Consultants to conduct a Phase 1 Heritage Impact Assessment (HIA) for the proposed Peach Tree X 23 Development that is situated on a part of Portion 109 and a part of the Remainder of Portion 331 of the Farm Knopjeslaagte 385 - JR.

A field survey was conducted after which a survey of literature was undertaken.

No heritage sites situated on the site earmarked for development.

It should be noted that the sub-surface archaeological and/or historical deposits and graves are always a possibility. Care should be taken during any work in the entire area and if any of the above is discovered, an archaeologist/heritage practitioner should be commissioned to investigate.

1. INTRODUCTION

The proposed Peach Tree X 23 development is for the establishment of a Light Industrial Township.

1.1 WHY A PHASE 1 HERITAGE IMPACT ASSESSMENT IS REQUIRED?

This project may potentially impact on any types and ranges of heritage resources that are outlined in Section 3 of the National Heritage Resources Act (Act 25 of 1999). Subsequently a Phase 1 Heritage Impact Assessment (HIA) was commissioned by Bokamoso Landscape Architects and Environmental Consultants and conducted by Leonie Marais-Botes.

1.1.1 METHOD

The objective of this Phase 1 Heritage Impact Assessment (HIA) was to gain an overall understanding of the heritage sensitivities of the area and indicate how they may be impacted on through development activities. The site survey took place on 8 February 2017.

In order to establish heritage significance the following method was followed:

- Investigation of primary resources (archival information)
- Investigation of secondary resources (literature and maps)
- Physical evidence (site investigation)
- Determining Heritage Significance.

1.2 PROPERTY DESCRIPTION

A part of Portion 109 and a part of the Remainder of Portion 331 of the Farm Knopjeslaagte 385 - JR

1.3 HISTORIY OF THE STUDY AREA

Historically the greater study area mainly consisted of farms and small holdings. Very little associated history exists.

1.4 LOCATION AND PHOTOGRAPHIC RECORD OF STUDY AREA

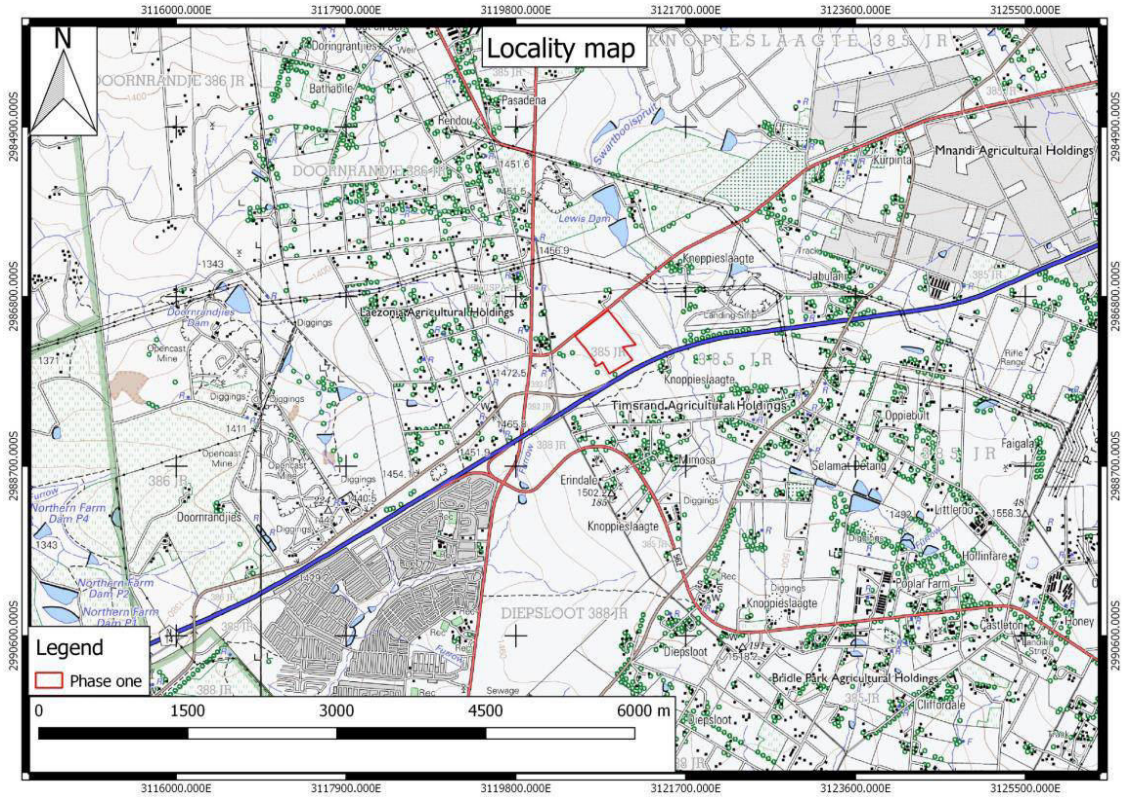

Figure 1: Locality map

Figure 2: Site characteristics

Figure 3: Site characteristics

2. FINDINGS

2.1 PRE-COLONIAL HERITAGE SITES

Possibilities: Greater study area taken into account.

Stone Age

The Stone Age is the period in human history when stone material was mainly used to produce tools[1]. In South Africa the Stone Age can be divided in three periods[2];

- Early Stone Age 2 000 000 – 150 000 years ago
- Middle Stone Age 150 000 – 30 000 years ago
- Late Stone Age 40 000 years ago - +/- 1850 AD

Iron Age

The Iron Age is the period in human history when metal was mainly used to produce artefacts[3]. In South Africa the Iron Age can be divided in three periods;

- Early Iron Age 250-900 AD
- Middle Iron Age 900-1300 AD
- Late Iron Age 1300-1840 AD[4]

[1] P. J. Coertze & R.D. Coertze, Verklarende vakwoordeboek vir Antropologie en Argeologie.
[2] S.A. Korsman & A. Meyer, *Die Steentydperk en rotskuns* in J.S. Bergh (red) Geskiedenisatlas van Suid-Afrika. Die vier noordelike provinsies.
[3] P.J. Coertze & R.D. Coertze, Verklarende vakwoordeboek vir Antropologie en Argeologie.

There are no pre-colonial heritage sites evident in the study area. This can be attributed to previous farming and other development attempts in the study area.

2.2 HISTORICAL PERIOD HERITAGE SITES

Possibilities: Greater study area taken into account.

- Pioneer sites;
- Sites associated with early mining;
- Structures older than 60 years;
- Graves (Graves younger than 60 years, graves older than 60 years, but younger than 100 years, graves older than 100 years, graves of victims of conflict or of individuals of royal descent).

None of the above situated on site.

2.3 ORIGINAL LANDSCAPE

Farming and previous infrastructure development attempts have altered the original landscape in the study area.

2.4 INTANGIBLE HERITAGE

The intangible heritage of the greater study area can be found in the stories of past and present inhabitants.

3 CATEGORIES OF HERITAGE VALUE (ACT 25 OF 1999)

The National Heritage Resources Act (Act 25 of 1999) identifies the following categories of value under section 3(1) and (2) of the Act under the heading "National Estate":

"3 (1) For the purpose of this Act, those heritage resources of South Africa which are of cultural significance or other special value for the present community and for future generations must be considered part of the national estate and fall within the sphere of operations of heritage resources authorities.

(2) Without limiting the generality of subsection (1), the national estate may include-
- (a) places, buildings, structures and equipment of cultural significance;
- (b) places which oral traditions are attached or which are associated with living heritage;
- (c) historical settlements and townscapes;
- (d) landscapes and natural features of cultural significance;
- (e) geological sites of scientific or cultural importance;
- (f) archaeological and palaeontological sites;
- (g) graves and burial grounds, including-
  - (i) ancestral graves;

[4] M.M. van der Ryst & A Meyer. *Die Ystertydperk* in J.S. Bergh (red) Geskidenisatlas van Suid-Afrika. Die vier noordelike provinsies and T.N Huffman, A Handbook to the Iron Age: The Archaeology of Pre-Colonial Farming Societies in Southern Africa.

(ii) royal graves and graves of traditional leaders;
(iii) graves of victims of conflict;
(iv) graves of individuals designated by the Minister by notice in the Gazette
(v) historical graves and cemeteries; and
(vi) other human remains which are not covered in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983);

(h) sites of significance relating to the history in South Africa;
(i) movable objects, including-
  (i) objects recovered from the soil or waters of South Africa including archaeological and palaeontological objects and material, meteorites and rare geological specimens;
  (ii) objects to which oral traditions are attached or which are associated with living heritage;
  (iii) ethnographic art and objects;
  (iv) military objects
  (v) objects of decorative or fine art;
  (vi) objects of scientific or technological interests; and
  (vii) books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section I (xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996).

(3) Without limiting the generality of the subsections (1) and (2), a place or object is to be considered part of the national estate if it has cultural significance or other special value because of-
  (a) It is importance in the community, or pattern of South Africa's history;
  (b) Its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
  (c) Its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
  (d) Its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural objects;
  (e) Its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
  (f) Its importance in demonstrating a high degree of creative or technical achievement at a particular period;
  (g) Its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
  (h) Its strong or special association with the life and work of a person, group or organisation of importance in the history of South Africa; and
  (i) Sites of significance relating to the history of slavery in South Africa."

3.1 HERITAGE VALUE OF WEIGHED AGAINST CULTURAL SIGNIFICANCE CATEGORIES

3.1.1 Spiritual value

During the site visit/field work no indication of any spiritual activity was observed on/near the proposed site. Thus no sites of spiritual value will be impacted on by the proposed project.

3.1.2 Scientific value

No sites of scientific value were observed on or near the site earmarked for development.

3.1.3 Historical value

No historical value associated with the site could be found in primary and secondary sources.

3.1.4 Aesthetic value

No heritage item with exceptional aesthetic (architectural) value was identified in the study area.

3.1.5 Social value

Social value is attributed to sites that are used by the community for recreation and formal and informal meetings regarding matters that are important to the community. These sites include parks, community halls, sport fields etc. None of the said evident in the immediate study area.

3.2 SPECIFIC CATEGORIES INVESTIGATED AS PER SECTION 3 (1) AND (2) OF THE NATIONAL HERITAGE LEGISLATION (ACT 25 OF 1999)

3.2.1 Does the site/s provide the context for a wider number of places, buildings, structures and equipment of cultural significance?

The study area does not provide context for a wider number of places, buildings, structures and equipment of cultural significance. The reason being the low density of heritage items in the study area.

3.2.2 Does the site/s contain places to which oral traditions are attached or which are associated with living heritage?

Places to which oral traditions are attached or associated with living heritage are usually find in conjunction with traditional settlements and villages which still practises age old traditions. None of these are evident near or on the proposed site.

3.2.3 Does the site/s contain historical settlements?

No historical settlements are located on or near the proposed site.

3.2.4 Does the site/s contain landscapes and natural features of cultural significance?

Due to infra-structure development and farming activities the original character of the landscape has been altered significantly in the study area. Thus the site does not contain natural features of cultural significance.

3.2.5 Does the site/s contain geological sites of cultural importance?

Geological sites of cultural importance include meteorite sites (Tswaing Crater and Vredefort Dome), fossil sites (Karoo and Krugersdorp area), important mountain ranges or ridges (Magaliesburg, Drakensberg etc.). The proposed site is not located in an area known for sites of this importance.

3.2.6 Does the site/s contain a wide range of archaeological sites?

The proposed site does not contain any surface archaeological deposits, a possible reason is previous infra-structure development attempts and farming activities in the greater study area.

The possibility of sub-surface findings always exists and should be taken into consideration in the Environmental Management Plan.

If sub-surface archaeological material is discovered work must stop and a heritage practitioner preferably an archaeologist contacted to assess the find and make recommendations.

3.2.7 Does the site/s contain any marked graves and burial grounds?

The site does not contain any marked graves or burial grounds.

The possibility of graves not visible to the human eye always exists and this should be taken into consideration in the Environmental Management Programme.

It is important to note that all graves and cemeteries are of high significance and are protected by various laws. Legislation with regard to graves includes the National Heritage Resources Act (Act 25 of 1999) whenever graves are 60 years and older. Other legislation with regard to graves includes those when graves are exhumed and relocated, namely the Ordinance on Exhumations (no 12 of 1980) and the Human Tissues Act (Act 65 of 1983 as amended).

If sub-surface graves are discovered work should stop and a professional preferably an archaeologist contacted to assess the age of the grave/graves and to advice on the way forward.

3.2.8 Does the site/s contain aspects that relate to the history of slavery?

This is not an area associated with the history of slavery like the Western Cape Province.

3.2.9 Can the place be considered as a place that is important to the community or in the pattern of South African history?

In primary and secondary sources the proposed site is not described as important to the community or in the pattern of South African history.[5]

3.2.10 Does the site/s embody the quality of a place possessing uncommon or rare endangered aspects of South Africa's natural and cultural heritage?

[5] Standard Encyclopaedia of Southern Africa and the TAB database at the National Archives of South Africa;
J.S. Bergh (red), Geskiedenisatlas van Suid-Afrika. Die Vier Noordelike Provinsies.

The proposed site does not possess uncommon, rare or endangered aspects of South Africa's natural and cultural heritage. These sites are usually regarded as Grade 1 or World Heritage Sites.

3.2.11 Does the site/s demonstrate the principal characteristics of South Africa's natural or cultural places?

The proposed site does not demonstrate the principal characteristics of South Africa's natural or cultural places. These characteristics are usually associated with aesthetic significance.

3.2.12 Does the site/s exhibit particular aesthetic characteristics valued by the community or cultural groups?

This part of the greater study area does not exhibit particular aesthetic characteristics valued by the community or cultural groups. The reason being the low density of heritage buildings and structures located in the greater study area.

3.2.13 Does the site/s contain elements, which are important in demonstrating a high degree of creative technical achievement?

The site does not contain elements which are important in demonstrating a high degree of creative technical achievement. Reason being none of the above are evident on site.

3.2.14 Does the site/s have strong and special associations with particular communities and cultural groups for social, cultural and spiritual reasons?

The proposed site does not have a strong or special association with particular communities and cultural groups for social, cultural and spiritual reasons. No comment in this regard was received during the public participation period.

3.2.15 Does the site/s have a strong and special association with the life or work of a person, group or organisation?

No indication of the above could be found in primary and secondary research sources.[6]

4. RECOMMENDATIONS

- There are no visible restrictions or negative impacts in terms of heritage associated with the site. In terms of heritage this project can proceed.
- The discovery of subsurface archaeological and/or historical material as well as graves must be taken into account in the Environmental Management Programme. See 3.2.6 and 3.2.7.

[6] Dictionary of South African Biography (vol I-V) and the TAB database at the National Archives of South Africa

Appendix H

Environmental Management Plan

Environmental Management Programme (EMPr)

For the Proposed Peach Tree X23

On a part of Portion 109 and part of the Remainder of Portion 331 of the Farm Knopjeslaagte 385 JR

City of Tshwane Metropolitan Municipality, Gauteng Province

March 2017

BOKAMOSO

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1 Project Outline

1.1 Background

Bokamoso Landscape Architect and Environmental Consultants cc was appointed by ***Tembibex (Pty) Ltd*** *to* compile a basic assessment report for the proposed development of ***Peach Tree X23*** as well as its associated activities.

1.2 Project description

The proposed development of Peach Tree X23 is situated on a part of Portion 109 and part of the Remainder of Portion 331 of the Farm Knopjeslaagte 385 JR.

The proposed development is for the establishment of a township to be known as **Peach Tree X23**. The proposed development comprises an area of approximately 11.8 hectares and is located in the area of jurisdiction of the **City of Tshwane Metropolitan Municipality** in **Gauteng Province.**

The study area is situated east of the R511 Road and north of the N14, adjacent to the Centurion Flight Academy (Pty) Ltd. The R114 runs along the site's northern boundary. Major city attractions such as the Zwartkops Raceway and the Gautrain Station are situated in the area. The proposed township will comprise of nine erven zoned as follows:

- Seven (7) erven zoned as "Industrial 2" for the main purpose of Commercial Use and Light Industry. *Industrial 2 zoning allows for Business Buildings, Commercial Use, Light Industry, Cafeteria, Car Wash, Place of Refreshment, Parking Garage, Retail Industry and Shops*; and
- Two (2) erven zoned as "Special" for Access and Access Control.

(Refer to Figure 1 for the Locality Map and Figure 2 for the Aerial Map)

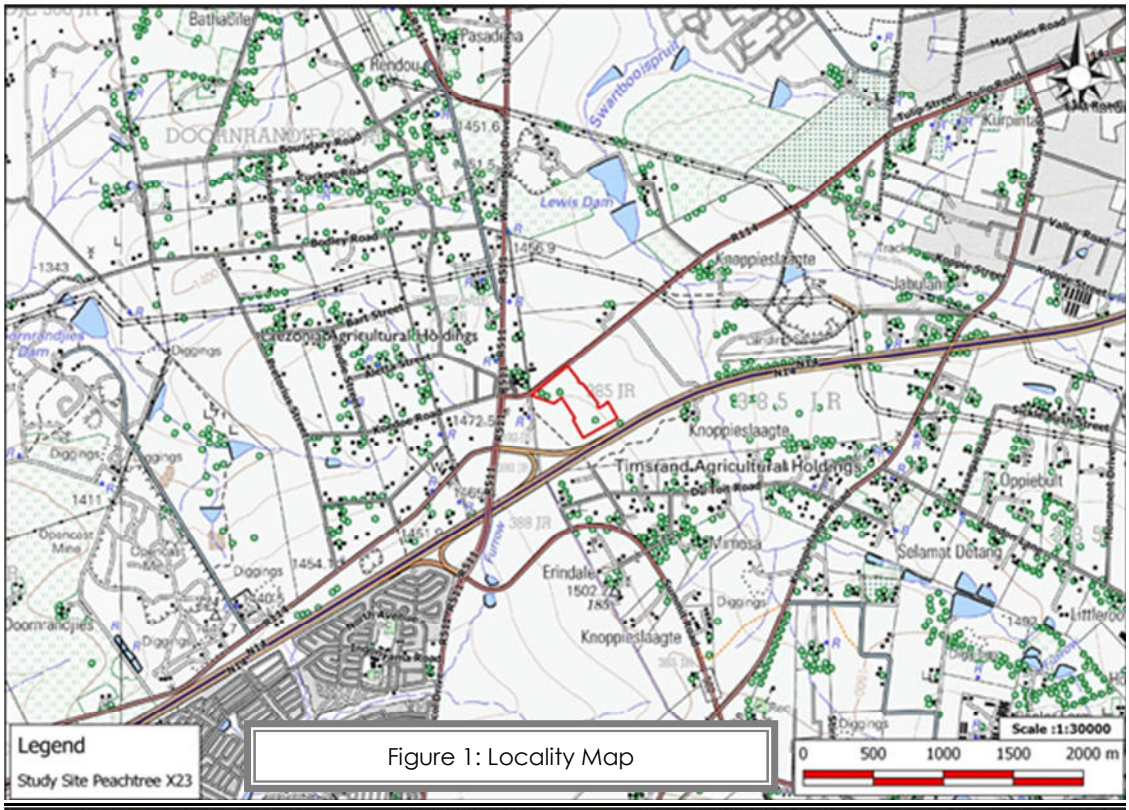


Figure 1: Locality Map

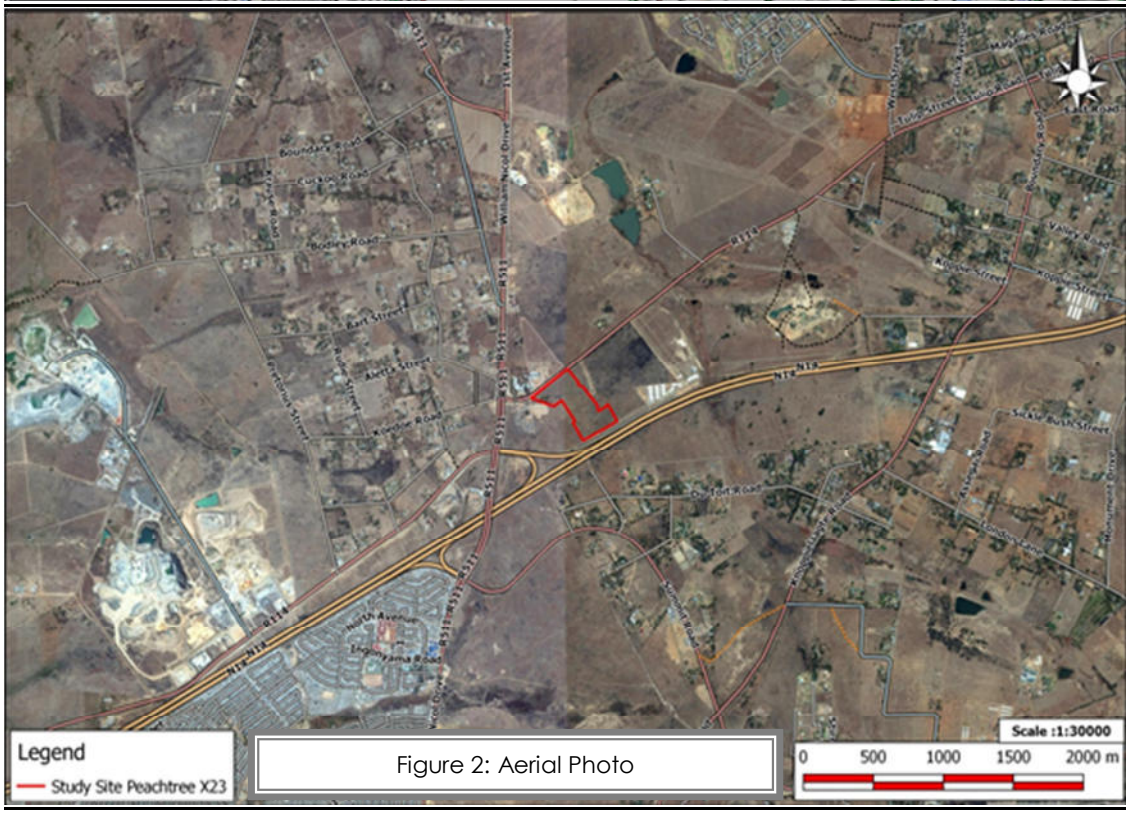


Figure 2: Aerial Photo

Timeframe for construction:

Will be provided when or if the application for the proposed development is approved. Therefore the timeframe for construction is unknown.

The developer will be responsible for the on-site activities. The EMPr will be a binding document for purposes of compliance.

1.3 Receiving Environment

Hydrology:

- No river or wetlands occur within the application site. The proposed development is not subjected to flood lines of any natural stream or water course within an expected frequency of 1:50 and 1:100 years and therefore in terms of Section 21 of the National Water Act, the developer will not need any water-use licenses for the proposed development.

Fauna and flora:

- The application sites are not located within any conservancy or protected area;
- According to a desktop study, no ridges are present on both of the development sites, which could create sensitive habitats;
- The site is considered of moderately sensitivity;
- No rare and endangered fauna and flora species were either recorded during the field visit; and
- Only one Orange Listed plant species (*Hypoxis hemerocallidea*) were found on the study site.

Cultural /Historical:

- No obvious features, sites or artefacts of cultural significance were found on the site during the desktop survey. However a Heritage specialist has

been appointed to conduct a Heritage Impact Assessment which will be included within the FBAR. Due to the study area being in close proximity to the Cradle of Humankind we thought it necessary to conduct a Heritage Impact Assessment.

Visual:

- The construction phase will cause a visual impact and must be mitigated accordingly.

Geology:

- According to the 1: 50 000 scale geological map the site is underlain by migmatite gneiss (granite) of the Halfway House Suite. The geology of the site was confirmed during this investigation, granite bedrock was encountered in the test pits; and
- No dolomite is found on the proposed development area. Valuable topsoil may be lost during the construction process. The loss of topsoil can however be minimised through the storage of topsoil in designated stockpiles on site and the re-use thereof within the landscape component of the development.

2 EMPr Objectives and context

Objectives

The objectives of this plan are to:

- Identify the possible environmental impacts of the proposed activity;
- Develop measures to minimise, mitigate and manage these impacts;
- Meet the requirements of the Environmental Authorization of GDARD and requirements of other Authorities; and

- Monitor the project.

EMPr context

This EMPr fits into the overall planning process of the project by carrying out the conditions of consent set out by the Gauteng Department of Agriculture and Rural Development. In addition, all mitigation measures recommended in the Basic Assessment report are included in the EMPr.

This EMPr addresses the following three phases of the development:

- Pre-construction planning phase;
- Construction phase; and
- Operational phase.

3 Monitoring

In order for the EMPr to be successfully implemented all the role players involved must have a clear understanding of their roles and responsibilities in the project.

These role players may include the Authorities (A), other Authorities (OA), Developer/proponent(D), Environmental Control Officer (ECO), Project Manager (PM), Contractors (C), Environmental Assessment Practitioner (EAP) and Environmental Site Officer (ESO). Landowners interested and affected parties and the relevant environmental and project specialists are also important role players.

3.1 Roles and responsibilities

Developer (D)

The developer is ultimately accountable for ensuring compliance with the EMPr and conditions contained in the Environmental Authorization (EA). The developer must appoint an independent Environmental Control Officer (ECO), for the duration of the pre-construction and construction phases, to ensure compliance with the requirements of this EMPr. The developer must ensure that the ECO is integrated as part of the project team. The responsibility of compliance will be carried across to the individual property owners as soon as transfer of the erven has taken place. It will be ensured that a copy of this document accompanies the purchase agreements for the erven.

Project Manager (PM)

The project Manager is responsible for the coordination of various activities and ensures compliance with this EMPr through delegation of the EMPr to the contractors and monitoring of performance as per the Environmental Control Officer's monthly reports.

Environmental Control Officer (ECO)

An independent Environmental Control Officer (ECO) shall be appointed, for the duration of the pre-construction and construction phase of the services and bulk infrastructure, by the developer to ensure compliance with the requirements of this EMPr. Thereafter the individual property owners will be responsible for the further appointment of the ECO.

- The Environmental Control Officer shall ensure that the contractor is aware of all the specifications pertaining to the project;
- Any damage to the environment must be repaired as soon as possible after consultation between the Environmental Control Officer, Consulting Engineer and Contractor;
- The Environmental Control Officer shall ensure that the developer staff and/or contractor are adhering to all stipulations of the EMPr;
- The Environmental Control Officer shall be responsible for monitoring the EMP throughout the project by means of site visits and meetings. This should be documented as part of the site meeting minutes;
- The Environmental Control Officer shall be responsible for the environmental training program;
- The Environmental Control Officer shall ensure that all clean up and rehabilitation or any remedial action required, are completed prior to transfer of properties;
- A post construction environmental audit is to be conducted to ensure that all conditions in the EMPr have been adhered to.

Contractor (C):

The contractors shall be responsible for ensuring that all activities on site are undertaken in accordance with the environmental provisions detailed in this document and that sub-contractor and laborers are duly informed of their roles and responsibilities in this regard.

The contractor will be required, where specified to provide Method Statements setting out in detail how the management actions contained in the EMPr will be implemented.

The contractors will be responsible for the cost of rehabilitation of any environmental damage that may result from non-compliance with the environmental regulations.

Environmental Site Officer (ESO):

The ESO is appointed by the developer and then finally the owners of the individual properties as his/her environmental representative to monitor, review and verify compliance with the EMPr by the contractor. The ESO is not an independent appointment but must be a member of the contractor's management team. The ESO must ensure that he/she is involved at all phases of the construction (from site clearance to rehabilitation).

Authority (A):

The authorities are the relevant environmental department that has issued the Environmental Authorisation. The authorities are responsible for ensuring that the monitoring of the EMPr and other authorization documentation is carried out by means of reviewing audit reports submitted by the ECO and conducting regular site visits.

Other Authorities (OA):

Other authorities are those that may be involved in the approval process of the EMPr.

Environmental Assessment Practitioner (EAP):

According to section 1 of NEMA the definition of an environmental assessment practitioner is "the individual responsible for the planning, management and coordination of environmental impact assessments, strategic environmental

assessments, environmental management plans or any other appropriate environmental instruments through regulations".

3.2 Lines of Communication

The Environmental Control Officer in writing should immediately report any breach of the EMPr to the Project Manager. The Project Manager should then be responsible for rectifying the problem on-site after discussion with the contractor. Should this require additional cost, then the developer should be notified immediately before any additional steps are taken.

3.3 Reporting Procedures to the Developer

Any pollution incidents must be reported to the Environmental Control Officer immediately (within 12 hours). The Environmental Control Officer shall report to the Developer on a regular basis (site meetings).

3.4 Site Instruction Entries

The site instruction book entries will be used for the recording of general site instructions as they relate to the works on site. There should be issuing of stop work order for the purposes of immediately halting any activities of the contractor that may pose environmental risk.

3.5 ESA/ESO (Environmental Site Officer) Diary Entries

Each of these books must be available in duplicate, with copies for the Engineer and Environmental Site Officer. These books should be available to the authorities for inspection or on request. All spills are to be recorded in the ESA/Environmental Site Officer's dairy.

3.6 Methods Statements

Methods statements from the contractor will be required for specific sensitive actions on request of the authorities or ESA/ESO (Environmental Site Officer). All method statements will form part of the EMPr documentation and are subject to all terms and conditions contained within the EMPr document. For each instance wherein it is requested that the contractor submit a method statement to the satisfaction of ESA/ESO, the format should clearly indicate the following:

- What – a brief description of the work to be undertaken
- How- a detailed description of the process of work, methods and materials
- Where- a description / sketch map of the locality of work; and
- When- the sequencing of actions with due commencement dates and completion date estimate.

The contractor must submit the method statement before any particular construction activity is due to start. Work may not commence until the method statement has been approved by the ESA/ESO.

3.7 Record Keeping

All records related to the implementation of this management plan (e.g. site instruction book, ESA/ESO dairy, methods statements etc.) must be kept together in an office where it is safe and can be retrieved easily. These records should be kept for two years at any time be available for scrutiny by any relevant authorities.

3.8 Acts

3.8.1. The National Water Act, 1998 (Act No: 36 of 1998)

The purpose of this Act is to ensure that the nation's water resources are protected, used, developed, conserved, managed and controlled in ways that take into account, amongst other factors, the following:

- Meeting the basic human needs of present and future generations;
- Promoting equitable access to water;
- Promoting the 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; and
- Providing for the growing demand for water use.

Impact on proposed Development:

Not Significant – the proposed development is not subjected to flood lines of any natural stream or water course within an expected frequency of 1:50 and 1:100 years and therefore in terms of Section 21 of the National Water Act, the developer will not need any water-use licenses for the proposed development.

3.8.2. Atmospheric Pollution Prevention Act (Act 45 of 1965)

The NEMA: AQA serves to repeal the Atmospheric Pollution Prevention Act (45 of 1965) and various other laws dealing with air pollution and it provides a more comprehensive framework within which the critical question of air quality can be addressed.

The purpose of the Act is to set norms and standards that relate to:

- Institutional frameworks, roles and responsibilities

- Air quality management planning
- Air quality monitoring and information management
- Air quality management measures
- General compliance and enforcement.

Amongst other things, it is intended that the setting of norms and standards will achieve the following:

- The protection, restoration and enhancement of air quality in South Africa
- Increased public participation in the protection of air quality and improved public access to relevant and meaningful information about air quality
- The reduction of risks to human health and the prevention of the degradation of air quality.

The Act describes various regulatory tools that should be developed to ensure the implementation and enforcement of air quality management plans. These include:

- Priority Areas, which are air pollution 'hot spots'
- Listed Activities, which are 'problem' processes that require an Atmospheric Emission License
- Controlled Emitters, which includes the setting of emission standards for 'classes' of emitters, such as motor vehicles, incinerators, etc.
- Control of Noise
- Control of Odours.

Impact on proposed Development:

Significant – The Act has relevance to the proposed development during the construction phase, dust and the generation of noise can become a significant factor, especially to the surrounding landowners. However if the development is well planned and the mitigation measures are successfully implemented the

proposed township's contribution to air pollution and the generation of air pollution can become less significant. None of the listed activities, according to this Act, have been triggered.

3.8.3 National Environmental Management Act (Act 107 of 1998)

The NEMA is primarily an enabling Act in that it provides for the development of environmental implementation plans and environmental management plans. The principles listed in the act serve as a general framework within which environmental management and implementation plans must be formulated.

The principles in essence state that environmental management must place people and their needs at the forefront of its concern and that development must be socially, environmentally and economically sustainable.

Impact on proposed Development:

Significant – Section 28 (1) of NEMA stated that every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment.

The EMPr is compiled in terms of Section 28 of NEMA.

3.8.4. TheNational Environmental Management: Waste Act (Act 59 of 2008)

This Act came into effect on 11 June 2009. It aims to consolidate waste management in South Africa, and contains a number of commendable provisions, including:

- The establishment of a national waste management strategy, and national and provincial norms and standards for, amongst others, the classification of waste, waste service delivery, and tariffs for such waste services;
- Addressing reduction, reuse, recycling and recovery of waste;
- The requirement for industry and local government to prepare integrated waste management plans;
- The establishment of control over contaminated land;
- Identifying waste management activities that requires a licence, which currently include facilities for the storage, transfer, recycling, recovery, treatment and disposal of waste on land;
- Co-operative governance in issuing licenses for waste management facilities, by means of which a licensing authority can issue an integrated or consolidated license jointly with other organs of state that has legislative control over the activity; and
- The establishment of a national waste information system.

On 3 July 2009 the Minister of Environmental Affairs and Tourism promulgated a list of waste management activities that might have a detrimental effect on the environment. These listed activities provide the activities that require a Waste Management License. Two Categories is specified: Category A and Category B. As part of Category A Waste Management License application a Basic Assessment in terms of Section 24(5) of the National Environmental Management Act (Act 107 of 1998) must be submitted to the relevant Authority. As part of a Category B Waste Management License a Scoping and EIA process in terms of Section 24(5) of the National Environmental Management Act (Act 107 of 1998) must be followed and submitted to the relevant Authority.

Impact on proposed Development:

Not Significant – No waste management license will be required during the construction or operational phases of the proposed township. Due to the fact that a small amount of solid construction waste will be stored and handled on the site, before it is hauled away and dumped at the nearest registered landfill site.

3.8.5 . The Municipal Systems Act (Act 32 of 2000)

This Act was introduced to provide for the core principles, mechanisms and processes that are necessary to enable municipalities to move progressively towards the social and economic upliftment of local communities, and ensure universal access to essential services that are affordable to all.

The proposed development will support the local authority in complying with the principles of the Municipal Systems Act, by assisting in providing the community with essential services, such as water and sewage infrastructure.

Impact on proposed Development:

Significant –The proposed development will promote the Municipal System within the area of Centurion, as the proposed development will install, upgrade, and improve the essential services such as water and sewage reticulation networks, therefore contributing to the social and Economic upliftment of the involved City of Tshwane Metropolitan Municipality.

3.8.6 National Veld and Forest Fire Act, 1998 (Act No. 101, 1998)

The purpose of this Act is to prevent and combat veld, forest and mountain fires throughout the Republic. Furthermore the Act provides for a variety of institutions, methods and practices for achieving the prevention of fires.

Impact on proposed Development:

Significant – Fires of construction workers may only be lit in the designated site camp as indicated in assistance with the ECO. It is important that a site development camp be located on a part of the application site that is already disturbed.

3.8.7 National Heritage Resources Act, 1999 (Act No. 25 of 1999)

The National Heritage Resources Act legislates the necesity and heritage impact assessment in areas earmarked for development, which exceed 0.5ha. The Act makes provision for the potential destruction to existing sites, pending the archaelogist's recommendations through permitting procedures. Permits are administered by the South African Heritage Resources Agency (SAHRA).

Impact on proposed Development:

Not significant - No cultural/historical significant areas were identified within the application site and thus no areas of historical or cultural value will be affected.

3.8.8. Conservation of Agricultural Resources Act (Act No. 43 of 1983)

This Act provides for control over the utilization of the natural agricultural resources of the Republic in order to promote the conservation of the soil, the water sources and the vegetation and the combating of weeds and invader plants; and for matters connected therewith.

Impact on proposed Development:

Not Significant – According to the Gauteng Agricultural Potential Atlas (GAPA 3), the Proposed Peach Tree X23 is located on land with low agricultural potential.

The study area does not fall within any of the Seven Agriculture Hubs identified for the Gauteng Province.

3.8.9. National Environmental Management Act: Biodiversity Act (Act No. 10 of 2004)

The purpose of the Biodiversity Act is to provide for the management of South Africa's biodiversity within the Framework of the NEMA and the protection of species and ecosystems that warrant National protection. As part of the implementation strategy, the National Spatial Biodiversity Assessment was developed.

Impact on proposed Development:

Not Significant – Although one Orange Listed Species were observed, the study site cannot be deemed highly sensitive, on account of agricultural and urban development threatening this ecosystem. According to the GDARD C-Plan, the area is considered a Critical Biodiversity Area (CBA) due to Primary Vegetation. HOWEVER, specialists have visited the site and conducted both a Fauna and Flora Assessment. The Flora Assessment showed that the site consist of Secondary Grassland and no longer Primary Vegetation. This Secondary Grassland is isolated from similar grassland vegetation units. It is surrounded by urban development and agricultural activities. The ecological status of this study unit will only decrease as movement of plant species is limited on account of isolation from natural vegetated areas.

3.8.11 Protected Species – Provincial Ordinances

Provincial ordinances were developed to protect particular plant species within specific provinces. The protection of these species is enforced through

permitting requirements associated with provincial lists of protected species. Permits are administered by the Provincial Departments of Environmental Affairs.

Impact on proposed Development:

Not Significant - A Fauna & Flora Specialist study was conducted. The study area consists of only one study unit, dominated by the graminoid vegetation layer. Although one Orange Listed Species were observed, the study site cannot be deemed ecologically highly sensitive, on account of agricultural and urban development threatening this ecosystem.

3.8.12. National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003)

The purpose of this Act is to provide for the protection, conservation and management of ecologically viable areas representative of South Africa's biological biodiversity and its natural landscapes.

Impact on proposed Development:

Not Significant- The Application site is not located within any conservancy or protected area.

3.8.13 National Road Traffic Act, 1996 (Act No. 93 of 1996)

This Act provides for all road traffic matters which shall apply uniformly throughout the Republic and for matters connected therewith.

Impact on proposed Development:

Not significant – Not Applicable.

4 Project activities

4.1 Pre-Construction Phase

TYPE	*Environmental risk or issue*	*Objective or requirement*	*Mitigation measure*	*Performance indicator*	*Responsibility*	*Frequency of Action*
General	**Project contract**	To make the EMP enforceable under the general conditions of the contract.	The EMPr document must be included as part of the tender documentation	The EMPr is included as part of the tender documentation	Developer	-
	Surrounding Residents	Service Interruption.	Contractor should inform all residents, landowners and tenants at least 48hours before the proposed interruption.		Developer Contractor	
Design and planning	**Geology-** **Stability of structures and restriction of land use due to geology**	To ensure stability of structures	- The layout and land must correspond to the stability zonation and development types recommended by the geotechnical engineer; - More detailed foundation investigations should be done for each of the structures prior to construction.		Geotechnical Engineer, Structural Engineer,	-
	Erosion and Siltation	To prevent the unnecessary loss of soil through bad management	All surface run-offs should be managed in such a way so as to ensure erosion of soil does not occur. Provisions should be made for the development of a rehabilitation plan, prior to construction, to ensure that all the areas which are susceptible to erosion shall be covered with a suitable vegetative cover as soon as	No soil lost	Landscape Architect, Environmental Consultants, Flora Specialist	-

TYPE	*Environmental risk or issue*	*Objective or requirement*	*Mitigation measure*	*Performance indicator*	*Responsibility*	*Frequency of Action*
			construction is completed.			
	Compaction	To prevent the compaction of valuable soils due to traffic and equipment	Designated routes shall be determined prior to construction for movement of construction vehicles and areas for the storage of equipment. All the areas that are compacted by machinery shall be ripped prior to them being rehabilitated.		ECO, Site Supervisor, Contractor	
			The site access point should be clearly marked as well as routes designated to be used by construction vehicles and pedestrians.		ECO, Site Supervisor Contractor	
	Topsoil	To Prevent the loss of valuable topsoil	Designated areas should be identified prior to construction for the stockpile of stripped topsoil. The stockpile areas should be designated were the material will not be damaged, removed or compacted. The stockpiled topsoil shall be used for the rehabilitation of the site during and after construction and for landscaping purposes.	Designated stockpile areas identified prior to construction for the storage of Top soil	ECO, Site Supervisor, Contractor	
			When the stripping of topsoil takes place, the grass component shall be included in the stripped topsoil. The soil will contain a natural grass seed mixture that may assist in the re-growth of grass once the soil is used for backfilling and landscaping.		Contractor	

TYPE	*Environmental risk or issue*	*Objective or requirement*	*Mitigation measure*	*Performance indicator*	*Responsibility*	*Frequency of Action*
	Storm water design- -Environmental Damage due to erosion, water pollution, gully formation and siltation;	To prevent and restrict erosion, siltation and groundwater pollution, through the design of a proper storm water management system	- A proper storm water management plan should be developed, to be implemented during the construction and operational phases of the proposed development; - Storm water outlets shall be correctly designed to prevent erosion; -Construction guidelines should be provided for the prevention and restriction of erosion and siltation - It is important to note the trenches for the water pipeline and even those for sewage lines do not need to be wide, which means that the environmental damage caused by the actual digging can be reduced to a minimum. However, while they are open, their presence will mean that herpetofauna of any size may fall into them, from where it will be difficult to escape and death may cause by drowning, excessive exposure to the sun or by being buried alive during the final construction work.	Compilation and approval of storm water management plan	Civil Engineer	
		To ensure the sustainability of the drainage and the open space systems lower down in the catchment area	-The storm water design for the proposed development must be designed to: ➢ Reduce and/or prevent siltation, erosion and water pollution. Storm water runoff should not be concentrated as far as possible and sheet flow		Civil Engineer	

TYPE	*Environmental risk or issue*	*Objective or requirement*	*Mitigation measure*	*Performance indicator*	*Responsibility*	*Frequency of Action*
			should be implemented; ➢ Run-off from paved surfaces should be slowed down through the strategic placement of berms; ➢ Attenuation ponds and energy dissipaters must be installed on the study area to break the speed of the water and to act as siltation ponds where required. ➢ Sheet runoff from paved surfaces and access roads needs to be curtailed; ➢ Surface storm water generated as a result of the development must not be channeled directly into any natural drainage system or wetland; ➢ The storm water management plan should be designed in a way that aims to ensure that post development runoff does not exceed predevelopment values in: - Peak discharge for any given storm;			

TYPE	*Environmental risk or issue*	*Objective or requirement*	*Mitigation measure*	*Performance indicator*	*Responsibility*	*Frequency of Action*
			- Total volume of runoff for any given storm; - Frequency of run-off; - Pollutants and debris reaching watercourses; ➢ As much of the vegetation should be retained as far as possible and rehabilitated if disturbed by construction activities to endure that erosion and siltation does not take place; ➢ No Trees should be planted within three meters form water bearing services.			
	Waste storage	To control the temporary storage of waste.	Temporary waste storage points on site shall be determined. These storage points shall be accessible by waste removal trucks and these points should not be located in sensitive areas/areas highly visible from the properties of the surrounding land-owners/tenants/in areas where the wind direction will carry bad odours across the properties of adjacent tenants or landowners.		Contractor ESO	-
		Ensure waste storage area does not generate pollution.	Build a bund around the waste storage area to avoid occurrence of pollution.		Contractor	-

TYPE	*Environmental risk or issue*	*Objective or requirement*	*Mitigation measure*	*Performance indicator*	*Responsibility*	*Frequency of Action*
		To control the temporary storage of waste	No waste materials shall at any stage be disposed of in the open veld of adjacent properties or in sensitive areas. Temporary waste storage points should be determined prior to construction on site. These storage points shall be accessible by waste removal trucks. Such areas should not be located in areas highly visible from the properties of the surrounding land-owners/tenants.	Designated areas determined prior to construction for the storage of waste on site.	ECO, Contractor	
		To ensure that the waste storage area does not generate any pollution	- The area designated for the storage of waste on site should be located in non-sensitive areas and areas where it would not be able to contaminate storm water. - In order to prevent any visual pollution, as well as mitigate anticipated visual impacts, the area designated for the storage of waste should be located in an area that is not highly visible.		Site Supervisor	
	Waste Generation, and air, water and noise pollution	Best Practice to minimise environmental impacts and ensure efficient management	Coordinate with other trades working on site regarding, site management, timing of works and waste management (recycling and reuse potential)		Project Manager	

TYPE	*Environmental risk or issue*	*Objective or requirement*	*Mitigation measure*	*Performance indicator*	*Responsibility*	*Frequency of Action*
			Plan the activities on site prior to construction for access, deliveries, construction areas, washout area, waste stockpiles, and chemical storage.		Environmental Site Officer. Occupational Health and Safety officer etc.	
		Solid Waste Disposal	Solid waste shall be disposed of in a manner approved by the relevant local authorities, and at a registered land-fill site.		Contractor	
	Fauna and Flora	To give smaller birds, mammals and reptiles a chance to move into other undisturbed areas close to their natural territories	Construction work should be planned beforehand and restricted to one area at a time.		Contractor	
		To ensure that the species introduced to the area, are compatible with the current and future quality of the ecological processes.	- The landscape development plan for the proposed development shall be submitted to the local authority for approval; - It is important that all the plant positions, quantities and coverage per m² be indicated on a plan; - The proposed planting materials for the areas to be landscaped shall be non-invasive, and preferably indigenous and /or endemic; - Where possible, trees naturally growing on the site should be retained as part of the landscaping.	The landscape development plan submitted to the local authority for approval.	Landscape Architect	-

TYPE	*Environmental risk or issue*	*Objective or requirement*	*Mitigation measure*	*Performance indicator*	*Responsibility*	*Frequency of Action*
			- Staff should be trained not to destroy herpetological specimens unnecessarily. Herpetofauna that are exposed during the construction phase should be removed and translocated. - It is important to note the trenches for the water pipeline and even those for sewage lines do not need to be wide, which means that the environmental damage caused by the actual digging can be reduced to a minimum. However, while they are open, their presence will mean that herpetofauna of any size may fall into them, from where it will be difficult to escape and could lead to death which may be caused by drowning, excessive exposure to the sun or by being buried alive during the final construction work. - Environmental damage caused by these trenches may be kept to a minimum by good forward planning and thereby reducing the actual length of time that trenches are left open. Possible damage to herpetofauna is in direct proportion to the time that these trenches are left open and may destroy amphibian and reptilian species. - The design of the storm water lines is not known. If cement pipes of large			

TYPE	*Environmental risk or issue*	*Objective or requirement*	*Mitigation measure*	*Performance indicator*	*Responsibility*	*Frequency of Action*
			diameter are used and the trenches are filled in again, potential danger is substantially reduced. Open storm water channels are dangerous, as they will continuously contribute to herpetofauna destruction.			
		To ensure the removal of all the Declared weeds and invaders from the site	All the declared weeds and invaders should be removed from site prior to construction.		Flora Specialist /Contractor	
Other Design Requirements	**Extreme change in micro climate temperatures**	To prevent the extreme change in micro climate temperatures	Where open parking bays are involved, one tree for every two parking bays shall be indicated on Landscape Development Plan which shall be approved by the Design Review Committee / Local Authority.	Landscape Development Plan complies	Landscape Architect	-
	Light Pollution	To prevent excessive light pollution through ineffective design	The generation of light through security lighting and other lighting should be effectively designed to not spill unnecessary outward into the oncoming traffic, or into the yards of the neighbouring properties or open spaces.		Architect, Landscape Architect/ Contractor	
	Visual Impact	To minimize the visual impact of the proposed development.	Architectural guidelines should be compiled for the proposed development and the styles used must promote unity through the use of certain street furniture, planting and paving patterns, colours and textures that do not only blend in tastefully with the character of the area, but		Architect Contractor.	

TYPE	*Environmental risk or issue*	*Objective or requirement*	*Mitigation measure*	*Performance indicator*	*Responsibility*	*Frequency of Action*
			are also functional and easy to maintain.			

4.2 Construction Phase

TYPE	*Environmental risk or issue*	*Objective or requirement*	*Mitigation measure*	*Performance indicator*	*Responsibility*	*Frequency of Action*
General	**Surrounding Residents**	Service Interruption.	Contractor should inform all residents, landowners and tenants at least 48hours before the proposed interruption.		Developer Contractor	
Contractors Camp	**Vegetation and topsoil**	To minimize damage to and loss of vegetation and retain quality of Topsoil.	- Site to be established under supervision of ECO; - Clearing and relocation of plants to be undertaken in accordance with site specific requirements; - The clearing of the site should take place within phases to prevent large areas exposed which could be prone to erosion; - The Contractor's Camp should not be established in areas which are deemed to be sensitive. Areas with low sensitivity such as degraded areas should rather be considered for the establishment of the contractor's Site Camp; - Valuable Topsoil that is cleared should be retained in designated stockpiles and used again during rehabilitation	Minimal vegetation removed/ damaged during site activities.	Contractor	As and when required

TYPE	*Environmental risk or issue*	*Objective or requirement*	*Mitigation measure*	*Performance indicator*	*Responsibility*	*Frequency of Action*
			works			
	Surface and ground water pollution	To minimize pollution of surface and groundwater resources.	1) Sufficient and temporary facilities including ablution facilities must be provided for construction workers operating on the site; 2) A minimum of one chemical toilet shall be provided per 10 persons. - The contractor shall keep the toilets in a clean, neat and hygienic condition. - Toilets provided by the contractor must be easily accessible and a maximum of 50m from the working area to ensure they are utilized. The contractor (who must use reputable toilet-servicing company) shall be responsible for the cleaning, maintenance and servicing of the toilets. The contractor (using reputable toilet-servicing company) shall ensure that all toilets are cleaned and emptied before the builders' or other public holidays; 3) No person is allowed to use any other area than chemical toilets; 4) No French drain systems may be installed; 5) No chemical or waste water must be allowed to contaminate the run-off on site; 6) Avoid the clearing of the site camp (of specific phase) or paved surfaces with soap.	Effluents managed Effectively. No pollution of water resources from site. Workforce use toilets provided.	Contractor ESO	As and when required
		To minimize pollution of	1) Drip trays and/ or lined earth bunds must be provided under vehicles and	No pollution of the	Contractor ESO	Daily

TYPE	*Environmental risk or issue*	*Objective or requirement*	*Mitigation measure*	*Performance indicator*	*Responsibility*	*Frequency of Action*
		surface and groundwater resources due to spilling of materials.	equipment, to contain spills of hazardous materials such as fuel, oil and cement; 2) Repair and storage of vehicles only within the demarcated site area; 3) Spill kits must be available on site; 4) Oils and chemicals must be confined to specific secured areas within the site camp. These areas must be bunded with adequate containment (at least 1.5 times the volume of the fuel) for potential spills or leaks; 5) All spilled hazardous substances must be contained in impermeable containers for removal to a licensed hazardous waste site; 6) No leaking vehicle shall be allowed on site. The mechanic/ the mechanic of the appointed contractor must supply the environmental officer with a letter of confirmation that the vehicles and equipment are leak proof; 7) No bins containing organic solvents such as paints and thinners shall be cleaned on site, unless containers for liquid waste disposal are placed for this purpose on site.	environment		
		To minimize pollution of surface and groundwater resources by cement	The mixing of concrete shall only be done at specifically selected sites, as close as possible to the entrance, on mortar boards or similar structures to prevent run-off into drainage lines, streams and natural vegetation.	No evidence of contaminated soil on the construction site.	Contractor ESO	Daily

TYPE	*Environmental risk or issue*	*Objective or requirement*	*Mitigation measure*	*Performance indicator*	*Responsibility*	*Frequency of Action*
		To minimize pollution of surface and groundwater resources due to effluent.	No effluent (including effluent from any storage areas) may be discharged into any water surface or ground water resource.	No evidence of contaminated water resources.	Contractor ESO	Daily
	Pollution of the environment	To prevent unhygienic usage on the site and pollution of the natural assets.	1) Weather proof waste bins must be provided and emptied regularly; 2) The contractor shall provide laborers to clean up the contractor's camp and construction site on a daily basis; 3) Temporary waste storage points on the site should be determined. THESE AREAS SHALL BE PREDETERMINED AND LOCATED IN AREAS THAT IS ALREADY DISTURBED. These storage points should be accessible by waste removal trucks and these points should be located in already disturbed areas /areas not highly visible from the properties of the surrounding land-owners/ in areas where the wind direction will not carry bad odours across the properties of adjacent landowners. This site should comply with the following: • Skips for the containment and disposal of waste that could cause soil and water pollution, i.e. paint, lubricants, etc.; • Small lightweight waste items should be contained in skips with lids to prevent wind littering; • Bunded areas for containment	No waste bins overflowing No litter or building waste lying in or around the site	Contractor ESO	Daily Weekly

TYPE	*Environmental risk or issue*	*Objective or requirement*	*Mitigation measure*	*Performance indicator*	*Responsibility*	*Frequency of Action*
			and holding of dry building waste. 4) No solid waste may be disposed of on the site; 5) No waste materials shall at any stage be disposed of in the open veld of adjacent properties; 6) The storage of solid waste on the site, until such time as it may be disposed of, must be in a manner acceptable to the local authority and DWS; 7) Cover any wastes that are likely to wash away or contaminate storm water.			
		Recycle material where possible and correctly dispose of unusable wastes	1) Waste shall be separated into recyclable and non-recyclable waste, and shall be separated as follows: • General waste: including (but not limited to) construction rubble, • Reusable construction material. 2) Recyclable waste shall preferably be deposited in separate bins; 3) All solid waste including excess spoil (soil, rock, rubble etc.) must be removed to a permitted waste disposal site on a weekly basis; 4) No bins containing organic solvents such as paints and thinners shall be cleaned on site, unless containers for liquid waste disposal are placed for this purpose on site; 5) Keep records of waste reuse,	Sufficient containers available on site No visible signs of pollution	Contractor ESO	Daily Weekly

TYPE	*Environmental risk or issue*	*Objective or requirement*	*Mitigation measure*	*Performance indicator*	*Responsibility*	*Frequency of Action*
			recycling and disposal for future reference. Provide information to ECO.			
	Increased fire risk to site and surrounding areas	**To decrease fire risk.**	1) Fires shall only be permitted in specifically designated areas and under controlled circumstances' 2) Food vendors shall be allowed within specified areas; 3) Fire extinguishers to be provided in all vehicles and fire beaters must be available on site; 4) Emergency numbers/ contact details must be available on site, where applicable.	No open fires on site that have been left unattended	Contractor	Monitor daily
Construction site	**Geology and soils-** ***Unstable structured due to the underlying geotechnical conditions of the site;** ***Loss of valuable Topsoil**	To Ensure the Stability of Structures	-The standard precautionary measures and founding recommendations made during the design and planning phase by the Geotechnical/Structural Engineers should be implemented during construction;	To ensure that all the precautionary measures has been taken and implemented during construction	Contractor, Consulting Engineers	
		To prevent the damaging of the existing soils and geology.	1) The top layer 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; 2) All surfaces that are susceptible to erosion, shall be protected either by cladding with biodegradable material or with the top layer of soil being seeded with grass seed/planted with a suitable groundcover.	Excavated materials correctly stockpiled No signs of erosion	Contractor	Monitor daily

TYPE	*Environmental risk or issue*	*Objective or requirement*	*Mitigation measure*	*Performance indicator*	*Responsibility*	*Frequency of Action*
		To prevent the loss of topsoil To prevent siltation & water pollution.	1) Stockpiling will only be done in designated places where it will not interfere with the natural drainage paths of the environment; 2) In order to minimize erosion and siltation and disturbance to existing vegetation, it is recommended that stockpiling be done/ equipment is stored in already disturbed/exposed areas; 3) Cover stockpiles and surround downhill sides with a sediment fence to stop materials washing away; 4) Remove vegetation only in areas designated during the planning stage; 5) Rehabilitation/ landscaping are to be done immediately after the involved works are completed; 6) All compacted areas should be ripped prior to them being rehabilitated/landscaped by the contractor as appointed by the individual erf owner; 7) The top layer of all areas to be excavated must be stripped and stockpiled in areas where this material will not be damaged, removed or compacted. This stockpiled material should be used for the rehabilitation of the site and for landscaping purposes; 8) Strip topsoil at start of works and store in stockpiles no more than 1,5 m high in designated materials storage area;	Excavated materials correctly stockpiled No visible signs of erosion and sedimentation Minimal invasive weed growth Vegetation only removed in designated areas	Contractor of the Individual Developer	Monitor daily

TYPE	*Environmental risk or issue*	*Objective or requirement*	*Mitigation measure*	*Performance indicator*	*Responsibility*	*Frequency of Action*
			9) During the laying of any cables, pipelines or infrastructure (on or adjacent to the site) topsoil shall be kept aside to cover the disturbed areas immediately after such activities are completed.			
	Erosion and siltation	To prevent erosion and siltation	1) It is recommended that the construction of the development be done in phases; 2) Each phase should be rehabilitated immediately after the construction for that phase has been completed. The rehabilitated areas should be maintained by the appointed rehabilitation contractor until a vegetative coverage of at least 80% has been achieved as appointed by the individual erf owner; 3) Mark out the areas to be excavated; 4) Large exposed areas during the construction phases should be limited. Where possible areas earmarked for construction during later phases should remain covered with vegetation coverage until the actual construction phase. This will prevent unnecessary erosion and siltation in these areas; 5) Unnecessary clearing of flora resulting in exposed soil prone to erosive conditions should be avoided; 6) All embankments must be adequately compacted and planted with grass to stop any excessive soils	No erosion scars No loss of topsoil All damaged areas successfully rehabilitated	Contractor ESO	Monitor daily

TYPE	*Environmental risk or issue*	*Objective or requirement*	*Mitigation measure*	*Performance indicator*	*Responsibility*	*Frequency of Action*
			erosion and scouring of the landscape if required; 7) The eradication of alien vegetation should be followed up as soon as possible by replacement with indigenous vegetation to ensure quick and sufficient coverage of exposed areas by the individual erf owner; 8) Storm water outlets shall be correctly designed to prevent any possible soil erosion; 9) All surface run-offs shall be managed in such a way so as to ensure erosion of soil does not occur; 10) Implementation of temporary storm water management measures that will help to reduce the speed of surface water by the individual erf owner / developer; 11) All surfaces that are susceptible to erosion shall be covered with a suitable vegetative cover as soon as construction is completed by the individual erf owner / developer.			
	Hydrology	To ensure that: -Construction works and structures are not flooded during heavy precipitation;	The storm water management plan which has been developed prior to construction should be implemented on a continuous basis;	No damage caused to construction works and structures due to the effective management of floodwater;	Contractor, Civil Engineers	

TYPE	*Environmental risk or issue*	*Objective or requirement*	*Mitigation measure*	*Performance indicator*	*Responsibility*	*Frequency of Action*
		-To minimise potential significant environmental damage due to extensive soil erosion, saltation and water pollution		-No visible signs of Environmental damage in the form of erosion, water pollution etc.		
		To minimise pollution of soil, surface and groundwater	-Increased run-off during construction must be managed using berms and other suitable structures as required to ensure flow velocities are reduced; -The contractor shall ensure that excessive quantities of sand, silt and silted water do not enter the storm water system.	No visible signs of erosion. No visible signs of pollution	Contractor	Monitor daily
	Fauna and Flora	To protect the existing fauna and flora.	1) All exotic invaders and weeds must be eradicated on a continuous basis; 2) Exotic invaders must be included in an alien management program for the site. Eradication must occur every 3 months; 3) No plants not indigenous to the area, or exotic plant species, especially lawn grasses and other ground-covering plants, should be introduced in the communal landscaping of the proposed site, as they will drastically interfere with the nature of the area; 4) Where possible, trees naturally growing on the site should be retained	No exotic plants used for landscaping	Contractor ESO / Home Owners Association / Design Review Committee	As and when required Every 6 months

TYPE	*Environmental risk or issue*	*Objective or requirement*	*Mitigation measure*	*Performance indicator*	*Responsibility*	*Frequency of Action*
			as part of the landscaping. 5) Only indigenous plant species, preferably species that are indigenous to the natural vegetation of the area, should be used for landscaping in communal areas. As far as possible, plants naturally growing on the development site, but would otherwise be destroyed during clearing for development purposes, should be incorporated into landscaped areas. Forage and host plants required by pollinators should be planted in landscaped areas. 6) Alien and invasive species must be removed.			
		To protect the existing fauna and flora.	1) Trees that are intended to be retained shall be clearly marked on site; 2) Snaring and hunting of fauna by construction workers on or adjacent to the study area are strictly prohibited and the Council shall prosecute offenders; 3) All mitigation measures for impacts on the indigenous flora of the area should be implemented in order to limit habitat loss as far as possible and maintain and improve available habitat, in order to maintain and possibly increase numbers and species of indigenous fauna; 4) Wood harvesting of any trees or shrubs on the study area or adjacent areas shall be prohibited;	No measurable signs of habitat destruction	Contractor ESO	As and when required

TYPE	*Environmental risk or issue*	*Objective or requirement*	*Mitigation measure*	*Performance indicator*	*Responsibility*	*Frequency of Action*
			5) Where possible, work should be restricted to one area at a time; 6) Noise should be kept to a minimum and the development should be done in phases to allow faunal species to temporarily migrate into the conservation areas in the vicinity; 7) The integrity of remaining wildlife should be upheld, and no trapping or hunting by construction personnel should be allowed. Caught animals should be relocated to the conservation areas in the vicinity. 8)Where possible, work should be restricted to one area at a time, as this will give the smaller birds, mammals and reptiles a chance to weather the disturbance in an undisturbed zone close to their natural territories.			
			All Declared weeds and invaders should be removed from the open spaces on an ongoing basis.			
		To mitigate the negative impact on the ecological environment due to the installation of services	Rehabilitate areas which were disturbed by the instillation of services immediately after works have been completed.	Disturbed areas successfully rehabilitated	Site Supervisor, Contractor	
	Social, safety and Security	To ensure the safety of the public	Although regarded as a normal practice, it is important to erect proper signs indicating the operations of heavy machinery in the vicinity of dangerous crossings and access roads or erven in	Visible signs erected	Contractor	

TYPE	Environmental risk or issue	Objective or requirement	Mitigation measure	Performance indicator	Responsibility	Frequency of Action
			the development site if necessary.			
			With the exemption of the appointed security personnel, no other workers, friend or relatives will be allowed to sleep on the construction site (weekends included).		Security Personal, contractor	
			- Heavy construction vehicles should avoid using the local road network during peak traffic times; - These vehicles should use only specific roads, and strictly keep within the speed limits and abide to all traffic laws. No speeding or reckless driving should be allowed; - Access to the site for construction vehicles should be planned to minimize the impact on the surrounding road network; - Warning signs should be erected on the roads if needed.			
			The following actions would assist in the management of safety along the road: -Adequate road marking; -Adequate roadside recovery areas; -Allowance for pedestrians and cyclists.		Project Manager, Environmental Site officer, Heath and Safety officer	

TYPE	*Environmental risk or issue*	*Objective or requirement*	*Mitigation measure*	*Performance indicator*	*Responsibility*	*Frequency of Action*
		Noise Impact- To maintain noise levels below "disturbing" as defined in the National Noise Regulations.	- Site workers must comply with the Provincial noise requirements; - Construction will only be permitted during working hours of between 07h00 and 19h00; - The surrounding residents must be notified of blasting activities in advance. The necessary safety measures must also be implemented.	No complaints from surrounding residents and I & AP	Contractor	Monitored daily
		Dust Impact- Minimise dust from the site. To ensure the adequate protection of construction workers against dust pollution	- Dust pollution could occur during the construction works, especially during the dry months. Regular and effective damping down of working areas (especially during the dry and windy periods) must be carried out to avoid dust pollution that will have a negative impact on the surrounding environment; - Stockpiles of fine material should be wetted and/or covered during windy conditions; - Workers on site should wear dust masks during dry and windy conditions; - During the construction phase, noise must be kept to a minimum to reduce the impact of the development on the fauna residing on the site.	No visible signs of dust pollution No complaints from surrounding residents and I & AP	Contractor	Monitored daily
		Visual Impact- In order to minimise the visual impact.	The disturbed areas shall be rehabilitated immediately after the involved construction works are completed as the construction vehicle and equipment will be causing visual impacts during the construction phase.	Visual impacts minimized	Contractor ESO	Monitor daily

TYPE	*Environmental risk or issue*	*Objective or requirement*	*Mitigation measure*	*Performance indicator*	*Responsibility*	*Frequency of Action*
		To mitigate the inconvenience of temporary power failures, disconnection of water and sewage, and telecommunication	There should be consultation with affected parties to determine the most convenient times for service disruptions. The interested and affected parties should also be notified in advance of dates that services will be disrupted.		Project Manager, Contractor	
		Increased fire risk to site and surrounding areas - To decrease fire risk.	- Fires shall only be permitted in specifically designated areas and under controlled circumstances. - Food vendors shall be allowed within specified areas. - Fire extinguishers to be provided in all vehicles and fire beaters must be available on site. - Emergency numbers/contact details must be available on site, where applicable.	No open fires on site that have been left unattended.	Contractor	Monitor daily
	Infrastructure and services	Installation of services	Determine areas where services will be upgraded and relocated well in advance. Discuss possible disruptions with affected parties to determine most convenient times for service disruptions and warn affected parties well in advance of dates that service disruptions will take place.	No complaints from I & AP	Contractor ESO	When required
	Cultural Resources	To ensure the protection of heritage resources if	If any graves or archaeological sites are exposed during construction work it should immediately be reported to a museum. The report from the	No destruction of or damage to graves or known	Contractor ESO	Monitor daily

TYPE	*Environmental risk or issue*	*Objective or requirement*	*Mitigation measure*	*Performance indicator*	*Responsibility*	*Frequency of Action*
		exposed during construction	archaeologist must be provided to GDARD if any graves are recovered.	archaeological sites		
	Vegetation	Landscaping	1) When planting trees, care should be taken to avoid the incorrect positioning of trees and other plants, to prevent the roots of trees planted in close proximity to the line of water-bearing services from causing leaking in, or malfunctioning of the services; 2) The proposed planting materials for the areas to be landscaped should preferably be endemic and indigenous; 3) All new trees and shrubs to be planted on the study area shall be inspected for pests and diseases prior to them being planted; 4) The inspection shall be carried out by the maintenance contractor at the property of the supplier and not on the study area; 5) All trees to be planted shall be in 20L containers with a height of approximately 1,8 metres and a main stem diameter of approximately 300 mm.	Landscaping done according to landscape development plan	Landscape architect Contractor / Individual Developer	When required
		Loss of plants	1) Aerate compacted soil and check and correct pH for soils affected by construction activities; 2) Make sure plant material will be matured enough and hardened off ready for planting. Water in plants immediately as planting proceeds; 3) Apply mulch to conserve moisture	Landscaping done according to landscape development plan	Landscape architect Contractor / Individual Developer	When required

TYPE	*Environmental risk or issue*	*Objective or requirement*	*Mitigation measure*	*Performance indicator*	*Responsibility*	*Frequency of Action*
			Plant according to the layout and planting techniques specified by the Landscape Architect in the Landscape Development Plans for the site. 4) Alien and invasive plants must be removed.			
		Spread of weeds	Ensure that materials used for mulching and topsoil/ fertilisers are certified weed free. Collect certifications where available. Control weeds growth that appears during construction.	Weed growth controlled	Landscape architect Contractor	When required
		To ensure rehabilitation of the site	1) Compacted soils shall be ripped at least 200mm; 2) All clumps and rocks larger than 30mm diameter shall be removed from the soil to be rehabilitated; 3) The soil shall be leveled before seeding; 4) Watering shall take place at least once per day for the first 14 days until germination of seeds have taken place; 5) Thereafter watering should take place at least for 20 minutes every 4 days until grass have hardened off.	Grass have hardened off	Landscape architect Contractor	Once a day Then every 4 days

4.3 Operational Phase

TYPE	*Environmental risk or issue*	*Objective or requirement*	*Mitigation measure*	*Responsibility*	*Frequency of Action*
SITE CLEAN UP AND PREPARED FOR USE	**Storm water pollution**	Do not allow any materials to wash into the storm water system.	Remove erosion and sediment controls only if all bare soil is sealed, covered or re-vegetate. Sweep roadways clean and remove all debris from kerb and gutter areas. Do not wash into drains.	Contractor	-
		Minimise waste	Decontaminate and collect waste in storage area ready for off-site recycling or disposal. Arrange for final collection and removal of excess and waste materials.	Contractor	-
ESTABLISHING PLANTS	**Slow or no re-vegetation to stabilise soil; loss or degradation of habitat**	To ensure re-vegetation to stabilize soil	Agreed schedule for regular follow-up watering, weed control, mulch supplements and amenity pruning, if needed. Replace all plant failures within three month period after planting.	Contractor	To be agreed
MATERIALS FAILURE	***Structural damage. Loss of site materials.***		Inspect all structures monthly to detect any cracking or structural problems. Confirm with designer if there are design problems. Rectify with materials to match, or other agreed solution.	Contractor	-
DRAINAGE FAILURE	**The flooding of structures and basements etc, due to drainage failure**	To ensure effective storm water management on site during the operational phase	All site drainage works should be inspected and maintained on a continues basis.	Maintenance contractor	
SITE AUDIT	***Eventual***	Successful	Routinely audit the works and adjust	Contractor	-

TYPE	***Environmental risk or issue***	***Objective or requirement***	***Mitigation measure***	***Responsibility***	***Frequency of Action***
	project failure	project establishment	maintenance schedule accordingly.		
GENERAL			Open fires and smoking during maintenance works are strictly prohibited.	Contractor Maintenance Contractor	-
			No waste material shall at any stage be disposed of on adjacent properties.	Contractor, Maintenance Contractor	
			Disturbed areas will be rehabilitated and re-vegetated. All declared weeds and invaders should be removed from the open space areas on an ongoing basis.	Landscape Contractor	

5 Procedures for environmental incidents

5.1 Leakages & spills

- Identify source of problem.
- Stop goods leaking, if safe to do so.
- Contain spilt material, using spills kit or sand.
- Notify Environmental Control Officer
- Remove spilt material and place in sealed container for disposal (if possible).
- Environmental Control Officer to follow Incident Management Plan.

5.2 Failure of erosion/sediment control devices

- Prevent further escape of sediment.
- Contain escaped material using silt fence, hay bales, pipes, etc.
- Notify ECO.
- Repair or replace failed device as appropriate.
- Dig/scrape up escaped material; take care not to damage vegetation.
- Remove escaped material from site.
- ECO to follow Incident Management plan.
- Monitor for effectiveness until re-establishment.

5.3 Bank/slope failure

- Stabilize toe of slope to prevent sediment escape using aggregate bags, silt fence, logs, hay bales, pipes, etc.
- Notify ECO.
- ECO to follow Incident Management plan.
- Divert water upslope from failed fence.
- Protect area from further collapse as appropriate.
- Restore as advised by ECO.
- Monitor for effectiveness until stabilized.

5.4 Discovery of rare or endangered species

- Stop work.
- Notify ECO.
- If a plant is found, mark location of plants.
- If an animal, mark location where sighted.
- ECO to identify or arrange for identification of species and or the relocation of the species if possible.
- If confirmed significant, ECO to liaise with Endangered Wildlife Trust.
- Recommence work when cleared by ECO.

5.5 Discovery of archeological or heritage items

- Stop work.
- Do not further disturb the area.
- Notify ECO.
- ECO to arrange appraisal of specimen.
- If confirmed significant, ECO to liaise with National, Cultural and History Museum.
  P.O. Box 28088
  SUNNYSIDE
  0132
  Contact Mr. J. van Schalkwyk
  or
  Mr.Naude

- Recommence work when cleared by ECO.

6 EMPr review

1. The Site supervisor is responsible for ensuring the work crew is complying with procedures, and for informing the work crew of any changes. The site supervisor is responsible for ensuring the work crew is aware of changes that may have been implemented by GDARD before starting any works.

2. If the contractor cannot comply with any of the activities as described above, they should inform the ECO with reasons within 7 working days.

Appendix I

Other information

Appendix Ii

Company Profile and EAP CV

Landscape Architects &
Environmental consultants

P.O.BOX 11375
Maroelana
0161

Tel: (012) 346 3810
Fax: (086) 570 5559

E-mail: lizelle@bokamoso.net
reception@bokamoso.net
Website: www.bokamoso.net

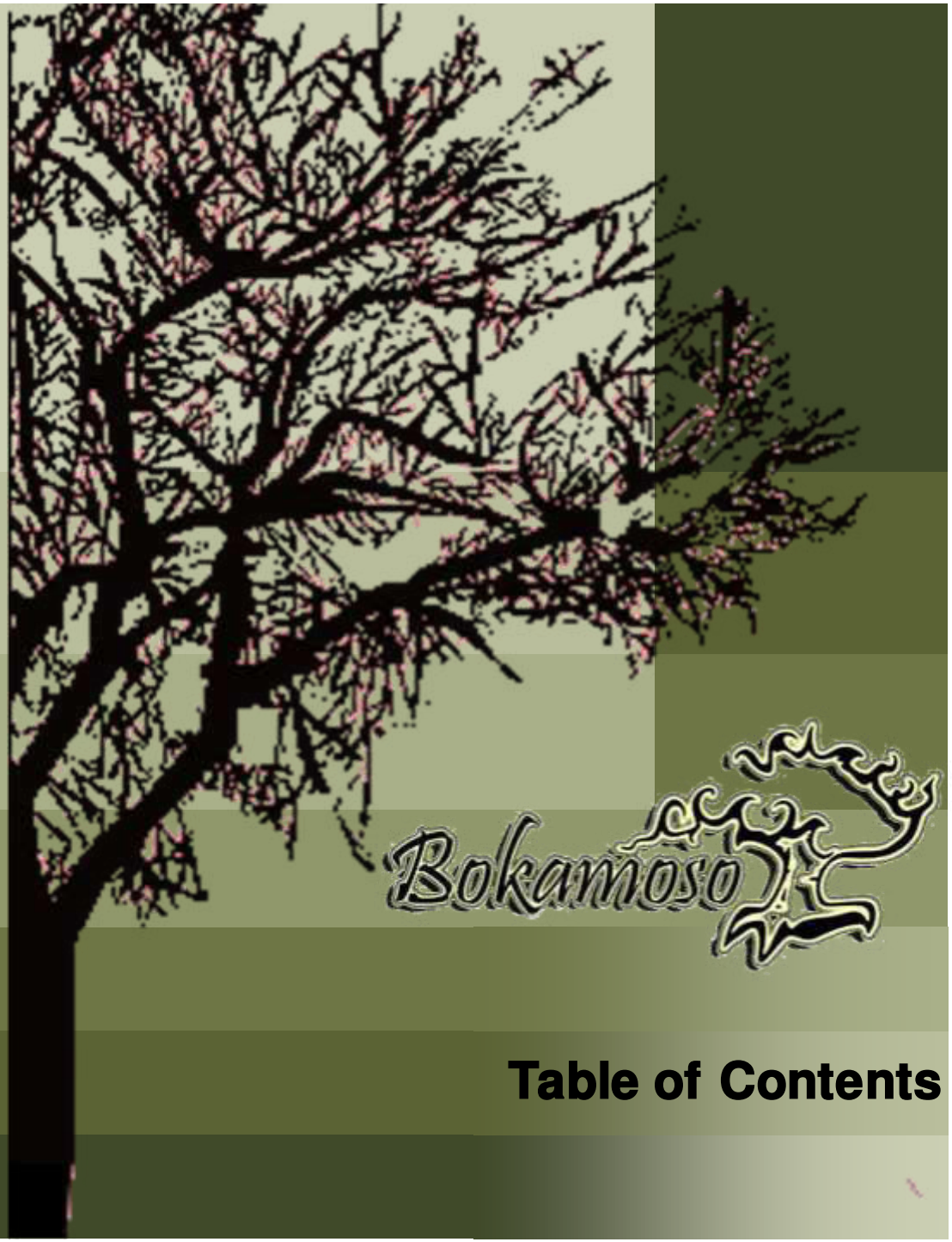
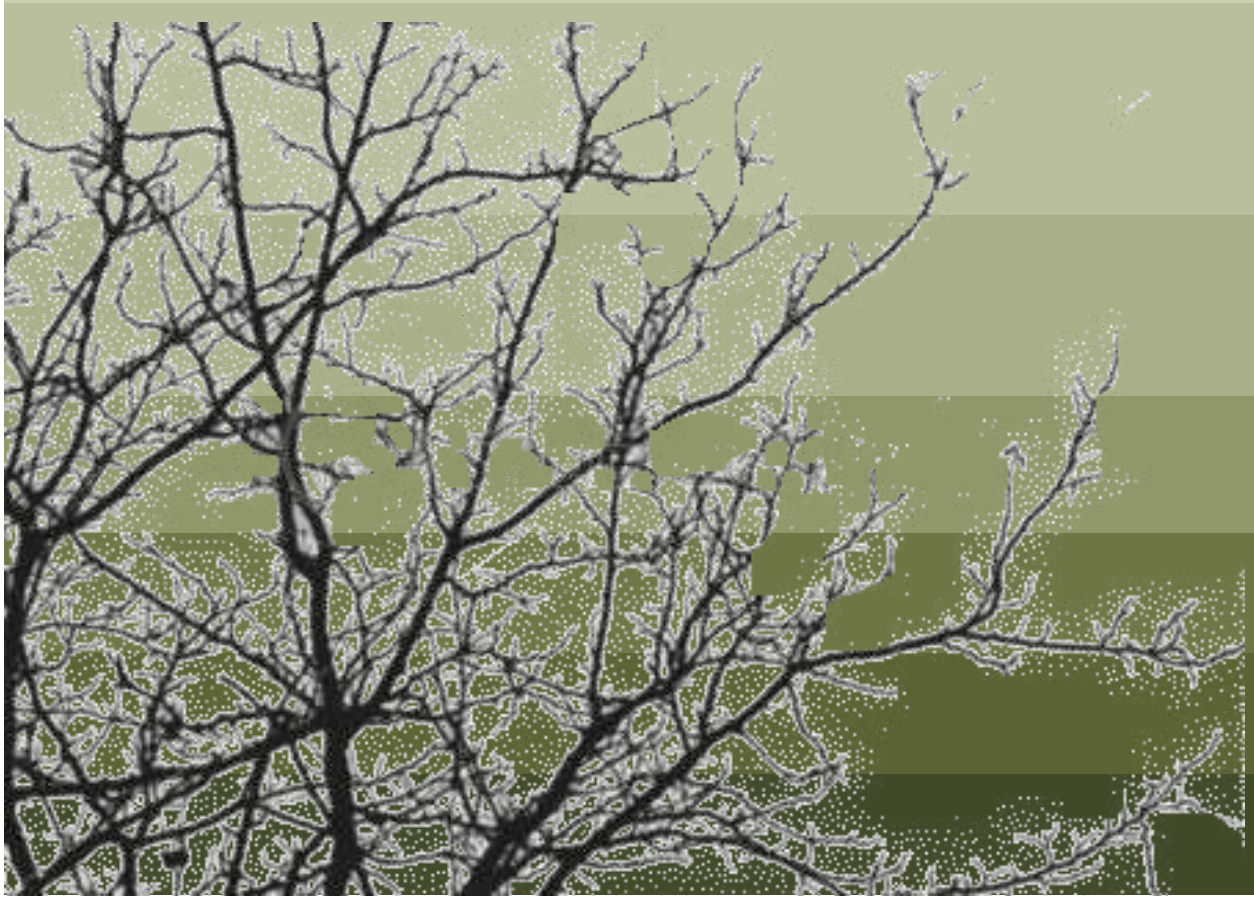


Table of Contents

Bokamoso specialises in the fields of Landscape Architecture and all aspects of Environmental Management and Planning. Bokamoso was founded in 1992 and has shown growth by continually meeting the needs of our clients. Our area of expertise stretches throughout the whole of South Africa. Our projects reflect the competence of our well compiled team. The diversity of our members enables us to tend to a variety of needs. Our integrated approach establishes a basis for outstanding quality. We are well known to clients in the private, commercial as well as governmental sector.

At Bokamoso we stand on a firm basis of environmental investigation in order to find unique solutions to the requirements of our clients and add value to their operations.



Bokamoso

01 Executive Summary

011 Company Overview

Vision:

At Bokamoso we strive to find the best planning solutions by taking into account the functions of a healthy ecosystem. Man and nature should be in balance with each other.

Mission:

We design according to our ethical responsibility, take responsibility for successful completion of projects and constitute a landscape that contributes to a sustainable environment. We add value to the operations of our clients and build long term relationships that are mutually beneficial.

Values:

Integrity

Respect

Bokamoso

Bokamoso stands on the basis of fairness. This include respect within our multicultural team and equal opportunities in terms of gender, nationality and race.

We have a wide variety of projects to tend to, from complicated reports to landscape installation. This wide range of projects enables us to combine a variety of professionals and skilled employees in our team.

Bokamoso further aids in the development of proficiency within the working environment. Each project, whether in need of skilled or unskilled tasks has its own variety of facets to bring to the table.

We are currently in the process of receiving our BEE scorecard. We support transformation in all areas of our company dynamics.

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03 Human Resources

031 Employment Equity

Lizelle Gregory (100% interest)

Lizelle Gregory obtained a degree in Landscape Architecture from the University of Pretoria in 1992 and passed her board exam in 1995.
Her professional practice number is PrLArch 97078.

Ms. Gregory has been a member of both the Institute for Landscape Architecture in South Africa (ILASA) and South African Council for the Landscape Architecture Profession (SACLAP), since 1995.

Although the existing Environmental Legislation doesn't yet stipulate the academic requirements of an Environmental Assessment Practitioner (EAP), it is recommended that the Environmental Consultant be registered at the International Association of Impact Assessments (IAIA). Ms. Gregory has been registered as a member of IAIA in 2007.

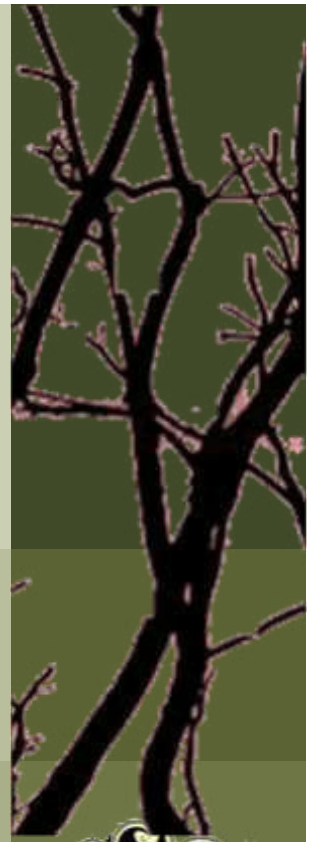
Ms. Gregory attended and passed an International Environmental Auditing course in 2008.
She is a registered member of the International Environmental Management and Assessment Council (IEMA).

She has lectured at the Tshwane University of Technology (TUT) and the University of Pretoria (UP). The lecturing included fields of Landscape Architecture and Environmental Management.

Ms. Gregory has more than 20 years experience in the compilation of Environmental Evaluation Reports:
Environmental Management Plans (EMP);
Strategic Environmental Assessments;
All stages of Environmental input ;
EIA under ECA and the new and amended NEMA regulations and various other Environmental reports and documents.

Ms. Gregory has compiled and submitted more than 600 Impact Assessments within the last 5-6 years. Furthermore, Ms. L. Gregory is also familiar with all the GDARD/Provincial Environmental policies and guidelines. She assisted and supplied GAUTRANS/former PWV Consortium with Environmental input and reports regarding road network plans, road determinations, preliminary and detailed designs for the past 12 years.

Consulting



Anè Agenbacht

Introduction to Sustainable Environmental Management—An overview of Principles, Tools,& Issues (Potch 2006)
Leadership Training School (Lewende Woord 2010)
BA Environmental Management (UNISA 2011)
PGCE Education (Unisa 2013) - CUM LAUDE
Project Manager
More than 10 years experience in the compilation of various environmental reports

Mary-Lee Van Zyl

MSc Plant Science (UP)
BSc (Hons) Plant Science (UP)
BSc Ecology (UP)
More than 3 years working experience in the Environmental field
Specialises in ECO works, Basic Assessments, EIA's, and Flora Reports
Compilation of various Environmental Reports

Dashentha Moodley

BA (Hons) Degree in Environmental Management (UNISA) - CUM LAUDE
Bachelor of Social Science in Geography & Environmental Management (UKZN)
More than 6 years experience in WUL Applications & Integrated Environmental Management within water resource management.
Senior Environmental Practitioner & Water Use Licence Consultant
Specialises in Water Use License & Compilation of various Env. Reports

Adéle Drake

BA Geography & History (UP)
NQF Level 7 Air Quality Management (UJ)
More than 15 years experience in the field of Environmental Management within Mining Industry (surface and underground), Forestry Industry, Renewable Energy Industry (WEF), and Environmental Consulting. Also ISO 14000, ISO 9000, and Safety Management Auditor.

Ronell Kuppen

BSc (Hons) in Geography (UNISA)
BA Environmental and Development (UKZN)
More than 5 years experience in Environmental Consulting
Specializing in WUL Applications, Waste License Applications, EIAs, Basic Assessments, Public Participations, Borrow Pits

Bokamoso

03 Human Resources

033 Personnel

Ben Bhukwana

BSc Landscape Architecture (UP)
More than 6 years experience in the field of Landscape Architecture (Design, Construction, Implementation, and Management).
Specialises in landscape design, ECO, rehabilitation plans and compilation various environmental reports and compilation of tender documents

Juanita de Beer

Diploma Events Management and Marketing (Damelin)
Specializes in Public relations and Public Participation Processes (4 years experience)
Specialises in compiling various environmental reports

Alfred Thomas

CIW Foundation& Internet Marketing (IT Academy)
12 years experience in GIS and IT in general.
GIS Operator and Multimedia Specialist.

Bianca Reyneke

Applying SHE Principles and Procedures (NOSA)
Intro to SAMTRAC Course (NOSA)
SHEQ Coordinator and compilation of environmental reports
Specialises in compiling various environmental reports

A.E. van Wyk

BSc Environmental Sciences (Zoology and Geography)
Specialises in compiling various environmental reports

Elsa Viviers

Interior Decorating (Centurion College)
(Accounting/ Receptionist) and Secretary to Lizelle Gregory

Loura du Toit

N. Dip. Professional Teacher (Heidelberg Teachers Training College)
Librarian and PA to the Project Manager

Merriam Mogalaki

Administration Assistant with in-house training in bookkeeping

Landscape Contracting

Elias Maloka

Assisting with Public Participations and Office Admin
Site manager overseeing landscape installations.
Irrigation design and implementation.
Landscape maintenance
More than 18 years experience in landscape construction works.

The contracting section compromises of six permanently employed black male workers.
In many cases the team consists of up to 12 workers, depending on the quantity of work.

Bokamoso

In-house Specialists

Corné Niemandt

MSc Plant Science (UP 2015) – Cum Laude
BSc (Hons) Zoology (UP 2012)
BSc Ecology (UP 2011)
Specialises in ecological surveys and report writing
Compilation of fauna and flora specialist reports
GIS: Generating maps

Garth van Rooyen

BSc (Hons) Environmental Soil Science
BSc Geology
Soil and Wetland Specialist

Bokamoso

01 Environmental Management Services

- Basic Assessment Reports
- EIA & Scoping Reports
- Environmental Management Plans
- Environmental Scans
- Strategic Environmental Assessments
- EMP for Mines
- Environmental Input and Evaluation of Spatial Development Frameworks
- State of Environmental Reports
- Compilation of Environmental Legislation and Policy Documents
- Environmental Auditing and Monitoring
- Environmental Control Officer (ECO)
- Visual Impact assessments
- Specialist Assistance with Environmental Legislation Issues and Appeals
- Development Process Management
- Water Use License applications to DWA
- Waste License Application

Bokamoso

04 Services

041 Consulting Services

02 Landscape Architecture

- Master Planning
- Sketch Plans
- Planting Plans
- Working Drawings
- Furniture Design
- Detail Design
- Landscape Development Frameworks
- Landscape Development Plans (LDP)
- Contract and Tender Documentation
- Landscape Rehabilitation Works

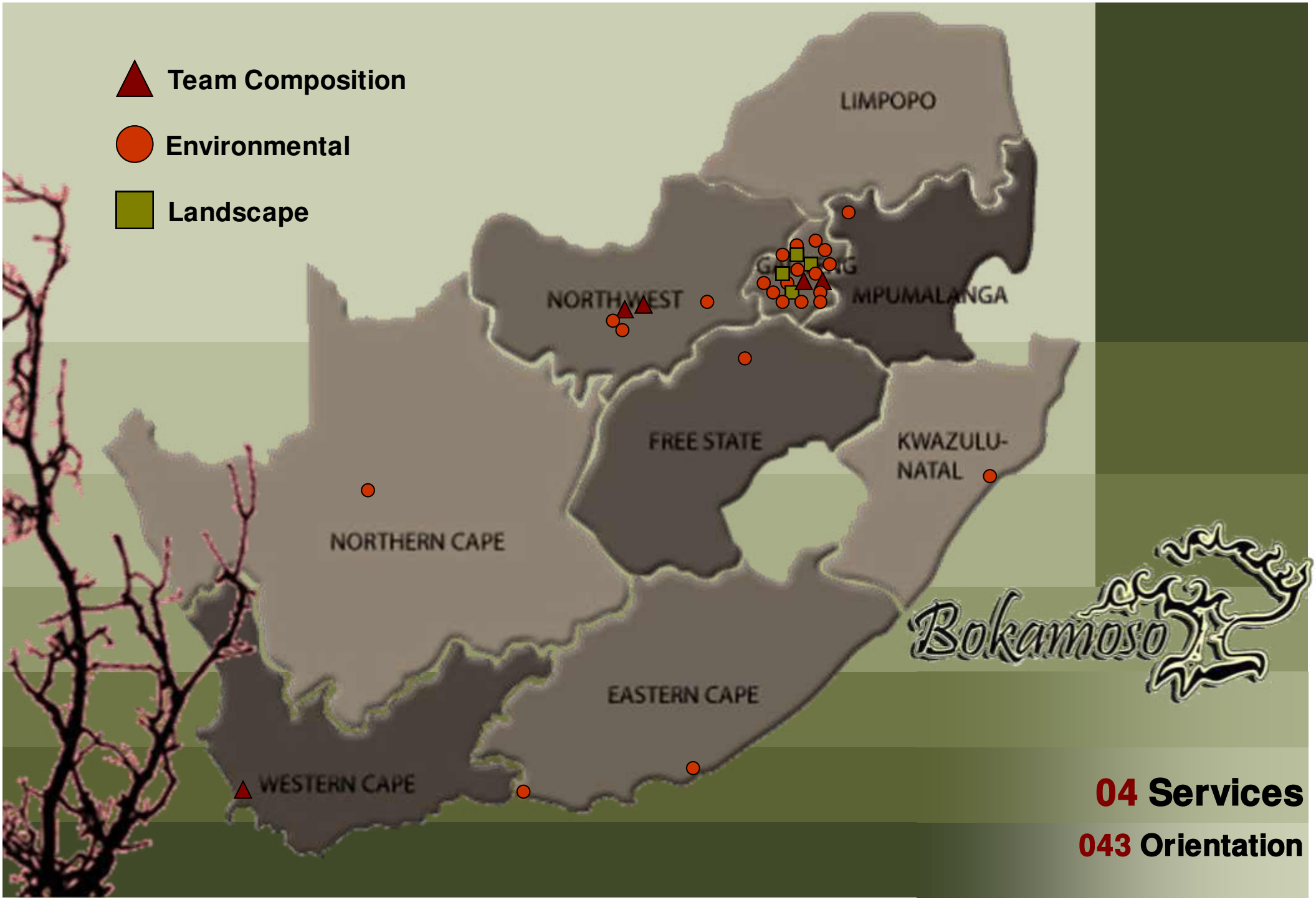
03 Landscape Contracting

Implementation of Plans for:

- Office Parks
- Commercial/ Retail / Recreational Development
- Residential Complexes
- Private Residential Gardens
- Implementation of irrigation systems

04 Services

042 Contracting Services


Team Composition
Environmental
Landscape
LIMPOPO
NORTHWEST
MPUMALANGA
FREE STATE
KWAZULU-
NATAL
NORTHERN CAPE
EASTERN CAPE
WESTERN CAPE
Bokamoso
04 Services
043 Orientation

01 Valpre Bottling Plant, Heidelberg

project

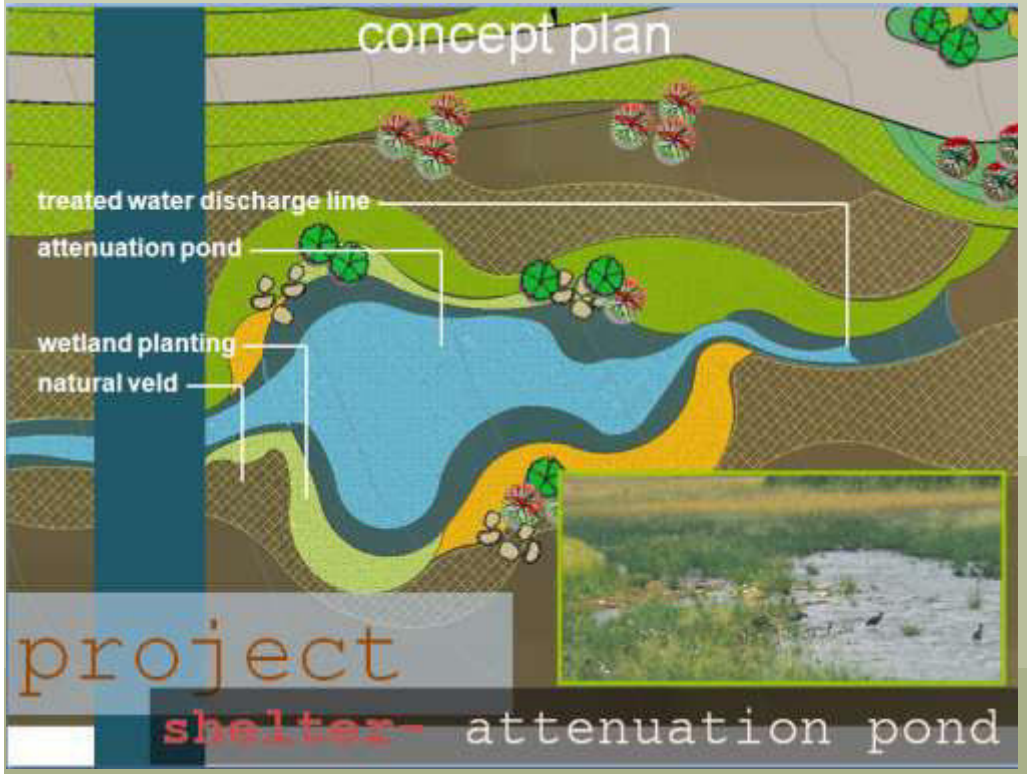
shelter- site plan

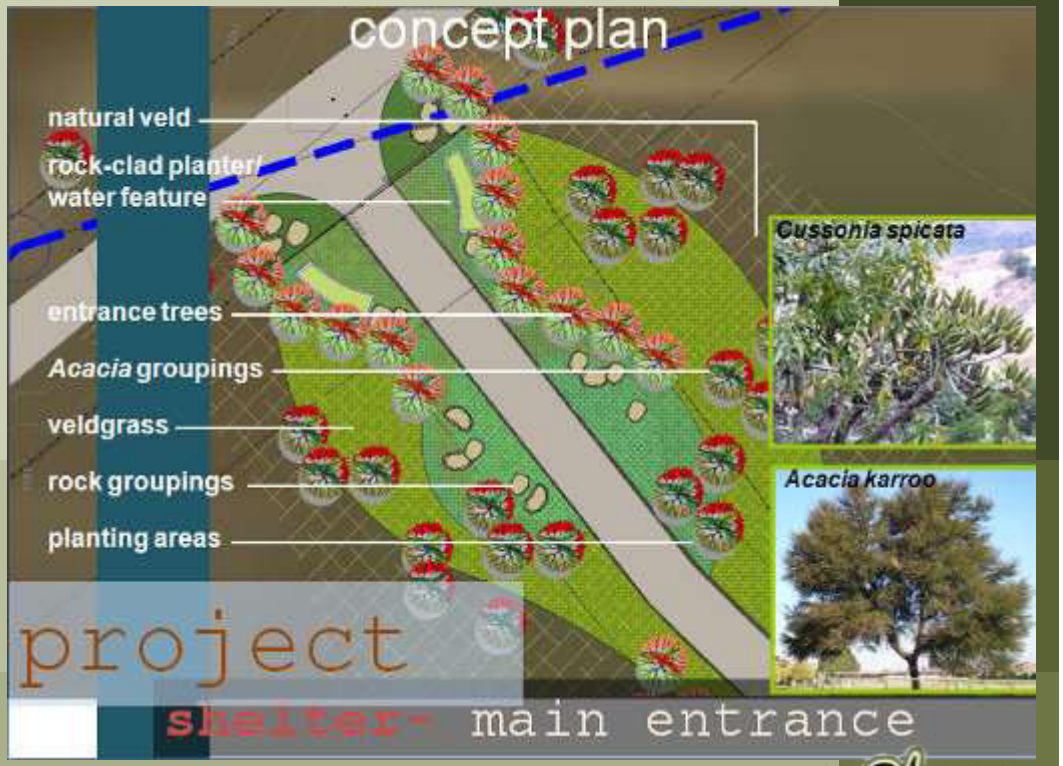
Bokamoso

05 Landscape Projects– Current

051 Commercial

01 Valpre Bottling Plant, Heidelberg





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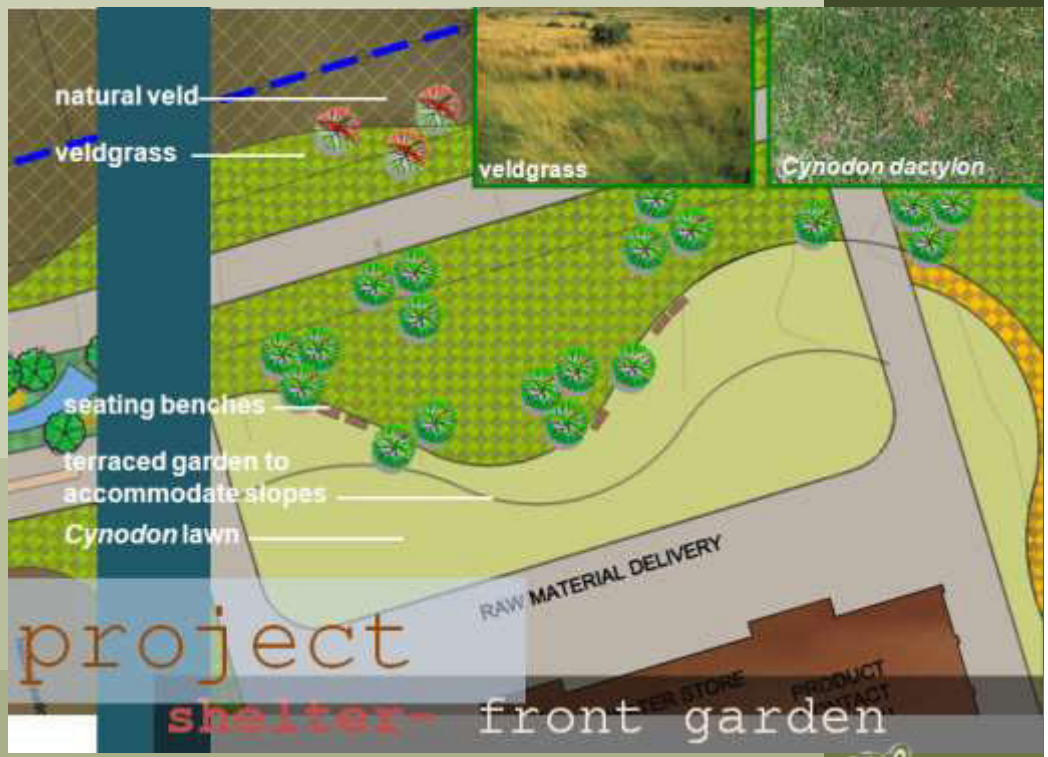
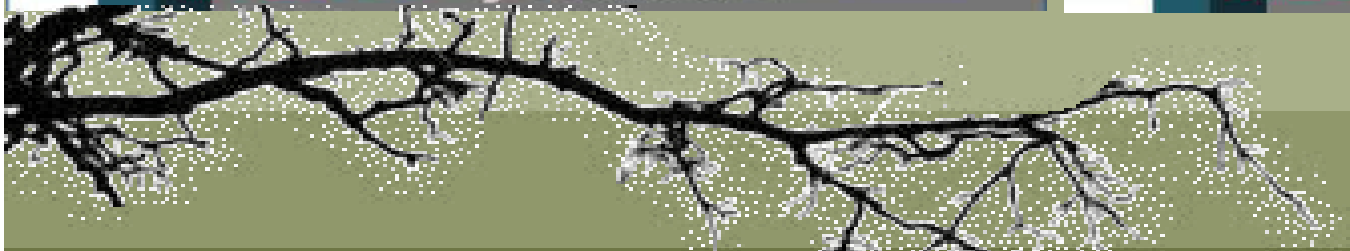
05 Landscape Projects– Current

051 Commercial

01 Valpre Bottling Plant, Heidelberg





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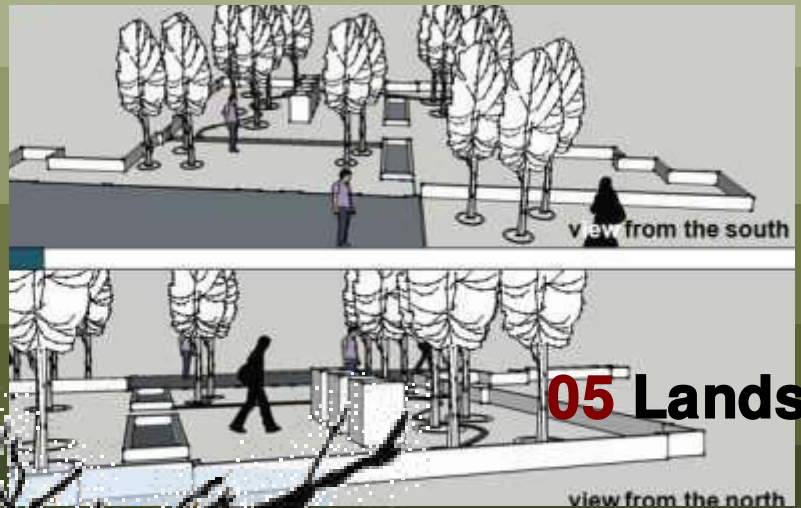
05 Landscape Projects– Current

051 Commercial

01 Valpre Bottling Plant, Heidelberg



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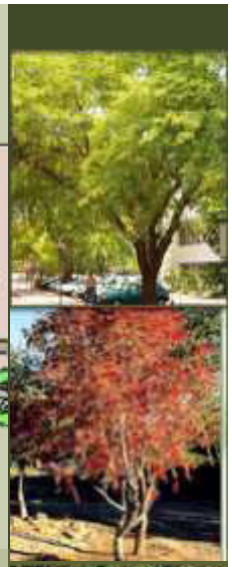
05 Landscape Projects– Current

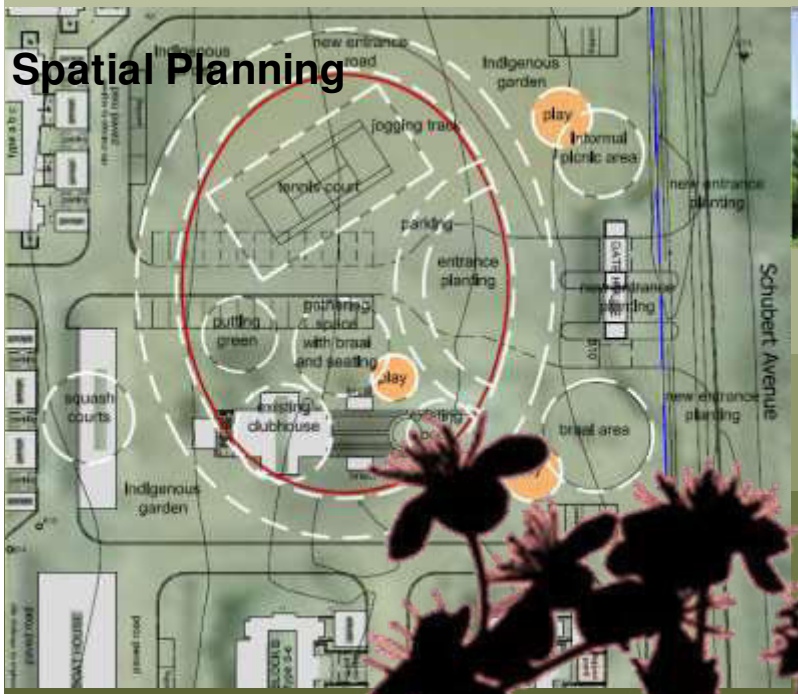
051 Commercial

02 Melodie Waters, Hartebeespoortdam



Streetscape

Spatial Planning



Indigenous Planting

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05 Landscape Projects – Current

052 Commercial/Recreational

02 Melodie waters, Hartebeestpoortdam

Development Framework

Rehabilitation

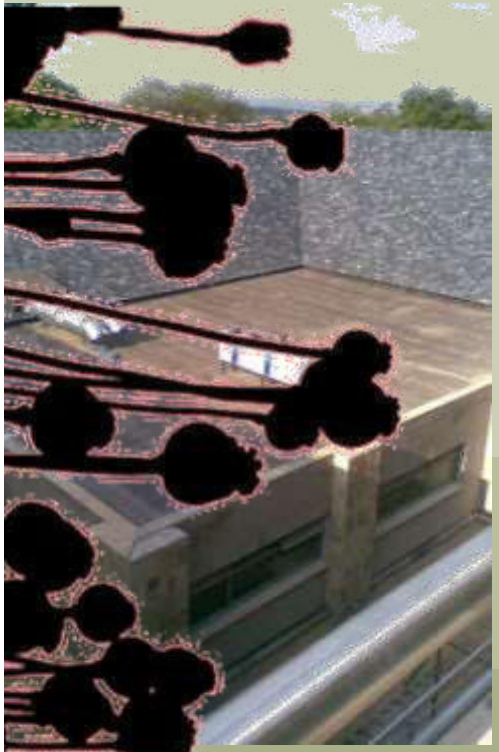
Area Layout

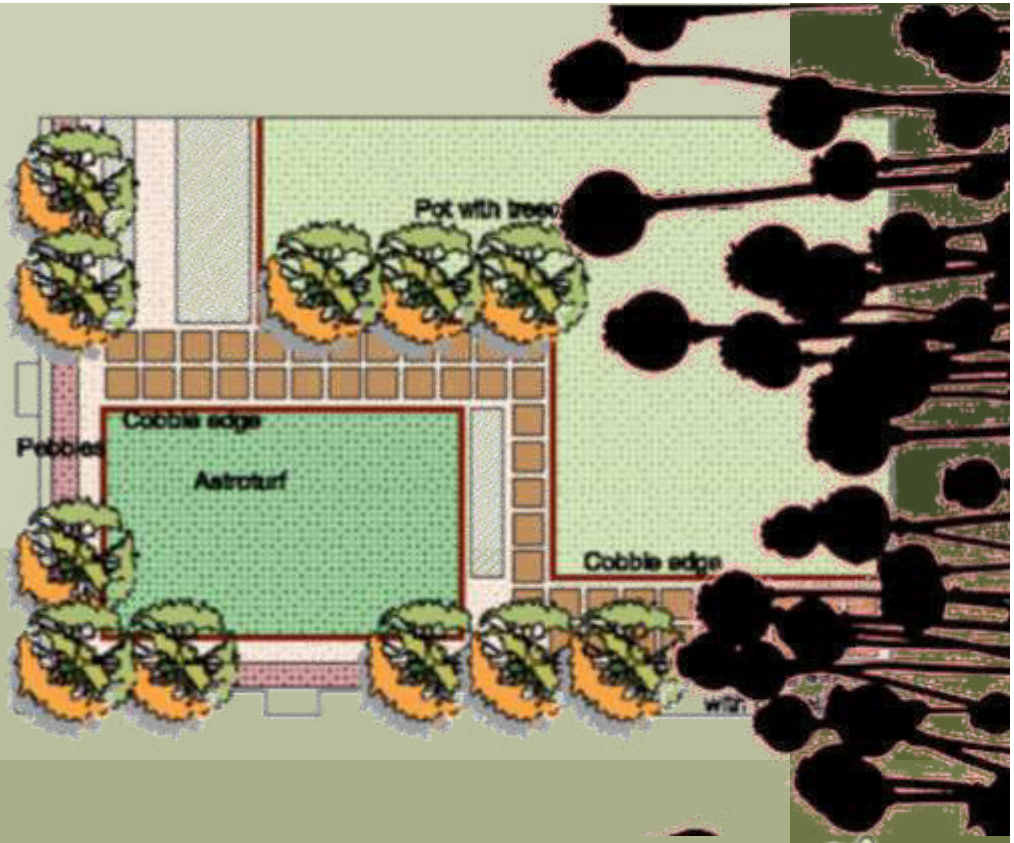
Bokamoso

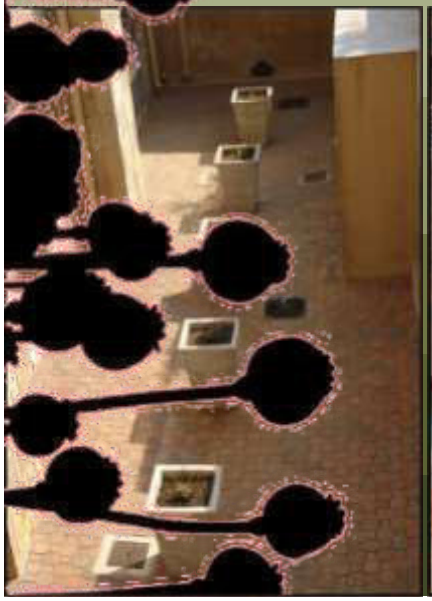
05 Landscape Projects– Current

052 Commercial/Recreational

03 Grain Building, Pretoria





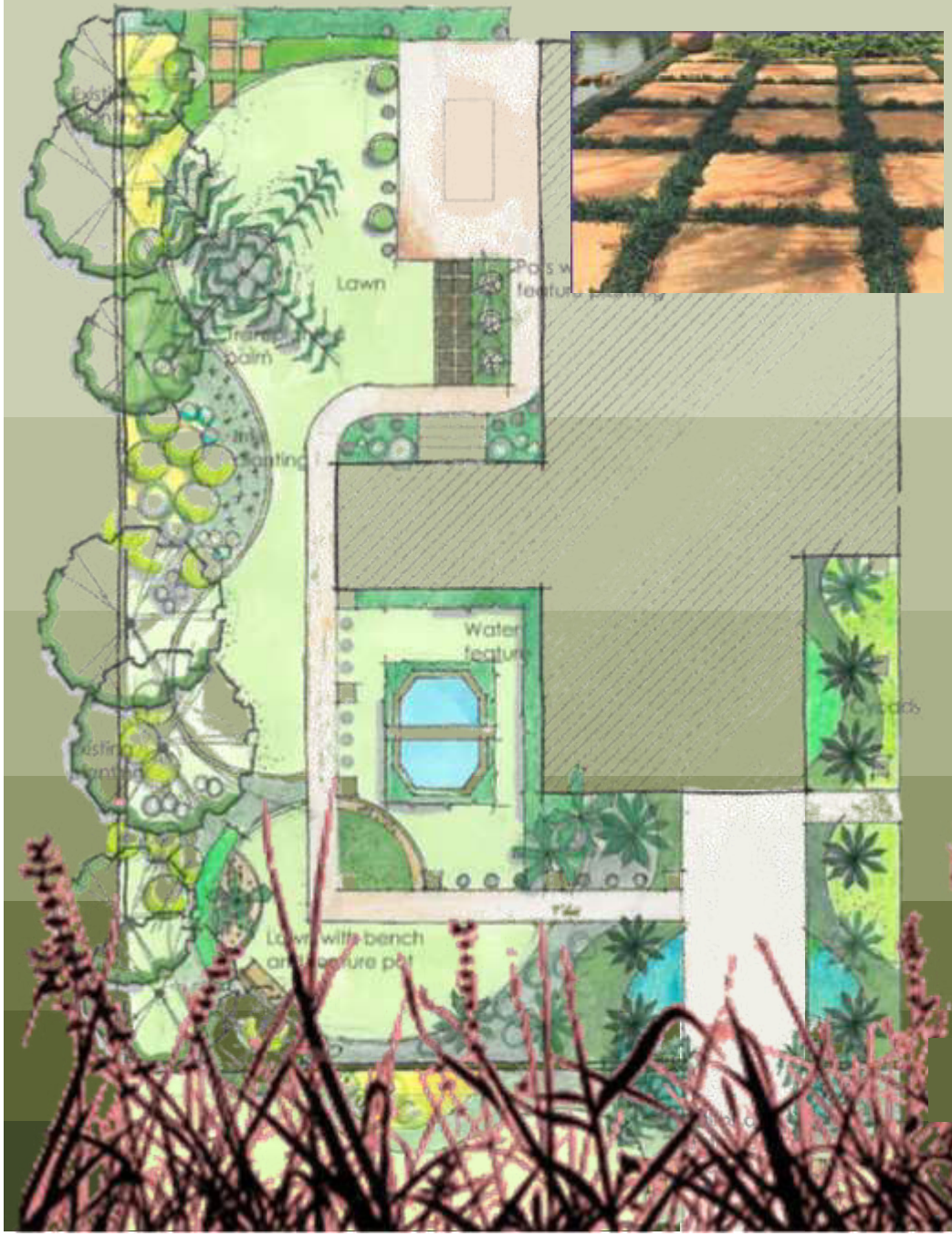


Bokamoso

05 Landscape Projects– Completed

053 Offices

04 Ismail Dawson offices, Pretoria



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05 Landscape Projects – Conceptual

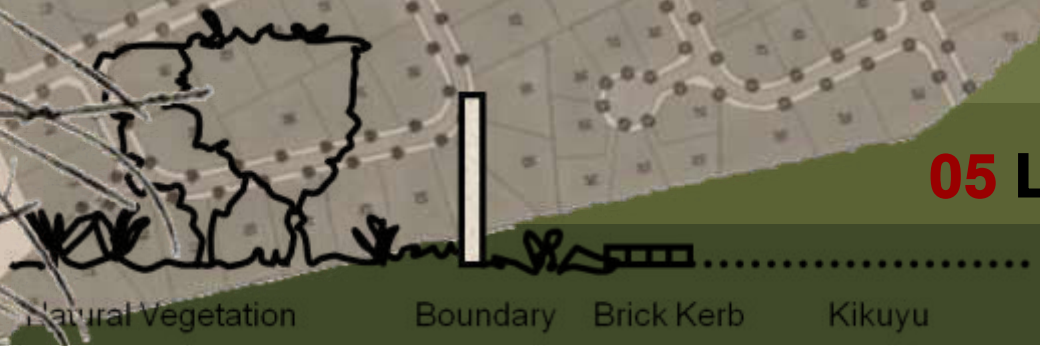
053 Offices

05 Celtic Manor, Pretoria









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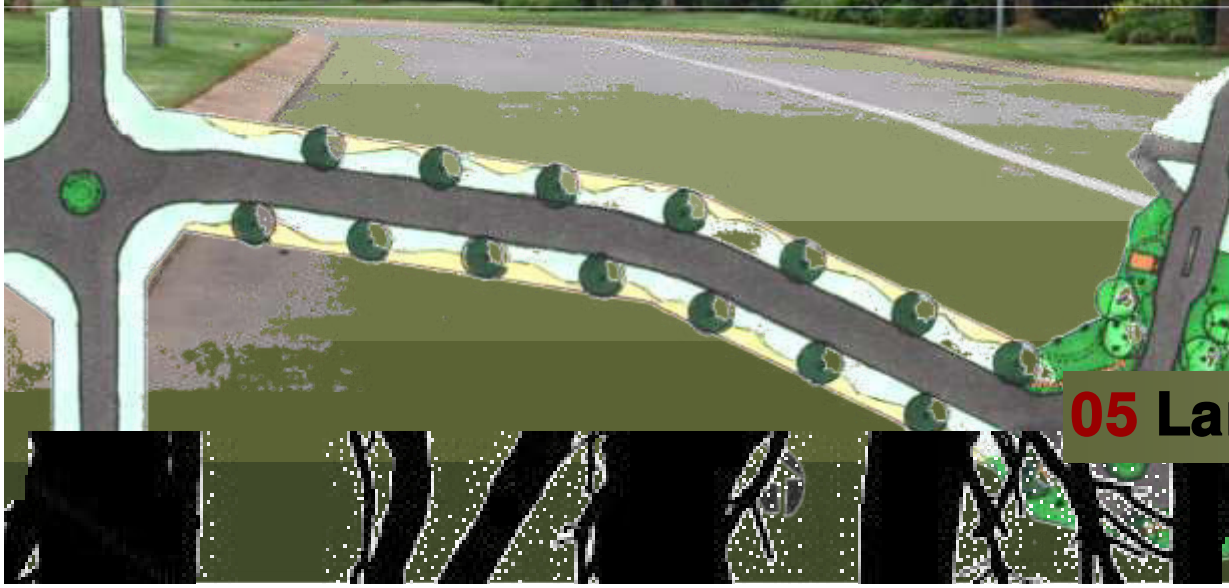
05 Landscape Projects - Completed

054 Complex Development

06 The Wilds, Pretoria



Bokamoso

05 Landscape Projects – Completed

054 Complex Development

07 The Wilds, Pretoria

05 Landscape Projects – Completed

055 Residential

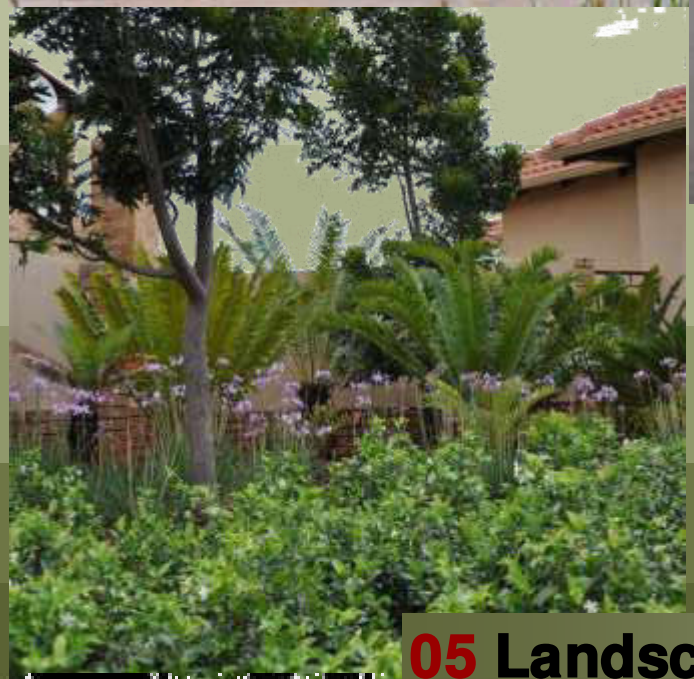
08 The Wilds, Pretoria

Bokamoso

05 Landscape Projects – Completed

055 Residential

09 The Wilds, Pretoria



Bokamoso

05 Landscape Projects – Completed

055 Residential

010 The Wilds, Pretoria

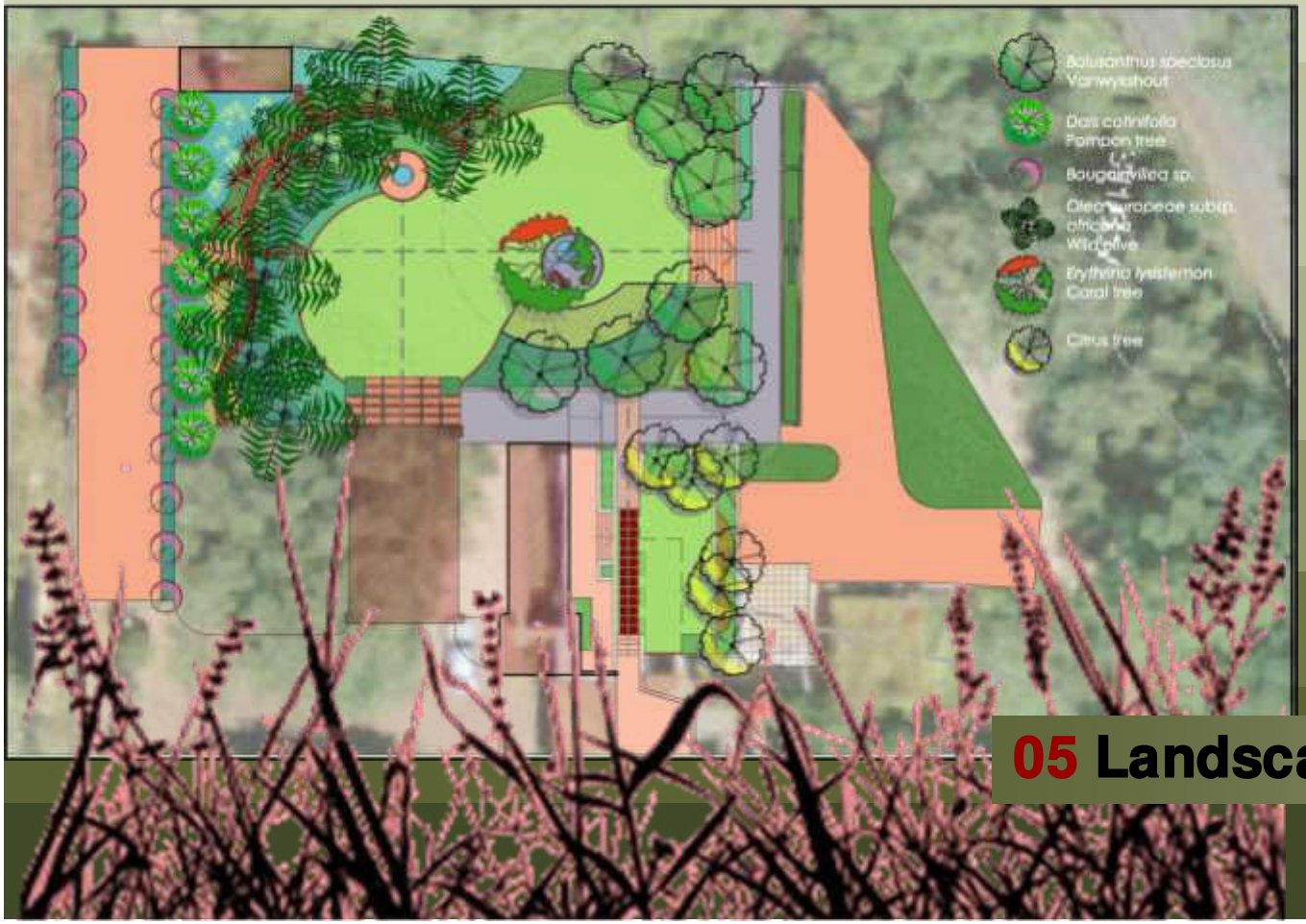
Bokamoso

05 Landscape Projects – Completed

055 Residential

011 Governor of Reserve Bank's Residence, Pretoria

Plant Palette



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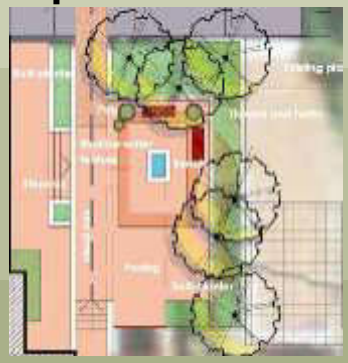

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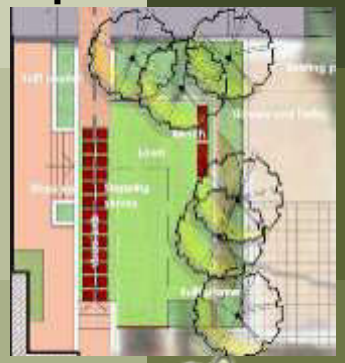


Bokamoso

05 Landscape Projects – Conceptual

055 Residential

012 House Ismail, Pretoria







Front Garden

Back Garden



Bokamoso

05 Landscape Projects - Conceptual

055 Residential

013 Forest Garden, Pretoria

Bokamoso

05 Landscape Projects – Completed

055 Residential

015 Forest Garden, Pretoria

Bokamoso

05 Landscape Projects - Completed

055 Residential

01 Safari Garden Expo

Received a Silver Certificate at the Safari Garden Expo, 2010

Bokamoso

06 Corporate Highlights

061 Awards

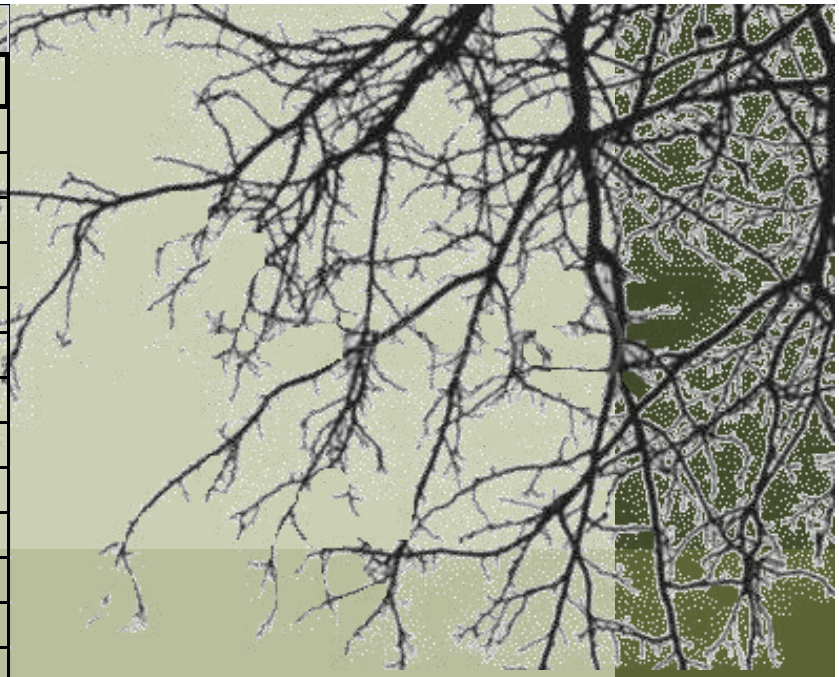
02 UNISA Sunnyside Campus, Pretoria

Best Commercial Paving Plan in Gauteng, 1997

06 Corporate Highlights

061 Awards

Project Name	Status	Project
Environmental Impact Assessment(EIA) and Scoping Report		
Junction 21	ROD	EIA
5 O'clock site access	In Progress	EIA
Bokamoso X 1	In Progress	Scoping & EIA
Doornvallei Phase 6 & 7	In Progress	EIA
Engen Interchange	In Progress	Scoping & EIA
Erasmia X15	In Progress	EIA
Franschkloof	In Progress	EIA
K113	Amendment of ROD	EIA
K220 East	ROD	EIA
K220 West	ROD	EIA
K54 ROD conditions	In Progress	EIA
Knopjeslaagte 95/Peachtree	ROD	EIA
Knopjeslaagte portion 20 & 21	ROD	EIA
Lillieslief/Nooitgedacht	In Progress	EIA
Mooiplaats 70 (Sutherland)	In Progress	EIA
Naauwpoort 1 - 12/Valley View	In Progress	EIA
PeachTree X5	In Progress	EIA
Strydfontein 60	In Progress	EIA
Thabe Motswere	In Progress	Scoping & EIA
Vlakplaats	In Progress	EIA
Waterval Valley	In Progress	EIA
Environmental Opinion		
Doornkloof 68 (Ross)	In Progress	Opinion
Monavoni X 53	In Progress	BA & Opinion
Mooikloof (USN)	In Progress	Opinion
Norwood Mall/Sandspruit	In Progress	Opinion
Riversong X 9	In Progress	Opinion
Sud Chemie	In Progress	Opinion
USN Benjoh Fishing Resort	In Progress	Opinion



The adjacent list host the status of our current projects. Only a selected amount of projects are displayed.

Bokamoso

07 Current Environmental Projects

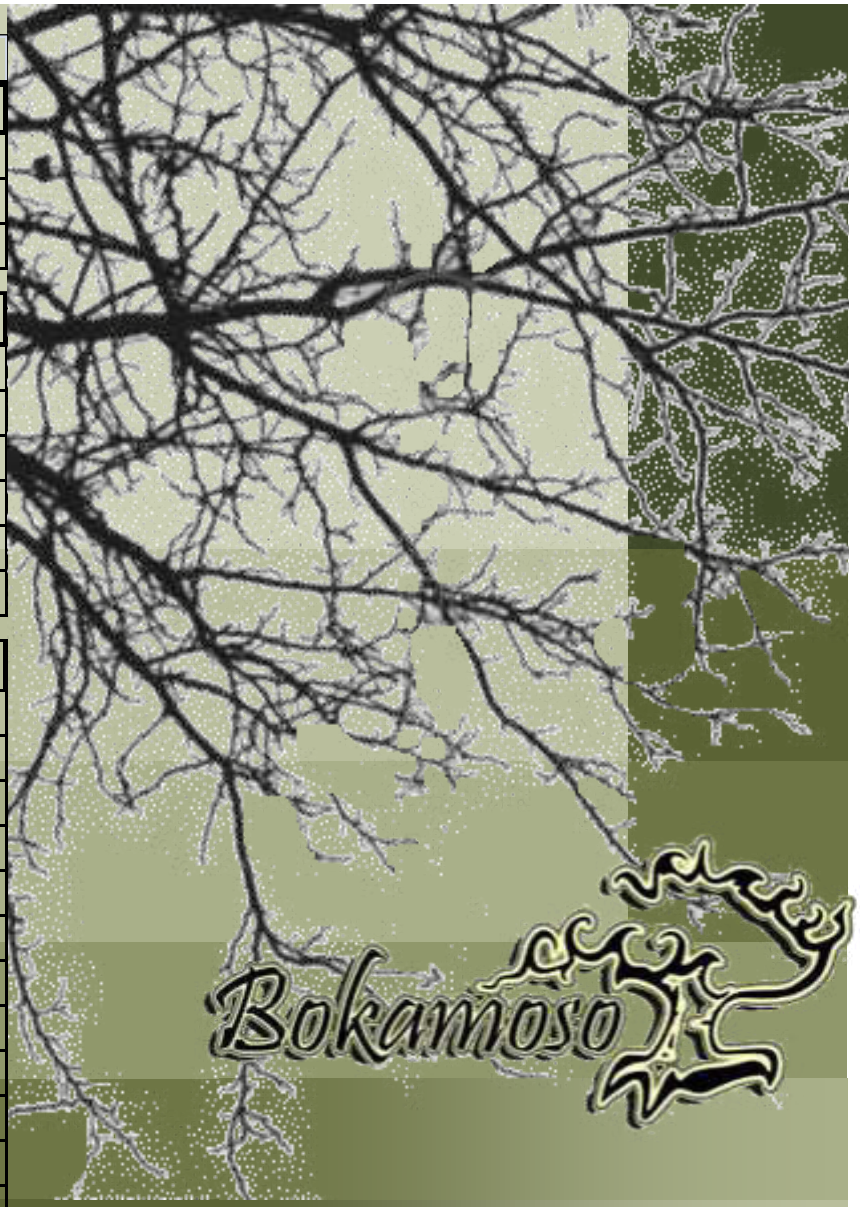
071 EIA, Scoping& Opinion

Project Name	Status	Project
Basic Assessment(BA)		
Annlin X 138	In Progress	BA
Clubview X 29	ROD	BA
Darrenwood Dam	In Progress	BA
Durley Holding 90 & 91	In Progress	BA
Elim	In Progress	BA
Fochville X 3	In Progress	BA
Hartebeeshoek 251	In Progress	BA
Klerksdorp (Matlosana Mall)	In Progress	BA
Monavoni External Services	ROD	BA
Monavoni X 45	Amendment of ROD	BA
Montana X 146	In Progress	BA
Rooihuiskraal X29	In Progress	BA
Thorntree Mall	In Progress	BA
Environmental control officer (ECO)		
Grace Point Church	In Progress	ECO
R 81	In Progress	ECO
Highveld X 61	In Progress	ECO
Mall of the North	In Progress	ECO
Olievenhoutbosch Road	In Progress	ECO
Orchards 39	In Progress	ECO
Pierre van Ryneveld Reservoir	In Progress	ECO
Project Shelter	In Progress	ECO
S24 G		
Wonderboom	In Progress	S24 G
Mogwasi Guest houses	Completed	S24 G

07 Current Environmental Projects

072 BA, ECO & S24 G

Project Name	Status	Project
Objection		
Colesberg WWTW	In Progress	Objection
Nigel Steelmill	Completed	Objection
Chantilly Waters	Completed	Objection
Development facilitation Act- Input (DFA)		
Burgersfort	In Progress	DFA & BA
Doornpoort Filling Station	In Progress	DFA & EIA & Scoping
Eastwood Junction	In Progress	DFA
Ingersol Road (Erf 78, 81 - 83)	In Progress	DFA
Roos Senekal	In Progress	DFA & EIA & Scoping
Thaba Meetse 1	In Progress	DFA & EIA & Scoping
Water Use License Act (WULA)		
Britstown Bulk Water Supply	In Progress	WULA
Celery Road / Green Channel	In Progress	WULA
Clayville X 46	In Progress	WULA
Dindingwe Lodge	In Progress	WULA
Doornpoort Filling Station	In Progress	WULA+DFA+EIA+SC
Eco Park Dam	In Progress	WULA
Groote Drift Potch	In Progress	WULA
Jozini Shopping Centre	In Progress	WULA+BA
K60	Completed	WULA
Maloto Roads	In Progress	WULA
Kwazele Sewage Works	In Progress	WULA
Monavoni External Services	In Progress	WULA+BA
Nyathi Eco Estate	In Progress	WULA
Prairie Giants X 3	In Progress	WULA
Waveside Water Bottling Plant	Completed	WULA



07 Current Environmental Projects

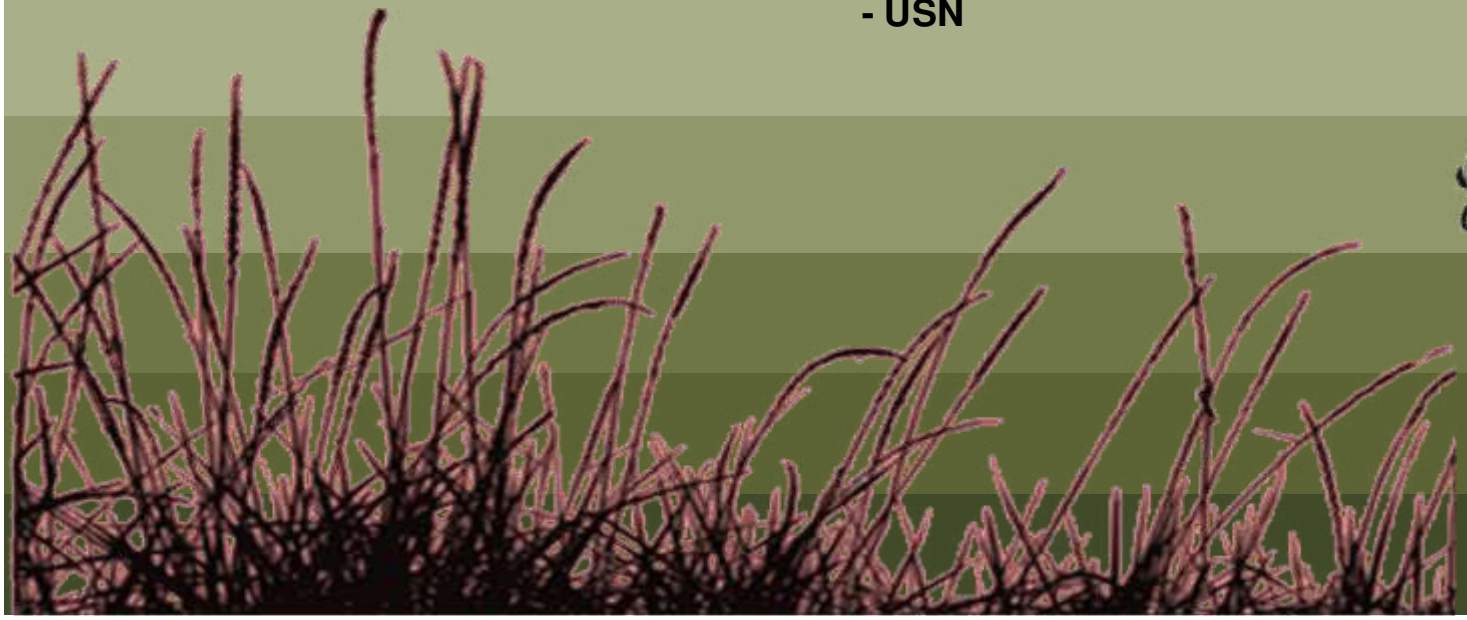
073 Objection, DFA & WULA

Project Name	Status	Project
Environmental Management Plan(EMP)		
Heidelberg X 12	ROD	EMP
Monavoni Shopping Centre	Completed	EMP
Forest Hill Development	Completed	EMP
Weltevreden Farm 105KQ	Completed	EMP+EIA
Raslouw Holding 93	Completed	EMP+BA
Durley Development	Completed	EMP+BA
Rooihuiskraal North X 28	Completed	EMP
Rehabilitation Plan		
Norwood Mall/Sandspruit	In Progress	Rehabilitation
Project Shelter Heidelberg	In Progress	Rehabilitation
Sagewood Attenuation Pond	ROD	Rehabilitation
Velmore Hotel	Completed	Rehabilitation
Grace Point Church	Completed	Rehabilitation
Mmamelodi Pipeline	Completed	Rehabilitation
Visual Impact Assessment		
Swatzkop Industrial Developme	Completed	Assessment +DFA
Erasmia	Completed	Assessment
Signage Application		
Menlyn Advertising	Completed	Signage
The Villa Mall	Completed	Signage+EMP+BA

07 Current Environmental Projects

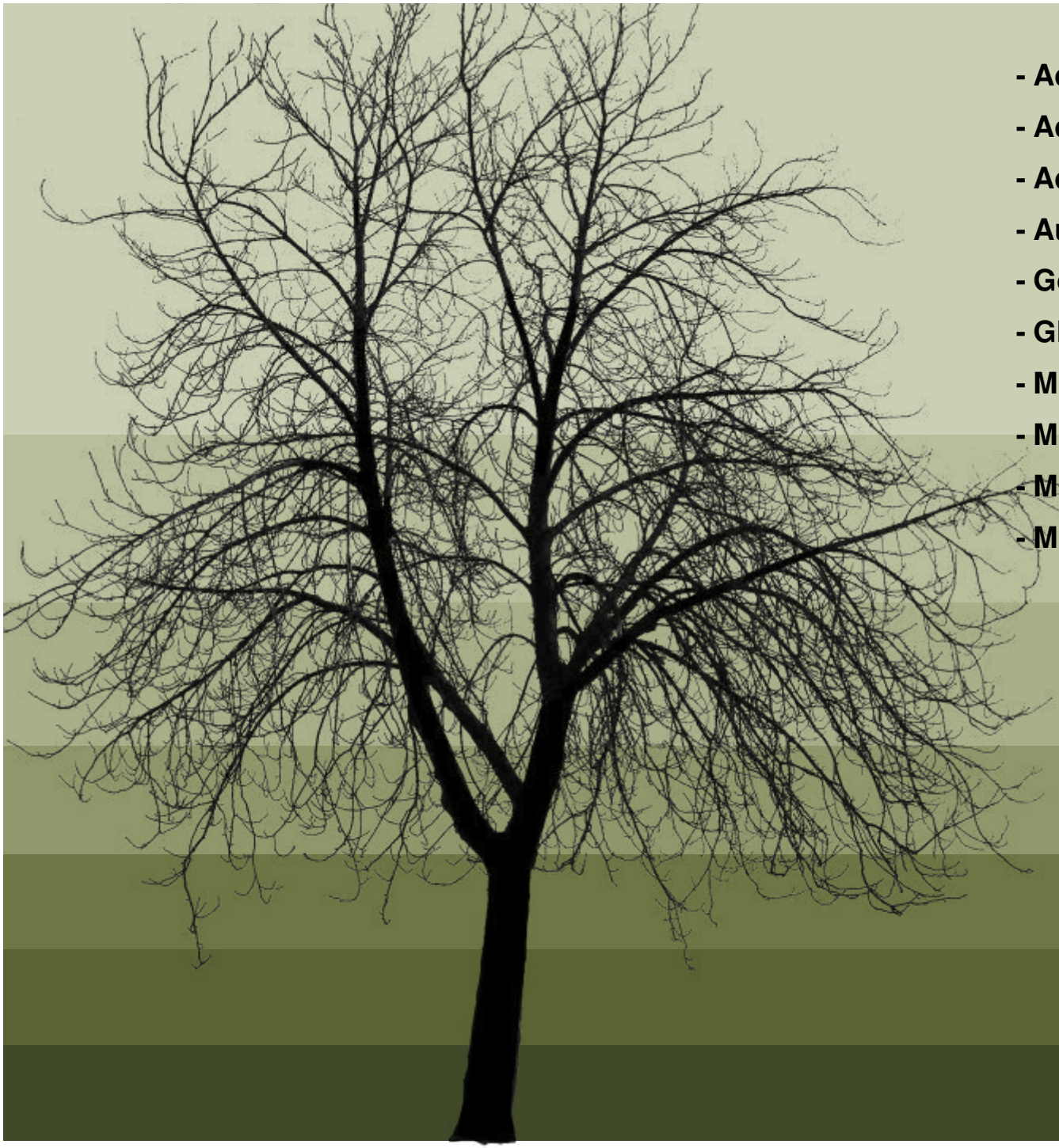
074 EMP, Rehabilitation , Waste Management & Signage Application

- Billion Property Group
- Cavaleros Developments
- Centro Developers
- Chaimberlains
- Chieftain
- Century Property Group
- Coca Cola
- Elmado Property Development
- Flanagan & Gerard
- Gautrans
- Hartland Property Group
- Moolman Group
- MTN
- M&T Development
- Old Mutual
- Property Investment Company
- Petroland Developments
- RSD Construction
- SAND
- Stephan Parsons
- Twin City Developments
- Urban Construction
- USN



Bokamoso

08 Indicative Clients



- Adobe Illustrator CS3
- Adobe Photoshop CS3
- Adobe InDesign CS3
- AutoCAD
- Google SketchUP
- GIS
- Microsoft Office Word
- Microsoft Office Excel
- Microsoft Office Publisher
- Microsoft Office Power Point

Bokamoso

09 Tools

Qualifications And Experience In The Field Of Environmental Planning And Management (Lizelle Gregory (Member Bokamoso)):

Qualifications:

-Qualified as ***Landscape Architect*** *at UP 1991;*
-Qualified as ***Professional Landscape Architect in 1997****;*
-A Registered Member at The ***South African Council for the Landscape Architect Profession (SACLAP)*** *with Practise Number:* ***PrLArch97078****;*
- A Registered Member at the ***International Association for Impact Assessment Practitioners (IAIA)****;*
- Qualified as an ***Environmental Auditor in July 2008*** *and also became a Member of the International Environmental Management Association (IEMAS) in 2008.*

Working Experience:

-Worked part time at Eco-Consult – 1988-1990;
-Worked part time at ***Plan Associates as Landscape Architect in training*** *– 1990-1991;*
-Worked as Landscape Architect at ***Environmental Design Partnership (EDP)*** *from 1992 - 1994*
-Practised under ***Lizelle Gregory Landscape Architects*** *from 1994 until 1999;*
*-****Lectured*** *at Part-Time at* ***UP*** *(1999) – Landscape Architecture and* ***TUT*** *(1998- 1999)- Environmental Planning and Plant Material Studies;*
-Worked as ***part time Landscape Architect and Environmental Consultant at Plan Associates*** *and* ***managed their environmental division for more that 10 years*** *– 1993 – 2008 (assisted the* ***PWV Consortium*** *with various road planning matters which amongst others included environmental Scans, EIA's, Scoping reports etc.)*
-Renamed business as ***Bokamoso in 2000*** *and is the only member of Bokamoso Landscape Architects and Environmental Consultants CC;*
*-****More than 20 years experience in the compilation of Environmental Reports,*** *which amongst others included the compilation of various* ***DFA Regulation 31 Scoping Reports****, EIA's for EIA applications in terms of the applicable environmental legislation, Environmental Management Plans, Inputs for Spatial Development Frameworks, DP's, EMF's etc. Also included EIA Application on and adjacent to mining land and slimes dams (i.e. Brahm Fisherville, Doornkop)*

Qualifications And Experience In The Field Of Landscape Architecture (Lizelle Gregory (Member Bokamoso)):

Landscape Architecture:

-Compiled landscape and rehabilitation plans for more than 22 years.

The most significant landscaping projects are as follows:
-Designed the Gardens of the Witbank Technicon (a branch of TUT). Also supervised the implementation of the campus gardens (2004);
-Lizelle Gregory was the Landscape Architect responsible for the paving and landscape design at the UNISA Sunnyside Campus and received a Corobrick Golden Award for the paving design at the campus (1998-2004);
-Bokamoso assisted with the design and implementation of a park for the City of Johannesburg in Tembisa (2010);
-The design and implementation of the landscape gardens (indigenous garden) at the new Coca-Cola Valpre Plant (2012-2013);
-Responsible for the rehabilitation and landscaping of Juksei River area at the Norwood Shopping Mall (johannesburg) (2012-2013);
-Designed and implemented a garden of more than 3,5ha in Randburg (Mc Arthurpark). Bokamoso also seeded the lawn for the project (more than 2,5 ha of lawn successfully seeded) (1999);
-Bokamoso designed and implemented more than 800 townhouse complex gardens and submitted more than 500 Landscape Development Plans to CTMM for approval (1995 – 2013);
-Assisted with Landscape Designs and the Masterplan at Eco-Park (M&T Developments) (2005-2011);
-Bokamoso designed and implemented an indigenous garden at an office park adjacent to the Bronberg. In this garden it was also necessary to establish a special garden for the Juliana Golden Mole. During a recent site visit it was established that the moles are thriving in this garden. Special sandy soils had to be imported and special indigenous plants had to be established in the natural section of the garden.

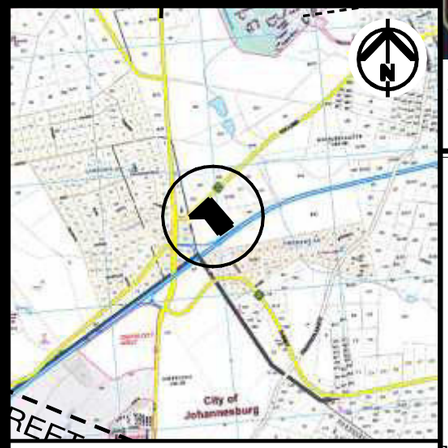
-Lizelle Gregory also owns her own landscape contracting business**. For the past 20 years she trained more than 40 PDI jobless people (sourced from a church in Mamelodi)** to become landscape contracting workers. All the workers are (on a continuous basis) placed out to work at nurserys and other associated industries;
-Over the past 20 years the Bokamoso team compiled more than 800 landscape development plans and also implemented most of the gardens. Bokamoso also designed and implemented the irrigation for the gardens (in cases where irrigation was required). Lizelle regarded it as important to also obtain practical experience in the field of landscape implementation.

Appendix Iii

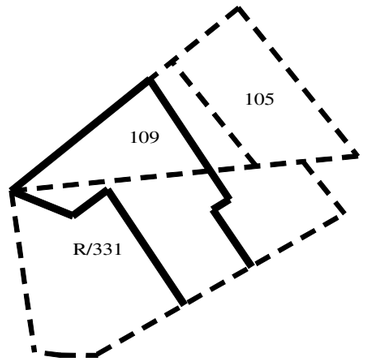
Enlarged Figures

PROPOSED TOWNSHIP: PEACH TREE EXTENSION 23

LOCALITY MAP 1:20 000



GEOTECHNICAL ZONES



THIS IS TO CERTIFY THAT THE TOWNSHIP LAYOUT ON THE PLAN IS IN ACCORDANCE WITH THE PROVISIONS AND RECOMMENDATIONS AS SET OUT IN THE GEOTECHNICAL INVESTIGATION FOR THE PROPOSED TOWNSHIP.

GEOTECHNICAL ZONES:

ZONE	DESCRIPTION
P-C2-S2	THE ENTIRE SITE IS ZONED - NHBRC ZONE P(FILL)-C2-S2

FLOOD LINE CERTIFICATION

1 : 50 AND 1 : 100 YEAR FLOODS

I HEREBY CERTIFY THAT IN TERMS OF SECTION 144 OF THE NATIONAL WATER ACT, ACT OF 1996, IT IS HEREBY CERTIFIED THAT THE TOWNSHIP IS NOT SUBJECT TO A FLOOD WITH AN EXPECTED FREQUENCY OF 1 : 50 YEARS AND 1 : 100 YEARS.

GENERAL NOTE:

1. CONTOURS: SUPPLIED BY ISAZI SURVEYS LAND SURVEYORS.
   1,00m INTERVALS
   DATUM: SEA LEVEL
   SYSTEM WGS
   THE CONTOURS ARE IN ACCORDANCE WITH REGULATION 18(1) OF THE TOWN-PLANNING AND TOWNSHIPS ORDINANCE, 1986
2. ALL DIMENSIONS AND AREAS ARE APPROXIMATE PENDING FINAL SURVEY.
3. PROPOSED PHASES SUBJECT TO CHANGE.
4. REPRESENTS A GEOTECHNICAL ZONE LINE.
5. REPRESENTS A LINE OF NO ACCESS.
6. REPRESENTS THE RELEVANT BUILDING LINES.

SERVITUDE NOTE:

1. EXISTING SERVITUDES TO BE INCORPORATED IN THE DESIGN OF THE TOWNSHIP.
2. PROPOSED 5m WIDE WATER SERVITUDE OVER ERVEN 9 AND 10.
3. PROPOSED ROW SERVITUDE OVER ERVEN 9 AND 10.

urban innovate

URBAN INNOVATE CONSULTING CC
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FAX: 086 592 9974
E-MAIL: info@urbaninnovate.co.za
www.urbanonnovate.co.za
PO BOX 27011
MONUMENT PARK
0105

PLAN No: PEACH TREE X23/1 DATE: AUG 2016

LAND USE

USE ZONE	ERF NUMBERS	TOT. NO. OF ERVEN	MIN. ERF SIZE (m²)	AVERAGE	TOTAL AREA (Ha)	
"INDUSTRIAL 2" FOR BUSINESS BUILDINGS, COMMERCIAL USE, LIGHT INDUSTRY, CAFETERIA, CAR WASH, PLACE OF REFRESHMENT, PARKING GARAGE, RETAIL INDUSTRY AND SHOPS.	1 - 7	7	N/A	N/A	10,8900	92,52
"SPECIAL" FOR ACCESS AND ACCESS CONTROL	8, 9	2	N/A	N/A	0,8800	7,48
EXISTING STREETS AND WIDENING	N/A	N/A	N/A	N/A	N/A	N/A
	TOTAL	9			11,7700	100,00

SITUATED ON PART OF PORTION 109 AND REM/331 OF THE FARM KNOPJESLAAGTE 385-JR.
REPRESENTED BY THE FIGURE A-B-C-D-E-F-G-H-J-K-L-M-N-O-P-Q-R-S-A

CITY OF TSHWANE METROPOLITAN MUNICIPALITY, GAUTENG

PORTION 107
KNOPJESLAAGTE 385-JR

PORTION 106
KNOPJESLAAGTE 385-JR

PORTION 11
KNOPJESLAAGTE

PEACH TREE X21

PEACH TREE X22

PEACH TREE X24

PORTION 105
KNOPJESLAAGTE 385-JR

PORTION 914

PORTION 109
KNOPJESLAAGTE 385-JR

R/PORTION 331
KNOPJESLAAGTE 385-JR

REM/PTN 22
KNOPJESLAAGTE 385-JR

M34 KRUGERSDORP PRETORIA ROAD

N14-HIGHWAY (P158/2)

16m BUILDING LINE

PROPOSED 25m STREET

PROPOSED 20m STREET

5m WIDE R.O.W SERVITUDE

5m WIDE WATER PIPELINE SERVITUDE S.G. No. 10048/2007

20m R.O.W SERVITUDE (FUTURE ROAD)

30m BUILDING LINE

20m BUILDING LINE

1 1,9485 Ha
2 1,7940 Ha
3 1,3350 Ha
4 1,1090Ha
5 1,0770 Ha
6 1,7915 Ha
7 1,8265 Ha
8 0,4760 Ha
9 0,4000 Ha

A B C D E F G H J K L M N O P Q R S

X 2866500 X 2866800 X 2867100
Y 97200 Y 96900 Y 96600 Y 96300 Y 96000 Y 95700 Y 95600 Y 95500

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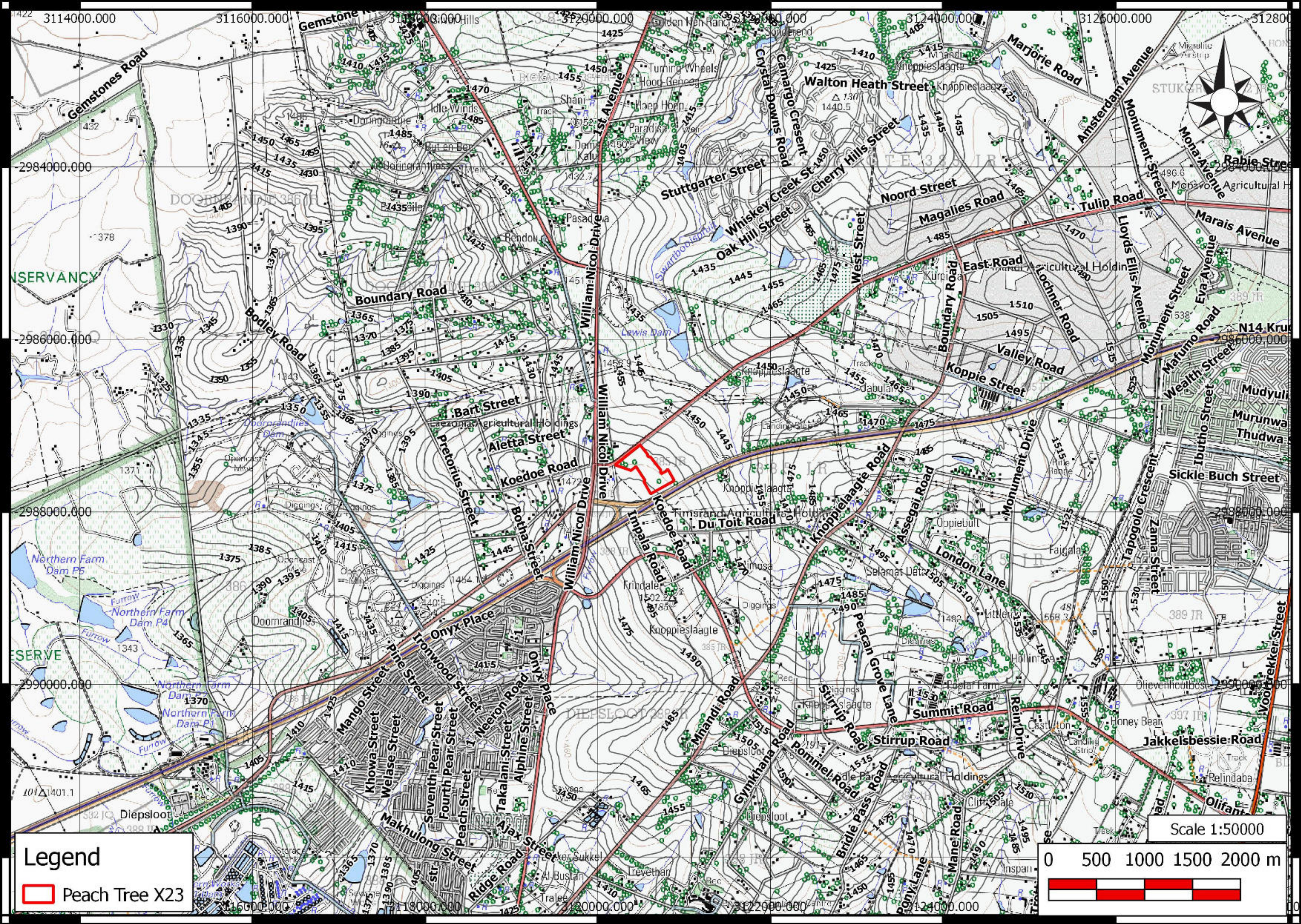

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Bodley Road
Bart Street
Aletta Street
Koedoe Road
Pretorius Street
Botha Street
William Nicol Drive
1st Avenue
Stuttgarter Street
Whiskey Creek St
Cherry Hills Street
Oak Hill Street
Crystal Downs Road
Camargo Crescent
Walton Heath Street
Noord Street
Magalies Road
Tulip Road
Marjorie Road
Amsterdam Avenue
Monument Street
Lloyds Ellis Avenue
Marais Avenue
East Road
Lochner Road
Valley Road
Koppie Street
West Street
Knoppieslaagte Road
Assegai Road
London Lane
Du Toit Road
Impala Road
Onyx Place
Ironwood Street
Pine Street
Mango Street
Neeron Road
Alphine Street
Takalani Street
Peach Street
Fourth Pear Street
Seventh Pear Street
Welase Street
Khowa Street
Makhulong Street
Ajax Street
Ridge Road
Mnandi Road
Gymkhana Road
Pommel Road
Stirrup Road
Peacan Grove Lane
Summit Road
Rein Drive
Bridle Pass Road
Mane Road
Pony Lane
Jakkelsbessie Road
Sickle Buch Street
Monument Drive
Tapogolo Crescent
Zama Street
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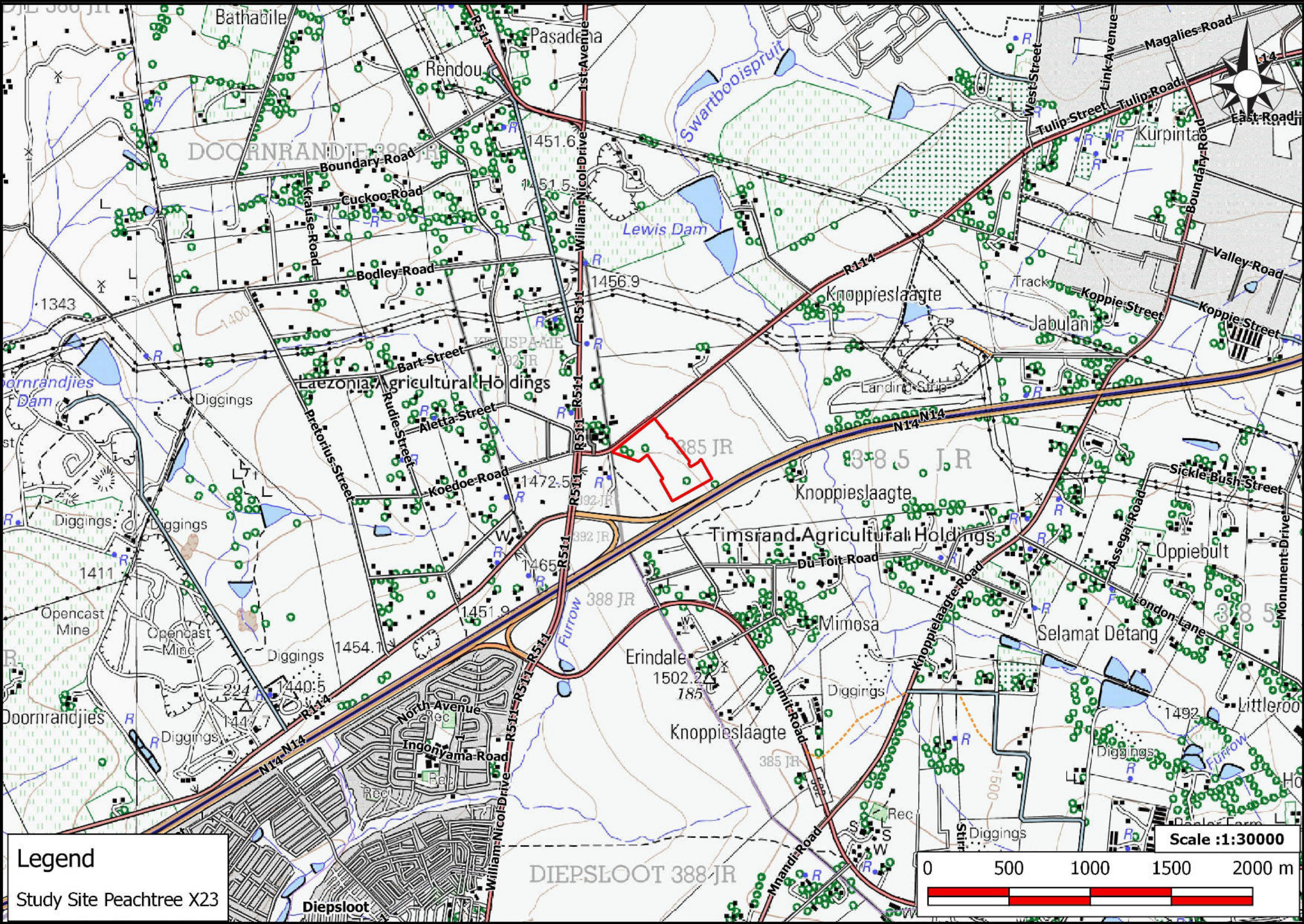
Northern Farm Dam P5
Northern Farm Dam P4
Northern Farm Dam P1
Doornrandjies Dam
Diepsloot
Knoppieslaagte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Tulip-Road
East-Road
Kurpinta
Boundary-Road
DOORNRANDJE 386 JR
Boundary-Road
Cuckoo-Road
Krause-Road
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1451.5
Lewis Dam
Bodley-Road
1456.9
R114
Knoppieslaagte
Track
Koppie-Street
Valley-Road
Jabulani
1343
Bart-Street
Laezonia Agricultural Holdings
Diggings
Pretorius-Street
Rudie-Street
Aletta-Street
Landing Strip
N14
385 JR
3 8 5 J R
Koedoe-Road
1472.5
Knoppieslaagte
Sickle-Bush-Street
Assegai-Road
Timsrand Agricultural Holdings
Du-Toit-Road
Oppiebult
Monument-Drive
Diggings
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1465
Furrow
388 JR
Mimosa
Selamat Detang
London-Lane
Knoppielaagte-Road
Opencast Mine
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1454.1
Erindale
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185
Summit-Road
Diggings
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Doornrandjies
North-Avenue
Ingonyama-Road
Rec
Knoppieslaagte
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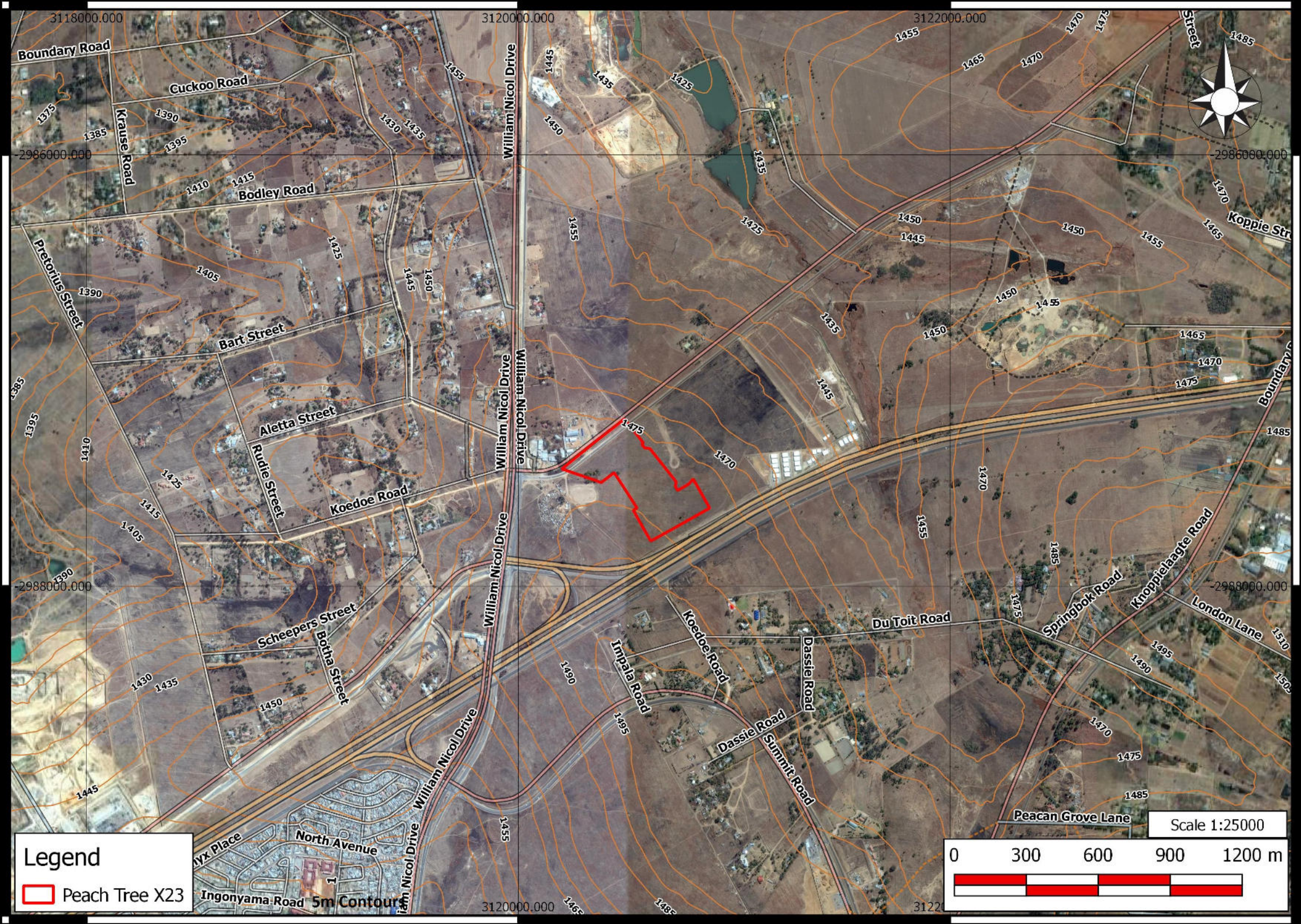
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Aletta Street
Rudie Street
Koedoe Road
Scheepers Street
Botha Street
William Nicol Drive
Impala Road
Dassie Road
Summit Road
Du Toit Road
Springbok Road
Knoppiefaagte Road
London Lane
Peacan Grove Lane
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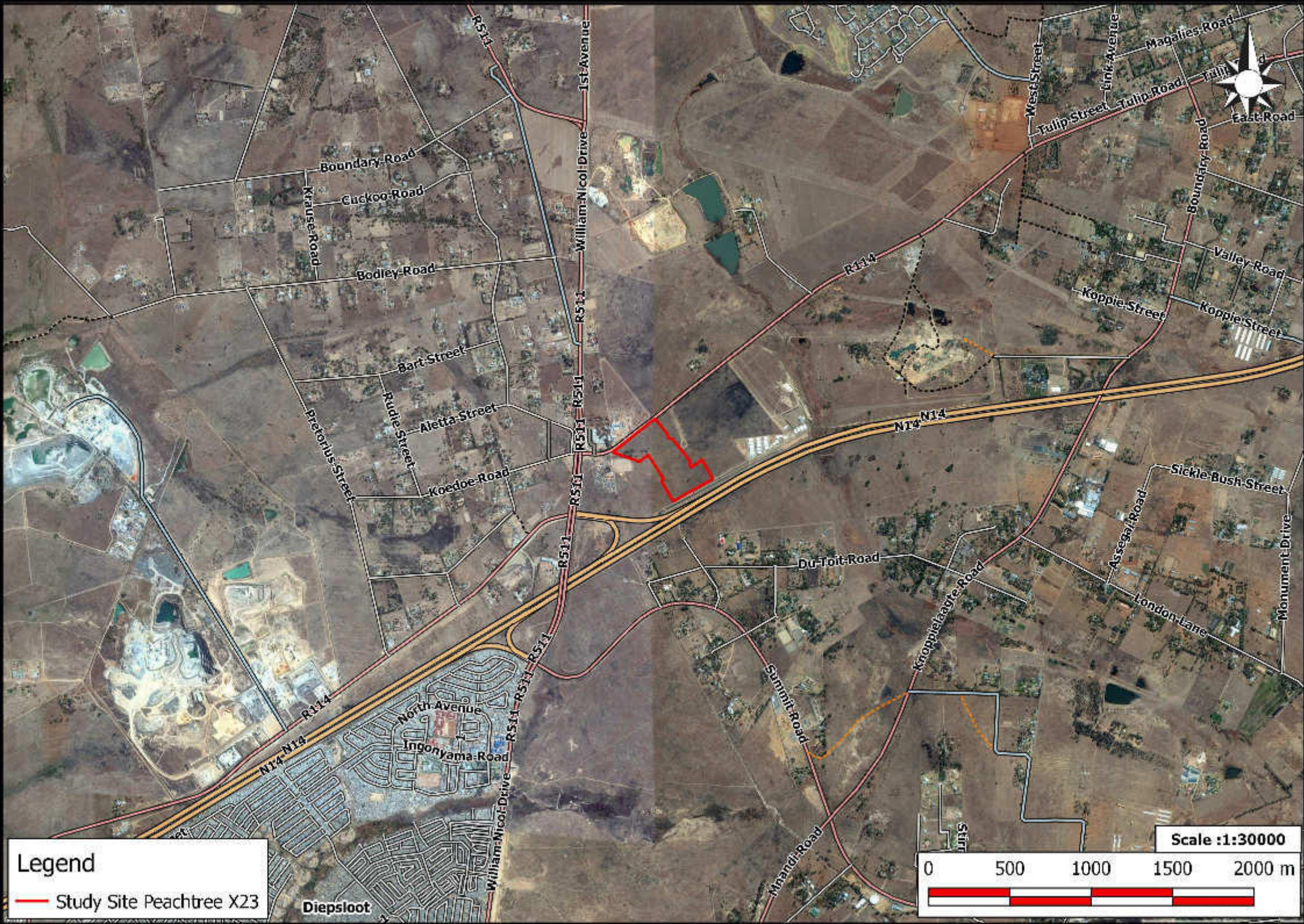
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1st Avenue
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R511
West Street
Link Avenue
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Tulip Street
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East Road
Boundary Road
Cuckoo Road
Krause Road
Bodley Road
R114
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Valley Road
Koppie Street
Koppie Street
Bart Street
Rudie Street
Aletta Street
Pretorius Street
Koedoe Road
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N14
Sickle Bush Street
Assegai Road
Monument Drive
Du Toit Road
Kroppielaagte Road
London Lane
Summit Road
North Avenue
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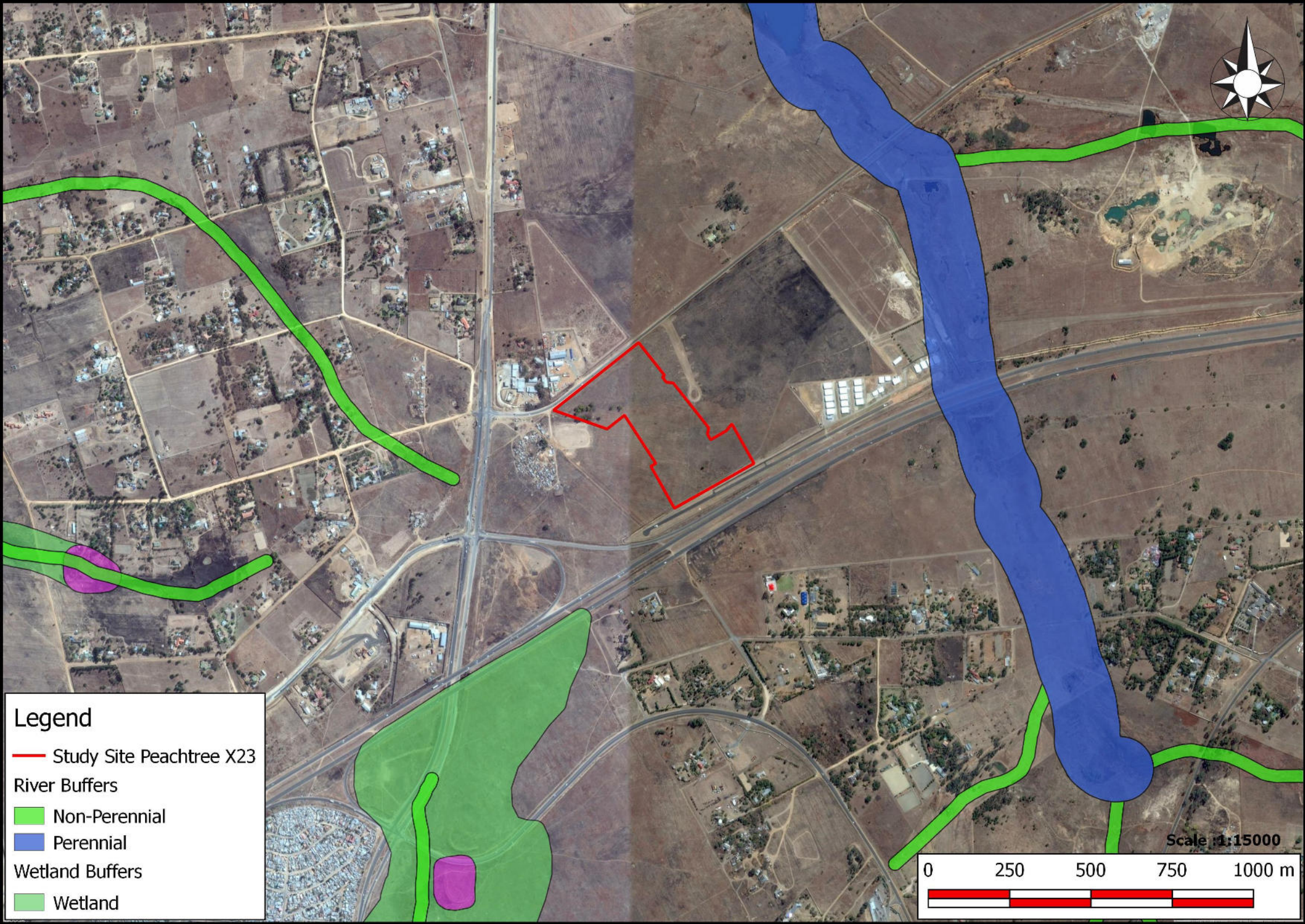
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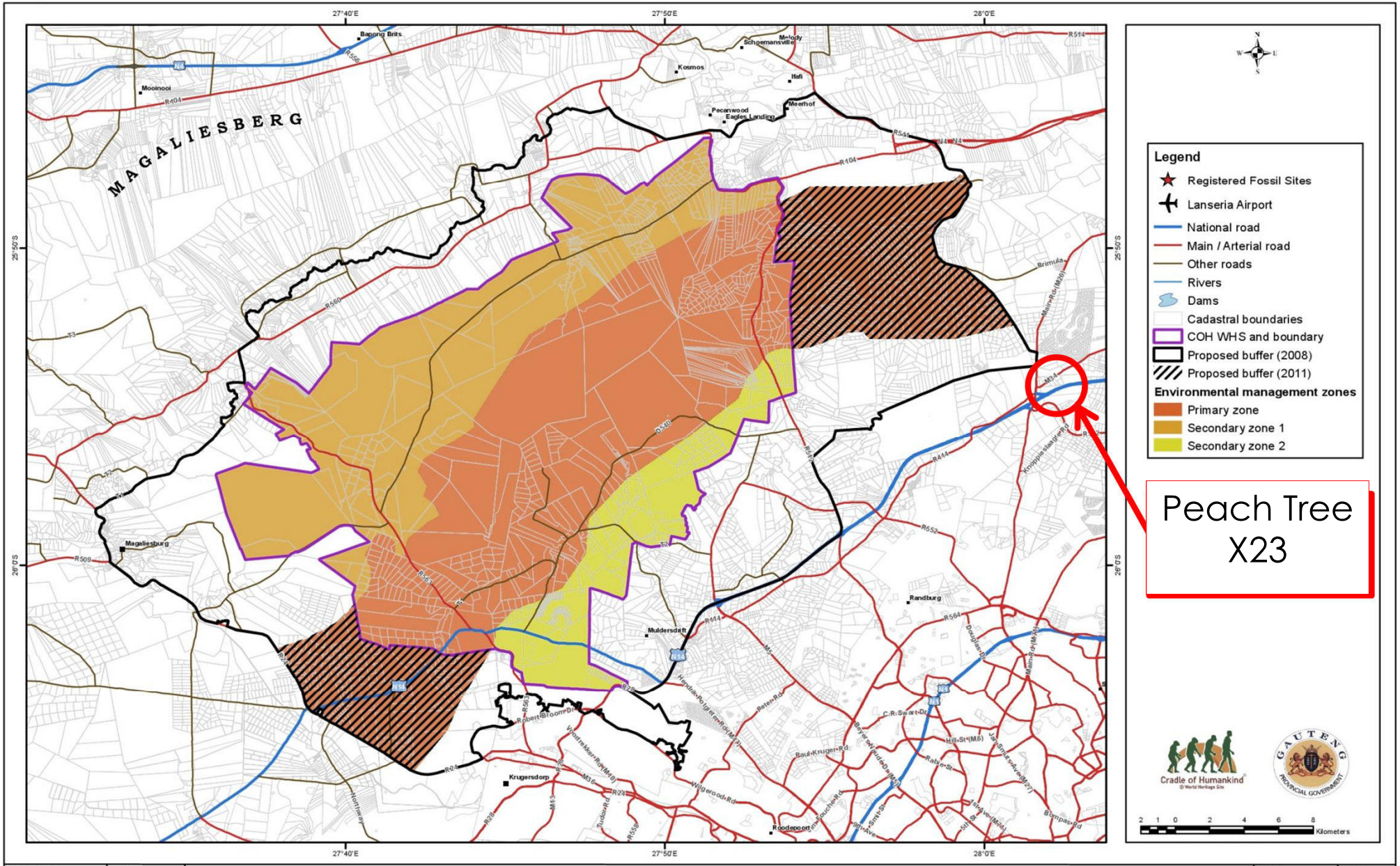
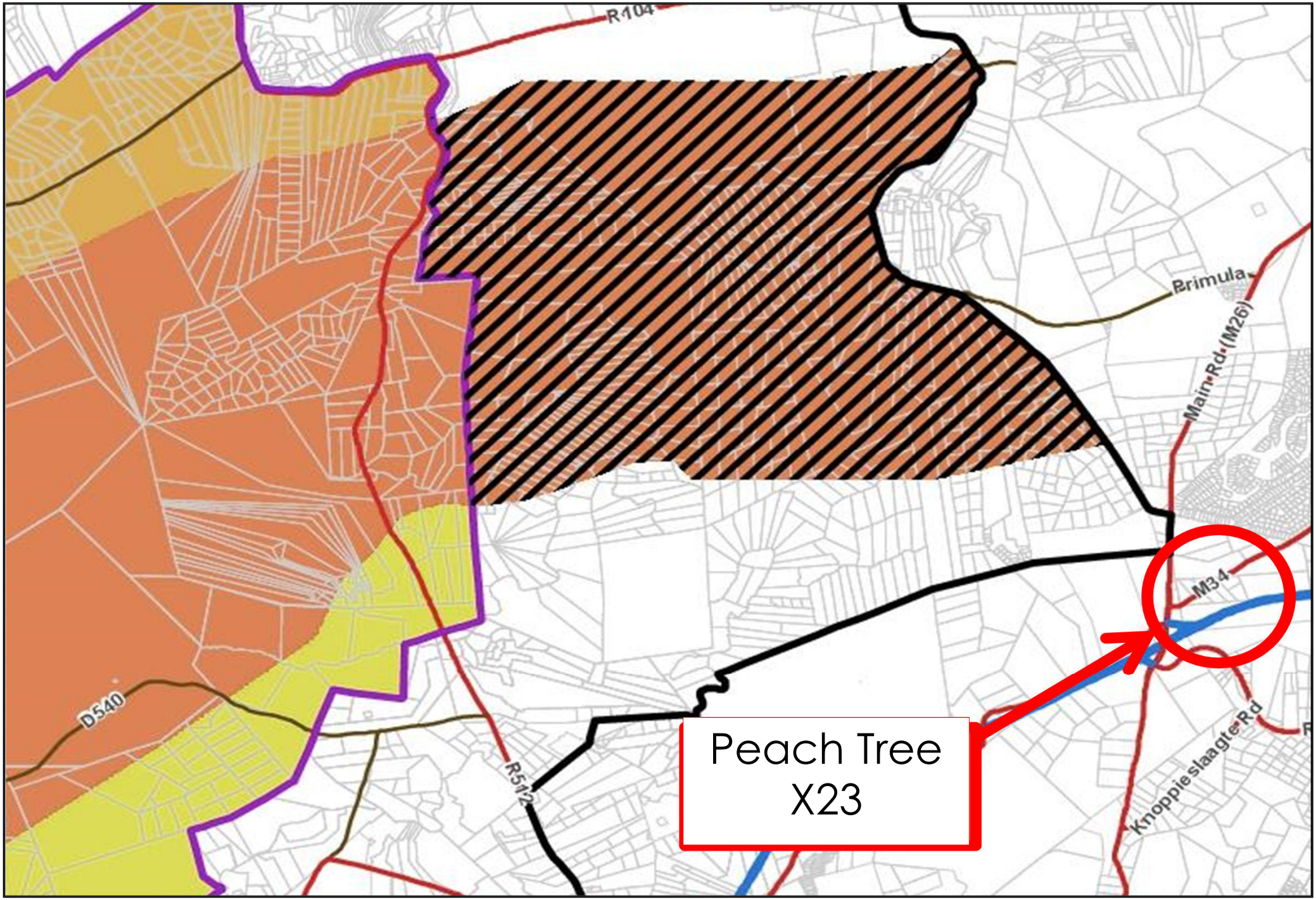
Wetland Buffers
Wetland
Scale :1:15000
0
250
500
750
1000 m

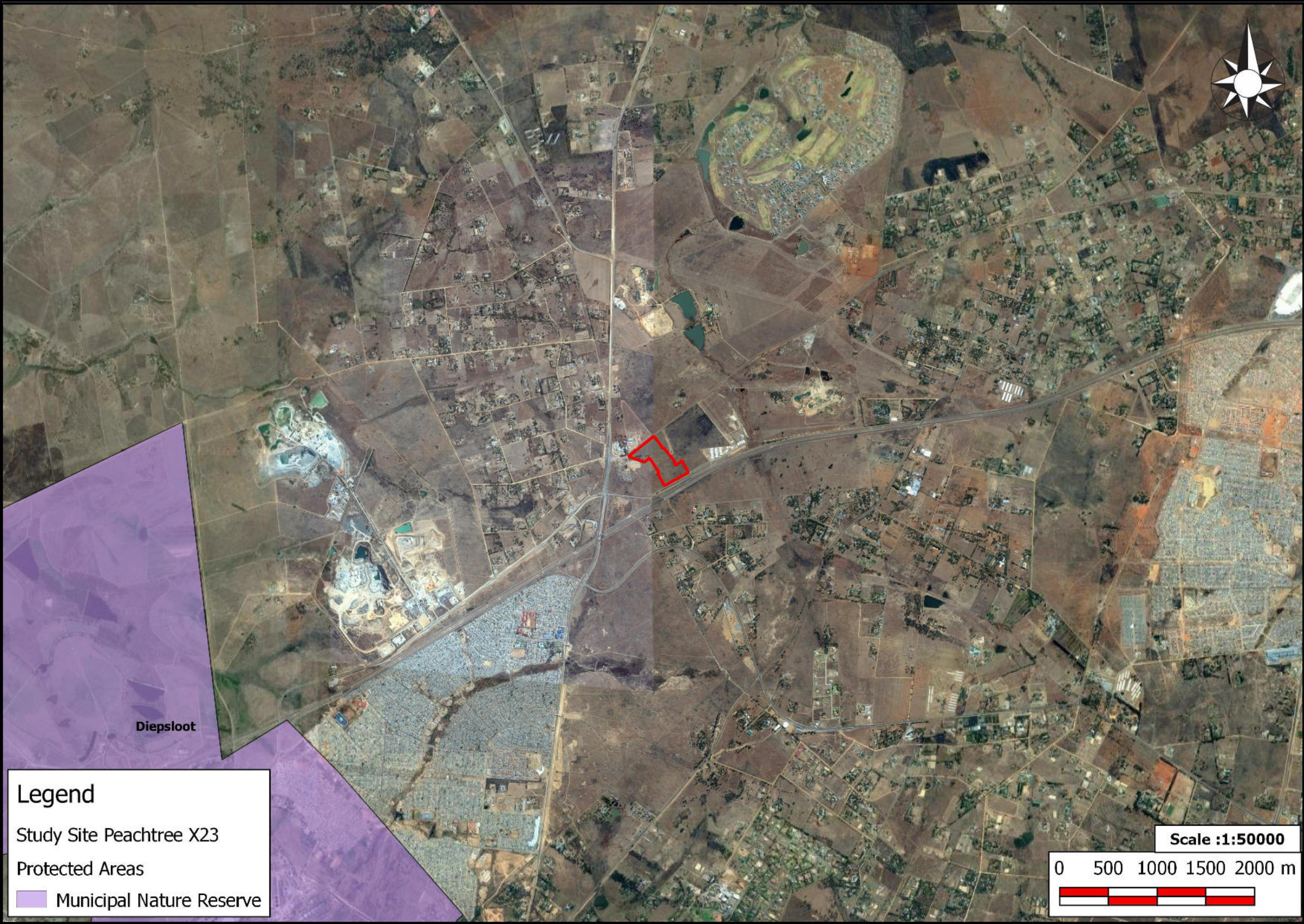
SRK Consulting
Engineers and Scientists

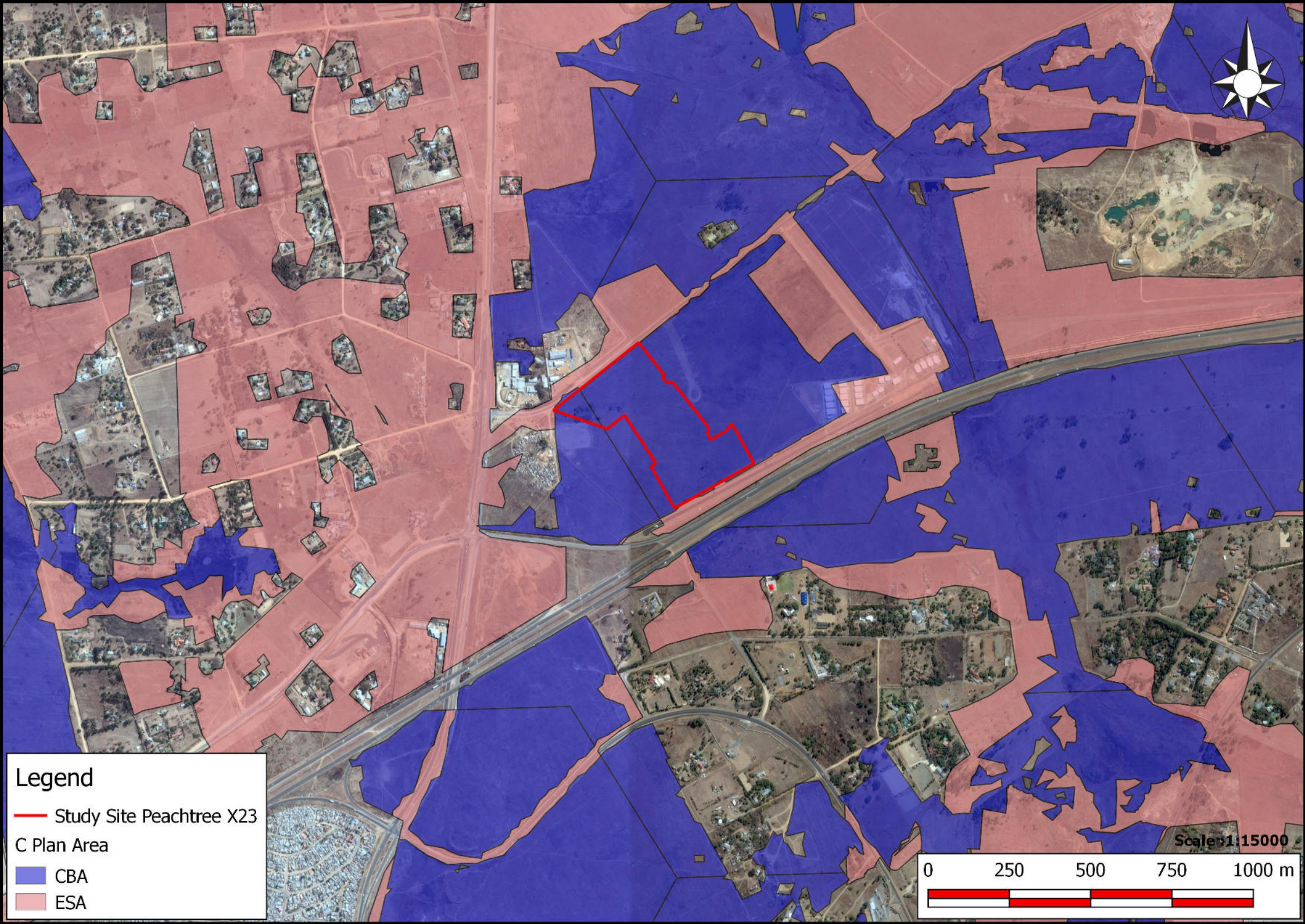


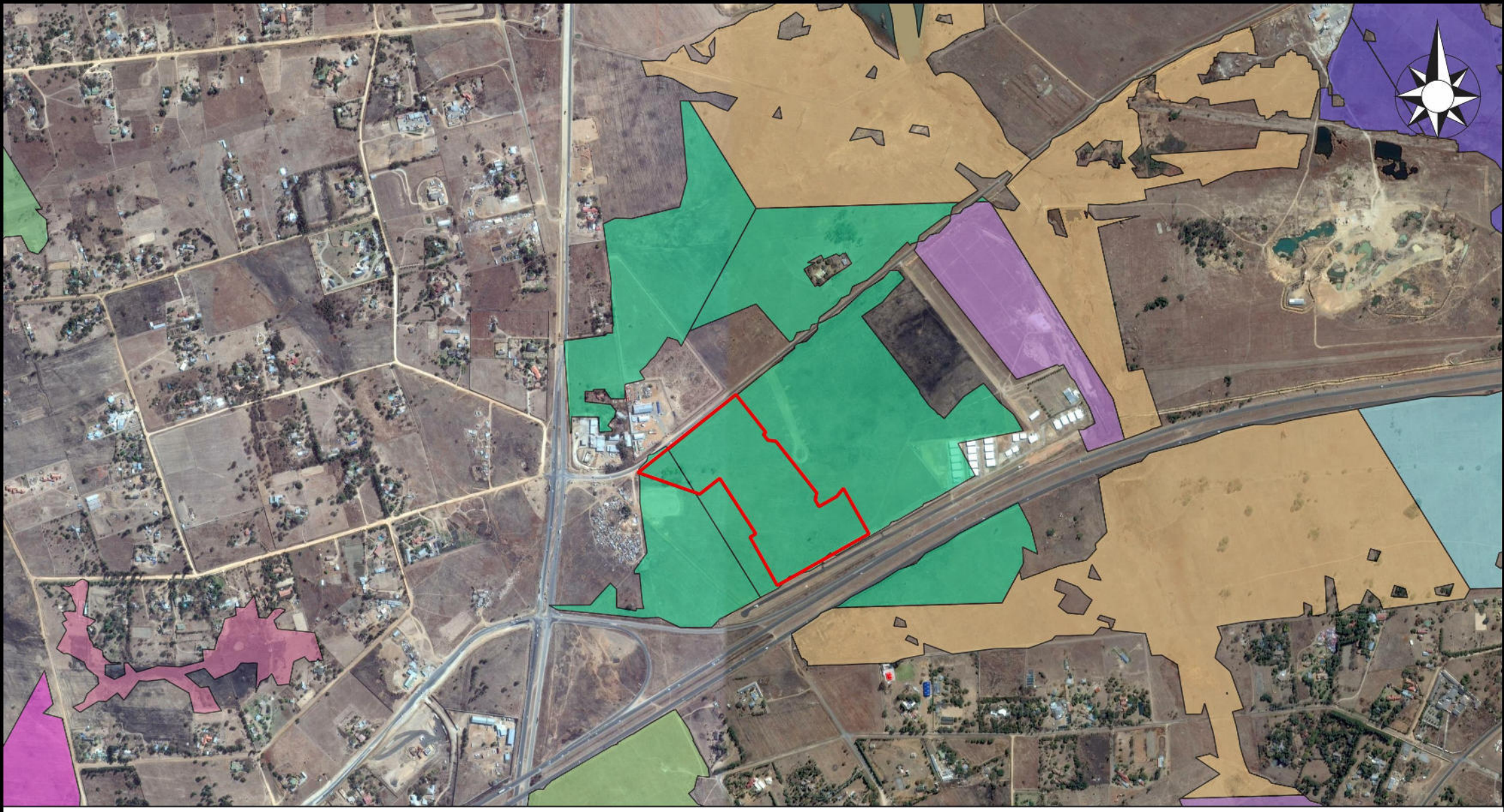
PROJECT NO.	DATUM: Hartebeesthoek_1994	ENVIRONMENTAL MANAGEMENT ZONES FOR THE COH WHS AND PROPOSED BUFFER ZONES (2011)	DATE 06/01/2011	SCALE 1:200,000
382239	PROJECTION: Geographic		COMPILED BY ELSA	MAP NO. 6

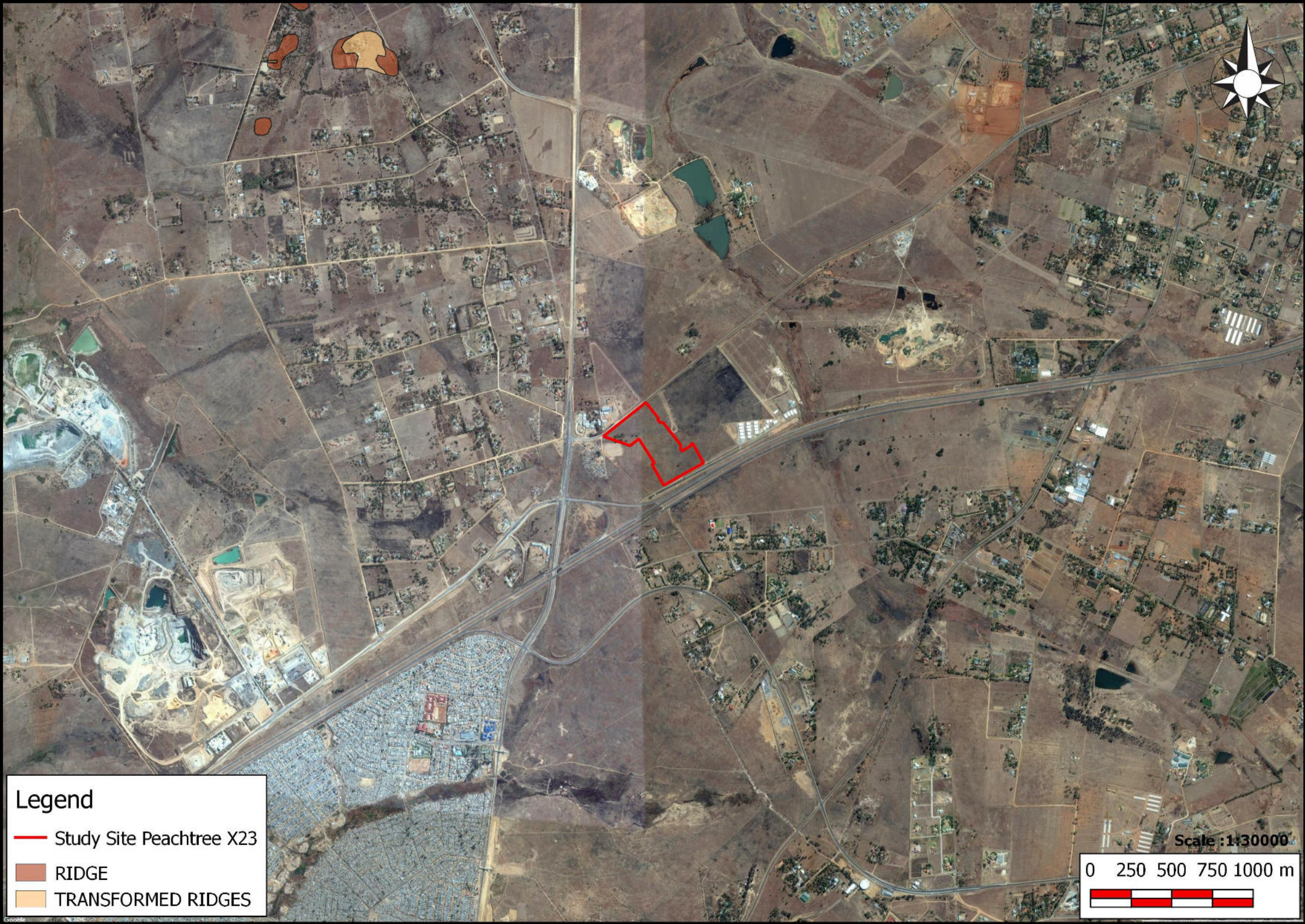
Path: J:\Proj\382239_Cradle_EMF\8GIS\GISPROJ\MXD\Jan2011_Final_EMF_maps\Map6_A3_CompositeMap_COHWHS.mxd

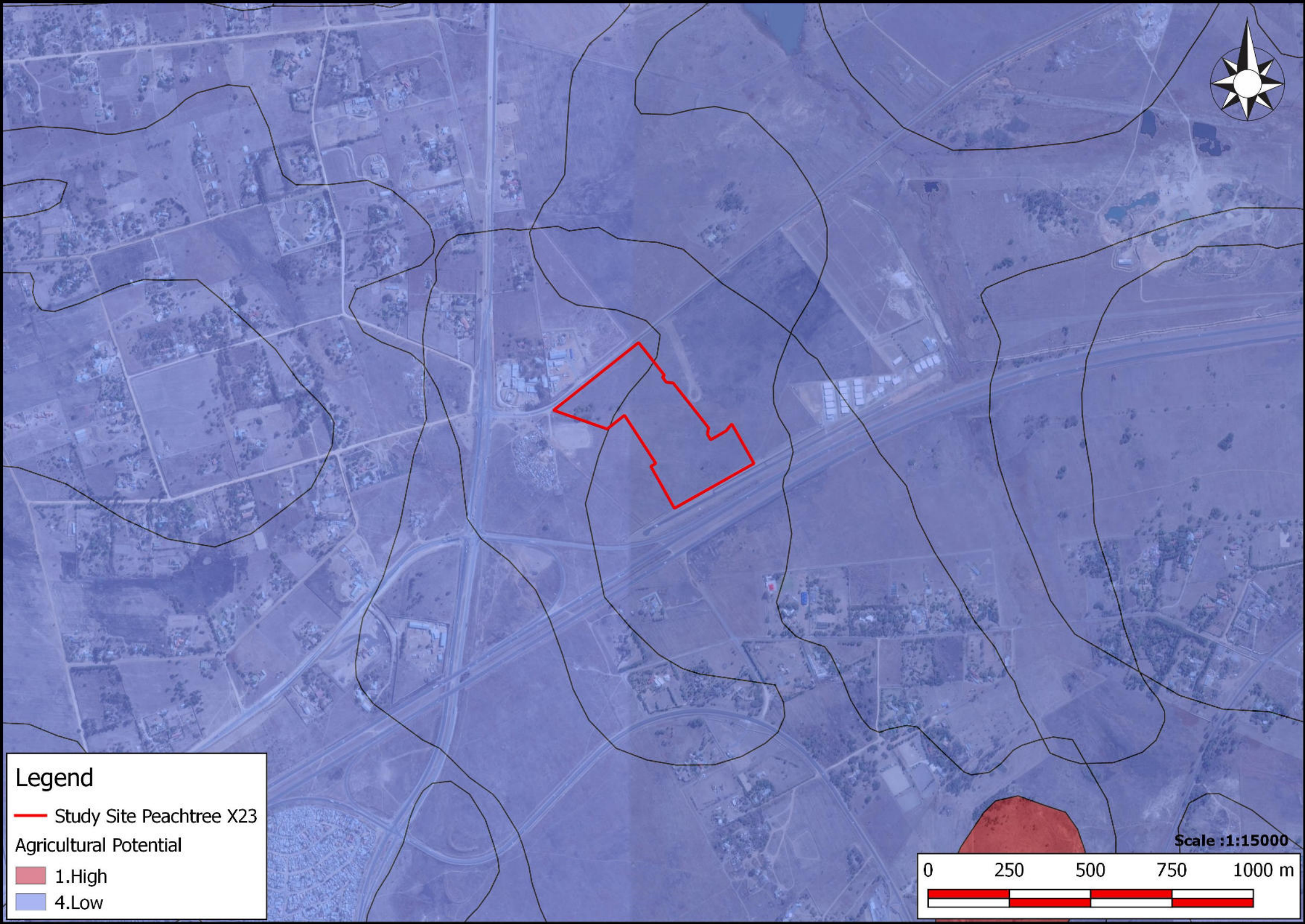

R104
Primula
Main Rd (M26)
M34
D540
R512
Knoppieslaagte Rd
Peach Tree
X23

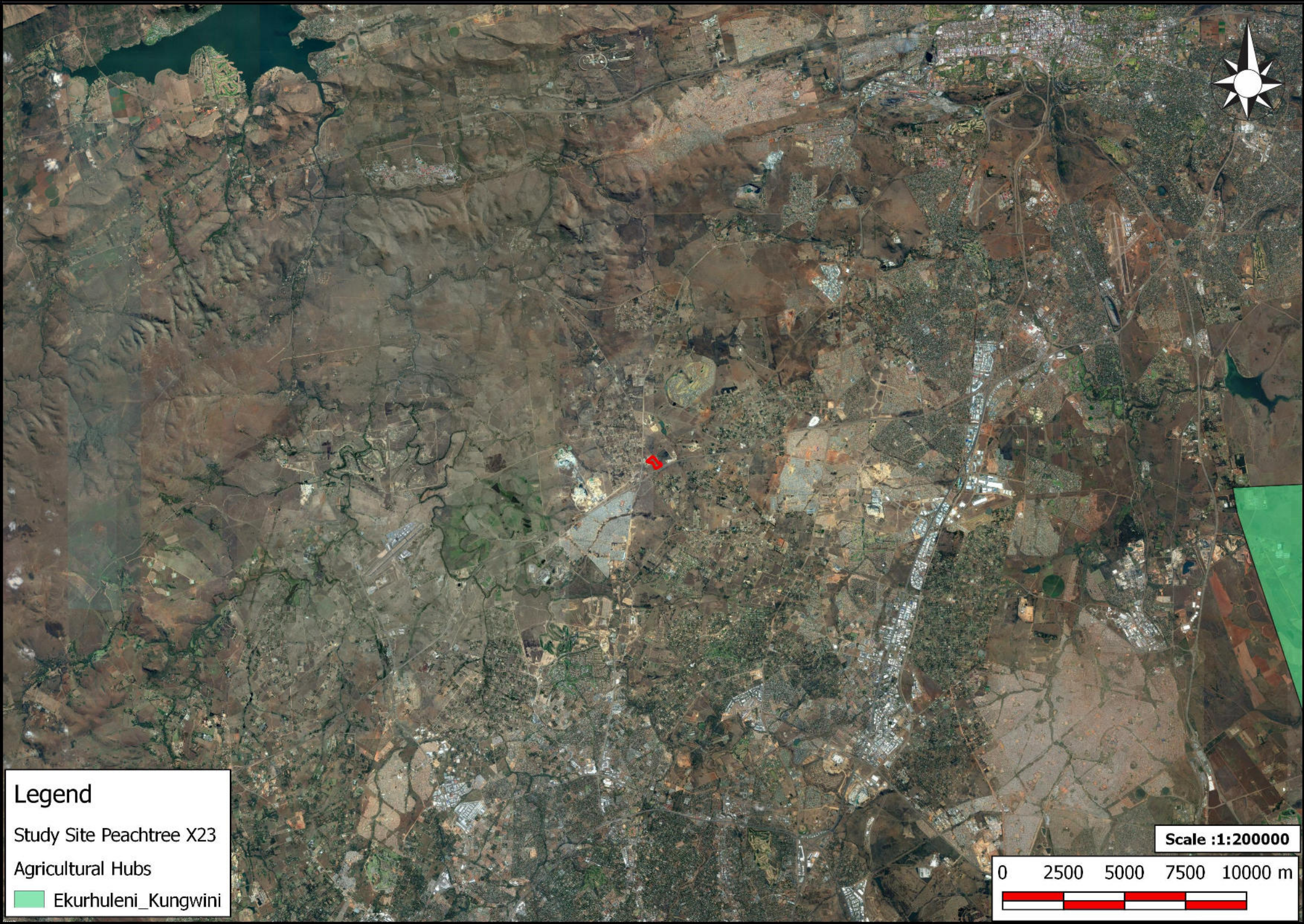

Diepsloot
Legend
Study Site Peachtree X23
Protected Areas
Municipal Nature Reserve
Scale :1:50000
0 500 1000 1500 2000 m

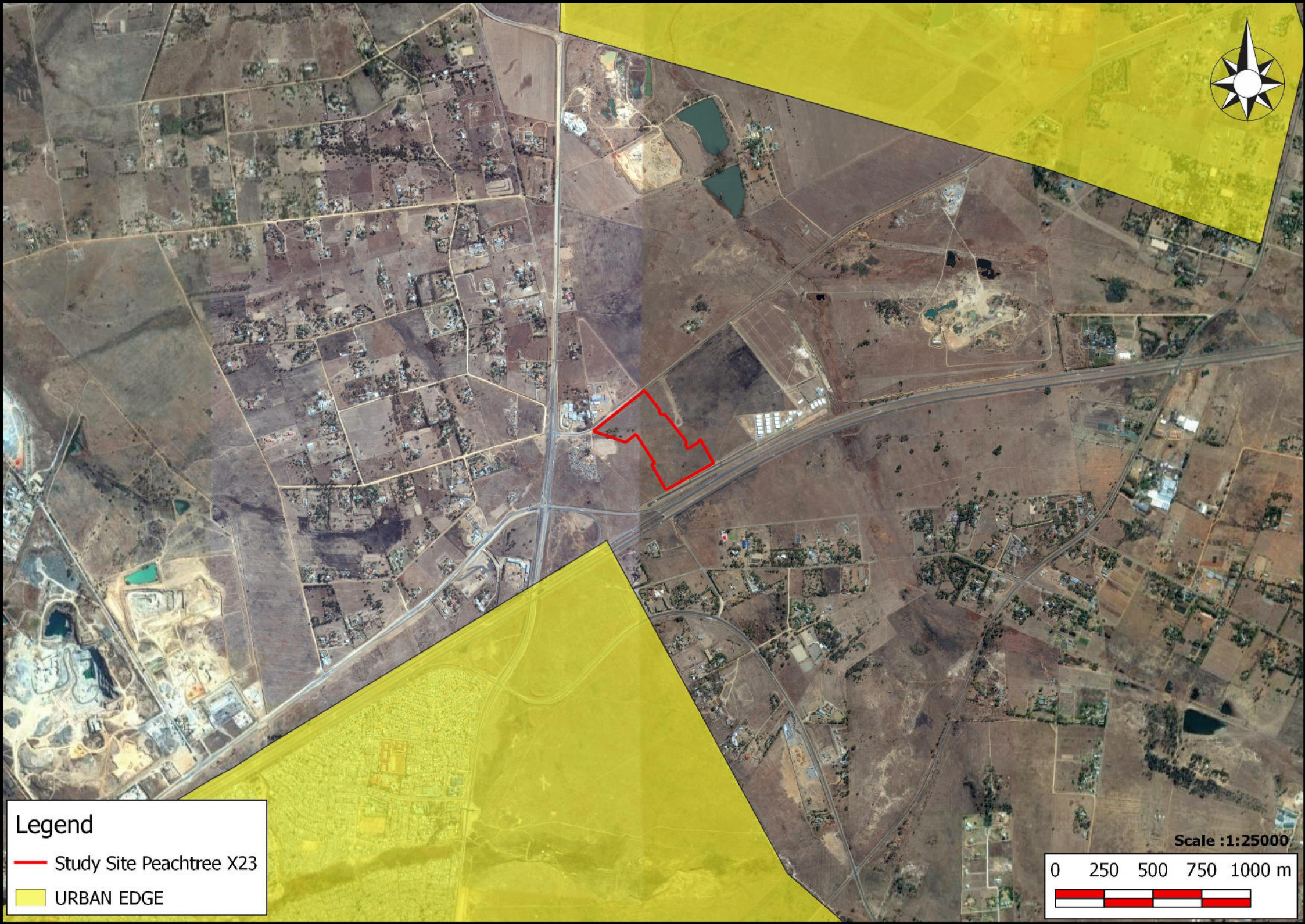

Legend
Study Site Peachtree X23
C Plan Area
CBA
ESA
Scale 1:15000
0
250
500
750
1000 m


Legend
Study Site Peachtree X23
C Plan
OL plant hab, Prim veg
OL plant hab, RL mammal hab, Prim veg
OL plant hab, RL mammal hab, RL bird hab, Prim veg
Prim veg
RL bird hab, Prim veg
RL plant hab, OL plant hab, Prim veg
RL plant hab, OL plant hab, RL bird hab, Prim veg
RL plant hab, OL plant hab, RL mammal hab, Prim veg
RL plant hab, OL plant hab, RL mammal hab, RL bird hab, Prim veg
RL plant hab, Prim veg
Scale :1:15000
0
250
500
750
1000 m

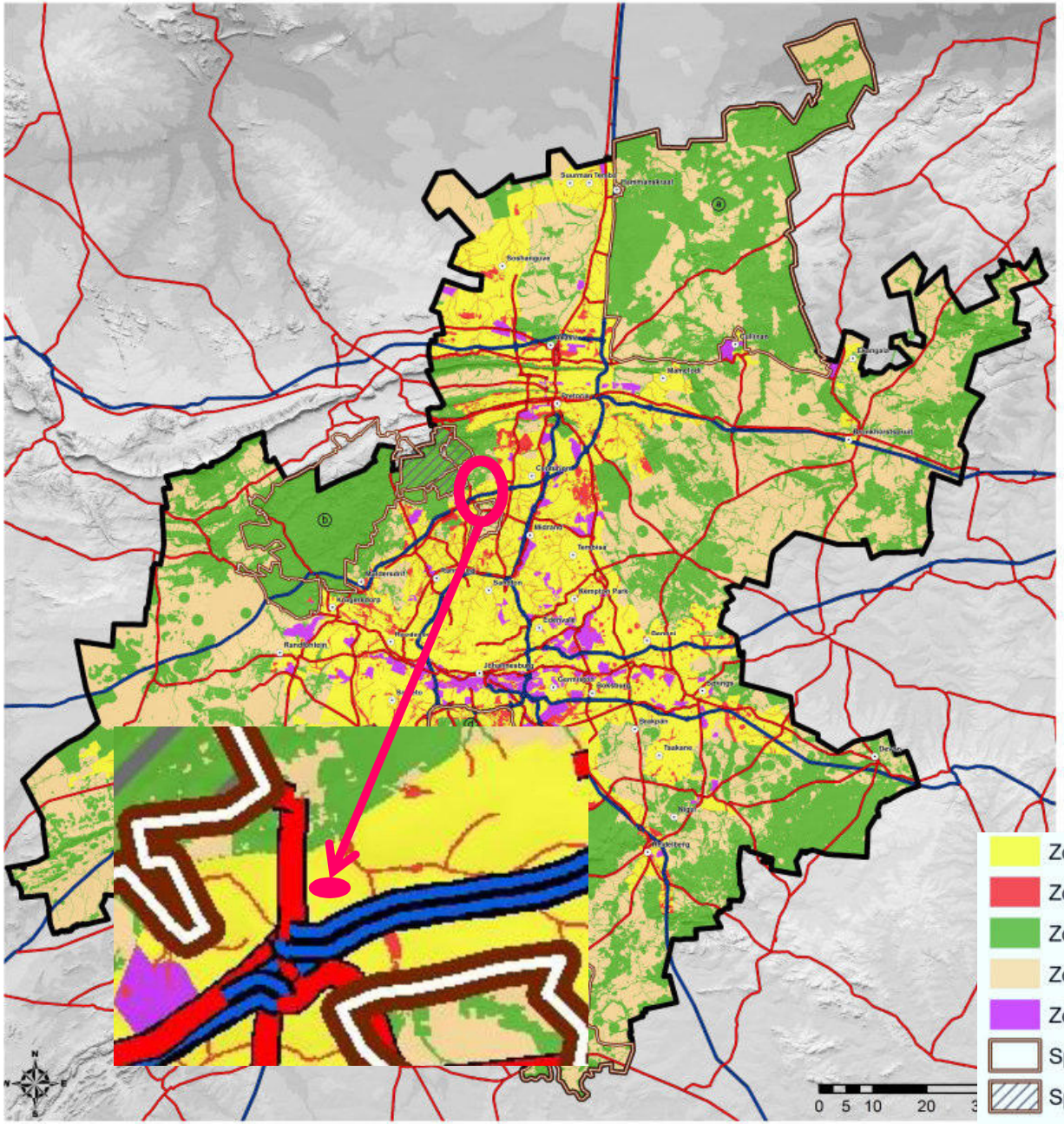

Legend
Study Site Peachtree X23
RIDGE
TRANSFORMED RIDGES
Scale :1:30000
0 250 500 750 1000 m


Legend
Study Site Peachtree X23
Agricultural Potential
1.High
4.Low
Scale :1:15000
0
250
500
750
1000 m


Legend
Study Site Peachtree X23
Agricultural Hubs
Ekurhuleni_Kungwini
Scale :1:200000
0 2500 5000 7500 10000 m


Legend
Study Site Peachtree X23
URBAN EDGE
Scale :1:25000
0 250 500 750 1000 m

Gauteng Provincial Environmental Management Framework



MAP LEGEND:

ENVIRONMENTAL MANAGEMENT ZONES

- Zone 1
- Zone 2
- Zone 3
- Zone 4
- Zone 5
- Special Control Zones
- Special Control Zone for Conservation, Recreation and Tourism

- Gauteng Provincial Boundary

Roads

- National Road
- Arterial Road

Special Control Zones:
(a) Dinokeng
(b) CoHWHS
(c) Vaaldam
(d) Jhb South
(e) Jhb North

Zone 1: Urban development zone

Intention
The intention with this zone is to streamline urban development activities in it and to promote development infill, densification and concentration of urban development, in order to establish a more effective and efficient city region that will minimise urban sprawl into rural areas.

Zone 2: High control zone (within the urban development zone)

Intention
This zone is sensitive to development activities. Only conservation should be allowed in this zone. Related tourism and recreation activities must be accommodated in areas surrounding this zone.

Zone 3: High control zone (outside the urban development zone)

Intention
This zone is sensitive to development activities and in several cases also have specific values that need to be protected. Conservation and related tourism and recreation activities should dominate development in this zone.

Special control zones (SCZ):

Special control zones are areas that have specific additional
account in

SCZ (a): Din

The Dinoke
nature tou
strong natu
in respect t
especially t
makes it an
activities th

- Recreation (especially in the Roodeplaat Dam area);
- Hospitality (especially lodges);
- Rural development that caters for the specific needs of the area; and
- Maintenance of current agricultural activities.

Activities that should be avoided as far as possible include:

- Battery farming and feedlots;
- Mining and sand winning;
- Industrial activities; and
- Large commercial and retail developments.

SCZ (b): Cradle of Humankind World Heritage Site

The purpose of this special zone is to incorporate the Cradle of Humankind World Heritage Site EMF into the Gauteng EMF. It has its own management zones and management guidelines that must be followed.

SCZ (d): Johannesburg South

The Johannesburg South special control zone
tem
ecial in the
nmental and
a valuable
ltural and
t includes the
on to the
y to the various
lso be taken
ives in the area.
griculture,
sociated
developments. These activities will form the nature and basis of economic activities in the area and the integration of agricultural, tourism and recreation value chains.

SCZ (e): Johannesburg North (the Greater Kayalami Conservancy)

The area is a rural island surrounded by urban areas. It is important to retain its character as it provides specific services to surrounding areas including:

- Habitat for threatened species;
- Equestrian therapy centres (with an exceptional service to the community of Diepsloot through their programmes with at-risk youth and disabled individuals);
- Environmental educational facilities;
- Nature trails and training of nature guides;
- Bird watching facilities;
- Green building resource centre;

ojects to increase food
employment for neighbouring

local indigenous plants and

iking;

cilities and supporting

creation and tourism

ithin the buffer area of the
nent plan should at least
ions placed on the buffer
HS Management Guidelines.
high potential for
eation (hiking, mountain
style hospitality.
making must take the
to account to ensure its
nt conservation and

recreation area.

protected areas and other conservation areas)

Intention
Where a management plan for a protected area is in place, it will override the GPEMF. Where there is no management plan, the area must be treated as Zone 3.

SCZ (c): Vaal Dam

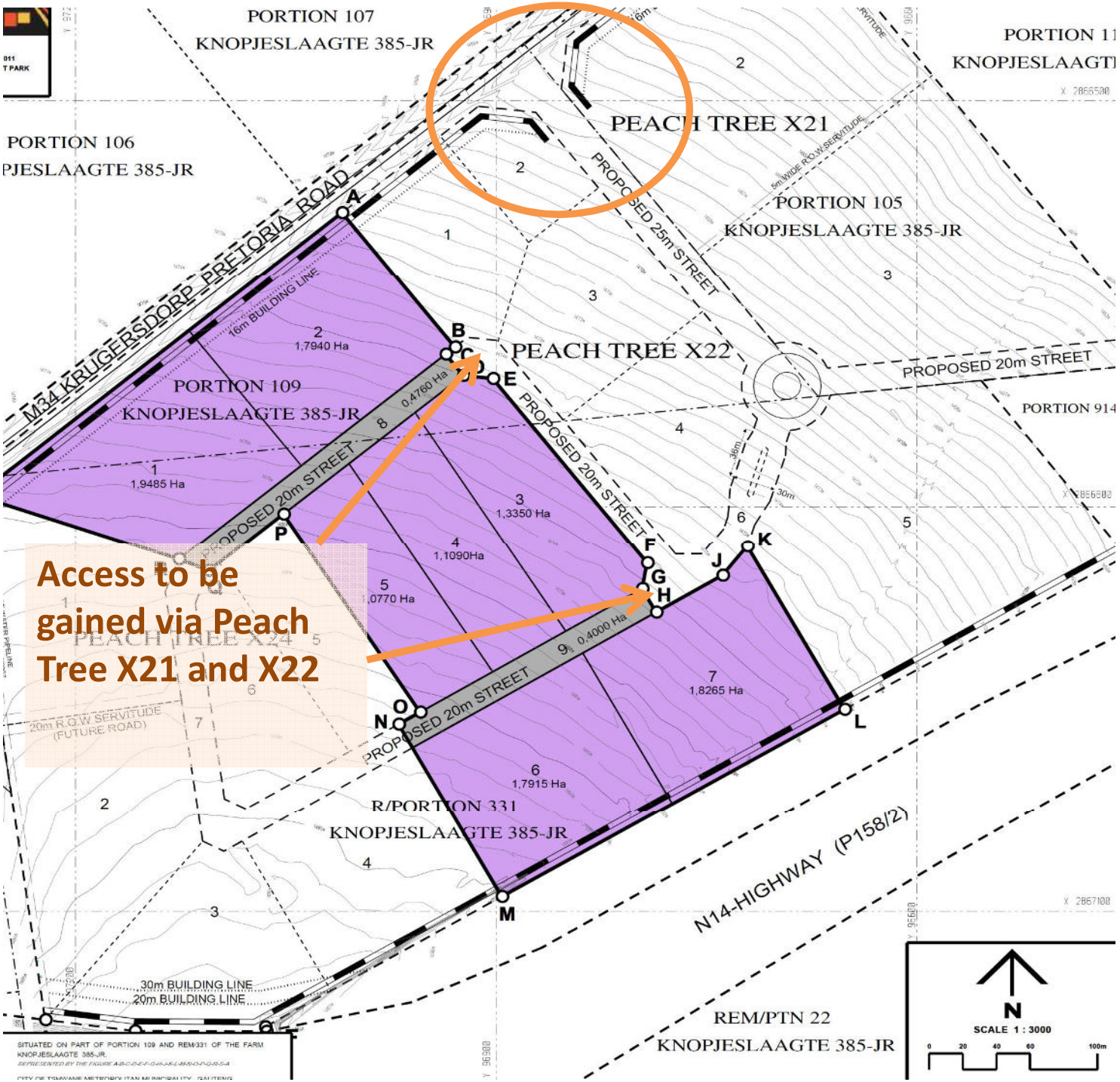
This area has good potential for development that focusses on the following:

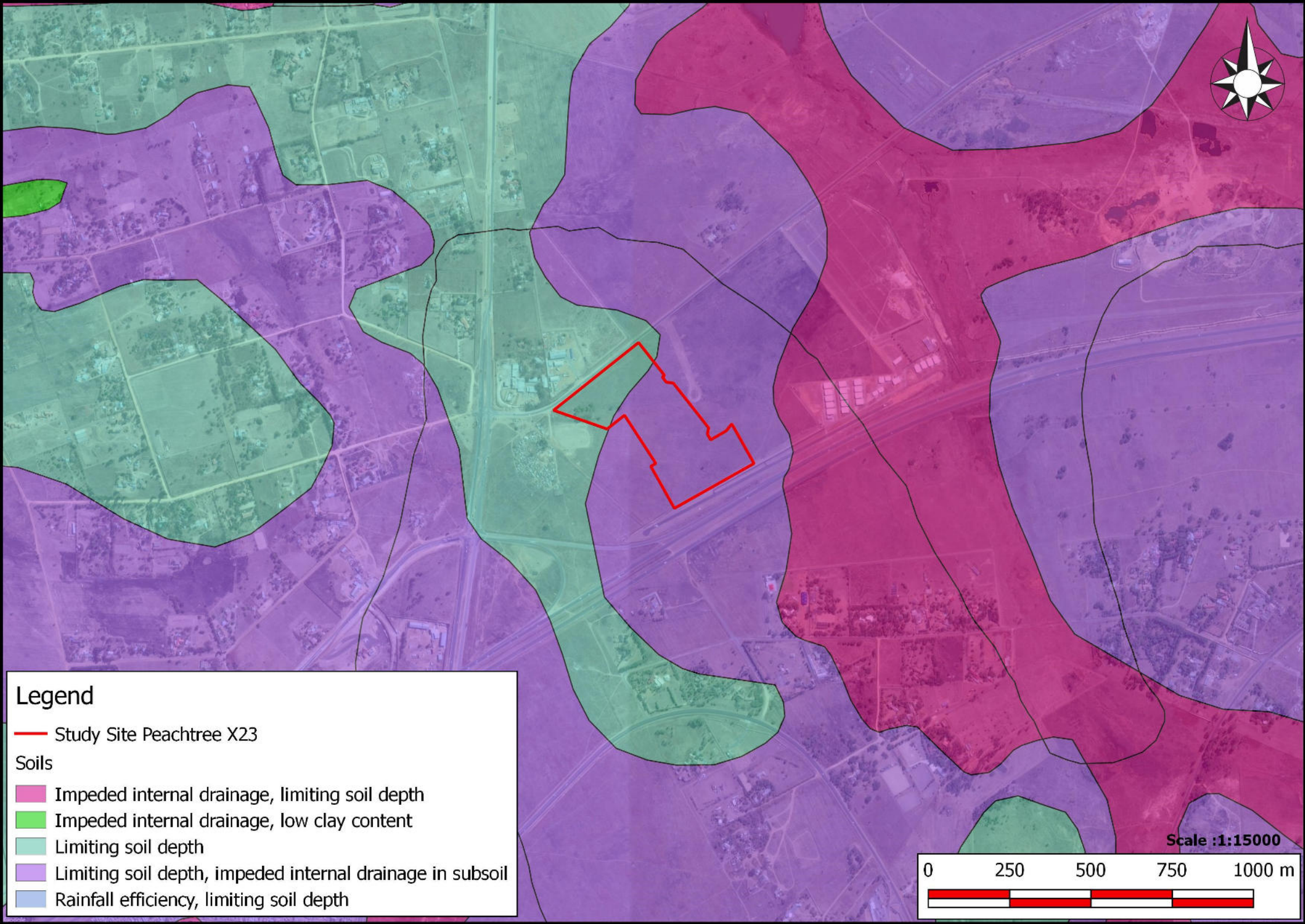
- Local tourism focused on the domestic market;
- Intensive recreation next to the Vaal Dam;
- Conservation of grassland habitat in the area;
- Rural development that focusses on tourism and recreation.

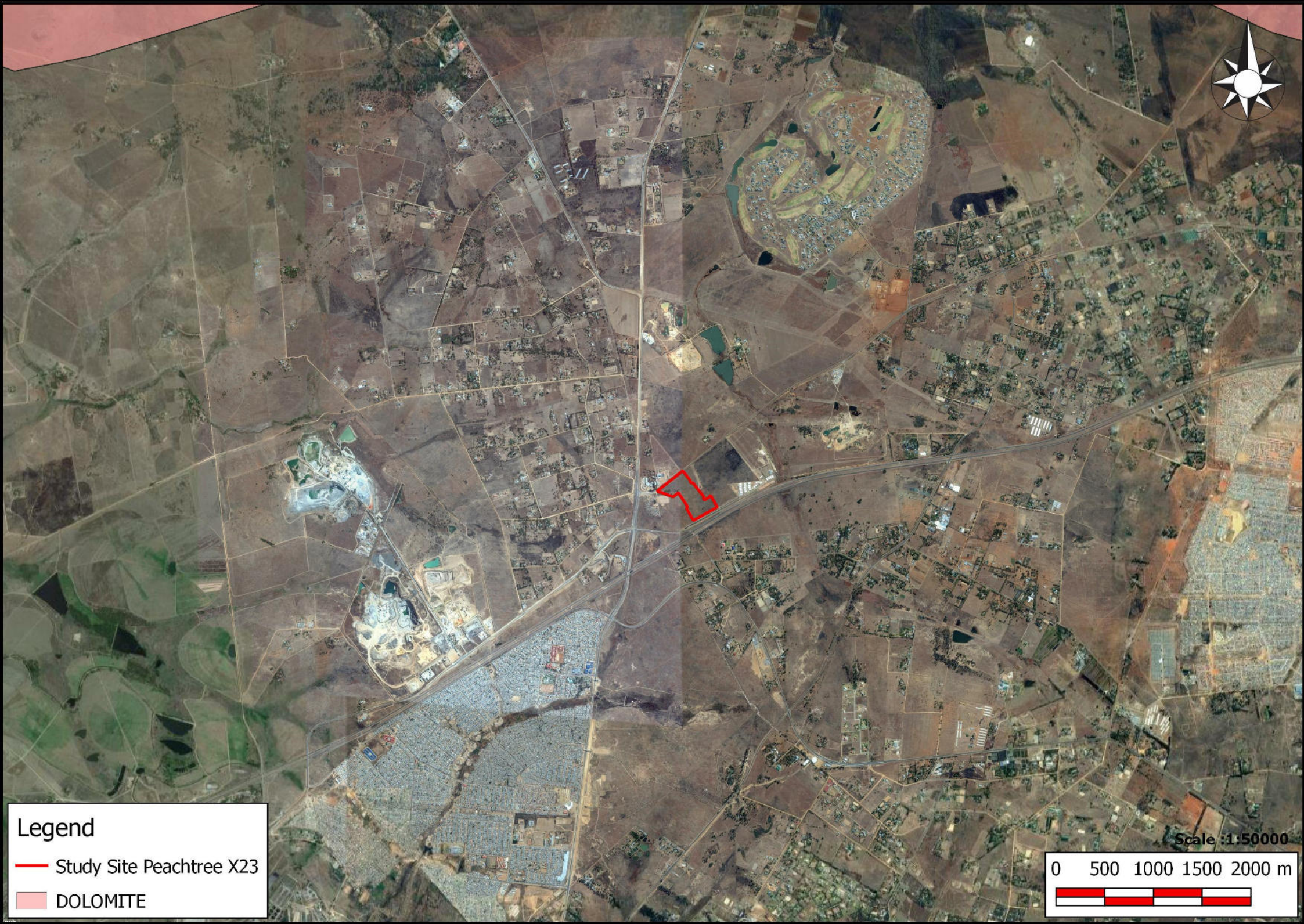
For enquiries, contact: 082 376 7201
Poster prepared by
ENVIRONOMICS
and
MetroGIS

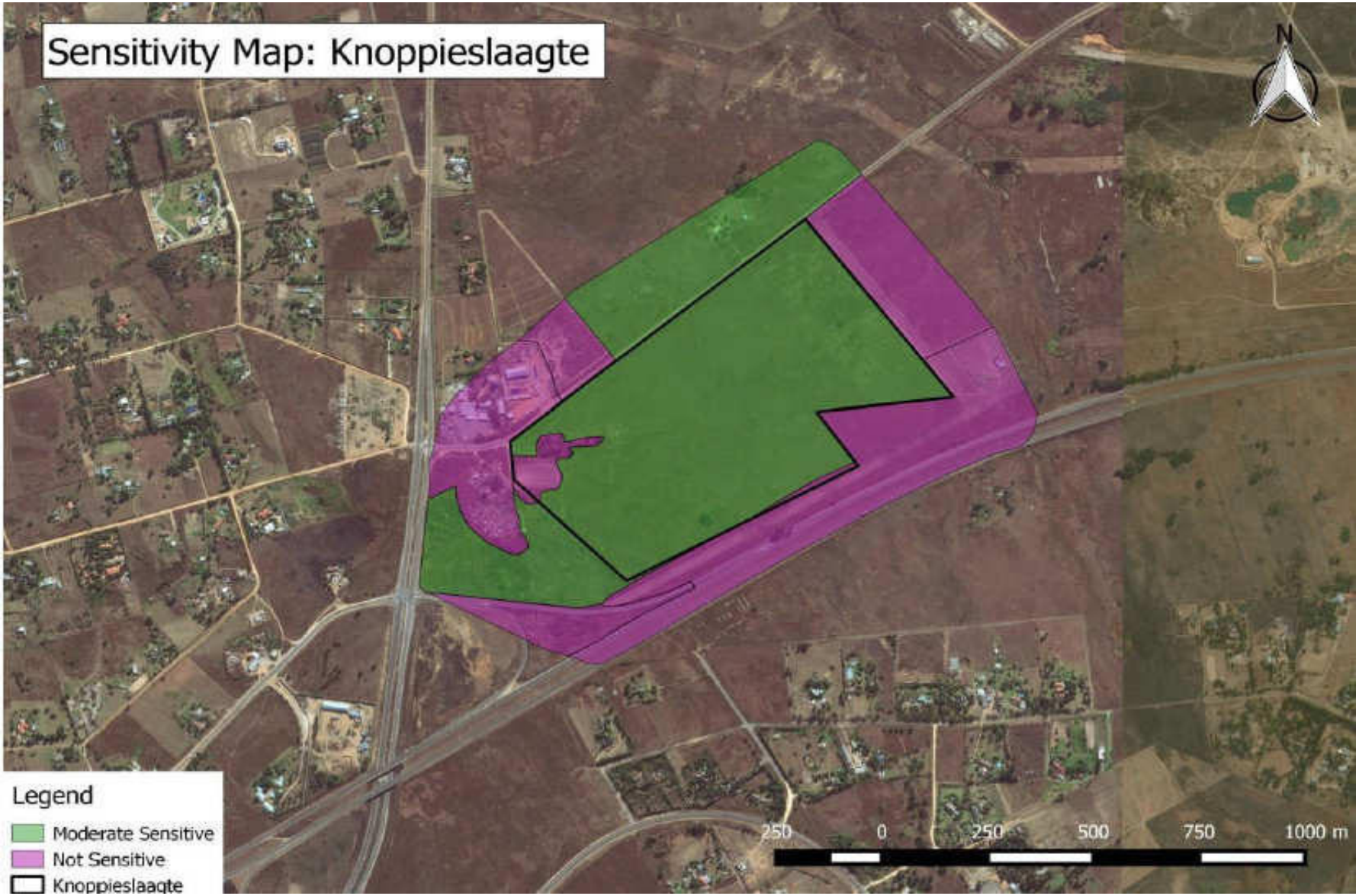
GAUTENG PROVINCE
AGRICULTURE AND RURAL DEVELOPMENT
REPUBLIC OF SOUTH AFRICA

Together, Moving Gauteng City Region Forward


PORTION 107
KNOPJESLAAGTE 385-JR
PORTION 106
PJESLAAGTE 385-JR
PEACH TREE X21
PROPOSED 25m STREET
PORTION 105
KNOPJESLAAGTE 385-JR
M34 KRUGERSDORP PRETORIA ROAD
16m BUILDING LINE
PEACH TREE X22
PROPOSED 20m STREET
PORTION 109
KNOPJESLAAGTE 385-JR
1,9485 Ha
1,7940 Ha
0,4760 Ha
1,3350 Ha
1,1090Ha
0,4000 Ha
1,8265 Ha
1,7915 Ha
PORTION 914
Access to be gained via Peach Tree X21 and X22
20m R.O.W SERVITUDE (FUTURE ROAD)
R/PORTION 331
KNOPJESLAAGTE 385-JR
N14-HIGHWAY (P158/2)
30m BUILDING LINE
20m BUILDING LINE
REM/PTN 22
KNOPJESLAAGTE 385-JR
SITUATED ON PART OF PORTION 109 AND REM/331 OF THE FARM KNOPJESLAAGTE 385-JR
N
SCALE 1 : 3000


Legend
Study Site Peachtree X23
Soils
Impeded internal drainage, limiting soil depth
Impeded internal drainage, low clay content
Limiting soil depth
Limiting soil depth, impeded internal drainage in subsoil
Rainfall efficiency, limiting soil depth
Scale :1:15000
0
250
500
750
1000 m


Legend
Study Site Peachtree X23
DOLOMITE
Scale :1:50000
0 500 1000 1500 2000 m


Sensitivity Map: Knoppieslaagte
N
Legend
Moderate Sensitive
Not Sensitive
Knoppieslaagte
250
0
250
500
750
1000 m

Appendix liii

Department Correspondence

agriculture and rural development
Department: Agriculture and Rural Development
GAUTENG PROVINCE

11 Diagonal Street, Diamond Building, Newtown, Johannesburg
P O Box 8769, Johannesburg, 2000

Telephone: (011) 240-2500
Fax: (011) 240-2700
Website: http://www.gdard.gpg.gov.za

Reference:	Gaut: 002/16-17/E0225
Enquiries:	Faith Mlambo
Telephone:	011 240-3053
Email:	faith.mlambo@gauteng.gov.za

Bokamoso Landscape Architects & Environmental Consultants cc

Email/Fax: info@bokamoso.net

Dear Sir/ Madam

Request for extension of time to submit Final BA Report: The proposed Peach Tree x 23 industrial development is for the establishment of an industrial township which is situated on part of Portion 109 and part of the Remainder of Portion 331 of the Farm Knopjeslaagte 385 JR, City of Tshwane, Gauteng

The Department acknowledges having received your request for extension of time to submit Final BA Report for the abovementioned project on 05/01/2017.

Your request for extension of time to submit Final BA Report has been granted. Thus, you have until 13/04/2017 to submit the Final BA Report.

Please draw the applicant's attention to the fact that the activity may not commence prior to an environmental authorisation being granted by the Department.

Yours faithfully

Boniswa Belot
Deputy Director: Strategic Administration Support
Date: 11/01/2017

CC: Tembibex (PTY) Ltd

Att: E Keyser
Email/Fax: emo@velmore.co.za