Nali

Sustainability Solutions (Pty) Ltd

Environmental and Development Consultants

DRAFT SCOPING REPORT

PROPOSED THORNTREE EAST MIXED-USE DEVELOPMENT

VARIOUS PORTIONS OF THE FARMS HAAKDOORNBOOM 267 JR AND KRUISFONTEIN 259 JR, CITY OF TSHWANE METROPOLITAN MUNICIPALITY, GAUTENG.

REF NUMBER: GAUT 002/21-22/E2919

valumax

Create more value

June 2021

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ABBREVIATIONS AND ACRONYMS

BID	Background Information Document
CA	Competent Authority
DW & S	Department of Water and Sanitation
DFFE	Department of Forestry, Fisheries and the Environment
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMPr	Environmental Management Programme
GDARD	Gauteng Department of Agriculture and Rural Development
GNR	Government Notice
HIA	Heritage Impact Assessment
IDP	Integrated Development Plan
I&AP	Interested and Affected Party
NEMA	National Environmental Management Act (Act no 107 of 1998)
NWA	National Water Act (Act no 36 of 1998)
PES	Present Ecological State
SAHRA	South African National Heritage Resource Agency
SDF	Spatial Development Framework

EXECUTIVE SUMMARY

Valumax (SAFDEV SSDC (Pty) Ltd) (the Applicant) proposes to establish an integrated human settlement constituted by various housing typologies, business uses and associated infrastructure. The township will include low and high density residential units inclusive of all supporting land uses and infrastructure.

The current zoning of the site is agricultural with most of the properties either being vacant or spotting limited residential and business uses. Therefore, this will be a green field development to the east of Soshunguve VV and Sushanguve East.

The proposed site is constituted by portions of the farms Haakdoornboom 267 JR and Kruisfontein 259 JR located north of Pretoria, approximately 35 km from Pretoria CBD. Mabopane highway (R80) and Soutpan Road (M 35) bound the proposed development to the west and east respectively. Hebron Road runs though the proposed development from west to east dividing it into two sections, namely Thorntree East North and Thorntree East South.

To ensure compliance with the Environmental Impact Assessment (EIA) Regulations (2014) promulgated under section 24(5) of the National Environmental Management Act, 1998 (Act no 107 of 1998) (NEMA) and environmental best practice, the applicant appointed Nali Sustainability Solutions (Pty) Ltd as the independent Environmental Assessment Practitioner (EAP) to manage the Environmental Authorisation (EA) process for the proposed project. The Gauteng Department of Agriculture and Rural Development (GDARD) has been identified as the Competent Authority (CA) for this project.

Activities triggered by the development

The EIA regulations contain certain listed activities that, when triggered by the proposed development, require certain EIA processes to be followed. Given that the proposed development triggers activities in listing Notices 1, 2 and 3, a scoping and environmental impact reporting process (S&EIR) must be followed to obtain authorisation.

The specific activities triggered by the proposed development include:

- Listing Notice 1, Activity 9- *The development of infrastructure exceeding 1000 metres in length for the bulk transportation of water or stormwater-*

- Listing Notice 1, Activity 10- *The development and related operation of infrastructure exceeding 1000 metres in length for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes;*

- Listing Notice 1, Activity 11-*The development of facilities or infrastructure for the transmission and distribution of electricity outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts;*

- Listing Notice 1, Activity 12-*The development of infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs (a) within a watercourse;*

- Listing Notice 1, Activity 13- *The development of facilities or infrastructure for the off-stream storage of water, including dams and reservoirs, with a combined capacity of 50 000 cubic metres or more;*

- Listing Notice 1, Activity 19- *The infilling or depositing of any material of more than 10 cubic meters into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;*

- Listing Notice 1, Activity 24- *The development of a road with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres;*

- Listing Notice 2, Activity 15- *The clearance of an area of 20 hectares or more of indigenous vegetation;*

- Listing Notice 3, Activity 14- *The development of infrastructure or structures with a physical footprint of 10 square metres or more where such development occurs within*

a watercourse and within sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans.

In terms of the Environmental Impact Assessment (EIA) Regulations, 2014 (as amended), this proposed development requires that a Scoping and EIR process is followed to obtain environmental authorisation (EA). Part 3 of these Regulations prescribe the process to be followed, namely:

1. **Scoping Report:** Appendix 2 of the EIA Regulations, 2014 (as amended) stipulate the required contents and process of the Scoping Report. A Scoping Report must contain the information necessary for a proper understanding of the process, informing the scope of the project and assessment as well as the consultation process to be undertaken.
2. **EIR:** Appendix 3 of the EIA Regulations, 2014 (as amended) stipulate the required contents of the EIR. An EIA process must be undertaken which will result in the EIR. The EIR will contain an Environmental Management Programme (EMPr) which will provide mitigation measures for the impacts identified during the EIA.

Purpose of the scoping process and resultant report

This Scoping Report has been compiled in accordance with these requirements and also describes the baseline receiving environment. During the EIA phase, impact assessments will be conducted with inputs from specialist assessments.

This Scoping Report will be made available for public review for a period of 30 days. Interested and Affected Parties (I&APs) will have the opportunity to send any questions or concerns about the project that they may have to the EAP. Any comments received will be included in the Final Scoping Report which will be submitted to the CA for approval, after which the project will proceed to the EIA phase. Once again, the EIR will be made available for public review before the final EIR is submitted to the CA for decision making. Once a decision has been made, the EAP will notify all registered I&APs of such a decision. Please refer to Chapters 2 and 7 for more detail regarding the EIA and Public Participation Processes respectively.

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1 INTRODUCTION

This section provides background information pertaining to the proposed activity, its location, details of the applicant, environmental assessment practitioners as well as the process required to obtain environmental authorisation.

1.1 Context and Background

The applicant, Valumax (SAFDEV SSC (Pty) Ltd) (hereafter referred to as Valumax) proposes to construct a mixed-use development with the overall objective of developing an integrated settlement which includes various land uses. This will be will be a green field development to the east of Soshunguve VV and Sushanguve East.

This development will consist of urban uses inclusive of low and higher density residential uses as well as supporting land uses and infrastructure. The ssupporting infrastructure will include, but is not limited to:

- Water, stormwater and sewage pipelines (upgrading of existing pipelines and construction of new pipelines)
- Roads (upgrading of existing roads and construction of new roads)
- Electrical services
- Telecommunication services

Supporting land uses include, but is not limited to

- Residential housing
- Banded housing
- Site and Services
- Schools
- Parks
- Clinics
- Churches
- Business and commercial development

1.2 Project Location

The proposed development is located on portions of the farms Haakdoornboom 267 JR and Kruisfontein 259 JR to the north of Pretoria, approximately 35 km from Pretoria CBD. The Mabopane highway (R80) and Soutpan Road (M 35) bound the proposed development to the west and east respectively. The Kaalplaas spruit and Metsi Metsuane spruit mark the edge of the development to the south and north respectively. The Hebron Road runs though the proposed development from west to east dividing it into two sections namely, Thorntree East North and Thorntree East South.

The following are the central coordinates of the site: 25°34'33.00"S, 28°08'10.00"E

See Figure 1 for the project location. Please refer to Annexure 5 for the list of property information.

1.3 Listed activities requiring environmental authorisation

Table 1 contains the listed activities per listing notice that are triggered by the proposed development in accordance with the project description. When an activity in listing notice 2 is triggered, a Scoping and EIR must be compiled as part of the EIA process.

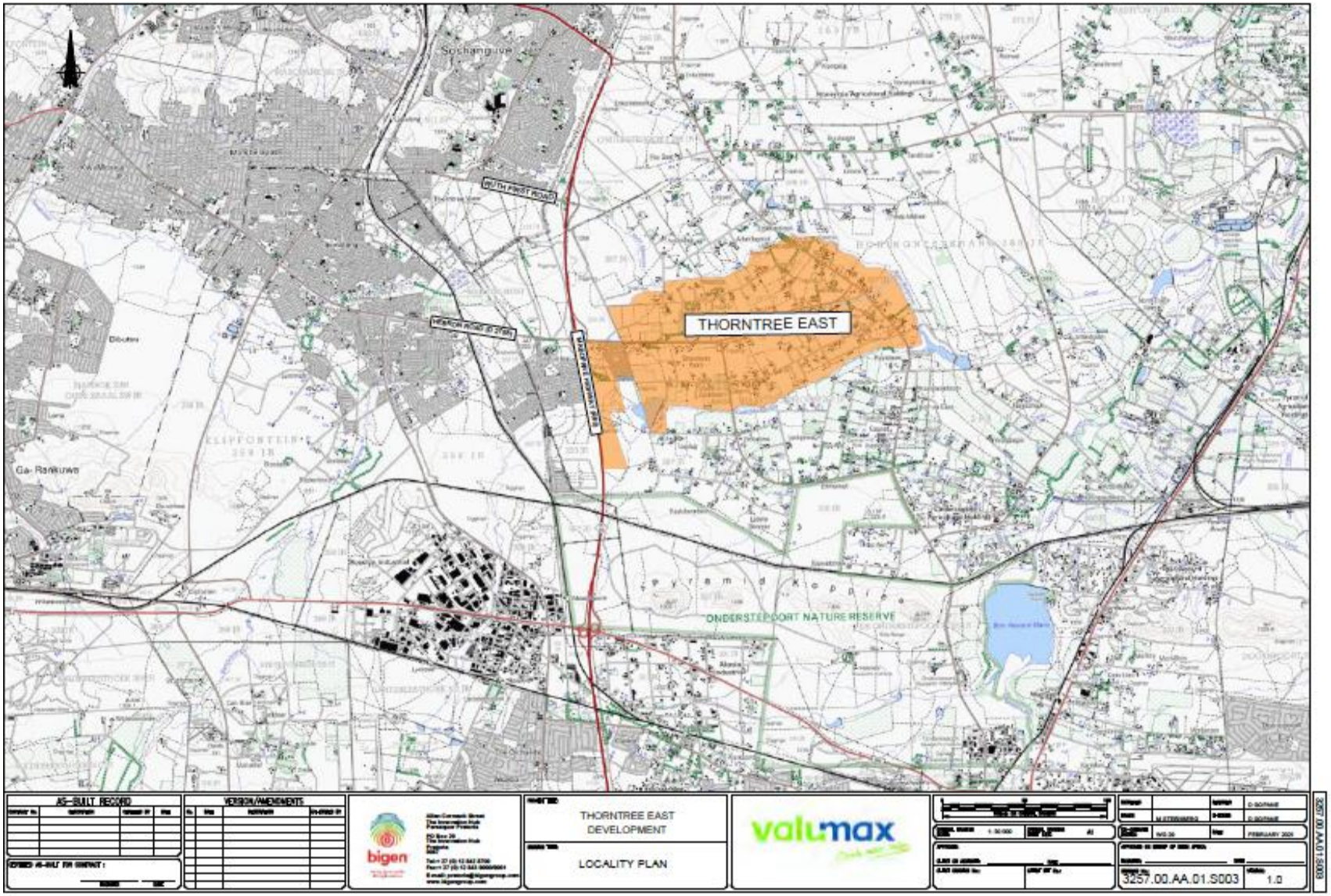

Figure 1: Thorntree East locality plan and study are

Table 1: Listed activities applicable to the proposed development

LISTING NOTICE	LISTING & ACTIVITY NO	DESCRIPTION OF LISTED ACTIVITY.	APPLICABILITY TO THE PROJECT
Listing Notice 2: No. R 325 of 2017	2.(15)	**The clearance of an area of 20 hectares or more of indigenous vegetation**, excluding where such clearance of indigenous vegetation is required for- (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.	The proposed residential project will involve the clearance of agriculture land for residential purposes. This site has been under extensive agriculture in the past. However, due to the extent of the proposed development footprint, it is expected that over 20 hectares of indigenous vegetation will be cleared.
Listing Notice 1: No. R 327 of 2017	1.(9)	**The development of infrastructure exceeding 1000 metres in length for the bulk transportation of water or stormwater**- (i) With an internal diameter of 0,36 metres or more; or (ii) **With a peak throughput of 120 litres per second or more**, Excluding where- (a) Such infrastructure is for bulk transportation of water or stormwater or stormwater drainage inside a road reserve or railway line reserve; or (b) Where such development will occur within an urban area.	A feeder bulk water line will need to be constructed to supply water to the proposed development. The proposed bulk water upgrades include bulk water pipelines ranging from 400mm diameter to 1300mm diameter which will exceed 1000 metres in length. There is no existing stormwater infrastructure in the vicinity of the proposed development. A new stormwater infrastructure will be designed to accommodate the stormwater discharge volumes yielded by the proposed development. The bulk stormwater pipeline will be designed with a minimum pipe diameter of 450mm and will exceed 1000 metres in length. The daily peak flow has been calculated at 1 234.2 litres per second for the proposed development.
Listing Notice 1: No. R 327 of 2017	1(10)	The development and related operation of infrastructure exceeding 1000 metres in length for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes- (i) With an internal diameter of 0.36 metres or more; or	The vast future developments on farm Haakdoornboom and Onderstepoort will require an entirely new system of reticulation and collector sewers, linking to the existing Kaalplaasspruit outfall sewer. Two new pump stations (Haakdoringboom 1 & 2 PS) and rising mains are required to accommodate low lying future development areas adjacent

		(ii) With a peak throughput of 120 litres per second or more, Excluding where- (a) Such infrastructure is for bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes inside a road reserve or railway line reserve; or (b) Where such development will occur within an urban area.	to the Kaalplaasspruit outfall sewer. The pipe sizes for the proposed sewer bulk pipelines are planned to range from 160 mm to 1500 mm diameter and will exceed 1000 metres in length. The average discharge is planned for 264.5 litres per second.
Listing Notice 1: No. R 327 of 2017	1.(11)	The development of facilities or infrastructure for the transmission and distribution of electricity— (i) **outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts**; or (ii) inside urban areas or industrial complexes with a capacity of 275 kilovolts or more, excluding the development of bypass infrastructure for the transmission and distribution of electricity where such bypass infrastructure is— (a) temporarily required to allow for maintenance of existing infrastructure; (b) two kilometres or shorter in length; (c) within an existing transmission line servitude; and (d) will be removed within 18 months of the commencement of development.	The construction of a new 132kV overhead powerline will be required to service the eastern portion of the proposed development.
Listing Notice 1: No. R 327 of 2017	1.(12)	The development of — (i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or	Roads, water pipelines, stormwater pipelines and bulk sewer pipelines will need to cross or be laid within 32m of the footprint's drainage lines and/or wetlands. All pipelines and associated infrastructure will, as far as possible, be kept within the road reserve to minimise the number of crossings.

		(ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; — excluding — (aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour; (bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies; (cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies; (dd) where such development occurs within an urban area; (ee) where such development occurs within existing roads, road reserves or railway line reserves; or (ff) the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the commencement of	

		development and where indigenous vegetation will not be cleared.	
Listing Notice 1: No. R 327 of 2017	1.(13)	**The development of facilities or infrastructure for the off-stream storage of water, including dams and reservoirs, with a combined capacity of 50 000 cubic metres or more**, unless such storage falls within the ambit of activity 16 of listing notice 2 of 2014.	Two new reservoirs are proposed for the Thorntree East Development, namely the Kruisfontein and Soshanguve L reservoirs.
Listing Notice 1: No. R 327 of 2017	1.(19)	The infilling or depositing of any material of more than 10 cubic meters into, or the **dredging, excavation, removal or moving of soil, sand,** shells, shell grit, pebbles **or rock of more than 10 cubic metres from a watercourse;** But excluding where such infilling, depositing, dredging, excavation, removal or moving- (a) will occur behind a development setback; (b) is for maintenance purposes undertaken in accordance with a maintenance management plan; (c) falls within the ambit of activity 21 in this Notice, in which case that activity applies; (d) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or (e) where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies.	Roads, water pipelines, stormwater pipelines and bulk sewer pipelines will need to cross or be laid within 32m of the footprint's drainage lines and/or wetlands. Soil, sand and rock removal from the watercourses will be required to do so. All pipelines and associated infrastructure will, as far as possible, be kept within the road reserve to minimise disturbance areas.
Listing Notice 1: No. R 327 of 2017	1.(24)	**The development of a road**— (i) for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Government Notice 545 of 2010; or (j) **with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres**;	The proposed development will include both newly constructed roads and the upgrading of existing roads. Road reserves will include various supporting infrastructure such as pipelines, cables etc.

		but excluding a road— (a) which is identified and included in activity 27 in Listing Notice 2 of 2014; (b) where the entire road falls within an urban area; or (c) which is 1 kilometre or shorter.	
Listing Notice 3: No. R 324 of 2017	14	**The development of-** (i) dams or weirs, where the dam or weir, including infrastructure and water surface area exceeds 10 square metres; or **(ii) infrastructure or structures with a physical footprint of 10 square metres or more;** where such development occurs- **(a) within a watercourse;** (b) in front of a development setback; or (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse, excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour.	GEOGRAPHICAL AREA BASED ON ENVIRONMENTAL ATTRIBUTES FOR GAUTENG AS PER LISING NOTICE 3: I. A protected area identified in terms of NEMPAA, excluding conservancies; II. National Protected Area Expansion Strategy Focus Areas; III. Gauteng Protected Area Expansion Priority Areas; **IV. Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng** V. Conservation Plan or in bioregional plans; VI. Sites identified within threatened ecosystems listed in terms of the National Environmental Management Act: VII. Biodiversity Act (Act No. 10 of 2004); VIII. Sensitive areas identified in an environmental management framework adopted by the relevant environmental authority; IX. Sites or areas identified in terms of an international convention;

			X. Sites managed as protected areas by provincial authorities, or declared as nature reserves in terms of the Nature Conservation Ordinance (Ordinance 12 of 1983) or the NEMPAA; XI. Sites designated as nature reserves in terms of municipal Spatial Development Frameworks; or XII. Sites zoned for conservation use or public open space or equivalent zoning.

1.4 Details of the Applicant

Table 2: Details of the Applicant

Aspect	Details
Applicant	Valumax (SAFDEV SSDC (PTY) Ltd)
Representative	Ferdinand Kerkhoff
Physical Address	78 Mogwane Street Soshanguve Thorntree View Pretoria
Contact number	0827473735
Email address	ferdinand@valumax.co.za
Fax no	0866950239

1.5 Details of the EAP

To ensure compliance with the Environmental Impact Assessment (EIA) Regulations (2014) promulgated under section 24(5) of the National Environmental Management Act, 1998 (Act no 107 of 1998) (NEMA) and environmental best practice, the applicant appointed Nali Sustainability Solutions (Pty) Ltd (NSS) as the independent Environmental Assessment Practitioner (EAP) manage the Environmental Authorisation (EA) process for the proposed project.

Table 3: Details of the EAP

Aspect	Details
Name	Nali Sustainability Solutions (Pty) Ltd (NSS)
Representative	Mr Pirate Ncube
Registration	EAPASA
Physical Address	65 Country Club Drive, Irene Farm Villages, Centurion
Postal Address	P Bag X1, Stand 1829, Irene Farm Villages, Centurion, 0045
Contact details	Tel: 0824517120: Email: ncube.nali@gmail.com
Expertise/ Experience	Vast experience in environmental management land use development. More than 27 years in land use, spatial planning and environmental management encompassing Strategic Environmental and Impact Assessments and reviews, development of Environmental Management Plans, Environmental Compliance Monitoring as well as Project Management. Served in various decision making bodies including the DFA Tribunal, Environmental Advisory

	Committee and MEC Appeals Advisory Panel. Qualified Town Planner with Masters in Real Estate and an MBA.
Assistant EAP	Ms Candice Dürr
Contact details	Tel: 0743681824 Email: durrenvironmental@gmail.com
Expertise / Experience	Over 7 years' experience in the environmental management field with vast experience and highly skilled in environmental impact assessment projects. Experienced in environmental management programmes, environmental monitoring and auditing and holds a BSc Hons degree in Environmental Management.

1.6 Legislative Aspects

The following legislation is applicable to this project and has been considered in the preparation of this report. A description of the applicability of the main legislation to this proposed development is discussed briefly below. Note that this is not an exhaustive list, but merely a high-level look at the critical laws and policies that are considered applicable.

Table 4: Applicable legislation

Title of legislation, Policy or Guideline	Administering Authority
Constitution of the Republic of South Africa (Act No 108 of 1990)	Government of South Africa
National Environmental Management Act, 1998 (Act No. 107 of 1998) and relevant regulations	Department of Forestry, Fisheries and the Environment (DFFE)
National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) and relevant regulations	DFFE
National Water Act (Act No 36 of 1998)	Department of Water and Sanitation (DW&S)
Atmospheric Pollution Prevention Act, 45 Of 1965	DFFE
Conservation of Agricultural Resources Act, 43 Of 1983	DFFE
National Heritage Resources Act No 25 of 1999 (Act No 25 of 1999 as amended)	South African Heritage Resources Agency (SAHRA)
National Environmental Management: Air Quality Act, 39 Of 2004 And Relevant Regulations	DFFE
Gauteng Environmental Management Framework	Gauteng DARD
i. Companion Guideline on the Environmental Impact Assessment Regulations, 2010 . ii. Environmental Management Framework Guidelines, 10 October 2012. iii. Gauteng Province Environmental Management Framework, 2015	Gauteng DARD

iv. Public Participation Guideline, 10 October, 10 October 2012. v. Fee Regulations Guidance Document, April 2014 vi. Guideline on need and desirability in terms of the Environmental Impact Assessment Regulations, 2010 vii. EIA Listed Activities and Timelines (January 2015)	
i. Spatial Planning and Land Use Management Act, 2013 ii. Tshwane Metropolitan Town Planning Scheme iii. City of Tshwane Spatial Development Framework (MSDF) and Integrated Development Plan (IDP) **iv.** The Municipal Systems Act, 2000 (Act No. 32 of 2000) and the Integrated Development Plans (IDP) regulates the planning processes of the local Municipality.	City of Tshwane

1.6.1 The Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996)

The Constitution should be viewed as the overarching legislation as it establishes environmental rights (Section 24). Other rights created in the Bill of Rights may impact on environmental management. An objective of local government is to provide a safe and healthy environment (Section 152) and public administration must be accountable, transparent and encourage participation.

Applicability to the proposed development:

- Ensures that proposed activity will not result in pollution and/or ecological degradation;
- Ensures that where possible conservation is promoted; and
- Ensures that the proposed activity is ecologically sustainable, while demonstrating economic and social development.

1.6.2 The National Environmental Management Act, 1998 (Act No.107 of 1998)

The National Environmental Management Act (NEMA) (Act 107 of 1998) is an all-encompassing act regulating various aspects of natural resource use, integrated environmental management and pollution control.

Environmental regulations were promulgated in terms of NEMA in 2014 to guide environmental management. These regulations include:

- GNR. 326 The Minister of Environmental Affairs, hereby make the regulations pertaining to environmental impact assessments, under sections 24(5) and 44 of the National Environmental Management Act,1998 (Act No.107 of 1998).

- GNR. 327. The purpose of this Notice is to identify activities that would require environmental authorizations prior to commencement of that activity and to identify CAs in terms of section 24(2) and 24(D) of the Act.
- GNR. 325.The purpose of this notice is to identify activities that would require an environmental authorization prior to the commencement of that activity and to identify CAs in terms of sections 24(2) and 24(D) of this Act.
- GNR. 324. The purpose of this notice is to list activities and identify CAs under sections 24(2) and 24(D) of the Act, where environmental authorisation is required prior to commencement of that activity in specific identified geographical area only.

Listed activities from these Regulations which will be triggered by the proposed project are provided in Section 1.3.

Applicability to the proposed development:

- The right to an environment that is not harmful to the health and well-being of the South African people;
- Sustainable development, environmental protection, equitable distribution of natural resources; and;
- The formulation of environmental management frameworks.

1.6.3 National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (NEMWA) and relevant regulations

The NEMWA is a law regulating waste management in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development.

The objectives of NEMWA, Act 59 of 2008 involve the protection of health, well-being and the environment by providing reasonable measures for the minimisation of natural resource consumption, avoiding and minimizing the generation of waste, reducing, recycling and recovering waste, and treating and safely disposal of waste as a last resort. In general, the act seeks to ensure that people are aware of the impact of waste on their health well-being and

the environment, and in the process giving effect to section 24 of the constitution, in ensuring an environment that is not harmful to health and well-being.

Applicability to the proposed development:

While the principles and objectives of the NEMWA should be considered during all phases of the proposed development, no sections of the Act are relevant to the proposed Thorntree Mixed-Use Development.

1.6.4 National Water Act (Act No 36 of 1998)

The National Water Act ([NWA] Act 36, 1998) identifies 11 consumptive and non-consumptive water uses which must be authorised under a tiered authorisation system. Section 27 of the NWA specifies that the following factors regarding water use authorisation must be taken into consideration:

- The efficient and beneficial use of water in the public interest;
- The socio-economic impact of the decision whether or not to issue a licence;
- Alignment with the catchment management strategy;
- The impact of the water use, resource directed measures; and
- Investments made by the applicant in respect of the water use in question.

Section 21 of the NWA identifies listed activities for which a Water use License should be obtained. The Section 21 listed activities include:

- Impeding or diverting the flow of water in a water course;
- Discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit;
- Disposing of waste in a manner which may detrimentally impact on a water resource;
- Altering the bed, banks, course or characteristics of a watercourse;

Authorisation of these water uses will form part of a separate process to the DW&S.

1.6.5 National Heritage Resources Act No 25 of 1999 (Act No 25 of 1999 as amended)

A Heritage Impact Assessment (HIA) is the process to be followed in order to determine whether any heritage resources are located within the area to be developed as well as the possible impact of the proposed development thereon. An HIA must be done under the following circumstances:

- The construction of a linear development (road, wall, power line, canal etc.) exceeding 300m in length
- The construction of a bridge or similar structure exceeding 50m in length
- Any development or other activity that will change the character of a site and exceed 5 000m2 or involve three or more existing erven or subdivisions thereof
- Re-zoning of a site exceeding 10 000 m2
- Any other category provided for in the regulations of SAHRA or a provincial heritage authority

The proposed development therefore triggers the need to conduct a HIA which will be done by an independent Heritage Specialist during the EIA phase of this project.

2 OVERVIEW OF THE EIA PROCESS

According to the Environmental Impact Assessment (EIA) Regulations, 2014 (as amended), this proposed development requires a Scoping and Environmental Impact Report (EIR) in order to apply for environmental authorisation (EA). Part 3 of these (EIA) Regulations stipulate the required process to be followed as per the following two phases, namely:

Scoping Report: Appendix 2 of the EIA Regulations, 2014 (as amended) stipulate the required contents and process of the Scoping Report. A Scoping Report must contain the information necessary for a proper understanding of the process, informing the scope of the project and assessment as well as the consultation process to be undertaken.

EIR: Appendix 3 of the EIA Regulations, 2014 (as amended) stipulate the required contents of the EIR. An EIA process must be undertaken which will result in the EIR. The EIR will contain an Environmental Management Programme (EMPr) which will provide mitigation measures for the impacts identified during the EIA.

Appendix 2 of the EIA Regulations list the following objectives that need to be met in order to ensure a comprehensive and consultative process has been followed.

a) Identify the relevant policies and legislation relevant to the activity;
b) Motivate the need and desirability of the proposed activity;
c) Identify and confirm the preferred activity and technology alternative through an impact and risk assessment and ranking process;
d) Identify and confirm the preferred site through a detailed site selection process, which includes an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified alternatives focusing on the geographical, physical, biological, social, economic, and cultural aspects of the environment;
e) Identify the key issues to be addressed in the assessment phase;
f) Agree on the level of assessment to be undertaken, including the methodology to be applied, the expertise required as well as the extent of further consultation to be undertaken to determine the impacts and risks the activity will impose on the preferred site through the life of the activity, including the nature, significance,

consequences, extent, duration and probability of the impacts to inform the location of the development footprint within the preferred site; and

g) Identify suitable measures to avoid, manage or mitigate identified impacts and to determine the extent of the residual risks that need to be managed and monitored.

An overview of the EIA process is set out in Table *5*.

Table 5: Overview of EIA process

APPLICATION PHASE
• Submit Application form to Competent Authority (GDARD) • Inform registered I&APs of application.
SCOPING PHASE
• Prepare Scoping Report • Advertise and make Scoping Report available for public review • Incorporate responses received from all stakeholders • Finalise Scoping Report and circulate to all stakeholders • Submit Scoping Report to GDARD
EIA PHASE
• Undertake specialist assessments • Prepare EIR and EMPr • Advertise and make reports available for public review and hold public participation meeting • Incorporate responses received from all stakeholders • Finalise EIR and EMPr and circulate to all stakeholders • Submit final reports to GDARD
DECISION PHASE
APPEAL PROCESS

3 PROJECT DESCRIPTION

This section provides details of the proposed activity and associated infrastructure.

3.1 Project Description

The proposed Thorntree East mixed-use development entails the transformation of approximately 400 ha of agriculturally zoned land to an urban development, predominately affordable housing development which will include all supporting land uses and infrastructure services, such as:

- Water, stormwater and sewage pipelines (upgrading of existing pipelines and construction of new pipelines)
- Roads (upgrading of existing roads and construction of new roads)
- Electrical services
- Telecommunication services
- Residential housing
- Bonded housing
- Site and Services
- Schools
- Parks
- Clinics
- Churches
- Business and commercial use.

The final layout plan will be guided by the development constraints and opportunities presented by the site. Included among these are the shape of the land, nature of adjacent land uses, the need for efficiency in land allocation in relation to infrastructure services, specialist and engineering recommendations, the wetland areas, areas of ecological sensitivity and geological constraints, as well as future roads adjacent to but outside of the development area. However, the Environmental Impact Assessment (EIA) and associated specialist studies will inform the final layout. Figure illustrates the development's future spatial plan. More detailed plans will be included in the EIR.

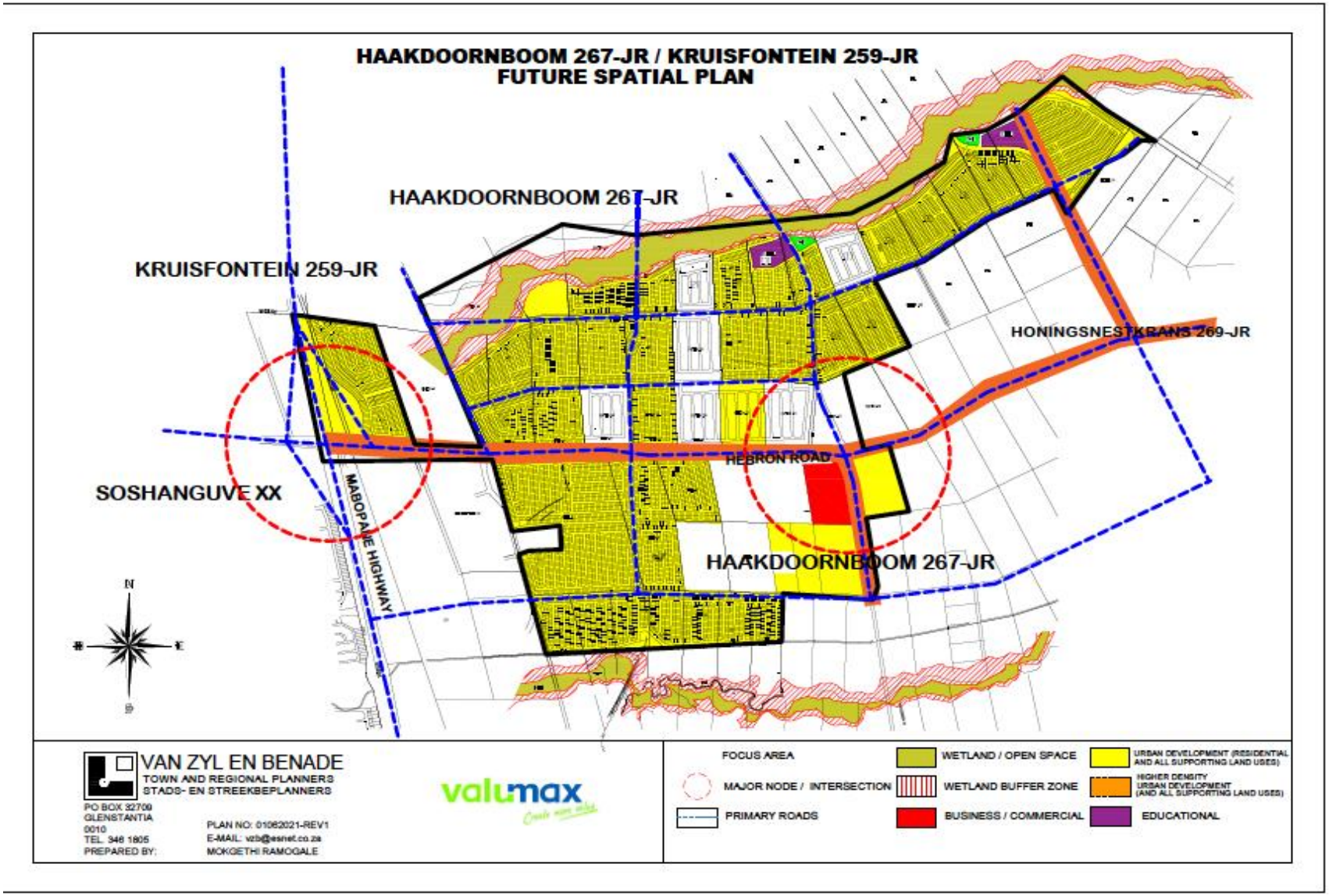

Figure 2: Future Spatial Plan for the Thorntree East Development

3.2 Description of infrastructure services

Various supporting infrastructure services will be required to service the proposed development. These services are discussed in this section.

3.2.1 Roads

The development includes the upgrading of existing roads as well as the construction of new internal roads.

The existing roads in the vicinity of the proposed development includes the following:

- The R80, a north-south dual carriageway that connects Pretoria West and Soshanguve.
- The M35 road (Soutpan Road), running on the eastern direction of the proposed development.
- The K216/D2758 (Hebron Road), a single carriageway road that also runs from west to east dividing the proposed development into Thorntree East North and Thorntree East South.
- Haakdoornboom Road that connects to Hebron road in the northern direction and connect to Soutpan Road in the eastern direction.
- The primary access to the proposed development will be via the existing single carriageway Hebron road (K216/D2758) from Mabopane highway (R80) and Soutpan road (M35). The proposed bulk road upgrades will be as per the Traffic Impact Study for the development.
- The proposed roads upgrades will be as per the City of Tshwane masterplan.

Standard details of the roads will conform to the latest City of Tshwane requirements. All road reserves will include the following services:

- Water pipes;
- Sewer pipes;
- Electrical cables;
- Stormwater pipes;
- Road layer works;

- Road furniture;
- Road asphalt; and
- Telecommunication cables

The proposed internal roads will be designed to connect to the proposed bulk roads. The road reserves and road width will be as per the approved layout by the City of Tshwane. See Figure 3 for more detail.

3.2.2 Stormwater

The proposed development is bound by the Kaalplaas spruit and Metsi Metsuane spruit to the south and north respectively. The 1:100 year floodline and wetland/river buffer zones affect the proposed development.

The stormwater design standards proposed for the implementation of the proposed development will be in accordance to the City of Tshwane's standards and minimum requirements and the stipulations in the *Guidelines for the provision of Engineering Services and Amenities in Residential Township Development* ("The Red Book") and SANRAL '*Drainage Manual*".

Detailed information will be retrieved from the specialist reports to further inform the stormwater designs.

There are three stormwater drainage areas on the proposed development namely drainage area A to C (see Figure 5). Drainage area A drains to the north of the proposed development into tributary Metsi Metsuane, while drainage area B drains to the north eastern side of the development and drainage area C drains to the south of the proposed development into Kaalplaasspruit.

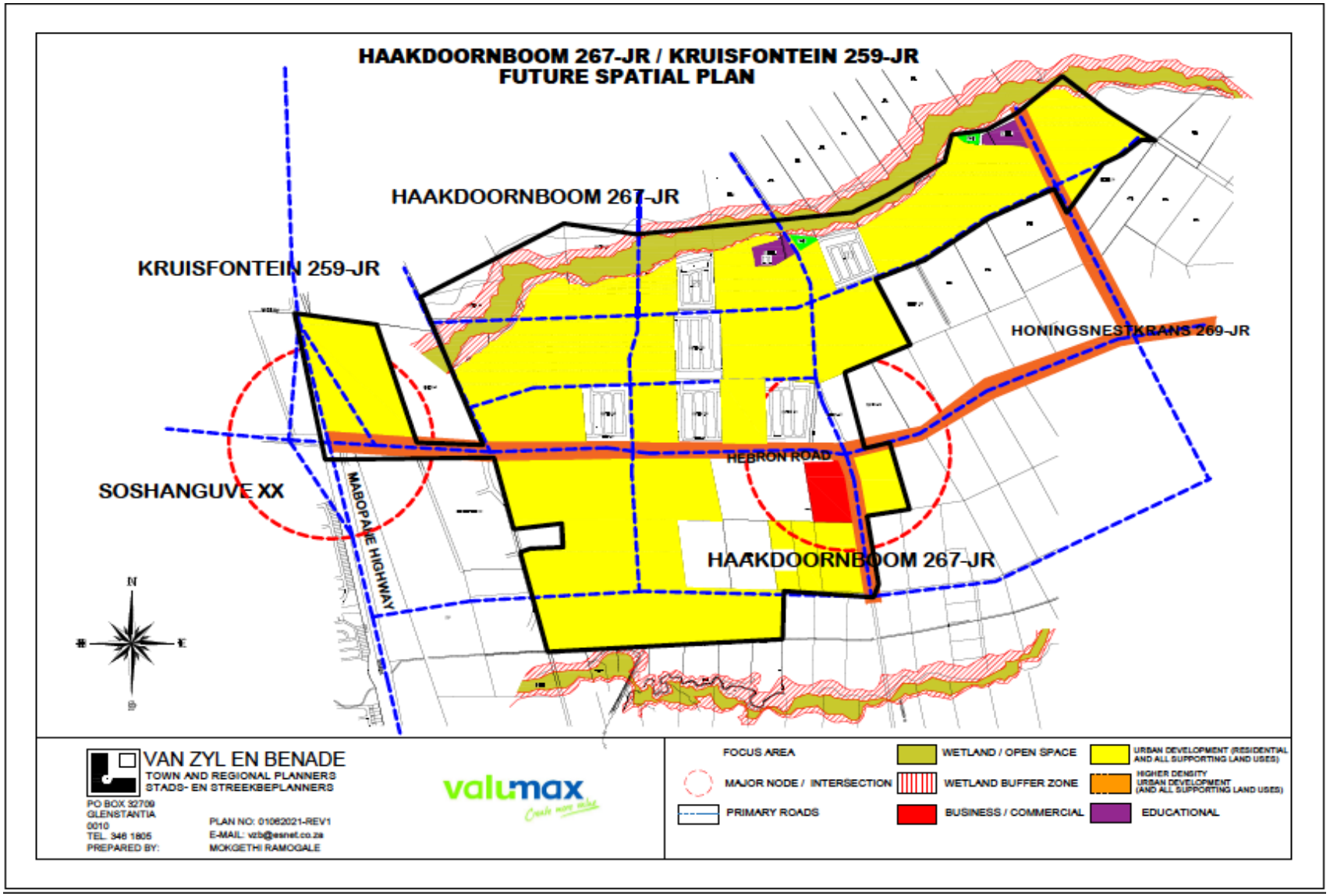

Figure 3: Proposed roads drawing

There is no existing stormwater infrastructure in the vicinity of the proposed development. A new stormwater infrastructure will be designed to accommodate the stormwater discharge volumes yielded by the proposed development.

The bulk stormwater pipeline will be designed with a minimum pipe diameter of 450mm.The minor and major systems will be designed to accommodate a 1:2 and 1:20 year design flood respectively. Roads will form an integral component of both the major and minor system. The stormwater designs (major & minor event) for the predevelopment scenario make use of a run-off factor of C = 0.28. The stormwater designs (major & minor event) for the post-development scenario will have a run-off factor of C = 0.6.

The internal stormwater system will be designed with a minimum pipe diameter of 450mm.The system will be designed to collect stormwater into the bulk stormwater infrastructure. The design will be done in accordance to the City of Tshwane guidelines and standards. The stormwater pipes will be located in the road reserves.

The kerb inlets will be designed to accommodate the 1:2 year flood (post development) and the 1:20 year floods (pre-development). The roads are typically designed to accommodate the 1:20 year flood event in which case the roadway will be flooded to a certain extent based on the road class. No uncontrolled stormwater drainage will be permitted in order to safeguard human life and protect property from the risk of damage.

3.2.3 Water

The City of Tshwane water guidelines for the design and construction of water and sanitation systems will be used as a guideline to the bulk water reticulation network for the proposed development. Bulk and internal water reticulation are described below.

Bulk water reticulation- The proposed development falls in the Kruisfontein and Soshanguve L reservoir zones. Two proposed connections are shown in Figure 4. Proposed connection A is located at Ruthfirst Road to the north west of the proposed development. Connection B is located at the existing Kruisfontein reservoir.

A feeder bulk water line will need to be constructed to supply water to the proposed development. The proposed bulk water upgrades include the following:

- Bulk water pipelines ranging from 400mm diameter to 1300mm diameter;
- New Kruisfontein and Soshanguve L reservoir; and
- PRV & Water meter chamber.

Internal water reticulation- The internal water reticulation will be installed in accordance with the proposed design norms and standards for water as described above. The internal water pipes will connect to the new proposed bulk water reticulation upgrades. The water infrastructure will be constructed in road reserves and servitudes located in between stands. The internal water network is designed to provide a connection point to each stand.

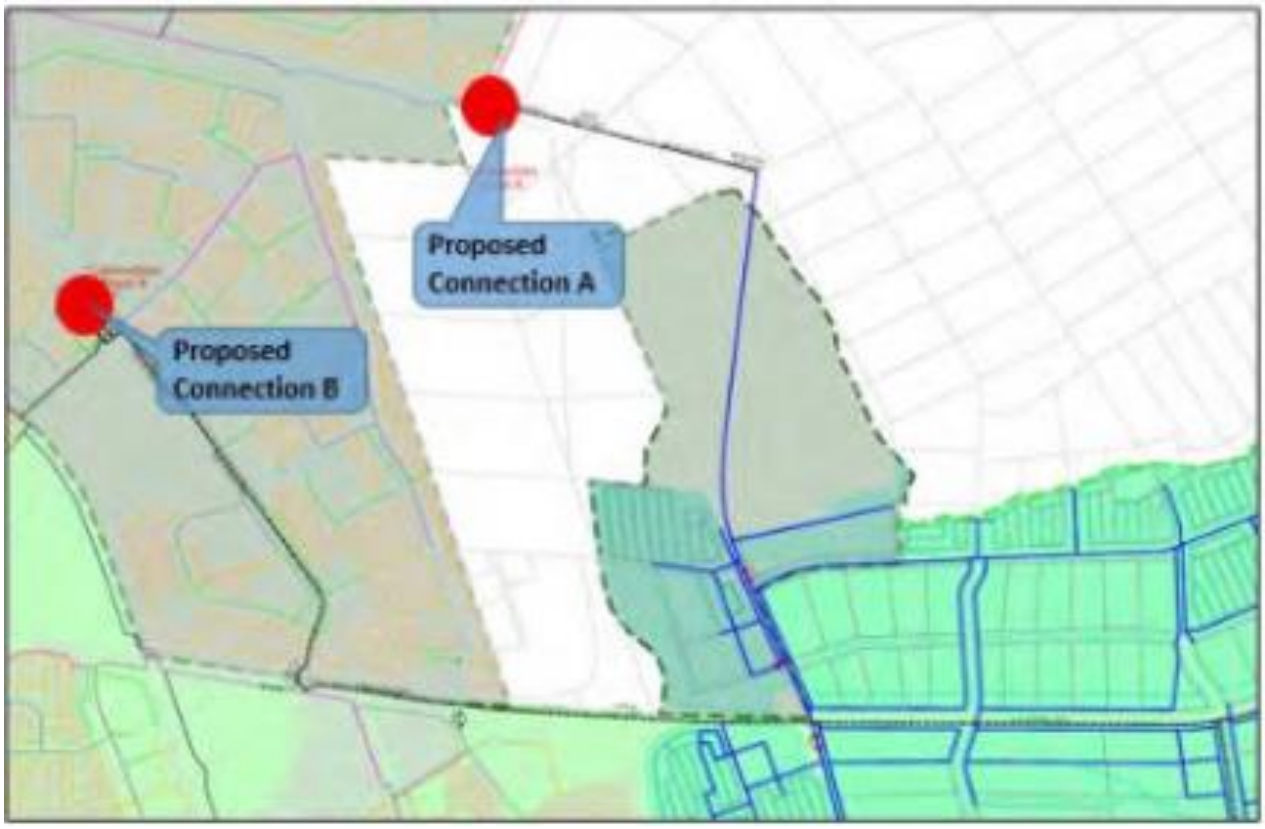

Figure 4: Diagram illustrating the two proposed bulk water connections

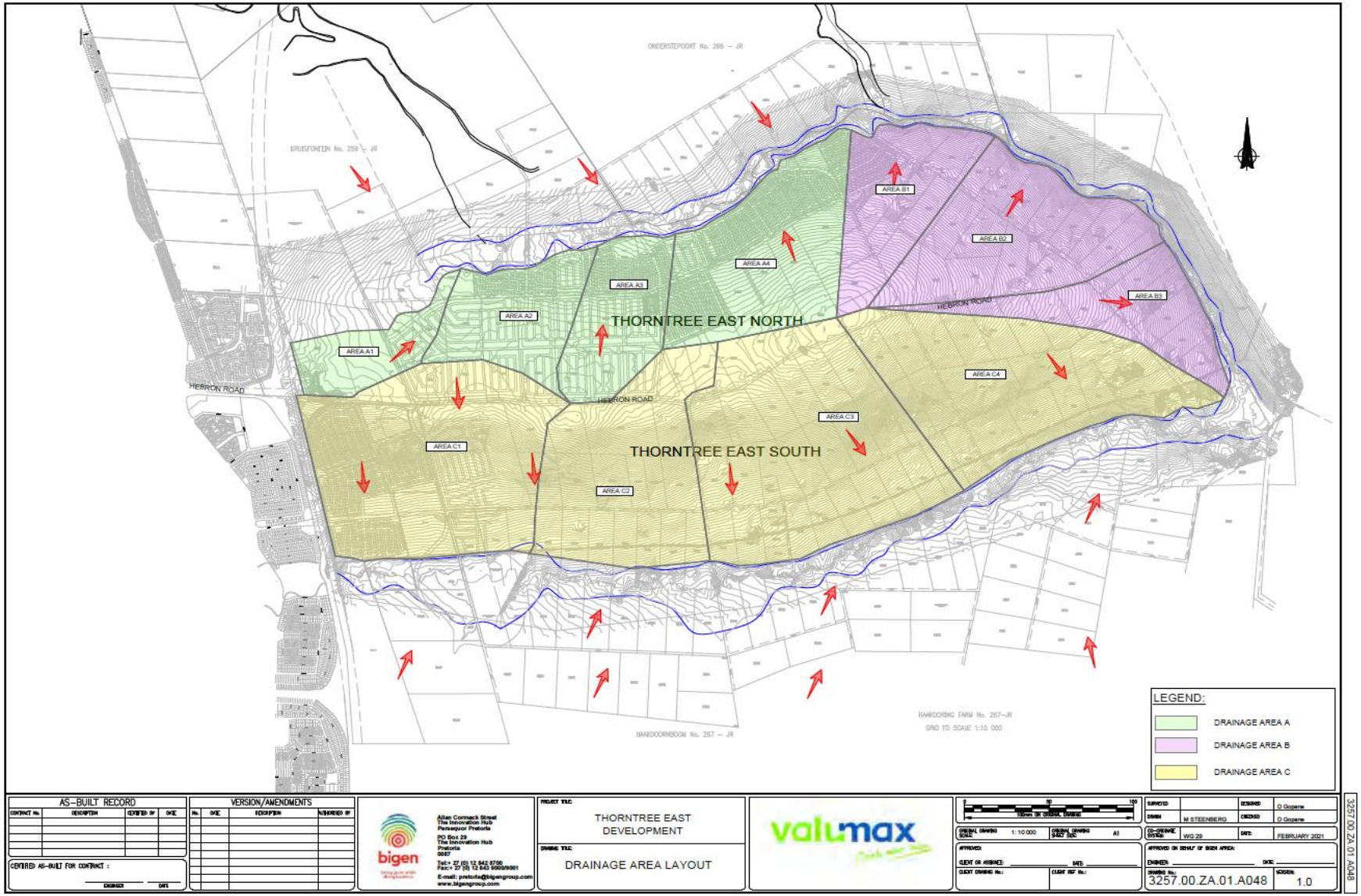

Figure 5: Drainage area layout

3.2.4 Sanitation

The proposed development falls within the Rooiwal 1 drainage area. The sewer from Rooiwal drainage area is discharged into the Rooiwal outfall sewer and treated at the Rooiwal (West and North) Wastewater Treatment Works.

The vast future developments will require an entirely new system of reticulation and collector sewers, linking to the existing Kaalplaasspruit outfall sewer. Two new pump stations (Haakdoringboom 1 & 2 PS) and rising mains are required to accommodate low lying future development areas adjacent to the Kaalplaasspruit outfall sewer.

The City of Tshwane water and sewer master plan of December 2020 Rooiwal_Daspoort_Zeekoegat) outlined the proposed bulk sewer pipelines to be constructed for the proposed development. The pipe sizes for the proposed sewer bulk pipelines, as per the City of Tshwane masterplan, have pipe sizes ranging from (but not limited to) 160 mm to 1500 mm diameter. See Figure 6.

The internal sewer network is designed to provide a connection point to each stand. Sewer infrastructure will be constructed in road reserves and servitudes located in between stands. The internal sewer network will connect to the proposed bulk sewer line. The internal sewer reticulation will be installed in accordance with the proposed design norms and standards for water as described in the City of Tshwane water guidelines. The level of service to be provided to stands in the development is a waterborne sewer connection to each stand.

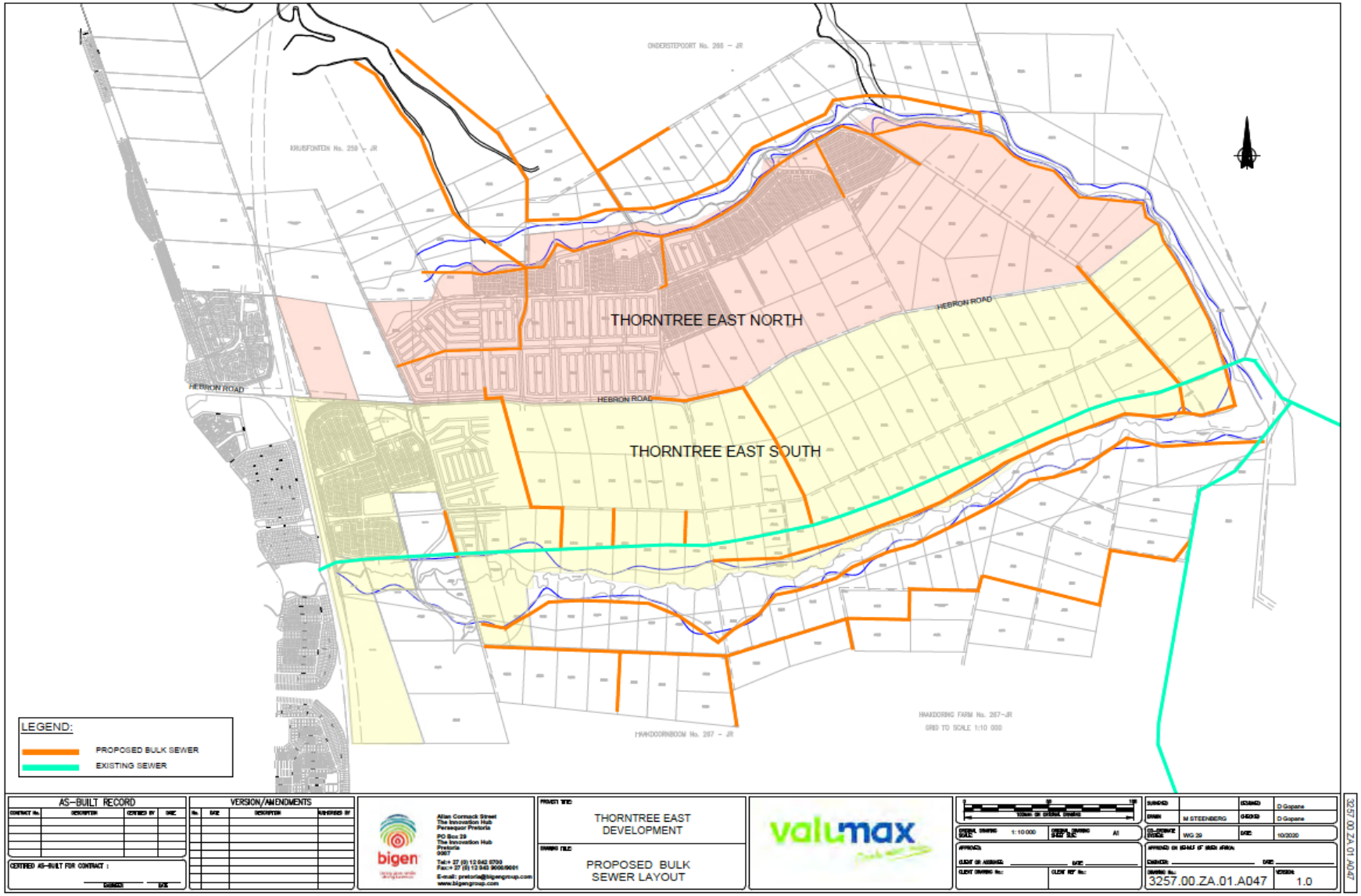

Figure 6: Proposed Bulk Sewer drawings

3.2.5 Electrical Services

The electrical supply authority for the area is the City of Tshwane. The proposed development falls in an area that is currently serviced by existing rural electrical distribution networks which will not be able or allowed to supply any proposed developments. Due to the large extent of the proposed development and the City of Tshwane's existing and proposed bulk electrical infrastructure, the bulk electrical capacity required by the proposed development will be supplied from three 132/11kV Primary Substations, namely:

Existing 132/11kV K1 Substation- This existing substation will supply the north-western portion of the proposed development, approximately up to the intersection of Hebron and Haakdoornboom Roads.

The bulk will be supplied via 11kV underground copper cables to be installed up to new 11kV satellite substations to be constructed at optimum positions in the proposed development. From these satellite substations, the internal electrical networks will consist of 11kV underground copper cable-rings fed from the satellite substations, that will energise miniature substations and Ring Main Units (RMU's).

The positions of the satellite substations will only be determined during the detail design phase of the internal electrical networks. The cable routes for all the above-mentioned link and internal cables, as well as the position of the miniature substations and RMU's will also only be determined during the detail design phase, but all these services will be installed in the road reserves of the proposed development.

Existing 132/11kV Rosslyn Substation- this existing substation will supply the south-western portion of the proposed development. The bulk will also be supplied via 11kV underground copper cables to be installed up to new 11kV satellite substations to be constructed at optimum positions in the proposed development. The rest of the electrical networks will be the same as discussed above.

Proposed 132/11kV Onderstepoort Substation -The eastern portion of the proposed development falls in an area that is not yet serviced by a City of Tshwane 132/11kV Primary

substation. The City of Tshwane have, however, commenced with the preliminary planning process of a new substation to be constructed to provide bulk electrical capacity to the area. The proposed position of the substation as well as the route of the proposed new 132kV overhead line that will have to be constructed to supply the substation is indicated by the yellow placemark (substation) and orange line (overhead line) in the image below.

Figure 7: Proposed Onderstepoort substation and proposed overhead line

The proposed 132kV overhead line will be supplied from the existing 400/132kV Buffel Substation. The bulk will also be supplied via 11kV underground copper cables to be installed from the proposed Onderstepoort substation once it has been completed up to new 11kV satellite substations to be constructed at optimum positions in the proposed development. The rest of the electrical networks will be the same as discussed above.

4 NEED AND DESIRABILITY

The EIA Regulations require a Scoping Report to describe the need and desirability of the proposed activity. The Department of Environmental Affairs (DEA) published the Guideline on Need and Desirability in 2017. This guideline has been used to answer specific questions related to the proposed activity. The table below addresses these issues and details how the need and desirability of the proposed development were considered during the EIA process.

Guideline Question	Response
Section 1: Securing Ecological Sustainable Development and Use of Natural Resources	
1. *How will this development (and its separate elements/aspects) impact on the ecological integrity of the area?*	Refer to section 8 for a description of the potential terrestrial and aquatic ecological impacts identified for the project. In summary, the development of a mixed-use development in close proximity to two separate watercourses is predicted to impact the ecology of the area negatively. During the EIA phase, specialist studies will assess these areas and confirm potential impacts and their appropriate mitigation measures. A buffer zone of 30m along a wetland associated with the watercourses have been proposed and recommended to the developer.
1.1 How were the following ecological integrity considerations taken into account?	
Threatened ecosystems;	The vegetation types found on the study site are *Marikana Thornveld* and Central Sandy Bushveld as shown in Figure 10. The Marikana Thornveld vegetation is Least Threatened. The Central Sandy Bushveld vegetation is Vulnerable. Further assessment in these fields of studies, and the updating of identified impacts and recommended mitigation and management measures will be included in the EIA Report and associated EMPr during the EIA phase of this project.
Sensitive, vulnerable, highly dynamic or stressed ecosystems;	The South African National Biodiversity Institute (SANBI) RedList website will be used to determine the conservation status of the species found during the ecological impact assessment site survey. This is done in

Guideline Question	Response
	order to identify and conserve sensitive species and their immediate environment. Results will be included in the EIR.
Critical Biodiversity Areas (CBAs) and other Ecological Support Areas (ESAs);	In terms of Gauteng Conservation Plan (C-Plan), only small portion of the proposed project falls within Important Area and Ecological Support Area (see Figure 11). These areas are associated with wetland and drainage lines. The developer has incorporated the drainage lines and wetland area in their preliminary Site Development Plan (Fig. 6). The remaining majority of the portions have been severely transformed by historical and current farming activities and residential properties.
Conservation targets;	Conservation targets for the Marikana Thornveld and Central Sandy Bushveld vegetation types are 24% and 19% respectively. Refer to Section 6 for more detail. Furthermore, detailed mitigation measures related to potential impacts will be included in the EIR.
Ecological drivers of the ecosystem;	Ecological drivers related to the affected ecosystem will be assessed during the Specialist Assessment and included in the EIR.
Environmental Management Framework;	GDARD decided to produce an Environmental Management Framework for the whole of Gauteng (GPEMF). The GPEMF replaces all other EMFs in Gauteng with the exception of the Cradle of Humankind World Heritage Site which is incorporated within the GPEMF. The objective of the GPEMF is to guide sustainable land use management within the Gauteng Province. The GPEMF and the GPEMF Standard, 2018 have informed the EIA process for the proposed project. No exclusions apply to this project. The proposed development footprint falls within a low control area of the GPEMF and is classified as a rural development priority area.

Guideline Question	Response
Spatial Development Framework; and	The Regional Spatial Development Framework, 2018 was used to access the demographic information and social vulnerability and other important information related to Region 2, of which this proposed project forms part of.
Global and international responsibilities relating to the environment.	The proposed project is not anticipated to impact on any global or international commitments. However, the appointed specialists will take global and international responsibilities into account when mapping and describing the affected environment. More detail will be included in the EIR.
1.2 How will this development disturb or enhance ecosystems and/or result in the loss of biological diversity?	As the development is proposed on a green field site close to various watercourses and associated wetlands, some ecological disturbance and loss of biological diversity is expected. Ecological and wetland assessments will be conducted to determine the potential negative impacts in relation to the current/existing receiving environment and will be presented in the EIR. Refer to Sections 6 and 8.
What measures were explored to firstly avoid these negative impacts, and where these negative impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts?	A buffer zone has been recommended to the developer as a measure to protect the watercourses within the study area and development zone. Refer to Section 8 for predicted potential impacts. Specialist assessments will be conducted to better determine potential impacts and mitigation measures will be proposed to minimise these impacts. Such detail will be included in the EIR.
What measures were explored to enhance positive impacts?	Predicted positive impacts include the implementation of alien/invasive species management during the construction phase of the project as well as the motivation for the developer to make use of indigenous plant species during landscaping/rehabilitation. As the current zoning of the area is agricultural, this will be seen as a positive impact due to the magnitude of alien/invasive species currently occupying the proposed

Guideline Question	Response
	development site. Measures to enhance positive impacts related to the biophysical environment will be included in the EIR and will be based on the specialist assessments.
1.3. How will this development pollute and/or degrade the biophysical environment?	As the development is proposed on a green field site close to various watercourses and associated wetlands, some pollution and degradation to the biophysical environment is expected, such as an increase in sediment in the aquatic environment during construction. Ecological and wetland assessments will be conducted to determine the potential negative impacts in relation to the current/existing receiving environment and will be presented in the EIR. Refer to Sections 6 and 8.
What measures were explored to firstly avoid these impacts and where these negative impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts?	A buffer zone has been recommended to the developer as a measure to protect the watercourses within the study area and development zone. Refer to Section 8 for predicted potential impacts. Specialist assessments will be conducted to better determine potential impacts and mitigation measures will be proposed to minimise these impacts. Such detail will be included in the EIR.
What measures were explored to enhance positive impacts?	Measures to enhance positive impacts related to the biophysical environment will be included in the EIR and will be based on the specialist assessments.
1.4 What waste will be generated by this development?	Waste related to the construction of the mixed-use development will include: • Building rubble; • Domestic waste; • Sewage waste; • Hazardous waste (mainly hydrocarbons); • Steel; • Wood; and • Other construction related waste. During the operations phase, meaning once the residential, commercial and public/social areas are

Guideline Question	Response
	occupied, it is expected that domestic, grey water and sewage waste will be the main source of waste from the development. Other known waste will include medical waste from the proposed clinic. Further waste sources will be from businesses that may be opened in the business hub. The nature of such businesses is currently not known.
What measures were explored to firstly avoid waste, and where waste could not be avoided altogether, what measures were explored to minimise, reuse and/or recycle the waste?	The EMPr will describe measures to minimise, reuse and/or recycle waste during both construction and operational phases of the project. Such measures will include: • Waste separation bins will be provided during construction; • Waste reduction, separation and recycling will be included in inductions and environmental awareness campaigns on site. • Reusable wastes such as soil, wood, steel, etc. will be stored for possible reuse. • Coordinate with other trades on site and nearby businesses for potential reuse or 'waste exchange'. The EMPr will be included in the EIR.
What measures have been explored to safely treat and/or dispose of unavoidable waste?	The EIR and EMPr will require the safe disposal of all remaining waste streams to the appropriately licensed landfill site.
1.5 How will this development disturb or enhance landscapes and/or sites that constitute the nation's cultural heritage? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts?	A Heritage Impact Assessment will be conducted as part of the Specialist Assessments for the project. The impacts and mitigation measures will be included in the EIR.

Guideline Question	Response
What measures were explored to enhance positive impacts?	
1.6 How will this development use and/or impact on non-renewable natural resources? What measures were explored to ensure responsible and equitable use of the resources? How have the consequences of the depletion of the non-renewable natural resources been considered? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	The Thorntree Mixed-use Development will be connected to municipal services for electrical, water and sanitation services. The following methods toward energy efficiency are proposed to be investigated for possible implementation by the proposed project: • Use of energy efficient lighting; • Use of day light wherever possible until artificial lighting is required; • Use of renewable solar powered lighting for external lighting; • Education and awareness of residents to switch off all electrical appliances when not in use; • Use of solar water heating; • Setting thermostats of water heaters at the most efficient level; • Insulation of hot water pipes and hot water storage tanks; • Use of housing insulation in roofs and ceilings; and/or Use of appropriately sized conductors to reduce the energy losses during distribution of electricity.
1.7 How will this development use and/or impact on renewable natural resources and the ecosystem of which they are part? Will the use of the resources and/or impact on the ecosystem jeopardise the integrity of the resource and/or system taking into account carrying capacity restrictions, limits of acceptable change, and thresholds? What measures were explored to firstly avoid the use of	Refer to Section 8 for a description of potential impacts on the terrestrial and aquatic environment. All identified impacts and any new impacts will be further assessed during the EIA phase of the project, the findings of which will be presented in an EIA Report and associated EMPr.

Guideline Question	Response
resources, or if avoidance is not possible, to minimise the use of resources? What measures were taken to ensure responsible and equitable use of the resources? What measures were explored to enhance positive impacts?	
Does the proposed development exacerbate the increased dependency on increased use of resources to maintain economic growth or does it reduce resource dependency (i.e. de-materialised growth)? (note: sustainability requires that settlements reduce their ecological footprint by using less material and energy demands and reduce the amount of waste they generate, without compromising their quest to improve their quality of life)	The proposed Thorntree Mixed-Use development is not expected to increase the dependency on the use of existing resources. Residents expected to occupy the development will largely be made up of local residents who currently make use of the City of Tshwane's resources. Connectivity of the municipal services to a newly built development will be more sustainable and efficient. Residents are likely to be employed within the development and the use of resources related to travel will therefore be reduced. In addition, municipal services will be expanded to accommodate the new development.
Does the proposed use of natural resources constitute the best use thereof? Is the use justifiable when considering intra- and intergenerational equity, and are there more important priorities for which the resources should be used (i.e. what are the opportunity costs of using these resources this the proposed development alternative?)	The proposed project entails the development of a residential township where a large portion of the proposed study area is zoned as agricultural However, various portions of the area are currently not used for agriculture but for residential and other small businesses. Where natural resources will be impacted upon by the proposed development, mitigation and/or management measures will be recommended, and will be updated and included in the finalised EIR and associated EMPr.
Do the proposed location, type and scale of development promote a reduced dependency on resources?	The establishment of a mixed-use development will inevitably require a dependency on certain resources related to housing, commercial and social establishments. However, residents expected to occupy the development

Guideline Question	Response
	will largely be made up of local residents who currently make use of the City of Tshwane's resources. Connectivity of the municipal services to a newly built development will be more sustainable and efficient. Residents are likely to be employed within the development and the use of resources related to travel will therefore be reduced. In addition, municipal services will be expanded to accommodate the new development.
1.8 How were a risk-averse and cautious approach applied in terms of ecological impacts?	Due to the presence of various watercourses within the development footprint, a buffer zone was recommended to the developer during the initial stages of the project planning. The Ecological and Aquatic specialist assessments will further inform the designs to ensure a risk-averse and cautious approach to potential ecological impacts.
What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)	Due to the large number of privately-owned properties in the neighbouring farm portions, it would be considered an invasion of privacy to include all neighbouring properties in the specialist assessments (field surveys). While all efforts are made to cover a total area during the specialist assessments, there is always the possibility of oversight, especially in overgrown or heavily disturbed areas (dump sites, etc.). The EAP assumes that information gathered from the applicant, specialists, and engineer is accurate and adequate for the assessment of potential impacts that may arise from the proposed development. It is also assumed that all mitigation, management, and monitoring measures prescribed in the EIR and the accompanying EMPr (when available) will be implemented by the proponent. There are no significant gaps in knowledge beyond the details of the design which are to be determined at a later stage. At the time of this

Guideline Question	Response
	report, the project had not yet completed detailed designs and layouts of the development were in conceptual design phase. Detailed designs will be generated if the project receives Environmental Authorisation from GDARD. In addition, micro-siting, based on additional specialist requirements during the EIA phase (if applicable) needs to occur. It is assumed that there will be no accommodation for the construction phase staff on site.
What is the level of risk associated with the limits of current knowledge?	A risk averse and cautious approach will be applied in the identification and assessment of potential impacts related to the development. During the EIA phase of the project, the consequences of all impacts will be identified in the impact assessment, and mitigation measures will be provided to ensure the impacts are as low as possible. The precautionary principle of environmental management will thereby be applied throughout the EIA process to ensure that all potential impacts (both positive and negative) are assessed. The level of risk associated with the limits of current knowledge described above is therefore considered to be low.
Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?	Where it is not possible to access neighbouring farm portions, a desktop assessment will further inform the site surveys. The fact that detailed designs will be completed at a later stage ensures that it will be based on additional specialist requirements during the EIA phase, which corresponds with the objective of a risk-averse and cautious approach.
1.9 How will the ecological impacts resulting from this development impact on people's environmental right in terms of the following:	
Negative impacts: e.g. access to resources, opportunity costs, loss of amenity (e.g. open space), air and	Refer to Section 8 which details the potential impacts identified during the scoping phase. All identified impacts and any new impacts will be further assessed during the

Guideline Question	Response
water quality impacts, nuisance (noise, odour, etc.), health impacts, visual impacts, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts?	EIA phase of the project, and the findings will be presented in an EIR and associated EMPr.
Positive impacts: e.g. improved access to resources, improved amenity, improved air or water quality, etc. What measures were taken to enhance positive impacts?	Refer to Section 8 which details the potential impacts identified during the scoping phase. All identified impacts and any new impacts will be further assessed during the EIA phase of the project, and the findings will be presented in an EIR and associated EMPr.
1.10 Describe the linkages and dependencies between human wellbeing, livelihoods and ecosystem services applicable to the area in question and how the development's ecological impacts will result in socio-economic impacts (e.g. on livelihoods, loss of heritage site, opportunity costs, etc.)?	Refer to Section 6 for the socio-economic baseline of the study area. Furthermore, refer to Section 8 for the identified socio-economic impacts. The identified socio-economic impacts and any new related impacts as well as their proposed mitigation measures will be presented in an EIR and associated EMPr.
1.11 Based on all of the above, how will this development positively or negatively impact on ecological integrity objectives/targets/considerations of the area?	Refer to Section 8 which details the potential impacts identified during the scoping phase. All identified impacts and any new impacts will be further assessed during the EIA phase of the project, and the findings will be presented in an EIR and associated EMPr.
1.12 Considering the need to secure ecological integrity and a healthy biophysical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different	Refer to Section 5 which details the alternatives considered for this project. Various physical constraints prevented the consideration of site location alternatives, however construction, sustainability and layout alternatives were considered.

Guideline Question	Response
impacts being proposed), resulted in the selection of the "best practicable environmental option" in terms of ecological considerations?	
1.13 Describe the positive and negative cumulative ecological/biophysical impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and existing and other planned developments in the area?	Refer to Section 8 which details the potential positive, negative and cumulative impacts identified during the scoping phase. All identified impacts and any new impacts will be further assessed during the EIA phase of the project, and the findings will be presented in an EIR and associated EMPr.
Section 2: Promoting Justifiable Economic and Social Development	
2.1 What is the socio-economic context of the area, based on, amongst other considerations, the following considerations?	
The IDP (and its sector plans' vision, objectives, strategies, indicators and targets) and any other strategic plans, frameworks of policies applicable to the area; *Spatial priorities and desired spatial patterns (e.g. need for integrated of segregated communities, need to upgrade informal settlements, need for densification, etc.);* *Spatial characteristics (e.g. existing land uses, planned land uses, cultural landscapes, etc.); and* *Municipal Economic Development Strategy ("LED Strategy").*	According to the approved Tshwane Integrated Development Plan (IDP) of 2019/20, "job-creating economic growth forms a central, if not the most important part of the solution to the triple threat of poverty, inequality and unemployment." The IDP states that in 2017, there was a total of 386 000 unemployed people in City of Tshwane, which is an increase of 150 000 since 2007, which recorded a number of 236 000 unemployed people in City of Tshwane. This 2017 data of total number of unemployed people in City of Tshwane constitutes 18.64% of the total number of unemployed people in Gauteng, with an unemployment rate of 24% in 2017. The following key IDP priorities will be enhanced through the Thorntree East Development: • Building integrated communities by developing a mixed-use development; • Improving access to public healthcare services by including a healthcare clinic in the development;

Guideline Question	Response
	• Delivering high-quality services by installing new infrastructure for the development such as roads, pipelines and electrical infrastructure. Apartheid left South Africa with a fragmented spatial form. Spatial priorities and solutions for Tshwane include: • Reverse the spatial patterns of apartheid; • Plan for compact cities and transport corridors; • Reduce the need to travel; • Compact cities by creating more infill and multi-storey developments, as well as a mix of land uses. Residential development in Region 2 should be guided by the principles contained in the Tshwane Compaction and Densification Strategy. The core principles of this strategy are the following: • Densification must contribute to the overall structure and functionality of the metropolitan area in that it takes place in a balanced, focused, structured and meaningful way. • Appropriate higher-density housing opportunities at appropriate locations must be provided for all income groups in order to promote the aims of social integration. • Specific areas of opportunity or areas in need for restructuring should be identified (areas that should not be densified for specific reasons should also be identified). • Areas targeted for densification should be well served by public transport or have the potential to be well served by public transport in future. • Pedestrianisation must be included in the densification process and 1,8 m walkways must be provided on erf boundaries in these areas by developers in accordance with the non-motorised

Guideline Question	Response
	transport priority map in Tshwane Compaction and Densification Strategy. • Areas targeted for densification should be well served by social facilities such as for education, open space, recreation etc or have the potential to be well served by social facilities. • Open space, farmland, natural beauty and critical environmental areas should be preserved and enhanced. • Cultural assets should be retained, encouraged and enhanced. • Densities for social housing developments, old-age homes and retirement centres, hostels and boarding houses, and student accommodation will be evaluated on their own merits, and location and accessibility to social infrastructure will play an important role. With the proposed development's objective to create a mixed-node development which will include a school, clinic and other social amenities together with housing and commercial structures, the development falls in line with the principles as highlighted above.
2.2 Considering the socio-economic context, what will the socio-economic impacts be of the development (and its separate elements/aspects), and specifically also on the socio-economic objectives of the area?	Refer to Section 8 of this report for the predicted impacts that the project may have on the socio-economic environment. All impacts and their mitigation measures will be assessed during the EIA phase and included in the EIR and EMPr.
Will the development complement the local socio-economic initiatives (such as local economic development (LED) initiatives), or skills development programs?	The proposed project will complement the local socio-economic initiatives identified for the area and provide some skills development, through the employment of local people and support of existing businesses.

Guideline Question	Response
2.3 How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities?	It is anticipated that the proposed residential township development will have far reaching positive impacts to the local society and community at large. The project will create temporary employment opportunities for the local residents during the construction phase, provide affordable housing and access to social and municipal services, and will present new economic opportunities to communities previously lacking in resources. This aspect will be further expanded on in the EIA phase.
2.4 Will the development result in equitable (intra- and inter-generational) impact distribution, in the short- and long-term? Will the impact be socially and economically sustainable in the short- and long-term?	Intra- and intergenerational equity means ensuring that development is sustainable enough to ensure that the needs of the present generation are met without compromising the ability of future generations to meet their own needs. The establishment of a mixed-use development is in itself seen as sustainable and equitable due to the different density of housing together with social, educational and commercial uses to be implemented. Thus, the economic and social impacts are anticipated to be positive in both the short and long term. The specialist assessments will further detail ways to prevent undue harm to the environment. The identified socio-economic impacts and any new related impacts will be further assessed during the EIA phase of the project, the findings of which will be presented in an EIA Report and associated EMPr.
2.5. In terms of location, describe how the placement of the proposed development will:	
Result in the creation of residential and employment opportunities in close proximity to or integrated with each other; *Reduce the need for transport of people and goods;*	Thorntree East development will contribute to economic growth by generating an expected yearly income of R220 million and creating approximately 1200 employment opportunities during the construction phase of the project. During the operational phase of the development, approximately 6500 employment opportunities will be created. This in turn stimulates the

Guideline Question	Response
Result in access to public transport or enable non-motorised and pedestrian transport (e.g. will the development result in densification and the achievement of thresholds in terms of public transport); *Compliment other uses in the area;* *Be in line with the planning for the area;* *For urban related development, make use of underutilised land available with the urban edge;* *Optimise the use of existing resources and infrastructure;*	feeling of community which is essential in meeting social needs. By establishing a mixed-use development, the Thorntree-East development can be seen as a "neighbourhood" where residents can live close to the commercial business opportunities, schools and clinics thus reducing the need for transport over long distances. The proposed project is adjacent to the existing Soshanguve township. Therefore, it is anticipated that the proposed development will complement the existing land use as well as alleviate housing shortage concerns within the area.
Opportunity costs in terms of bulk infrastructure expansions in non-priority areas (e.g. not aligned with the bulk infrastructure planning for the settlement that reflects the spatial reconstruction priorities of the settlement); *Discourage "urban sprawl" and contribute to compaction / densification;*	Refer to section 3 of this report which details the scope of the proposed development. Roads, stormwater, sanitation, water and electrical services will be require expansion in order to service the new development. The Thorntree East development will result in a formal settlement in the area, providing various types of housing and municipal services within the development. As this proposed development will be adjacent to the existing Soshanguve township and taking into account that educational, commercial and residential zones are planned, the development is expected to contribute to densification of the area.
Contribute to the correction of the historically distorted spatial patterns of settlements and to the optimum use of existing infrastructure in excess of current needs,	Apartheid left South Africa with a fragmented spatial form. Spatial priorities and solutions for Tshwane include: • Reverse the spatial patterns of apartheid; • Plan for compact cities and transport corridors; • Reduce the need to travel;

Guideline Question	Response
	• Compact cities by creating more infill and multi-storey developments, as well as a mix of land uses. The Thorntree East development aims to take these priorities into account during the detailed design phase.
Encourage environmentally sustainable land development practices and processes;	The proposed township establishment application for Environmental Authorisation is being undertaken in accordance with the EIA Regulations, 2014 (as amended) and other relevant environmental legislation and guidelines. Principles of the legislation considered for this development include and encourage environmentally sustainable land development practices and processes. Furthermore, the proposed development is on land that is already mostly used as residential land.
Take into account special locational factors that might favour the specific location (e.g. the location of a strategic mineral resource, access to the port, access to rail, etc.);	The location of existing municipal infrastructure to which the services of the proposed development are to be connected were taken into account. Furthermore, the fact that the development will be close to main roads and adjacent to the existing Soshanguve township further favours the specific location.
The investment in the settlement or area in question will generate the highest socio- economic returns (i.e. an area with high economic potential).	The proposed project will contribute to the local, and regional Gross Domestic Product (GDP), and also on the local communities through the employment of local community members and local contractors, as well as other influences that the housing developments will bring to the local communities, such as affordable housing, education and medical facilities, access to municipal services, etc.
Impact on the sense of history, sense of place and heritage of the area and the socio-cultural and cultural-historic characteristics and sensitivities of the area,	Refer to Section 8 for predicted impacts that the proposed project may have on the socio-economic environment. As the current zoning of the land is agriculture, the impact of population influx and sense of place will be looked at in detail during the EIA phase. All

Guideline Question	Response
	impacts and proposed mitigation measures will be included in the EIR.
In terms of the nature, scale and location of the development promote or act as a catalyst to create a more integrated settlement?	The proposed development is located adjacent to the existing Soshanguve settlement and is expected to act as a catalyst to create a more integrated settlement through the creation of affordable housing, expansion of municipal services and other socio-economic benefits that are likely to arise from the establishment of a new township.
2.6 How was a risk-averse and cautious approach applied in terms of socio-economic impacts?	
What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)?	Due to the large number of privately-owned properties in the neighbouring farm portions, it would be considered an invasion of privacy to include all neighbouring properties in the specialist assessments (field surveys). While all efforts are made to cover a total area during the specialist assessments, there is always the possibility of oversight, especially in overgrown or heavily disturbed areas (dump sites, etc.). The EAP assumes that information gathered from the applicant, specialists, and engineer is accurate and adequate for the assessment of potential impacts that may arise from the proposed development. It is also assumed that all mitigation, management, and monitoring measures prescribed in the EIR and the accompanying EMPr (when available) will be implemented by the proponent. There are no significant gaps in knowledge beyond the details of the design which are to be determined at a later stage. At the time of this report, the project had not yet completed detailed designs and layouts of the development were in conceptual design phase. Detailed designs will be generated if the project receives Environmental Authorisation from GDARD. In addition, micro-siting,

Guideline Question	Response
	based on additional specialist requirements and public participation during the EIA phase (if applicable) needs to occur. It is assumed that there will be no accommodation for the construction phase staff on site.
What is the level of risk (note: related to inequality, social fabric, livelihoods, vulnerable communities, critical resources, economic vulnerability and sustainability) associated with the limits of current knowledge?	The level of risk associated with the above mentioned limits of current knowledge is regarded as low. The thorough public participation process as required by the EIA regulations is expected to assist in filling in the gaps of knowledge as to the potential socio-economic impacts of the proposed project on the local community.
Based on the limits of knowledge and the level of risk, how and to what extent was a risk- averse and cautious approach applied to the development?	The Developer applied a risk-averse approach to the project by largely limiting the extent of development to the Developer-owned properties. Discussions were also held between the Developer and community representatives and notices of their intentions to develop the Developer-owned properties were sent out. To the EAPs knowledge, no response was received from any of the neighbouring landowners. However, two landowners consented to the EIA process by signing the required consent forms which are included in the EIA Application Form. Furthermore, micro-siting of the various developments and associated infrastructure will be done after the completion of the EIA phase to ensure all stakeholder concerns and environmental sensitivities are taken into account during detailed designs. In addition, the thorough public participation process as required by the EIA regulations is expected to assist in filling in the gaps of knowledge as to the potential socio-economic impacts of the proposed project on the local community.

Guideline Question	Response
2.7 How will the socio-economic impacts resulting from this development impact on people's environmental right in terms of the following:	
Negative impacts: e.g. health (e.g. HIV-Aids), safety, social ills, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts?	Refer to Section 8 for a description of the predicted impacts. This aspect will be further explored and detailed in the EIR and EMPr.
Positive impacts. What measures were taken to enhance positive impacts?	Refer to Section 8 for a description of the predicted impacts. All impacts will be assessed and detailed in the EIR and EMPr.
2.8 Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the development's socio-economic impacts will result in ecological impacts (e.g. over utilisation of natural resources, etc.)?	Refer to Section 8 for a description of the predicted impacts. All impacts will be assessed and detailed in the EIR and EMPr.
2.9 What measures were taken to pursue the selection of the "best practicable environmental option" in terms of socio- economic considerations?	The development is proposed to occur on the land owned by the Developer. A buffer zone around sensitive areas has also been proposed, and will be detailed and confirmed during the specialist assessments in the EIA phase. Refer to Section 8 for a description of the predicted impacts. All impacts will be assessed and detailed in the EIR and EMPr.
2.10 What measures were taken to pursue environmental justice so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and	The development will be located adjacent to an existing township in Soshanguve and will be developed on land currently owned by the Developer. A buffer zone around sensitive areas has also been proposed, and will be detailed and confirmed during the specialist assessments in the EIA phase. Refer to Section 8 for a description of the

Guideline Question	Response
disadvantaged persons (who are the beneficiaries and is the development located appropriately)?	predicted impacts. All impacts will be assessed and detailed in the EIR and EMPr.
2.11 What measures were taken to pursue equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing, and what special measures were taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination?	By conducting a Scoping and EIA Process, the applicant ensures that equitable access is considered. Refer to Section 8 of this Scoping Report. This aspect will be further explored in the EIA and EMPr.
2.12 What measures were taken to ensure that the responsibility for the environmental health and safety consequences of the development has been addressed throughout the development's life cycle?	The EIA and EMPr will specify timeframes within which mitigation measures must be implemented.
2.13 What measures were taken to:	
Ensure the participation of all interested and affected parties; *Provide all people with an opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation;* *Ensure participation by vulnerable and disadvantaged persons;* *Promote community wellbeing and empowerment through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means;*	Refer to Section 7 of this report for details of the public participation conducted and further planned for this project.

Guideline Question	Response
Ensure openness and transparency, and access to information in terms of the process, *Ensure that the interests, needs and values of all interested and affected parties were taken into account, and that adequate recognition were given to all forms of knowledge, including traditional and ordinary knowledge,* *Ensure that the vital role of women and youth in environmental management and development were recognised and their full participation therein will be promoted?*	
2.14 Considering the interests, needs and values of all the interested and affected parties, describe how the development will allow for opportunities for all the segments of the community (e.g. a mixture of low-, middle-, and high-income housing opportunities) that is consistent with the priority needs of the local area (or that is proportional to the needs of an area)?	Refer to the project description in Section 3. The development is proposed as a mixed-use development and will include high- and low density housing, a clinic and school as well as commercial zones.
What measures have been taken to ensure that current and / or future workers will be informed of work that potentially might be harmful to human health or the environment or of dangers associated with the work, and what measures have been taken to ensure that the right of workers to	The EMPr will include requirements for training of workers in the form of inductions and regular toolbox talks and environmental awareness. The EMPr will also require a Health and Safety plan to be established and implemented by the relevant departments within the contractor's team.

Guideline Question	Response
refuse such work will be respected and protected?	
2.16 Describe how the development will impact on job creation in terms of, amongst other aspects:	
The number of temporary versus permanent jobs that will be created; *Whether the labour available in the area will be able to take up the job opportunities (i.e. do the required skills match the skills available in the area);* *The distance from where labourers will have to travel;* *The location of jobs opportunities versus the location of impacts; and* *The opportunity costs in terms of job creation.*	Thorntree East development will contribute to economic growth by generating an expected yearly income of R220 million and creating approximately 1200 employment opportunities during the construction phase of the project. During the operational phase of the development, approximately 6500 employment opportunities will be created. The issue of sourcing labour workers locally will be addressed during the EIA phase and included in the EIR and EMPr.
2.17 What measures were taken to ensure:	
That there were intergovernmental coordination and harmonisation of policies, legislation and actions relating to the environment. *That actual or potential conflicts of interest between organs of state were resolved through conflict resolution procedures.*	As per EIA regulations, the EIA process requires governmental departments to be included as Stakeholders and be provided the opportunity to comment on the application for EA.
2.18 What measures were taken to ensure that the environment will be held in public trust for the people, that the beneficial use of environmental resources will serve the public interest, and that the environment will be protected as the people's common heritage?	Refer to Section 8 for predicted impacts. All impacts will be assessed and detailed during the specialist assessments and included in the EIR and EMPr.

Guideline Question	Response
2.19 Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left?	Impact assessments and detailed mitigation measures will be conducted in the EIA phase and included in the EIR and EMPr.
2.20 What measures were taken to ensure that the costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects will be paid for by those responsible for harming the environment?	This aspect will assessed during the EIA phase and will be included in the EIR and EMPr.
2.21 Considering the need to secure ecological integrity and a healthy bio-physical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the best practicable environmental option in terms of socio-economic considerations?	The proposed development is expected to result in both positive and negative socio-economic impacts. However, considering the employment opportunities, the capital investment together with the new availability of affordable housing, education and medical facilities, the positive impacts are expected to outweigh the negative. These impacts will be thoroughly assessed during the EIA phase and included in the EIR and EMPr. Note that detailed designs and micro-siting have been delayed to ensure the comments and concerns recorded during the upcoming PPP as well as the specialist assessment and impact assessments are taken into account.

5 DESCRIPTION OF ALTERNATIVES

The EIA regulations require that feasible and reasonable alternatives be considered for any proposed development. This ensures that different approaches and methods, locations and layouts are considered in order to arrive at the best possible (preferred) alternative for the development, taking environmental acceptability and economic and technical feasibility into account.

Such alternatives will be discussed in this chapter and the preferred alternative will be highlighted. It is, however, important to note that site location alternatives prove challenging due to various individual landowners and agricultural activities surrounding the developer-owned properties. Site layout and construction alternatives are therefore described below.

5.1 Preferred site location

Without landowner consent it is not feasible, nor is it reasonable, to assume a location alternative on properties that are not owned by the developer. Two landowner consent forms were obtained and have been included in the preferred location description, as per Figure 8. The coloured areas have been included for the proposed development, while the properties without colour have been excluded as they are not owned by Valumax. Furthermore, the waterbodies present on the site further constrains the possibility of any site alternatives.

5.2 Construction Alternatives

During the planning and construction phase, the developer shall consider the advantages and disadvantages of construction materials (or inputs) to be used in the development. Such materials include:

- Road surfacing (asphalt, brick paving);
- Building materials (brick type, roof type, etc.);
- Roof type (flat or pitched);
- Paint (volatile organic compounds (VOCs) and colour); and
- Other finishes (lighting, landscaping, etc.).

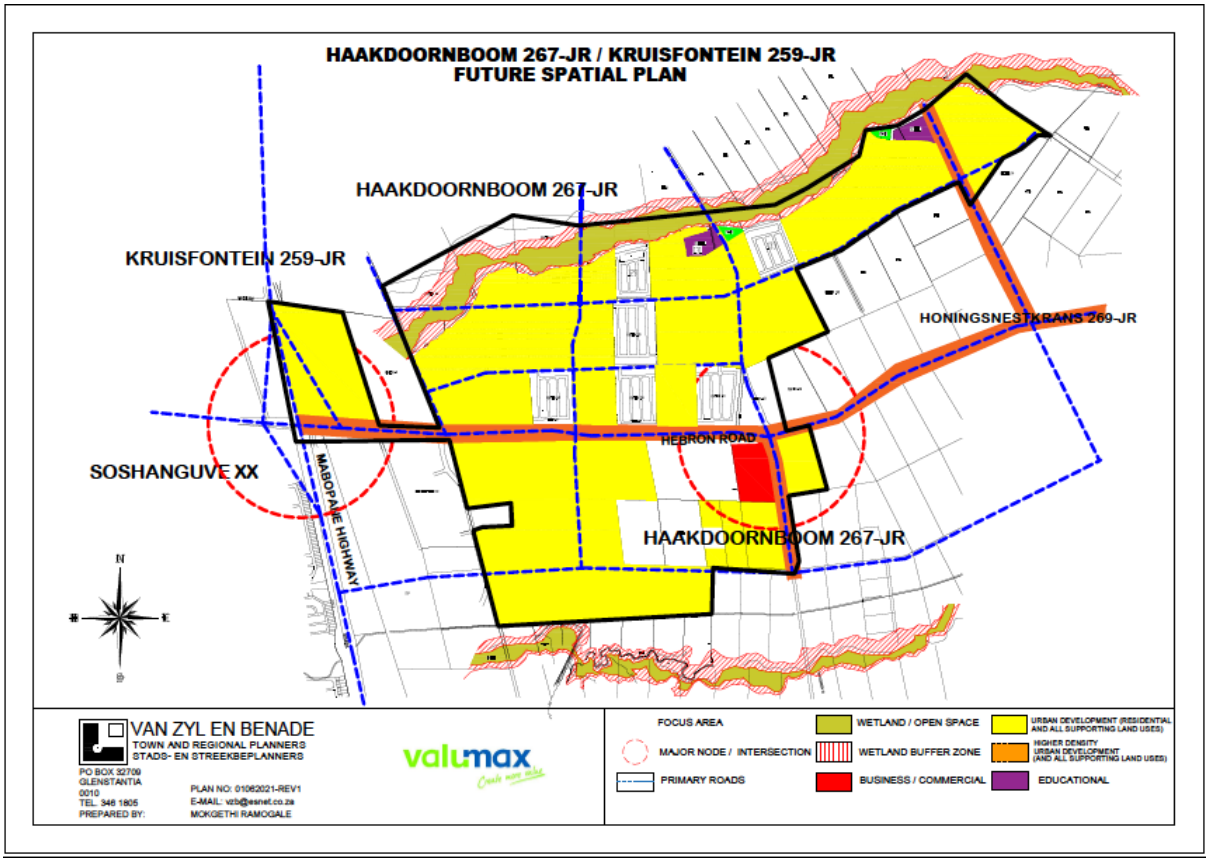

Figure 8: Preferred site location

When considering the above alternatives, it is important to ensure the proposed development is aesthetically pleasing to adjacent landowners. Buildings should blend in with surrounding developments where possible.

5.3 Sustainability Development Alternatives

Sustainable Development Principles need to be incorporated into the development planning activities as outlined in Section 6 of the Gauteng Sustainable Development Guideline.

Such principles have not been considered to date. However, the following activities are recommended by the EAP and should be further investigated by the developer for possible inclusion into the design, where feasible.

5.3.1 Water

- Use of low-flow shower heads; and/or
- Harvesting of rainwater.

5.3.2 Energy

- Use of energy efficient lighting;
- Use of day light wherever possible until artificial lighting is required;
- Use of renewable solar powered lighting for external lighting;
- Education and awareness of residents to switch off all electrical appliances when not in use;
- Use of solar water heating;
- Setting thermostats of water heaters at the most efficient level;
- Insulation of hot water pipes and hot water storage tanks;
- Use of housing insulation in roofs and ceilings; and/or
- Use of appropriately sized conductors to reduce the energy losses during distribution of electricity.

5.3.3 Waste

- Waste separation bins will be provided during construction;
- Waste reduction, separation and recycling will be included in inductions and environmental awareness campaigns on site.
- Reusable wastes such as soil, wood, steel, etc. will be stored for possible reuse.
- Coordinate with other trades on site and nearby businesses for potential reuse or 'waste exchange'.

5.3.4 Design/layout of development

The design should, where feasible, endeavor to accommodate solar access and overlooking in an effort to make optimum use of natural sunlight. It is worth noting, however, that the objective of this project is to construct an affordable urban development and the design will therefore need to be kept as cost effective as possible.

5.3.5 Materials

During the operational phase of the development, the residents and users of the development may choose to make use of recycled materials to further enhance their properties / schools / parks or businesses.

While reusing construction materials during the construction phase is feasible (as mentioned in the waste section above), making use of recycled material for the actual construction of the development is not advised in order to ensure the good quality and longevity of the development for its future residents.

5.4 Layout Alternatives

The preliminary desktop assessments identified two drainage lines and various wetlands in the study area. Preliminary recommendations to the developer include the observation of a buffer zone along the drainage lines and wetlands. These buffer zones will be confirmed during the specialist assessments.

The business/commercial hub of the development has been planned for the major intersection of Hebron Road and Haakdoornboom Road for ease of access and to ensure economic viability. An alternative site in a separate major node/intersection of the proposed development is at the Hebron Road and Mabopane Highway intersection. However, the South-Western section of the drainage line and the Mabopane highway intersection traverses this portion of the property. Together with the inclusion of a wetland buffer zone, this area was deemed not feasible for the business/commercial hub. Therefore, the location as indicated with a red block in Figure 8 is considered the preferred alternative for the business/commercial hub.

Furthermore, the higher density residential zone has been planned along the Hebron road which is the main road that traverses the site. As this is the busiest area of the proposed development, alternative layouts for these zones have not been considered.

5.5 No-go alternative

The EIA regulations require that the “no-go” alternative be considered. This requires the comparison between advantages that the development will have on the community be compared with the advantages that may occur should the development not take place. Similarly, the disadvantages also need to be compared.

An important aspect to consider is that, during preliminary site inspections and desktop assessments, it is clear that the proposed development site is currently in a degraded state. This is especially due to past and present agricultural activities but also due to anthropogenic activities such as dumping and vandalism.

The obvious advantage of the development is that it will benefit the affected community on a socio-economic scale, such as job opportunities, better housing options and a sense of community. The no-go alternative will result in these benefits being null in void. However, environmental impacts which may occur due to the development in both the construction and operational phase also need to be considered, specifically for the drainage lines and wetlands present on site.

During the EIA phase, the proposed development site and potential impacts will be assessed by the specialists appointed for this project. After the impact assessment has been completed, and valuable comments have been obtained from the I&APs, a more informed comparison between the development and a no-go alternative can be made.

6 DESCRIPTION OF THE RECEIVING ENVIRONMENT

The following specialists have been appointed to conduct impact assessments of their respective specialist fields for the Environmental Impact Assessment Report (EIR). This chapter describes their terms of reference for assessment and the desktop level description of the receiving environment.

6.1 Terrestrial Ecology

Matavha Environmental (Pty) Ltd has been appointed to conduct the ecological impact assessment for the proposed Thorntree Development. The terms of reference as agreed upon are as follows:

- To conduct an ecological impact assessment on farms Haakdoornboom 267 JR and Kruisfontein 259 JR near Soshanguve. This assessment is to include:
- Field survey for vegetation survey, vegetation communities and habitats;
- Terrestrial fauna report and red data listed species;
- Verify threatened species; and
- Impact assessment and recommendations.

6.1.1 Climate

The climate is warm and temperate. In winter, there is much less rainfall than in summer. The average annual temperature around the area is 17.8 degrees Celcius.

In one year, the rainfall is 699 mm (Figure 9).

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature (°C)	22.5	22	20.7	17.8	13.8	10.8	11	13.5	17.3	20.5	21.1	22.1
Min. Temperature (°C)	16.1	15.6	14	10.4	5.5	1.9	1.8	4.3	8.6	12.7	14.2	15.4
Max. Temperature (°C)	28.9	28.5	27.4	25.2	22.2	19.7	20.2	22.8	26.1	28.3	28	28.8
Avg. Temperature (°F)	72.5	71.6	69.3	64.0	56.8	51.4	51.8	56.3	63.1	68.9	70.0	71.8
Min. Temperature (°F)	61.0	60.1	57.2	50.7	41.9	35.4	35.2	39.7	47.5	54.9	57.6	59.7
Max. Temperature (°F)	84.0	83.3	81.3	77.4	72.0	67.5	68.4	73.0	79.0	82.9	82.4	83.8
Precipitation / Rainfall (mm)	126	91	82	48	21	6	6	7	18	66	112	116

Figure 9: Climatic figures of the region

6.1.2 Vegetation

Vegetation units are broadly classes and may include several distinct vegetation communities within a unit. The vegetation units of Mucina and Rutherford (2006) were used as references. The vegetation types found on the study site are Marikana Thornveld and Central Sandy Bushveld as shown in Figure *10*.

Marikana Thornveld:

Vegetation and Landscape Features:

Open *Vachellia karroo* woodland, occurring in valleys and slightly undulating plains, and some lowland hills. Shrubs are denser along drainage lines, on termitaria and rocky outcrops or in other habitat protected from fire.

Geology and soils:

Most of the area is underlain by the mafic intrusive rocks of the Rustenburg Layered Suite of the Bushveld Igneous Complex. Rocks include gabbro, norite, pyroxenite and anorthosite. The shales and quartzites of the Pretoria Group (Transvaal Supergroup) also contribute. Manly vertic melanic clays with some dystrophic or mesotrophic plinthic catenas and some freely drained, deep soils. Land types mainly Ea, Ba and Ae.

Occurrence of important flora:

Tall Tree: *Senegalia burkei.*

Small Trees: *Senegalia caffra (d), Vachellia. gerrardii (d), V. karroo (d), Combretum molle (d), Rhus lancea (d), Ziziphus mucronata (d), V. nilotica, V. tortilis subsp. heteracantha, Celtis africana, Dombeya rotundifolia, Pappea capensis, Peltophorum africanum, Terminalia sericea.*

Tall Shrubs: *Euclea crispa subsp. crispa (d), Olea europaea subsp. africana (d), Rhus pyroides var. pyroides (d), Diospyros lycioides subsp. guerkei, Ehretia rigida subsp. rigida, Euclea undulata, Grewia flava, Pavetta gardeniifolia.*

Low Shrubs: *Asparagus cooperi (d), Rhynchosia nitens (d), Indigofera zeyheri, Justicia flava.*

Woody Climbers: Clematis brachiata (d), Helinus integrifolius.

Herbaceous Climbers: *Pentarrhinum insipidum (d), Cyphostemma cirrhosum.*

Graminoids: Elionurus muticus (d), Eragrostis lehmanniana (d), Setaria sphacelata (d), Themeda triandra (d), Aristida scabrivalvis subsp. scabrivalvis, Fingerhuthia africana, Heteropogon contortus, Hyperthelia dissoluta, Melinis nerviglumis, Pogonarthria squarrosa.
Herbs: *Hermannia depressa (d), Ipomoea obscura (d), Barleria macrostegia, Dianthus mooiensis subsp. mooiensis, Ipomoea oblongata, Vernonia oligocephala.*
Geophytic Herbs: *Ledebouria revoluta, Ornithogalum tenuifolium, Sansevieria aethiopica.*

Conservation:

This vegetation is Least Threatened. Conservation target is 24%, but around 22% is statutorily conserved mainly in the Magaliesberg Nature Area and much smaller proportions in the Rustenberg, Wonderboom and Suikerbosrand Nature Reserves. At least an additional 1% conserved in other reserves brings the total conserved very close to target. About 15% transformed mainly by cultivation and urban and built-up areas. Some areas with dense stands of the alien *Melia azedarach* but which is often associated with drainage lines or alluvia (i.e. azonal vegetation) embedded within this unit. Erosion is very low to low.

Central Sandy Bushveld:

Vegetation and Landscape Features:

Low undulating areas, sometimes between mountains, and sandy plains and catenas supporting tall, deciduous *Terminalia sericea* and *Burkea Africana* woodland on deep sandy soils (with the former often dominant on the lower slopes of sandy catenas) and low, broadleaved *Combretum* woodland on shallow rocky or gravelly soils. Species of *Vachellia*, *Ziziphus* and *Euclea* are found on flats and lower slopes on eutrophic sands and some less sandy soils. *V. tortilis* may dominate some areas along valleys. Grass-dominated herbaceous layer with relatively low basal cover on dystrophic sands.

Geology and soils:

The large southern and eastern parts of this area are underlain by granite of the Lebowa Granite Suite and some granophyre of the Rashoop Granophyre Suite (both Bushveld Complex, Vaalian). In the north, the sedimentary rocks of the Waterberg Group (Mokolian Erathem) are most important. Specifically, sandstone, conglomerate and siltstone of the Alma Formation and

sandstone, siltstone and shale of the Vaalwater Formation. Well-drained, deep Hutton or Clovelly soils often with a catenary sequence from Hutton at the top to Clovelly on the lower slopes; shallow, skeletal Glenrosa soils also occur. Land types mainly Bb, Fa, Ba, Bd and Ac.

Occurrence of important flora:

Tall Trees: *Vachellia burkei* (d), *V. robusta*, *Sclerocarya birrea* subsp. *caffra*.

Small Trees: *Burkea africana* (d), *Combretum apiculatum* (d), *C. zeyheri* (d), *Terminalia sericea* (d), *Ochna pulchra*, *Peltophorum africanum*, *Rhus leptodictya*.

Tall Shrubs: *Combretum hereroense*, *Grewia bicolor*, *G. monticola*, *Strychnos pungens*.

Low Shrubs: *Agathisanthemum bojeri* (d), *Indigofera filipes* (d), *Felicia fascicularis*, *Gnidia sericocephala*.

Geoxylic Suffrutex: *Dichapetalum cymosum* (d).

Woody Climber: *Asparagus buchananii*.

Graminoids: *Brachiaria nigropedata* (d), *Eragrostis pallens* (d), *E. rigidior* (d), *Hyperthelia dissoluta* (d), *Panicum maximum* (d), *Perotis patens* (d), *Anthephora pubescens*, *Aristida scabrivalvis* subsp. *scabrivalvis*, *Brachiaria serrata*, *Elionurus muticus*, *Eragrostis nindensis, Loudetia simplex, Schmidtia pappophoroides, Themeda triandra, Trachypogon spicatus.*

Herbs: Dicerocaryum senecioides (d), Barleria macrostegia, Blepharis integrifolia, Crabbea angustifolia, Evolvulus alsinoides, Geigeria burkei, Hermannia lancifolia, Indigofera daleoides, Justicia anagalloides, Kyphocarpa angustifolia, Lophiocarpus tenuissimus, Waltheria indica, Xerophyta humilis.

Geophytic Herb: *Hypoxis hemerocallidea. Succulent Herb: Aloe greatheadii var. davyana.*

Conservation:

This vegetation is Vulnerable. Conservation target is 19%, but less than 3% is statutorily conserved and is spread thinly across many nature reserves including the Doorndraai Dam and Skuinsdraai Nature Reserves. An additional 2% conserved in other reserves including the Wallmansthal SANDF Property and a grouping of private reserves, which include most of the Nylsvlei freshwater wetlands. About 24% transformed, including about 19% cultivated and 4% urban and built-up areas. Much of the unit in the broad arc south of the Springbokvlakte is heavily populated by rural communities. Several alien plants

are widely scattered but often at low densities; these include *Cereus jamacaru*, *Eucalyptus* species, *Lantana camara*, *Melia azedarach*, *Opuntia ficus-indica* and *Sesbania punicea*. Erosion very low to high, especially in some places northeast of Groblersdal.

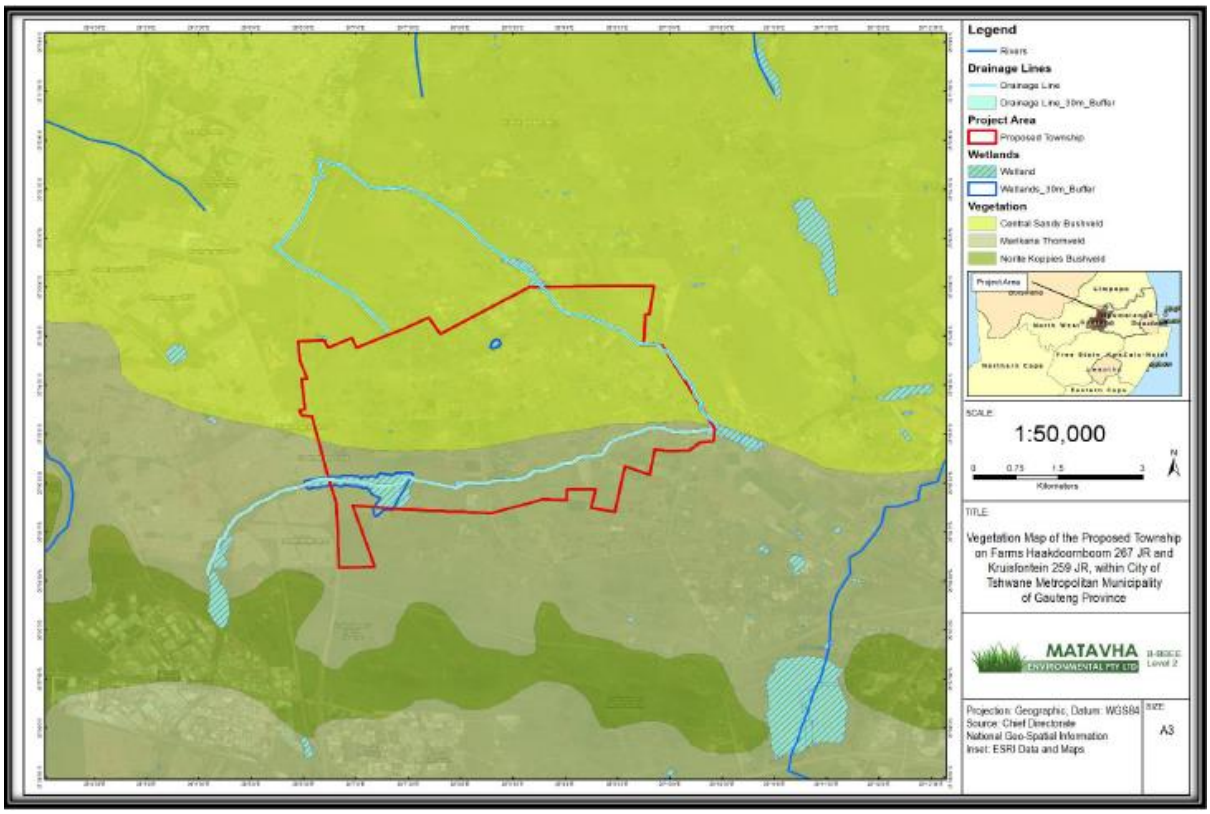

Figure 10: Illustration of vegetation units of the study area

6.1.3 Legal Requirements

Gauteng Conservation Plan

Gauteng Department of Agriculture and Rural Development (GDARD) initiated a conservation plan which is called, Gauteng Conservation Plan (Gauteng C-Plan v3.3). This Gauteng C-Plan v3.3 delineates on a map, commonly known as a Critical Biodiversity Areas (CBA), biodiversity priority areas called Critical Biodiversity Areas, Ecological Support Areas and Protected Areas. The map is designed to be used at approximately 1:50 000 scale as the integrated biodiversity input into land use planning and decision making.

Critical Biodiversity Areas (CBAs) are terrestrial and aquatic areas of the landscape that need to be maintained in a natural or near-natural state in order to ensure the continued existence and functioning of species and ecosystems and the delivery of ecosystem services. In other

words, if these areas are not maintained in a natural or near-natural state then biodiversity targets cannot be met. Maintaining an area in a natural state can include a variety of biodiversity compatible land uses and resource uses.

Ecological Support Areas (ESAs) are terrestrial and aquatic areas that are not essential for meeting biodiversity representation targets (thresholds), but which nevertheless play an important role in supporting the ecological functioning of critical biodiversity areas and/or in delivering ecosystem services that support socio-economic development, such as water provision, flood mitigation or carbon sequestration. The degree or extent of restriction on land use and resource use in these areas may be lower than that recommended for CBAs.

Sensitivity Analysis

In terms of Gauteng Conservation Plan, only small portion of the proposed project falls within Important Area and Ecological Support Area (see Figure 11). These areas are associated with wetland and drainage lines. The developer has incorporated the drainage lines and wetland area in their preliminary Site Development Plan (Fig. 6). The remaining majority of the portions have been severely transformed by historical and current farming activities and residential properties.

Red Data Analysis and Floral

The South African National Biodiversity Institute (SANBI) RedList website will be used to determine the conservation status of the species found during the ecological impact assessment site survey. This is done in order to identify and conserve sensitive species and their immediate environment. Results will be included in the EIR.

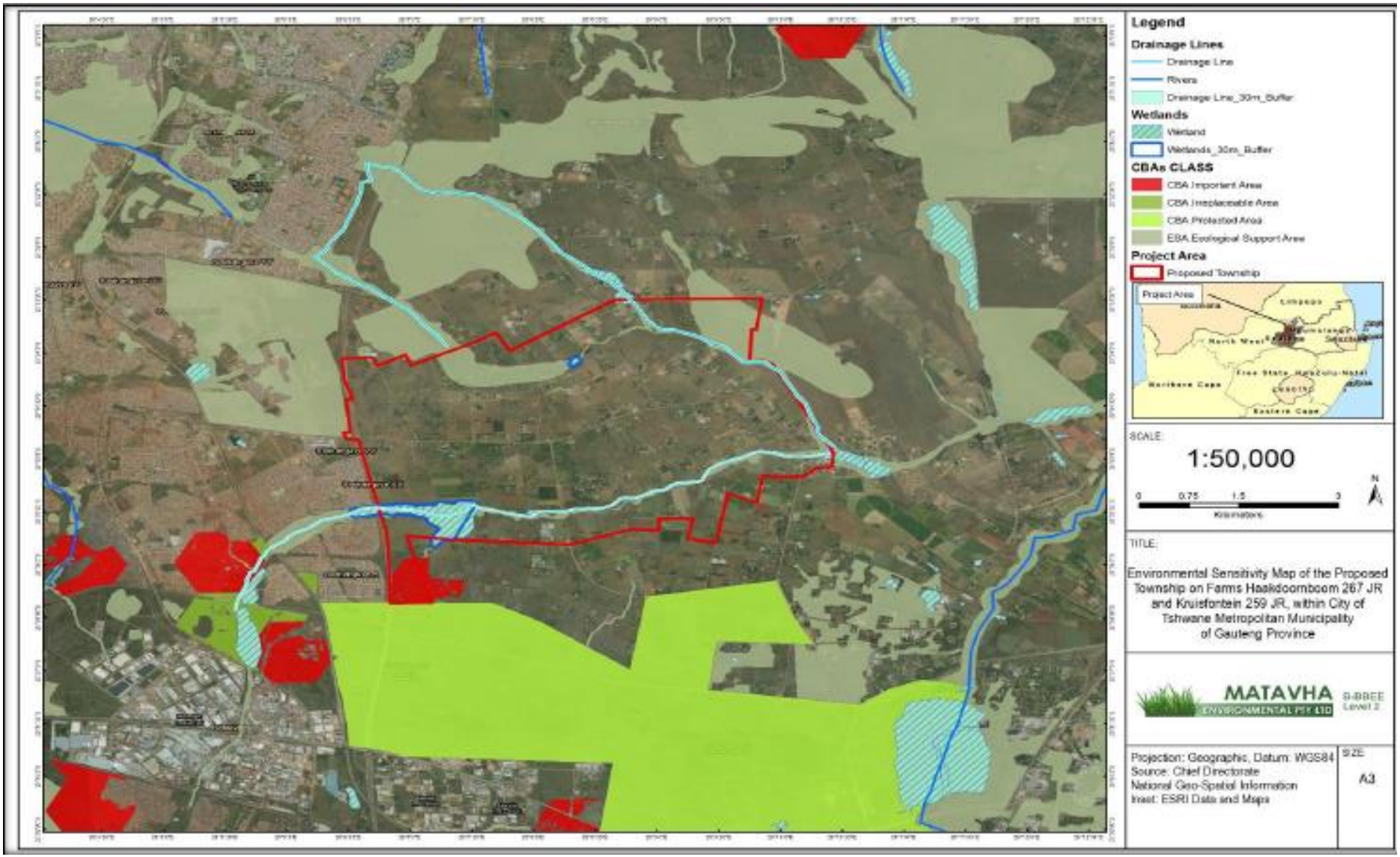

Figure 11: Gauteng Conservation Plan of the study area

Ecological Function:

Ecological function relates to the degree of ecological connectivity between systems within a landscape matrix. Therefore, systems with a high degree of landscape connectivity amongst one another are perceived to be more sensitive and will be those contributing to ecosystem service (for example wetlands) or overall preservation of biodiversity. Conservation importance relates to species diversity, endemism (unique species or unique processes) and the high occurrence of threatened and protected species or ecosystems protected by legislation.

A Sensitivity Scale is used as follows:

- ***High ecological function***: Sensitive ecosystems with either low inherent resistance or resilience towards disturbance factors or highly dynamic systems considered to be stable and important for the maintenance of ecosystems integrity for example pristine grasslands, pristine wetlands and pristine ridges.
- ***Medium ecological function***: Relatively important ecosystems at gradients of intermediate disturbances. An area may be considered of medium ecological function if it is directly adjacent to sensitive/pristine ecosystem.
- ***Low ecological function***: Degraded and highly disturbed systems with little or no ecological function.
- ***No Go Areas***: Areas that have irreplaceable biodiversity or important ecosystem function values which may be lost permanently if these ecosystems are transformed, with a high potential of also affecting adjacent and/or downstream ecosystems negatively

The Conservation Status of the vegetation can be determined as either high, medium or low as per the following definitions:

- ***High conservation importance***: Ecosystems with high species richness which usually provide suitable habitat for several threatened species. Usually termed 'no-go' areas and unsuitable for development and should be conserved.
- ***Medium conservation importance***: Ecosystems with intermediate levels of species diversity without any threatened species. Low-density development may be accommodated, provided the current species diversity is conserved.

- ***Low conservation importance***: Areas with little or no conservation potential and usually species poor (most species are usually exotic).

6.2 Aquatic environment

Matavha Environmental (Pty) Ltd has been appointed to conduct the wetland impact assessment for the proposed Thorntree Development. The terms of reference as agreed upon are as follows:

- Desktop assessment of the project site (identify wetlands within the site by examining existing national and provincial wetland databases, 1: 50 000 topographical maps, and ortho/ aerial photographs, if available);
- Identify riparian areas where they occur;
- A site visit to confirm the presence or absence of wetland areas within the proposed project site area as well as verify wetland boundaries;
- Identify, assess, and delineate any waterbodies/wetlands within the study area;
- Assessment of the Present Ecological Status of wetlands on site (Level 1, WetHealth);
- Assessment of Ecological Importance and Sensitivity of wetlands on site;
- Impact assessment of the proposed activities on the wetlands;Apply buffers to the outer edges of the wetlands within the site;
- Assess impacts of the proposed township development on the identified wetlands and suggest mitigation measures for minimising potential impacts on wetlands; and
- Compile report with maps.

6.2.1 Description of the area

The purpose of the wetland assessment is to determine the relative importance, sensitivity, and current conditions of the significant aquatic features in order to assess the impact of the proposed residential township development on those aquatic resources. The assessment is also required to make recommendations in terms of mitigation measures that can be used to prevent or minimise the impact on the aquatic resources.

From a desktop level it is clear that the area has been exposed to high levels of disturbance, mainly by past and current farming activities. Very few patches of natural vegetation remain

in the area. The desktop assessment identified various drainage lines and wetlands associated with the study area (Figure 12). A buffer of 30 m was applied to all wetlands identified and a 32 m buffer was applied to the drainage lines in order to guide the developer during the scoping phase.

6.2.2 Delineation of wetlands

The following techniques and assessments will be used to conduct the wetland impact assessment of these areas:

- A level 2 Wet-Health Assessment;
- A level 2 Wet-EcoServices Assessment; and
- An Ecological Importance and Sensitivity (EIS) Assessment.

For the purpose of the assessment, wetlands are considered as those ecosystems defined by the National Water Act as:
"land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil."

These habitats are found where the topography and geological parameters impede the flow of water through the catchment, resulting in the soil profiles of these habitats becoming temporarily, seasonally, or permanently wet. Further to this, wetlands occur in areas where groundwater discharges to the surface forming seeps and springs. Soil wetness and vegetation indicators change as the gradient of wetness changes.

Based on the definition of a wetland within the National Water Act, three vital concepts govern the presence of a wetland namely:

1. Hydrology- Land inundated by water or which displays saturated soils when these soils are biologically active (the growth season).
2. Hydric soils- Soils that have been depleted of oxygen through reduction resulting in the presence of redoximorphic features.

3. Hydrophytic vegetation- Plant species that are adapted to growing in saturated soils and subsequent anaerobic conditions (hydrophytes).

The conservation of wetland systems is vital as these habitats provide numerous functions that benefit not only biodiversity but provide an array of ecosystem services.

Table *6* classifies the wetland features as follows:

Table 6: Classification of wetland features

Wetland type	Depression
Quaternary catchment	A23E
Water Management Area	Crocodile (West) and Marico
System	Inland
Ecoregion	Central Bushveld Group
Landscape setting	Flat
Seasonality	Perrenial
Anthropogenic influence	Major disturbances due to surrounding activities (farming and settlements)
Vegetation	Primarily within Marikana Thornveld

The study site will be assessed with regards to the determination of the presence of wetland areas according to the procedure described in “A Practical Field Procedure for Identification and Delineation of Wetland and Riparian Areas” (DWAF, 2005).

Figure 12: Delineated wetlands within and around the proposed development sit

6.3 Heritage

A. Pelser Archaeological Consulting (APAC) was appointed to conduct a Phase 1 Heritage Impact Assessment for the proposed development. The following terms of reference were agreed to with the Heritage Specialist:

- Identify all objects, sites, occurrences and structures of an archaeological or historical nature (cultural heritage sites) located on the portion of land that will be impacted upon by the proposed development;
- Assess the significance of the cultural resources in terms of their archaeological, historical, scientific, social, religious, aesthetic and tourism value;
- Describe the possible impact of the proposed development on these cultural remains, according to a standard set of conventions;
- Propose suitable mitigation measures to minimize possible negative impacts on the cultural resources; and
- Review applicable legislative requirements;

6.3.1 Description of the area

The study and development area is located in a mostly rural agricultural holdings setting with small scale farming making up a large part of the activities. Large sections of the study area have been utilised for agricultural purposes for many years, while some related developments (homesteads, roads, powerlines) have also impacted on the development and study area. The topography of the area is relatively flat and open with no rocky ridges, outcrop or hills present. From a desktop study, visibility on the ground is expected to be fairly good, although dense vegetation in some sections may make access and visibility difficult. Informal dumping of household refuse and building rubble occur in some sections, while a number of dwellings and other structures in the development area have also already been demolished or are in stages of demolition and/or vandalism.

6.3.2 Discussion on the heritage of the area

The Stone Age:

The Stone Age is the period in human history when lithic (stone) material was mainly used to produce tools. In South Africa the Stone Age can be divided in basically into three periods. It is however important to note that dates are relative and only provide a broad framework for interpretation. A basic sequence for the South African Stone Age (Lombard et.al 2012) is as follows:

1. Earlier Stone Age (ESA) up to 2 million – more than 200 000 years ago
2. Middle Stone Age (MSA) less than 300 000 – 20 000 years ago
3. Later Stone Age (LSA) 40 000 years ago – 2000 years ago

It should also be noted that these dates are not a neat fit because of variability and overlapping ages between sites (Lombard et.al 2012: 125). Stone Age sites (ESA to LSA) are known in the larger geographical area (some in the so-called Magaliesberg Research Area), which includes rock art sites (Bergh 1999: 4).

The Iron Age:

The Iron Age is the name given to the period of human history when metal was mainly used to produce metal artifacts. In South Africa it can be divided in two separate phases (Bergh 1999: 96-98), namely:

1. Early Iron Age (EIA) 200 – 1000 A.D
2. Late Iron Age (LIA) 1000 – 1850 A.D.

Huffman (2007: xiii) however indicates that a Middle Iron Age should be included. His dates, which now seem to be widely accepted in archaeological circles, are:

1. Early Iron Age (EIA) 250 – 900 A.D.
2. Middle Iron Age (MIA) 900 – 1300 A.D.
3. Late Iron Age (LIA) 1300 – 1840 A.D.

The Historical Period:

The historical period started with the moving into the area by the first Europeans. The first groups to move through the larger area were those of Schoon & McLuckie and Moffat &

Archbell in 1829, followed by Andrew Smith in 1835 and then David Livingstone in 1847 (Bergh 1999: 12-13), closely followed by the Voortrekkers and first white farmers.

Soshanguve is a township situated about 45 km north of Pretoria, Gauteng, South Africa. It was established in 1974 on land scheduled to be incorporated into a bantustan bordering on Mabopane in Bophuthatswana, to Sotho, Shangaan, Nguni and Venda people (thus the name) who were resettled from Wallmansthal after being forcibly removed from their land. Schools in Soshanguve, i.e. Wallmansthal high and Khutso primary, are originally from Wallmasthal. The first section that was built in Soshanguve is Block "K", housing residents of Wallmansthal. It later became part of the City of Tshwane Metropolitan Municipality.

Background research indicates that there are some cultural heritage (archaeological & historical) sites and features in the larger geographical area within which the study area falls. The physical assessment of the specific study area will endeavour to identify any sites, features or material of cultural heritage (archaeological and/or historical) origin or real significance within the development area footprint (if any).

6.4 Socio-economic Environment

The development of mixed use residential and commercial property will ensure availability of housing and provide employment opportunities, which ties in with the City of Tshwane's plan to create a city of opportunity. According to the IDP, this plan centres around five focus areas in order to create economic growth:

1. Attracting investment and encouraging growth by making it easy to do business in Tshwane;
2. Revitalising and supporting Tshwane's entrepreneurs;
3. Empowering individuals to take advantage of opportunities;
4. Infrastructure-led growth to catalyse and revitalise existing nodal economies; and
5. Encourage tourism and recreation.

In addition, the Thorntree East development will contribute to economic growth by generating an expected yearly income of R220 million and creating approximately 1200 employment opportunities during the construction phase of the project. During the

operational phase of the development, approximately 6500 employment opportunities will be created. This in turn stimulates the feeling of community which is essential in meeting social needs.

The total number of households within City of Tshwane Metropolitan Municipality increased at an average annual rate of 3.21% from 2006 to 2016, which is higher than the annual increase in the number of households in South Africa: 1.97%. With high in- migration into a region, the number of households increases, putting additional strain on household infrastructure.

Benefits for the local community will include employment opportunities, affordable housing (high density and lower density) with municipal services, access to community related infrastructure such as churches, schools and clinics and the upgrading of roads.

All the above-mentioned benefits correlate with the City of Tshwane's vision of a prosperous capital city through fairness, freedom and opportunity which is supported by the strategic pillars for development as set out in the City of Tshwane's IDP of 2019/20:

1. Advancing economic growth and job creation;
2. Creating a caring environment and promoting inclusivity;
3. Delivering excellent services and protecting the environment;
4. Keeping the residents safe; and
5. Being open, honest and responsive.

According to the approved Tshwane Integrated Development Plan (IDP) of 2019/20, "job-creating economic growth forms a central, if not the most important part of the solution to the triple threat of poverty, inequality and unemployment." The IDP states that in 2017, there was a total of 386 000 unemployed people in City of Tshwane, which is an increase of 150 000 since 2007, which recorded a number of 236 000 unemployed people in City of Tshwane. This 2017 data of total number of unemployed people in City of Tshwane constitutes 18.64% of the total number of unemployed people in Gauteng, with an unemployment rate of 24% in 2017.

The following key IDP priorities will be enhanced through the Thorntree East Development:

- Building integrated communities by developing a mixed-use development;
- Improving access to public healthcare services by including a healthcare clinic in the development;
- Delivering high-quality services by installing new infrastructure for the development such as roads, pipelines and electrical infrastructure.

The proposed development footprint falls within a low control area of the Gauteng Environmental Management Framework (EMF) and is classified as a rural development priority area. There is a high and urgent need for increased housing facilities, linked to a sustainable utilisation of resources, taking into consideration the land use and job creation opportunities from residential activities.

7 PUBLIC PARTICIPATION PROCESS

Consultation with the public forms an integral component of the environmental authorisation process. The PP Process in particular allows Interested & Affected Parties (I&APs) and other identified stakeholders to be informed about potential decisions that may affect them, and it affords them the opportunity to influence those decisions. Through effective Public Participation informed decision making by the Competent Authority is ensured, as the views of all parties affected by a proposed activity has been considered.

As per the Integrated Environmental Management Guidelines Series 7 (2010), published by the Department of Environmental Affairs, the benefits of public participation include the following:

- It provides an opportunity for I&APs, EAP's and the Competent Authority to obtain clear, accurate and understandable information about the environmental impacts associated with the proposed activity or implications of s decision;
- It provides I&APs with an opportunity to voice their support, concerns and questions regarding the project, application or decision;
- It provides I&APs with the opportunity of suggesting ways for reducing or mitigating any negative impacts of the project and for enhancing its positive impacts;
- It enables an applicant to incorporate the needs, preferences and values of affected parties into its application;
- It provides opportunities for clearing up misunderstandings about technical issues, resolving disputes and reconciling conflicting interests, it is an important aspect of securing transparency and accountability in decision-making; and
- It contributes toward maintaining a healthy, vibrant democracy.

7.1 Approach to the Public Participation Process

The approach followed for the Public Participation Process to date and which will continue throughout the EIA Process is as per Chapter 6 of the Environmental Impact Assessment Regulations, 2010 published in Government Notice No 543 of 18 June 2010.

The following Guideline Documents published are also being utilised to inform the Public Process;

- Integrated Environmental Management Guideline Series 7 – Public Participation in the EIA Process, Department of Environmental Affairs (2010); and
- Public Participation Guidelines, Guideline Document 4 of 2006.

However, to prevent any large gathering of members of the public and the subsequent possibility of further spread of COVID-19, the PP plan proposes the following measures to be implemented. Note that these measures are aimed at negating the need for a public meeting as a measure to protect the health of all parties involved in this process.

- Conduct telephonic discussions with stakeholders who communicate any concerns with or questions about the proposed project.
- Upload all documents related to the application for EA and Basic Assessment (BA) Report onto the website and provide all registered interested and affected parties (I&APs) with the details. This will allow I&APs to view the documentation in the safety of their businesses or homes.
- Provide any I&AP with a hard copy of the documentation when specifically requested or where access to a computer and the internet is not available.
- Arrange for video meetings between the stakeholders when specifically requested.

7.2 Public Participation Plan

The public participation process for the Scoping Report is planned to commence on 17 June 2021 and will include the activities as listed below.

7.2.1 Placement of an advertisement

A legal notice will be placed in one local newspaper deemed to be appropriate in terms of accessibility and language. The content of the legal notice will be published in English and will include the following details:

- Details regarding the application;
- The nature and location of the proposed activity;
- Where further information on the application or activity can be obtained from; and
- Manner in which representations in respect of the application may be made and details of the applicable contact person.

7.2.2 Direct notification of landowners and other identified I&APs

A Background Information Document (BID) and a notification letter will be distributed through registered post and/or email to directly affected landowners. These documents will also be distributed to other I&APs which have been identified. The BID will also be available for download from the Nali Sustainability Solutions website. Copies and proofs of notification will be included in the Final Scoping Report after the commenting period.

Other stakeholders identified and to be notified other than directly affected property owners include:

- Neighbouring landowners;
- Organs of state which have jurisdiction in respect of the activity (National, Provincial and Local Authorities);
- Parastatals such as Eskom and Telkom who may be affected by the proposed activity;
- Local communities and Farmers Associations; and
- Other organisations potentially affected by the activity.

A register (I&AP database) has been opened and is being maintained which contains the contact details of:

- All persons / institutions / organisations and associations that have been notified;
- All persons / institutions that have requested to be included in the database'
- All organs of State which have jurisdiction in respect of the activity.

The I&AP database can be found in **Annexure 5**. Note that the identification of affected stakeholders is an on-going process and this list should not be seen as final. I&APs stakeholders may register throughout the lifespan of the EIA Process.

7.2.3 Site notice boards

In order to notify the surrounding communities and immediate adjacent landowners of the proposed development, and to invite them to participate in the EIA Process, site notices will be erected in conspicuous locations along the proposed development site. To ensure

adequate notification of potential stakeholders, notice boards will also erected at public facilities such as Municipal Buildings, Public Libraries and popular shopping centres frequented by local residents. The notices will be prepared in English.

7.2.4 Comments and Response trail

Issues, comments and concerns raised during the public participation process are compiled into a Comments and Response Report (CRR). Responses will be provided on comments received. The IRR is used for the evaluation of environmental impacts and serves to identify issues which require further scrutiny during the EIA investigation. All comments and responses received during the commenting period will be included in the Final Scoping Report once the commenting period has been completed.

7.2.5 Scoping Report available for public review

The Scoping Report will be made available for review and comment by registered I&APs and key stakeholders between 17 June and 17 July. The Report with Appendices will also be made available for download from the Nali Sustainability Solutions website at www.nalisustainabilitysolutions.co.za.

Registered I&APs will be notified of the availability of the Scoping Report through post, facsimile and email.

The following organs of state will be notified of the availability of the Scoping Report for review:

- City of Tshwane Metropolitan Municipality
- Department of Water Affairs;
- Provincial Roads Authorities
- Department Public Works
- Department Agriculture and Land Administration
- Eskom
- Telkom
- South African National Roads Agency Limited (SANRAL)

- South African Heritage Resources Agency (SAHRA)

All comments received on the Scoping Report will be included in the CCR of the Final Scoping Report for submission to the CA. Take note that registered I&APs will again be afforded an opportunity to provide comment during the EIA phase of the process.

7.2.6 Comment on Final Scoping Report

Following the expiry date for submission of comments on the Scoping Report, the Final Scoping Report will be prepared for submission to the CA. Registered I&APs will be notified of such submission. In the event that I&APs wish to make further comments on the Final Scoping Report they will be requested to submit their comments directly to the CA.

8 POTENTIAL IMPACTS IDENTIFIED

In preparation for the EIA phase of the project, it is necessary to attempt to predict the potential impacts that the proposed development may have on the environment. These potential impacts will be confirmed and updated during the EIA phase and detailed impact assessments and scoring will be done to determine the significance of each impact (refer to Section 9.2).

This chapter lists such potential impacts. Chapter 9 describes the methodology which will be used during the EIA phase to determine the significance of these impacts.

8.1 Potential Impacts on Terrestrial Ecology

- Local loss of plant species
- Loss of micro habitat
- Loss of foraging grounds
- Further introduction of alien species

8.2 Potential Impacts on the Aquatic Ecology

- Soil erosion and sedimentation of the watercourse system;
- Loss of habitat and aquatic fauna;
- Pollution as a result of runoff from the construction area entering into the waterbodies;
- Control of alien and/or invasive species within the development footprint;
- Implementation of buffer zones around the watercourse areas to protect wet areas from further degradation; and
- Prevention of further illegal dumping.

8.3 Potential Impacts on Heritage

- Loss of or damage to objects, sites and structures (National Estate) of archaeological or historical nature;
- Loss of or damage to cultural heritage resources;
- Negative effects on cultural resources in terms of their archaeological, historical, scientific, social, religious, aesthetic and tourism value; and

- The impact of the proposed development on possible graves which may be present in the area.

8.4 Potential Impacts on the Social and Socio-Economic Environment

- Social pathologies arising from population influx (negative);
- Impact on the current community's sense of place;
- Creation / sustaining of employment opportunities (positive);
- Increase in tax base; and
- Provision of infrastructure services and expansion of municipal services.

8.5 Cumulative Impacts

Taking the above potential impacts into account, it is important and necessary to consider the cumulative impact of the development on the environment. Section 2 of the NEMA requires the consideration of cumulative impacts as part of any environmental assessment process.

For example, the loss of terrestrial and aquatic species due to the loss of foraging ground and pollution of waterbodies can lead to a much larger or more significant impact on the proposed development site and surrounding areas. Furthermore, the possible introduction of additional alien vegetation can further reduce suitable habitat for terrestrial faunal and floral species.

The EIR will endeavor to address cumulative impacts and make provision for proposed mitigation measures to be included in the EMPr.

9 PLAN OF STUDY FOR EIA

The EIA regulations require the Scoping Report to include a Plan of Study that will be undertaken during the EIA phase of the project.

9.1 Tasks to be undertaken during the EIA

9.1.1 Specialist Assessments

Detailed specialist assessments will be conducted should the final scoping report and the plan of study for Environmental Impact Assessment (EIA) be accepted by the Department of Environmental Affairs. The specialist studies proposed for the EIA are:

- Ecological assessment
- Wetland assessment and delineation
- Heritage assessment
- Geological and Geotechnical assessment
- Other including Services, Traffic, Roads, Stormwater

The plan of study summary with regards to the individual specialist studies to be undertaken Table 7.

Table 7: Summary of specialists' plan of study

Assessment	Plan of Study summary
Ecological Assessment	The important aspect used during the study will be to determine areas where the development and activities around it will result in negative impacts. Each problem area will be photographed and assessed in the ecological assessment report. The process will include: • A study to gain background information of the physical habitat, as well as generating potential faunal and floral species lists for the study area; • The site assessment to determine dominant faunal and floral species; • Description of the sensitivity of the site; • Impact assessment which will include: – A broad-scale map of the vegetation of the proposed site. – A description of the dominant and characteristic species within the broad-scale plant communities; – A list of Red Data plant and animal species previously recorded within the site which the study area is situated, obtained from the relevant authorities and literature reviews; – Identification of sensitive habitats and plant communities; – Preliminary investigation of the impacts of the project and the provision of recommended mitigation measures; – Identify and assess any cumulative impacts arising from the project where there is major uncertainty, low levels of confidence in predictions and poor data or information. Recommend practicable mitigation measures to minimize or eliminate negative impacts and or enhance potential project benefits; and

Assessment	Plan of Study summary
	– Recommend appropriate monitoring measures. – THERE IS LITTLE ON FAUNA ?? including birds, frogs etc
Wetland Assessment	The wetland assessment report will provide detailed information on the aquatic constraints, potential impacts and recommended mitigation measures for the proposed township development. A Risk Assessment for the proposed project as per the General Authorisation in terms of Section 39 of the National Water Act, 1998 (Act No. 36 of 1998) for Water Uses as defined in Section 21 (c) and (i) (Notice 509 of 2016) will be undertaken. The following terms of reference will guide the assessment: • Desktop assessment of the project site (identify wetlands within the site by examining existing national and provincial wetland databases, 1: 50 000 topographical maps, and ortho/ aerial photographs, if available). • Identify riparian areas where they occur; • A site visit to confirm the presence or absence of wetland areas within the proposed project site area as well as verify wetland boundaries; • Identify, assess, and delineate any waterbodies/wetlands within the study area; • Assessment of the Present Ecological Status of wetlands on site (Level 1, WetHealth); • Assessment of Ecological Importance and Sensitivity of wetlands on site; and • Impact assessment of the proposed activities on the wetlands; • Apply buffers to the outer edges of the wetlands within the site; • Assess impacts of the proposed township development on the identified wetlands and suggest mitigation measures for minimising potential impacts on wetlands; and to

Assessment	Plan of Study summary
	• • Compile report with maps.
Heritage Impact Assessment	The Terms of Reference for the study is to: • Identify all objects, sites, occurrences and structures of an archaeological or historical nature (cultural heritage sites) located on the portion of land that will be impacted upon by the proposed development; • Assess the significance of the cultural resources in terms of their archaeological, historical, scientific, social, religious, aesthetic and tourism value; • Describe the possible impact of the proposed development on these cultural remains, according to a standard set of conventions; • Propose suitable mitigation measures to minimize possible negative impacts on the cultural resources; and • Review applicable legislative requirements. The methodology that will be used by the specialist to conduct the assessment is: 1. Survey of available literature in order to place the development area in an archaeological and historical context. 2. Conduct a field survey according to generally accepted HIA practices, aimed at locating all possible objects, sites and features of heritage significance in the area. The location/position of all sites, features and objects is determined by means of a Global Positioning System (GPS) where possible, while detail photographs are also taken where needed. 3. Obtain oral histories from local communities, where possible and applicable. 4. Document all sites, objects, features and structures identified during the survey.

Assessment	Plan of Study summary
Geological and Geotechnical Assessment	The specialist has been appointed to conduct a desktop assessment of the geological and geotechnical conditions of the area where the proposed development will take place. The following aspects will be assessed by the specialist: • Make use of existing information and regional geology, based on a 1:50 000 scale Geological Map by the Geological Survey of the former Department of Mines of South Africa to determine the residual material underlying the area; • Assess the stability of the geology; • Assess the drainage of the site; • Determine whether any essential municipal services are available on the site; • Provide a provisional site classification; and • Provide recommendations.
Other	• Engineering Services • Stormwater Management • Traffic Impact • Roads Infrastructure

9.2 Impact Assessment Methodology

The purpose of this chapter is to describe the assessment methodology utilised in determining the significance of the potential impacts of the proposed activities on the biophysical, social and economic environment. The methodology is broadly consistent to that described in the DEA's Guideline Document on the EIA Regulations (1998).

9.2.1 Evaluation methods in Environmental Assessment

Environmental, social and economic attributes are first identified for which impacts of the proposed activity will be assessed. This is done through initial investigations by the EAP and then through public participation.

Baseline information is then required to establish the *status quo* for the environmental and social attributes to be evaluated in the impact assessment. This is done through collection and collation of existing spatial information (GIS, aerial photographs, planning databases etc) which is then verified through specialist assessments.

The impact of activities to be conducted during various phases of the proposed project on the attributes identified during scoping phase EIA is then evaluated by the EAP through input from the various specialists. The preferred methodology to evaluation is a simple Impact – Activity Checklist.

9.2.2 Impact – Activity Checklist

This section outlines the methodology used to assess the significance of the potential environmental impacts identified. For each impact, the EXTENT (spatial scale), MAGNITUDE (size or degree scale) and DURATION (time scale) are described (Table 8. These criteria are used to ascertain the SIGNIFICANCE of the impact, firstly in the case of no mitigation and then with the most effective mitigation measure(s) in place. The mitigation described in the EIR represent the full range of plausible and pragmatic measures but does not *necessarily imply that they should or will all be implemented*. [1] The decision as to which mitigation measures to

[1] The applicant is requested to indicate which alternative and mitigation measures they are prepared and able to implement

implement lies ultimately with the CA. The tables on the following pages show the scale used to assess these variables and defines each of the rating categories.

Table 8: Criteria for the evaluation of environmental impacts

CRITERIA	CATEGORY	DESCRIPTION
Extent or spatial influence of impact	**Regional**	Beyond a 10km radius of the proposed construction site
	Local	Within a 10km radius of the centre of the proposed construction site
	Site specific	On site or within 100m of the proposed construction site
Magnitude of impact (at the indicated spatial scale)	**High**	Natural and/ or social functions and/ or processes are *severely* altered
	Medium	Natural and/ or social functions and/ or processes are *notably* altered
	Low	Natural and/ or social functions and/ or processes are *slightly* altered
	Very Low	Natural and/ or social functions and/ or processes are *negligibly* altered
	Zero	Natural and/ or social functions and/ or processes remain *unaltered*
Duration of impact	**Construction period**	Up to 2 years
	Medium Term	Up to 5 years after construction
	Long Term	More than 5 years after construction

The SIGNIFICANCE of an impact is derived by taking into account the temporal and spatial scales and magnitude. The means of arriving at the different significance ratings is explained in Table 9.

Table 9: Definition of significance ratings

SIGNIFICANCE RATINGS	LEVEL OF CRITERIA REQUIRED
High	• High magnitude with a regional extent and long term duration • High magnitude with either a regional extent and medium term duration or a local extent and long term duration • Medium magnitude with a regional extent and long term duration
Medium	• High magnitude with a local extent and medium term duration • High magnitude with a regional extent and construction period or a site specific extent and long term duration • High magnitude with either a local extent and construction period duration or a site specific extent and medium term duration • Medium magnitude with any combination of extent and duration except site specific and construction period or regional and long term • Low magnitude with a regional extent and long term duration
Low	• High magnitude with a site specific extent and construction period duration • Medium magnitude with a site specific extent and construction period duration • Low magnitude with any combination of extent and duration except site specific and construction period or regional and long term • Very low magnitude with a regional extent and long term duration
Very low	• Low magnitude with a site specific extent and construction period duration • Very low magnitude with any combination of extent and duration except • regional and long term
Neutral	• Zero magnitude with any combination of extent and duration.

Once the significance of an impact has been determined, the PROBABILITY of this impact occurring as well as the CONFIDENCE in the assessment of the impact would be determined using the rating systems outlined in Table 10 and Table 11 respectively. It is important to note that the significance of an impact should always be considered in connection with the probability of that impact occurring. Lastly, the REVERSIBILITY of the impact is estimated using the rating system outlined in Table 12.

Table 10: Definition of probability ratings

PROBABILITY RATINGS	CRITERIA
Definite	Estimated greater than 95% chance of the impact occurring.
Probable	Estimated 5 to 95% chance of the impact occurring.
Unlikely	Estimated less than 5% chance of the impact occurring.

Table 11: Definition of confidence ratings

CONFIDENCE RATINGS	CRITERIA
Certain	Wealth of information on and sound understanding of the environmental factors potentially influencing the impact.
Sure	Reasonable amount of useful information on and relatively sound understanding of the environmental factors potentially influencing the impact.
Unsure	Limited useful information on and understanding of the environmental factors potentially influencing this impact.

Table 12: Definition of reversibility ratings

REVERSIBILITY RATINGS	CRITERIA
Irreversible	The activity will lead to an impact that is permanent.
Reversible	The impact is reversible, within a period of 10 years.

9.2.3 Subjectivity in assigning Significance

Despite attempts at providing a completely objective and impartial assessment of the environmental implications of development activities, EIA processes can never escape the subjectivity inherent in attempting to define significance. The determination of the significance of an impact depends on both the context (spatial scale and temporal duration) and intensity of that impact. Since the rationalisation of context and intensity will ultimately be prejudiced by the observer, there can be no wholly objective measure by which to judge the components of significance, let alone how they are integrated into a single comparable measure.

This notwithstanding, in order to facilitate informed decision-making, EIAs must endeavour to come to terms with the significance of the potential environmental impacts associated with particular development activities. Recognising this, potential subjectivity in the current EIA process has been attempted to be addressed as follows:

- Being explicit about the difficulty of being completely objective in the determination of significance, as outlined above;
- Developing an explicit methodology for assigning significance to impacts and outlining this methodology in detail in the Plan of Study for EIA and in this EIR. Having an explicit methodology not only forces the assessor to come to terms with the various facets contributing towards the determination of significance, thereby avoiding arbitrary assignment, but also provides the reader of the EIR with a clear summary of how the assessor derived the assigned significance;
- Wherever possible, differentiating between the likely significance of potential environmental impacts as experienced by the various affected parties; and
- Utilising a team approach and internal review of the assessment to facilitate a more rigorous and defendable system.

Although these measures may not totally eliminate subjectivity, they provide an explicit context within which to review the assessment of impacts.

9.3 Public Participation during the EIA phase

Public participation forms a critical component of the EIA process, as it provides all interested and affected parties with an opportunity to learn about a project, but more importantly to understand how a project will impact on them. Once the Scoping phase is complete, the will EIA phase will allow for the 30 days public review period of the EIR.

9.3.1 Public review of documents

Documents, including all supporting documentation, will be made available for public comment. The public will be given a 30-day period to comment and raise issues of concern based on the information contained in the report.

Should the Plan of Study for EIA be approved, the EIR will be completed and made available for public comment for a 30-day period. It should be noted that this period may be extended on request. All specialist reports prepared as indicated in this document will be appended to the EIR for public review.

9.3.2 Public meetings

No public meeting is envisaged to take place given the COVID-19 lockdown restrictions. Detailed communication will be provided to I&AP via electronic media.

9.3.3 Incorporation of comments into the final EIR

All comments received during the public review period (including those obtained during public meetings) will be incorporated into the final EIR which will be submitted to the CA for review and approval.

9.3.4 Notification of the decision on Environmental Authorisation

Once the CA has made a decision regarding the application for environmental authorisation, notices will be sent to all registered Interested and Affected Parties that the Environmental Authorisation (EA) has been granted or refused and that it is available for review. These notices will indicate the process required to lodge an appeal, as well as the prescribed timeframes in which documentation should be submitted.

10 CONCLUSION AND RECOMMENDATIONS

The proposed Thorntree-East Development is planned to be a mixed-use development comprising of residential, commercial and social sections. The development and subsequent availability of high- and low-density housing, schools and clinics, retail and businesses in close proximity to one another is intended to create a feeling of community for the future residents. This proposal therefore ties in with the City of Tshwane's Integrated Development Plan (IDP) focus areas to:

1. Attract investment and encourage growth by making it easy to do business in Tshwane;
2. Revitalise and support Tshwane's entrepreneurs;
3. Empower individuals to take advantage of opportunities;
4. Infrastructure-led growth to catalyse and revitalise existing nodal economies; and
5. Encourage tourism and recreation

However, it is always imperative to consider not only the advantages of the proposed development, but also the potential negative impacts that may be associated with the construction of a mixed-use development. These potential impacts are not only limited to the physical and biophysical environmental impacts, but also to that of the receiving social environment.

In this regard, the Public Participation Process as prescribed in the National Environmental Management Act, 107 of 1998 is recommended to be continued during the EIA phase to allow I&APs the opportunity to participate in the process. This will prove especially important when considering the neighbouring landowners and the potential impact that this development may have on them.

Due to the limited level of detail that is normally considered during a screening assessment, it is considered imperative to conduct detailed specialist studies, based on the plan of study for EIA as reflected in chapter 9, should the final scoping report and the plan of study for EIA be accepted.

ANNEXURE 1

LOCALITY MAP

ANNEXURE 2

PROPOSED LAYOUT