GAUTENG PROVINCE
AGRICULTURE AND RURAL DEVELOPMENT
REPUBLIC OF SOUTH AFRICA

Basic Assessment Report in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, and the Environmental Impact Assessment Regulations, 2014 (Version 1)

Kindly note that:

1. This **Basic Assessment Report** is the standard report required by GDARD in terms of the EIA Regulations, 2014.
2. This application form is current as of 8 December 2014. It is the responsibility of the EAP to ascertain whether subsequent versions of the form have been published or produced by the competent authority.
3. **A draft Basic Assessment Report must be submitted, for purposes of comments within a period of thirty (30) days, to all State Departments administering a law relating to a matter likely to be affected by the activity to be undertaken.**
4. **A draft Basic Assessment Report (1 hard copy and two CD's) must be submitted, for purposes of comments within a period of thirty (30) days, to a Competent Authority empowered in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended to consider and decide on the application.**
5. Five (5) copies (3 hard copies and 2 CDs-PDF) of the final report and attachments must be handed in at offices of the relevant competent authority, as detailed below.
6. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
7. Selected boxes must be indicated by a cross and, when the form is completed electronically, must also be highlighted.
8. An incomplete report may lead to an application for environmental authorisation being refused.
9. **Any report that does not contain a titled and dated full colour large scale layout plan of the proposed activities including a coherent legend, overlain with the sensitivities found on site may lead to an application for environmental authorisation being refused.**
10. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the application for environmental authorisation being refused.
11. No faxed or e-mailed reports will be accepted. Only hand delivered or posted applications will be accepted.
12. Unless protected by law, and clearly indicated as such, all information filled in on this application will become public information on receipt by the competent authority. The applicant/EAP must provide any interested and affected party with the information contained in this application on request, during any stage of the application process.
13. Although pre-application meeting with the Competent Authority is optional, applicants are advised to have these meetings prior to submission of application to seek guidance from the Competent Authority.

DEPARTMENTAL DETAILS:

Gauteng Department of Agriculture and Rural Development
Attention: Administrative Unit of the of the Environmental Affairs Branch
P.O. Box 8769
Johannesburg
2000
Administrative Unit of the of the Environmental Affairs Branch
Ground floor Diamond Building
11 Diagonal Street, Johannesburg
Administrative Unit telephone number: (011) 240 3377
Department central telephone number: (011) 240 2500

(For official use only)

GAUT 002/21-22/E3087 (online submission reference number).

NEAS Reference Number:						
File Reference Number:						
Application Number:						
Date Received:						

If this BAR has not been submitted within 90 days of receipt of the application by the competent authority and permission was not requested to submit within 140 days, please indicate the reasons for not submitting within time frame.

n.a.

Is a closure plan applicable for this application and has it been included in this report? **n.a.**
if not, state reasons for not including the closure plan.

n.a.

Has a draft report for this application been submitted to a competent authority and all State Departments administering a law relating to a matter likely to be affected as a result of this activity? **Yes**

Is a list of the State Departments referred to above attached to this report including their full contact details and contact person? **Yes**

If no, state reasons for not attaching the list.

Have State Departments including the competent authority commented? **NO**

If no, why?

THE PUBLIC PARTICIPATION PROCESS is currently being conducted and all/any comments from State Departments and the Competent Authority will be included in the FINAL BASIC ASSESSMENT REPORT.

SECTION A: ACTIVITY INFORMATION

1. PROPOSAL OR DEVELOPMENT DESCRIPTION

Project title (must be the same name as per application form):

PROPOSED ZOLA EXTENSION 3 TOWNSHIP to be situated on A PART OF THE REMAINDER OF THE FARM SOWETO 387 IQ

Select the appropriate box

The application is for an upgrade of an existing development		The application is for a new development	X	Other, specify	

Does the activity also require any authorisation other than NEMA EIA authorisation?

YES	~~NO~~

If yes, describe the legislation and the Competent Authority administering such legislation

***National Water Act (NWA), Act 36 of 1998]* – Department Water and Sanitation**

If yes, have you applied for the authorisation(s)?	**YES**	~~NO~~
If yes, have you received approval(s)? (attach in appropriate appendix)	**YES**	~~NO~~

2. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations:

Title of legislation, policy or guideline:	Administering authority:	Promulgation Date:
NATIONAL LEGISLATION:		
Conservation of Agriculture Resources Act, 1983 (Act 43 of 1983).	**National**	**1983**
Disaster Management Act, 2002. Government gazette 43096, March 2020.	**National**	**2020**
DEAT (2005) Guideline 3: General Guide to the Environmental Impact Assessment Regulations, 2005, Integrated Environmental Management Guideline Series, Department of Environmental Affairs and Tourism (DEAT), Pretoria.	**National Department of Environmental Affairs and Tourism**	**2006**
DEAT (2005) Guideline 4: Public Participation, in Support of the EIA Regulations, 2005, Integrated Environmental Management Guideline Series, Department of Environmental Affairs and Tourism (DEAT), Pretoria.	**National Department of Environmental Affairs and Tourism**	**2005**
DEAT (2006) Guideline 5: Assessment of Alternatives and Impacts in support of the Environmental Impact Assessment Regulations, 2006. Integrated Environmental Management Guideline Series, Department of Environmental Affairs and Tourism (DEAT), Pretoria.	**National Department of Environmental Affairs and Tourism**	**2005**
Environment Conservation Act. 1989 (Act no.73 of 1989).	**National**	**1989**
Hazardous Substance Act. 1973 (15 of 1973).	**National**	**1973**

National Building Regulations and Building Standards Act (Act 103 of 1977).	**National**	**1977**
National Development Plan, 2030.	**National**	**2012**
National Environmental Management Act, 1998 (Act No. 107 of 1998 as amended).	**National & Provincial**	**27 November 1998**
National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004).	**National & Provincial**	**2004**
SECTION 24G OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT (NO 107 OF 1998) – Consequences of unlawful commencement of activity.	**National & Provincial**	**27 November 1998**
National Heritage Resources Act 25 of 1999.	**SOUTH AFRICAN HERITAGE RESOURCE AGENCY (SAHRA)**	**28 April 1999**
National Water Act (NWA), Act 36 of 1998].	**National**	**1998**
National Web based Environmental Screening Tool.	**National**	**2020**
NEMA (Act 107 of 1998) Amendment of the Environmental Impact Assessment Regulations 2014, 7 April 2017: GN326, published in Government Gazette 38282 on 7 April 2017.	**National**	**7 April 2017**
Noise Control Regulations.	**National**	**1992**
Noise Regulations promulgated in terms of the Environment Conservation Act 73 of 1989.	**National**	**1989**
Occupational Health and Safety Act, 1993 (Act No 85 of 1993).	**National**	**1993**
Red List Plant Species Guideline, 2006.	**National**	**2006**
The Constitution of South Africa (Act 108 of 1996).	**National**	**1996**
Sustainable Development Guideline, April 2017.	**National**	**2017**
The Road Traffic Act of 1996.	**National**	**1996**
National Spatial Development Perspective (NSDP), 2006.	**National**	**2006**
Spatial Planning & Land Use Management Act, 16 of 2013 (SPLUMA).	**National**	**2013**
PROVINCIAL GUIDELINES:		
Gauteng Conservation Plan 3.3 Terrestrial CBA's 2011.	**Gauteng Department of Agriculture and Rural Development (GDARD)**	**October 2011**
GAUTENG PLANNING AND DEVELOPMENT ACT, 2003.	**Gauteng**	**2003**
Gauteng Environmental Management Framework, THE DEVELOPMENT OF THE PROVINCIAL ENVIRONMENTAL MANAGEMENT FRAMEWORK (GPEMF) FOR GAUTENG - Draft Environmental Management Framework Report August 2014 - Produced by the Environomics Project Team, including: Environomics MetroGis EnviroGIS David Hoare Consulting NRM Consulting.	**Gauteng Department of Agriculture and Rural Development (GDARD)**	**2014**
GAUTENG SPATIAL DEVELOPMENT FRAMEWORK 2011 & 2030.	**Gauteng**	**2011/2015**
Gauteng Urban Edge, 2010.	**Gauteng**	**2010**
Gauteng Noise Control Regulations, 1999.	**Gauteng**	**1999**
GDARD's Gauteng Environmental Management Framework.	**Gauteng**	**2014 & 2018**
The GAUTENG Transport Infrastructure Act, 2001.	**Gauteng**	**2001**
Local Authority Notices		
CITY OF JOHANNESBURG SPATIAL DEVELOPMENT FRAMEWORK (i.e. Regional Spatial Development Framework:(RSDF 2010/2011).	**City of Johannesburg**	**2010/2011**
'City of Johannesburg Metropolitan Municipality: Spatial Development Framework 2040. *(In collaboration with: Iyer Urban Design, UN Habitat, Urban Morphology and Complex Systems Institute and the French Development Agency City of Johannesburg: Department of Development Planning 2016').*	**City of Johannesburg**	**2016**
INTEGRATED ENVIRONMENTAL MANAGEMENT POLICY *FINAL JUNE 2005* ***ENVIRONMENTAL PLANNING AND MANAGEMENT*** *(011 407 6439/ 407 6751 environment@joburg.org.za).*	**City of Johannesburg**	**2005**
Johannesburg Metropolitan Open Space Policy Prepared for: CITY OF JOHANNESBURG – March 2004. [Compiled by: STRATEGIC ENVIRONMENTAL FOCUS (Pty) Ltd PO Box 74785 Lynnwood Ridge Pretoria 0040 Tel: (012) 349 - 1307 Fax: (012) 349 - 1229 E-mail: sef@sefsa.co.za]	**City of Johannesburg**	**2004**

Description of compliance with the relevant legislation, policy or guideline:	
Legislation, policy of guideline	**Description of compliance**
Conservation of Agriculture Resources Act, 1983 (Act 43 of 1983).	Control and … the natural agricultural resources for the conservation of soil, water, plants and animals. Removal of the alien and weed species encountered in the application area should take place in order to comply with existing legislation (amendments to the regulations under the CARA 1983 and Section 28 of the NEMA 1998). Removal of species should take place throughout the construction and operational phases.

	The National Web based Environmental Screening Tool was used to screen the site for sensitivity regarding the following i.e: (i) Agriculture Screening Map. The agriculture screening map indicated that the proposed site has high Agricultural sensitivity.
Disaster Management Act, 2002. Government gazette 43096, March 2020.	The restrictions enforced in terms of Government Gazette 43096 which placed the country in a national state of disaster limiting the movement of people to curb the spread of the COVID-19 virus has placed some limitations on the commencement and continuation of the public consultation as part of an EIA process.
DEAT (2005) Guideline 3: General Guide to the Environmental Impact Assessment Regulations, 2005, Integrated Environmental Management Guideline Series, Department of Environmental Affairs and Tourism (DEAT), Pretoria.	It provides a broad introduction to the Regulations by explaining the roles and responsibilities of the people involved in environmental authorisation applications the processes that are involved in applying for environmental authorisation and answering a set of key questions may arise.
DEA (2017) Guideline 4: Public Participation, in Support of the EIA Regulations, 2017, Integrated Environmental Management Guideline Series, Department of Environmental Affairs (DEA), Pretoria.	This guideline has been developed in order to assist the proponents or applicants, registered interested and affected parties (RI&AP's) and environmental assessment practitioners (EAPs) to understand what is required of them and how to comprehensively undertake a PPP.
DEAT (2006) Guideline 5: Assessment of Alternatives and Impacts in support of the Environmental Impact Assessment Regulations, 2006. Integrated Environmental Management Guideline Series, Department of Environmental Affairs and Tourism (DEAT), Pretoria.	It provides a basic guide to the assessment of alternatives and impacts which are key components of an EIA process.
Environment Conservation Act (ECA). 1989 (Act no.73 of 1989)	This Act specific provision for the issue of regulations with regard to noise. Such regulations, namely the National Noise Control Regulations, were promulgated in January 1992. These regulations relate to the control of noise by local authorities but only by local authorities which request the application of such. In 1996 the responsibility for administering the Noise Control Regulations was devolved to provincial level, but, as of June 2004, only Gauteng and the Western Province have promulgated their regulations. Another aspect of the ECA is that it may be used to advantage with respect to noised control by means of the prohibition of certain defined activities by the Minister of Environmental Affairs and Tourism. There are specific procedures related to the investigation of environmental impact of such activities that must be undertaken. Although the activities listed are not identified solely on the basis of noise, many have a noise impact component, and thus by implication there is a requirement to conduct a noise impact study, where relevant as a part of the total environmental impact assessment (EIA). The ECA is now largely superseded by the National Environment Management Act (Act 107 of 1998) although certain legislation such as the Noise Control Regulations will still be promulgated in terms of this Act.
Hazardous Substance Act. 1973 (15 of 1973)	Any contaminated soil is to be removed and disposed of at an appropriately permitted landfill site in accordance with the acceptable methods prescribed for the particular waste class and hazard rating, as prescribed by DWS's minimum requirements for the handling. Classification and disposal of Hazardous Waste, Second Edition (1998).
National Building Regulations and Building Standards Act (Act 103 of 1977)	Approval is required, from the Local Municipality; for the buildings being erected.
National Development Plan., 2030	The South African Government through the Presidency has published a National Development Plan. The Plan aims to eliminate poverty and reduce inequality by 2030. The Plan has the target of developing people's capabilities to improve their lives through social protection, rising income, housing and basic services, and safety. It proposed to implement the following strategies to address the above goals: 1. Creating jobs and improving livelihoods; 2. Expanding infrastructure; 3. Transition to a low-carbon economy; 4. Transforming urban and rural spaces; 5. Improving education and training; 6. Providing quality health care; 7. Fighting corruption and enhancing accountability; and – 8. Transforming society and uniting the nation.
National Environmental Management Act, 1998 (Act No. 107 of 1998 as amended).	The Environmental Authorisation for the proposed development is lawfully applied for in terms of the EIA Regulations, 2014, promulgated under NEMA. The conditions on the Environmental Authorisation, if approved, will be adhered to.

	A Basic Assessment Report is required for this project.
National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004).	The fauna and flora that dominate the proposed project site has been assessed in terms of the National Environmental Biodiversity Act, 2004 (Act no.10 of 2004) as amended (NEMBA) including all the relevant legislation published in terms of this act. A BIODIVERSITY ASSESSMENT REPORT (i.e. *'A vegetation assessment of the site proposed for development of the Emdeni Public transport Facility in Soweto - by G.J. Bredenkamp - Commissioned by Pierre Joubert Landscape Architect and Environmental Planner [Eco-Agent CC; PO Box 23355; Monument Park; 0181. Tel 012 3463180 / Fax 012 460 2525 / Cell 082 5767046]. December 2021.)'* - was compiled for the specific site and No NEMBA species or protected trees occur on the site.
SECTION 24G OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT (NO 107 OF 1998) – Consequences of unlawful commencement of activity.	*'The site is currently totally transformed and covered by weeds with a small part used as an informal vegetable garden'* - as stated in the BIODIVERSITY ASSESSMENT REPORT (i.e. *'A vegetation assessment of the site proposed for development of the Emdeni Public transport Facility in Soweto - by G.J. Bredenkamp - Commissioned by Pierre Joubert Landscape Architect and Environmental Planner [Eco-Agent CC; PO Box 23355; Monument Park; 0181. Tel 012 3463180 / Fax 012 460 2525 / Cell 082 5767046]. December 2021.)'*. It is suggested that this clearing of vegetation within the historically i.e. previously, disturbed area not be regarded as a violation of a listed activity as per Environmental Impact Assessment Regulations Listing Notice No. 3 of 2014.' – since it was a gradual process of transformation which occurred from over a period of more than 30 years ago as clearly observed on the 'historical imagery' GOOGLE EARTH images.
National Heritage Resources Act 25 of 1999.	The DRAFT BAR was submitted for review to the South Africa Heritage Resources Authority (SAHRA) and the Provincial Heritage Resources Authority Gauteng Province (PHRAG) in terms and respect of the National Heritage Resources Act 1999 (Act no.25 of 1999) (NHRA). The NHRA provides for the protection and management of South Africa's heritage resources. The South African National Heritage Resources Agency (SAHRA) is the administering authority regarding all matters relating to heritage resources. A heritage resource refers to any historically important feature such as graves, trees, archaeology, culturally significant symbols, spaces, landscapes and fossil beds as protected heritage resources. In terms of Section 38 of the NHRA, SAHRA can call for a Heritage Impact Assessment (HIA) (also known as an Archaeological Impact Assessment or AIA) for certain categories of development. The NHRA also makes provision for the assessment of heritage impacts as part of an EIA process and indicates that if such an assessment is deemed adequate, a separate HIA is not required. Section 38 (1) of the NHRA notes that the relevant heritage authority should be notified provided with details such as location, nature and extent of the following developments: *(a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;* *(b) the construction of a bridge or similar structure exceeding 50 m in length;* *(c) any development or other activity which will change the character of a site—* *(i) exceeding 5 000 m2 in extent; or* *(ii) involving three or more existing erven or subdivisions thereof; or* *(iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or* *(iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;* *(d) the re-zoning of a site exceeding 10 000 m2 in extent; or* *(e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority.* Any artefacts uncovered during the construction phase will be reported to SAHRA as provided for in the EMPr.
The National Water Act (Act No. 36 of 1998).	As stated in the WETLAND ASSESSMENT REPORT (i.e. ''*A wetland assessment of the site proposed for development of the Emdeni Public transport Facility in Soweto' - by G.J. Bredenkamp & CE Venter (Commissioned by Pierre Joubert Landscape Architect and Environmental Planner [Eco-Agent CC; PO Box 23355; Monument Park; 0181. Tel 012 3463180 / Fax 012 460 2525 / Cell 082 5767046]. December 2021.)'* It is important to note that all rivers and wetlands in South Africa are considered to be ecological sensitive systems and enjoy legal protection (National Water Act 1998, National Environmental Management Act, 1998). A wetland is present to the east of the site and receives stormwater from the surrounding development. The site is covered by deep infill and the historical extent of the wetland is therefore unknown. The preferred alternative takes place outside the wetland unit and its buffer zone. If the mitigations measures included in this report is adhered to and the stormwater plan is implemented no negative impacts are anticipated and the PES class of the wetland will remain the same. This development is supported. A GENERAL AUTHORISAION water use license application was submitted and granted i.e. issued, by the Department of Water and Sanitation for the proposed development i.e: Ref.no:27/2/2/C122/113/3; 21 October 2020. Please see a copy of it

	attached in APPENDIX F.
National Web based Environmental Screening Tool.	On 5 July 2019, the Minister of Environment, Forestry and Fisheries signed a notice of requirement for all applications submitted as per Regulation 16(1)(b)(v) of the Environmental Impact Assessment Regulations, 2014, as amended. This notice requires a screening report as generated by the National Web Based Environmental Screening Tool in terms of Section 24(5)(h) of the National Environmental Management Act, 1998 (Act no.107 of 1998) to be submitted along with the application effective from October 2019. The screening tool can be described as an online, geographic information system, which enables the user to assess the proposed area of development for any potential sensitivities. Moreover, the tool provides additional information that might be required for assessment during an authorisation process. This includes instances of minimum requirements, potential Environmental Management Frameworks for the area and specific regional development targets or plans. The report generated by the screening tool provides an indication of specialist's studies that will be mandatory to undertake during the authorisation process, based on the development plans for the region of the environmental sensitivity of the site. The screening tool and generated report assist companies and consultancies in ensuring that accurate planning and subsequent applications can be undertaken. The EAP has incorporated the screening tool as an integral part of the screening to sensitivities from the launch date and finds most of the information very usable, accurate and relevant to the authorisation process. The screening tool is an open soured program and more importantly, user-friendly. For free access to the screening tool please use the following link i.e: *https://screening.environment.gov.za/screeningtool/#/pages/welcome*
NEMA (Act 107 of 1998) Amendment of the Environmental Impact Assessment Regulations 2014, 7 April 2017: GN326, published in Government Gazette 38282 on 7 April 2017.	Please see chapter 6 relating to public participation. Appendix 1 relating to the content of the Basic Assessment Report as well as Appendix 4 relating to the content of the EMPr.
Noise Control Regulations.	The National Noise Regulations of 1992 provided a more definitive approach to the control of noise and was applied by many local authorities. These regulations have now been developed to provincial level control.
Occupational Health and Safety Act, 1993 (Act No 85 of 1993).	Exposure to high levels of noise can be detrimental to the auditory health of persons in the workplace. Noise control can be exercised in terms of the Act, which aims at providing for the health and safety of persons at a workplace or in the course their employment or in connection with the use of machinery. Apart from extensive provisions of the Act dealing with such safety, the Minister is authorized to make regulations, which in his opinion, are necessary or desirable in the interest of the safety of persons in the above-mentioned circumstances.
Red List Plant Species Guideline, 2006.	Organisms that fall into the Extinct in the Wild (EW), critically endangered (CR), Endangered (EN), Vulnerable (VU) categories of ecological status. A Red Data Listed (RDL) species assessment as well as an assessment of other Species of Conservation concern (SCC), including potential for such species to occur within the study area, was conducted. A BIODIVERSITY ASSESSMENT REPORT (i.e. *'A vegetation assessment of the site proposed for development of the Emdeni Public transport Facility in Soweto - by G.J. Bredenkamp - Commissioned by Pierre Joubert Landscape Architect and Environmental Planner [Eco-Agent CC; PO Box 23355; Monument Park; 0181. Tel 012 3463180 / Fax 012 460 2525 / Cell 082 5767046]. December 2021.)'* - was compiled for the specific site and NO possible Red listed plant species were found i.e. identified, on site.
The Constitution of South Africa (Act 108 of 1996).	According ot Section (2)(4)(f) and (o) of the Act, • The participation of all interested and affected parties (I&AP's) in environmental governance should be promoted and all people should have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation, and participation by vulnerable and disadvantaged persons should be ensured, and – • The environment is held in public trust for the people, the beneficial use of environmental resources should serve the public interest and the environment should be protected as the people's common heritage.
The Road Traffic Act of 1996.	The Road Traffic Act of 1996 provides, inter alia, that no person shall operate or permit to be operated on a public road and vehicle causing noise in excess of the prescribed noise level. The Act, however, does not prescribe noise levels, but empowers the Minister of Transport to issue regulations prescribing them. The consolidated Road Traffic Regulations in terms of the Act do not prescribe any such noise levels, although the noise levels specified in the South African National standard SANS 10181, have been specified as control standards.
National Spatial Development Perspective (NSDP), 2006.	The NSDP 2006 provides a framework for deliberating the future development of the national space economy and recommends mechanisms to bring about optimum

	alignment between infrastructure investment and development programmes within localities. It is not a national development plan; nor does it predetermine what should happen where, when and how. Instead, it utilises principles and the notions of need and potential as a common backdrop against which investment and spending decisions should be considered and made. In addition, while the NSDP provides an initial interpretation of the potential of different localities and sectors, this is not a definitive measure. Provincial Growth and Development strategies (PGDSs) and Integrated Development Plans (IDPs) will need to provide more rigorous assessments of potential by combining the NSDP's initial interpretation with local knowledge and research. Through a process of interaction and dialogue, these provincial and municipal planning instruments will then define each locality's development potential in terms of the six stated categories of development potential. The following principles apply i.e: Principle 1: Rapid, inclusive economic growth and Poverty alleviation; Principle 2: Provision of basic services; Principle 3: Government spending to be fixed on localities of economic growth and/or economic potential; Principle 4: Address past and current social inequalities; Principle 5: Economic development should enhance activity corridors.
Spatial Planning & Land Use Management Act, 16 of 2013 (SPLUMA).	The Spatial Planning and Land Use Management Act 16 of 2013 (SPLUMA) is a national law that was passed by Parliament in 2013. The law gives the Department of Rural Development and Land Reform (DRDLR) the power to pass Regulations in terms of SPLUMA to provide additional detail on how the law should be implemented.
PROVINCIAL GUIDELINES:	
Gauteng Conservation Plan 3.3 Terrestrial CBA's 2011.	The Gauteng conservation plan (version 3.3) Terrestrial CBA's represents priority areas for biodiversity conservation in the Gauteng province. The whole site falls inside of an area identified as a – i. Critical Biodiversity Area 2; Ecological Support Area; Critically endangered ecosystem.
GAUTENG PLANNING AND DEVELOPMENT ACT, 2003.	The Act aims to provide for a single system of development, planning and land management in the Province; to set out principles for planning and development in the Province; to establish planning bodies and to provide for appeals to the Appeal Tribunal; to create a framework for the preparation of development plans and frameworks; to provide for the creation of zoning schemes; to create unified procedures for development applications; to provide for the repeal of legislation and transitional measures; to provide for general matters such as enforcement procedures; and to provide for matters connected therewith.
Gauteng Urban Edge, 2010	According to Mr. Neel du Toit of the Gauteng Department of Economic Development, the urban edge is now delineated on a yearly basis, and it is the responsibility of the local authorities to request for a yearly amendment to the urban edge.
Gauteng Noise Control Regulations, 1999	The regulation controls noise pollution. According to the acceptable noise levels in a residential area situated within an urban area is 55dBA and the maximum acceptable noise levels in a rural area is 45dBA.
Gauteng Environmental Management Framework, THE DEVELOPMENT OF THE PROVINCIAL ENVIRONMENTAL MANAGEMENT FRAMEWORK (EMF) FOR GAUTENG - Draft Environmental Management Framework Report August 2014 - Produced by the Environomics Project Team, including: Environomics MetroGis EnviroGIS David Hoare Consulting NRM Consultin – and, GDARD's Gauteng Environmental Management Framework (GPEMF) Report, November 2018.	The objective of the GPEMF is to guide sustainable land use management within the Gauteng Province. The site falls predominantly (i.e. approximately 85-90%) within the GEMF as ZONE 1: Urban development zone - which is compatible with the proposed activity. [ZONE 1 Intention: The intention with Zone 1 is to streamline urban development activities in it and to promote development infill, densification and concentration of urban development within the urban development zones as defined in the Gauteng Spatial Development Framework (GSDF), in order to establish a more effective and efficient city region that will minimise urban sprawl into rural areas]. A small portion of the eastern side of the site (i.e. approximately 10-15%) falls within the GEMF as ZONE 2: High control Zone - which is not compatible with the proposed activity, hence the PREFERRED PROPOSAL is NOT proposed to fall within this area i.e ZONE 2. [ZONE 2 Intention - Sensitive areas within the urban development zone must be conserved and where linear development (roads etc.) cannot avoid these areas, a proper assessment and implementation of alternatives must be undertaken. Composition: o Sensitive areas within the Urban Development Zone include: o Conservation priority areas (CBAs: Irreplaceable areas); o Rivers (including 32m buffers); o Ridges; o Areas that are sensitive (as determined in the sensitivity assessment); and o Protected areas. Conservation is the primary objective in this zone and no new residential, retail, business, commercial, industrial or any other land use, with the exception of unavoidable linear service infrastructure, may be allowed in this area.] The illustration of the GPEMF can be found in APPENDIX I.
GAUTENG SPATIAL DEVELOPMENT FRAMEWORK 2011 & 2030.	The Gauteng Spatial Development Framework (GSDF) 2011 was the first attempt at an integrated, coherent vision of settlement form, transportation and economic development for the province. However, it was not implemented as intended, resulting

	in a slow pace of spatial, economic and social transformation in the province. In 2015, the Gauteng Provincial Government decided to review the GSDF 2011, a decision that was also prompted by the Spatial Planning and Land Use Management Act (SPLUMA) (Act 16 of 2013), which came into force on 1 July 2015. This resulted in the GSDF 2030, which seeks to (i) direct, guide, focus and (ii) align, coordinate and harmonise all development spending in the province, to ensure rapid, sustainable and inclusive provincial economic growth and township redevelopment, therefore enabling decisive spatial transformation. The GSDF 2030 is guided and informed by the national legal framework; international, national and provincial spatial policy directives; and municipal Spatial Development Frameworks. GSDF 2030 is aligned with Gauteng's 10-Pillar Programme of Transformation, Modernisation and Re-Industrialisation 2014, Gauteng 25-Year Integrated Transport Master Plan 2013, Gauteng Provincial Environmental Management Framework 2014, the Gauteng Rural Development Plan 2014, and the Gauteng City-Region Integrated Infrastructure Master Plan 2030. It also takes into account the United Nations Sustainable Development Goals 2030 and New Urban Agenda 2016, the African Urban Agenda 2015, the National Development Plan 2030, the Integrated Urban Development Framework 2016, the Strategic Infrastructure Projects 2013, the Neighbourhood Development Partnership Programme, the Comprehensive Rural Development Programme and the Pro-active Land Acquisition Strategy.
The GAUTENG Transport Infrastructure Act, 2001.	The Act was created to consolidate the laws relating to roads and other types of transport infrastructure in Gauteng; and to provide for the planning, design, development, construction, financing, management, control, maintenance, protection and rehabilitation of provincial roads, railway lines and other transport infrastructure in Gauteng; and to provide for matters connected therewith.
Local Authority Notices	
CITY OF JOHANNESBURG SPATIAL DEVELOPMENT FRAMEWORK (i.e. Regional Spatial Development Framework:(RSDF 2010/2011).	1.0 Regional Spatial Development Framework: 1.1 According to the (RSDF 2010/2011), the site is situated in Region G, Sub-area 4. 1.2 This Sub Area is identified as a Public Transport Priority Area and Marginalised and Peri Urban Areas Priority Area in terms of the Growth Management Strategy. 1.3 Key issues to be addressed include: • Unmanaged informal trading and illegal trading; • Absence of formal public transport facility; • Low-income levels and unemployment; • Absence of public transport stops (with shelter) and lay-byes; • Need for pedestrian crossing along Golden Highway; • Proliferation of informal settlements; • Public sector intervention to support potential growth and development; • Encourage investments in the nodes; • Provide and improve public transport facilities and trading facilities; • Restrict rights in decentralised areas and encourage infill development; 1.4 Development objectives for the area include: • Pursue the productive use of all vacant land parcels in the Sub Area And promote infill development; • Support clustering of services in multi-purpose development centre; • Encourage and support partnerships. 1.5 The development proposal is in line with the RSDF 2010 / 2011.
'City of Johannesburg Metropolitan Municipality: Spatial Development Framework 2040. *(In collaboration with: Iyer Urban Design, UN Habitat, Urban Morphology and Complex Systems Institute and the French Development Agency City of Johannesburg: Department of Development Planning 2016 & draft 2021/2022').*	1.1 The Spatial Development Framework 2040 (SDF) aims to address issues with the CoJMM spatial and social landscape, some of these being identified as: • Increasing pressure on the natural environment and green infrastructure; • Urban sprawl and fragmentation; • Spatial inequalities and the job-housing mismatch. 1.2 The development proposal is situated within a previously marginalized area and as a result will have no negative affect on the natural environment and will ensure optimal utilisation of existing infrastructure, while promoting the notion of infill development and creating job opportunities in close proximity to residential area. ***'Unlocking Soweto as a True City District*** *Transform Soweto into a liveable city district in its own right with access to jobs and the full array of urban amenities. Create a series of self-sufficient mixed-use nodes as growth points for jobs within the area. Develop mixed land uses (particularly economically productive ones) and social services, making use of a good street pattern and public transport.* *Strengthening the natural structure as a provider of ecological services: A major component of Soweto's natural structuring system is its river and wetland system, which is of metropolitan significance as a Critical Biodiversity Area. The system's importance in forming ecological corridors and environmental infrastructure should be protected and enhanced. Current storm water infrastructure is not adequate and with the proposed intensification the river and wetland system will need to be restored and protected as a part of the storm water management solution.'* The proposed development is not at variance with, but compatible with the SDF.

CITY OF JOHANNESBURG - INTEGRATED ENVIRONMENTAL MANAGEMENT POLICY (CoJ-IEMP) *FINAL - JUNE 2005* ***ENVIRONMENTAL PLANNING AND MANAGEMENT*** *(011 407 6439/ 407 6751 environment@joburg.org.za).*	The city of Johannesburg …has acknowledged that its economic development should be underpinned by sustainability principles. The integrated environmental management policy is designed to position the city to develop sustainably based on this philosophy: • Environmental management in Johannesburg has to advance development at a socio-economic level to alleviate poverty and at a macro-economic level, to promote investment in the city. This philosophy is premised on the developmental role of local government as enshrined in the Municipal Systems Act • Environmental management will be incorporated in the day to day running or operations of the city. All Council entities will conduct their activities to advance the developmental role of environmental management, and limit the impact of their activities on the environment. • The goal for environmental management is to reduce the "ecological footprint" of the City through compact, integrated spatial development patterns supporting resource efficiency and sustainable development practices The policy is a product of the review of the Environmental Management Framework (EMF) that was previously considered the environmental management policy for the City. The process was subjected to relevant stakeholder engagements within the city. This policy provides a framework to address the impact of the past, present and future development initiatives on the environment thereby promoting a sustainable development agenda that recognises that development should cater for economic, social and environmental priorities. The policy also serves to reinforce the city's commitment to the implementation of the Millennium Declaration Goals (MDG's) and the Johannesburg Plan of Implementation (JPoI). The proposed development is not at variance with, but compatible with the CoJ-IEMP.
Johannesburg Metropolitan Open Space Policy Prepared for: CITY OF JOHANNESBURG – March 2004. [Compiled by: STRATEGIC ENVIRONMENTAL FOCUS (Pty) Ltd PO Box 74785 Lynnwood Ridge Pretoria 0040 Tel: (012) 349 - 1307 Fax: (012) 349 - 1229 E-mail: sef@sefsa.co.za]	The City of Johannesburg has identified the need to develop and manage a system of primary open spaces identified in the first phase of the Johannesburg Metropolitan Open Space System (JMOSS I). Primary open space constitutes of existing and desired ecological open space, the latter of which is based on selected ecological criteria. JMOSS II seeks to provide additional, specific criteria to be applied to primary open space in order to determine the most appropriate management strategy and policy to give effect to MOSS and its management. PURPOSE OF JMOSS I: The Johannesburg Metropolitan Open Space System Phase 1 (JMOSS I) was developed in order to allow for an informed response from the CoJ to the loss of open space. This is achieved with the aid of the decision support and spatial planning tool that can assist in the promotion of sustainable management of open space within the CoJ, through linking of established and potential conservation areas. Those open spaces that were not formally "established" (i.e. the desired ecological open space) were assessed for inclusion in the JMOSS based on a set of criteria. JMOSS I focused on the scientific ecological principles, such as connectivity, conservation value, disturbance levels and habitat diversity. Natural land cover datasets were used to identify ecological open space and Red Data fauna and flora presence was considered. While the social aspects of open space were highlighted, those did not form part of the evaluation of open space. JMOSS II is aimed at providing more robust criteria and principles for the identification of high value primary open space, in line with broader legislative and policy frameworks, and creating further proactive and reactive mechanisms for the protection and management of open space. Goals of JMOSS I: • To provide a cohesive, holistic view of the nature and purposes of an open space system and generate principles of approach most likely to lead to its establishment. • To formulate a perceptual model that can be used to identify the types of land most worthy of inclusion within an open space system. • To propose a methodology, which, if applied, would be most likely to bring any potential open space into effect. • To determine suitable boundaries for a City of Joburg Metropolitan Open Space System. • To provide a holistic view and analysis of existing open space. • To identify those potential open spaces that occur throughout the metropolitan area that are worthy of inclusion in an open space system based on applied criteria. • To, in terms of the chosen methodology, assess existing and potential open space that should constitute the MOSS. JMOSS I (CoJ, 2003d) The proposed development is not at variance with, but compatible with the JMOSS.

ACTIVITIES APPLIED FOR:

NATIONAL ENVIRONMENTAL MANAGEMENT ACT, No. 107 of 1998 (NEMA):

The proposed activity requires a Basic Assessment to be undertaken in compliance with the regulatory requirements of the NEMA Environmental Impact Assessment Regulations 2014 (as Amended) - 7 April 2017: Listing notice GN. R324 – due to the following activities being triggered i.e:

Indicate the number of the relevant	**Activity No (s) (relevant notice): e.g. Listing notices**	**Describe each listed activity as per the wording in the listing notices:**

Government Notice:	**1, 2 or 3**	
GN. R327, 7 April 2017.	1.(12)	*'The development of—* • *…; or –* • *infrastructure or structures with a physical footprint of 100 square metres or more;* *where such development occurs—* *(a) within a watercourse;* *(b) …; or* *(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse'.*
	The developer proposes a PUBLIC TRANSPORT FACILITY – TAXI RANK to be constructed on **ZOLA EXTENSION 3 TOWNSHIP** to be situated on **A PART OF THE REMAINDER** of the **FARM SOWETO 387 IQ (City of Johannesburg, Gauteng)** which will consist of the following i.e: • Size of site = 1,3178 hectares. • Size of Proposed development (i.e. activity) footprint: [10 631.30 m²]. o 40 TAXI RANKING AREA BAYS o 4 DROP-OFF AREA BAYS o 30 TAXI HOLDING BAYS o 10 ADMINISTRATION PARKING BAYS o 6 TRADING KIOSKS o 3 ABLUTION BLOCKS o SECURITY OFFICE o ADMINISTRATION OFFICE BLOCK + ADMIN SQUARE o REFUSE AREA o RECREATIONAL AREA o PUBLIC SQUARE & STAGE o DRIVEWAY & 10 PUBLIC PARKING BAYS o PAVED WALKWAYS (including covered Walkways) o STORMWATER ATTENUATION PONDS o SOFT LANDSCAPING AREAS o CIVIL SERVICES INFRASTRUCTURE (i.e. stormwater channels, palisade fences, water pipes, sewer pipes, manholes, electricity cables etc). • Wetland & wetland buffer areas: (excluded from proposed development footprint) [1 852.70 m²]. • Existing Public Road: [694 m²]. **NOTE:** **It is highly unlikely that the development of infrastructure or structures with a physical footprint of 100 square metres or more will occur within a watercourse and/or within 32 metres of a watercourse, measured from the edge of a watercourse – since the development footprint (i.e. of the PREFERRED LAYOUT PROPOSAL) is proposed to occur outside of the watercourse, wetland and wetland buffer areas – and the wetland assessment report have specified a development setback line.**	
GN. R327, 7 April 2017	1.(19)	*The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse'.*
	The developer proposes a PUBLIC TRANSPORT FACILITY – TAXI RANK to be constructed on **ZOLA EXTENSION 3 TOWNSHIP** to be situated on **A PART OF THE REMAINDER** of the **FARM SOWETO 387 IQ (City of Johannesburg, Gauteng)** which will consist of the following i.e: • Size of site = 1,3178 hectares. • Size of Proposed development (i.e. activity) footprint: [10 631.30 m²]. o 40 TAXI RANKING AREA BAYS o 4 DROP-OFF AREA BAYS o 30 TAXI HOLDING BAYS o 10 ADMINISTRATION PARKING BAYS o 6 TRADING KIOSKS o 3 ABLUTION BLOCKS o SECURITY OFFICE o ADMINISTRATION OFFICE BLOCK + ADMIN SQUARE o REFUSE AREA	

		o RECREATIONAL AREA o PUBLIC SQUARE & STAGE o DRIVEWAY & 10 PUBLIC PARKING BAYS o PAVED WALKWAYS (including covered Walkways) o STORMWATER ATTENUATION PONDS o SOFT LANDSCAPING AREAS o CIVIL SERVICES INFRASTRUCTURE (i.e. stormwater channels, palisade fences, water pipes, sewer pipes, manholes, electricity cables etc). • Wetland & wetland buffer areas: (excluded from proposed development footprint) [1 852.70 m²]. • Existing Public Road: [694 m²]. **NOTE:** ➢ **It is highly unlikely, that the infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse will occur, since the development footprint (i.e. of the PREFERRED LAYOUT PROPOSAL) is proposed to occur outside of the watercourse, wetland and wetland buffer areas – and the wetland assessment report have specified a development setback line.**
GN. R327, 7 April 2017.	1.(27)	*'The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation, except 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 developer proposes a PUBLIC TRANSPORT FACILITY – TAXI RANK to be constructed on **ZOLA EXTENSION 3 TOWNSHIP** to be situated on **A PART OF THE REMAINDER** of the **FARM SOWETO 387 IQ (City of Johannesburg, Gauteng)** which will consist of the following i.e: • Size of site = 1,3178 hectares. • Size of Proposed development (i.e. activity) footprint: [10 631.30 m²]. o 40 TAXI RANKING AREA BAYS o 4 DROP-OFF AREA BAYS o 30 TAXI HOLDING BAYS o 10 ADMINISTRATION PARKING BAYS o 6 TRADING KIOSKS o 3 ABLUTION BLOCKS o SECURITY OFFICE o ADMINISTRATION OFFICE BLOCK + ADMIN SQUARE o REFUSE AREA o RECREATIONAL AREA o PUBLIC SQUARE & STAGE o DRIVEWAY & 10 PUBLIC PARKING BAYS o PAVED WALKWAYS (including covered Walkways) o STORMWATER ATTENUATION PONDS o SOFT LANDSCAPING AREAS o CIVIL SERVICES INFRASTRUCTURE (i.e. stormwater channels, palisade fences, water pipes, sewer pipes, manholes, electricity cables etc). • Wetland & wetland buffer areas: (excluded from proposed development footprint) [1 852.70 m²]. • Existing Public Road: [694 m²]. **NOTE:** ➢ **It is highly unlikely, that an area of more than 10 000 square meters of indigenous vegetation is proposed to be cleared, since the site is completely transformed and does not seem to have 10 000 square metres of indigenous vegetation available where the development footprint is proposed – as set out in more detail in the BIODIVERSITY ASSESSMENT REPORT in Appendix G.** ➢ **The development footprint (i.e. of the PREFERRED LAYOUT PROPOSAL) is also proposed to occur outside of the watercourse, wetland and wetland buffer areas – and the wetland assessment report have specified a development setback line.**	

GN. R324, 7 April 2017	**3.(12)**	*The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.* *c. Gauteng* *i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004;* *ii. Within Critical Biodiversity Areas or Ecological Support Areas identified in the Gauteng Conservation Plan or bioregional plans; or -* *iii. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning'.*
	The developer proposes a PUBLIC TRANSPORT FACILITY – TAXI RANK to be constructed on **ZOLA EXTENSION 3 TOWNSHIP** to be situated on **A PART OF THE REMAINDER** of the **FARM SOWETO 387 IQ (City of Johannesburg, Gauteng)** which will consist of the following i.e: • Size of site = 1,3178 hectares. • Size of <u>Proposed development (i.e. activity) footprint</u>: [10 631.30 m²]. o 40 TAXI RANKING AREA BAYS o 4 DROP-OFF AREA BAYS o 30 TAXI HOLDING BAYS o 10 ADMINISTRATION PARKING BAYS o 6 TRADING KIOSKS o 3 ABLUTION BLOCKS o SECURITY OFFICE o ADMINISTRATION OFFICE BLOCK + ADMIN SQUARE o REFUSE AREA o RECREATIONAL AREA o PUBLIC SQUARE & STAGE o DRIVEWAY & 10 PUBLIC PARKING BAYS o PAVED WALKWAYS (including covered Walkways) o STORMWATER ATTENUATION PONDS o SOFT LANDSCAPING AREAS o CIVIL SERVICES INFRASTRUCTURE (i.e. stormwater channels, palisade fences, water pipes, sewer pipes, manholes, electricity cables etc). • <u>Wetland & wetland buffer areas:</u> (excluded from proposed development footprint) [1 852.70 m²]. • <u>Existing Public Road</u>: [694 m²]. **NOTE:** ➢ **It is uncertain i.e. highly unlikely, that an area of more than 300 square meters of indigenous vegetation is proposed to be cleared, since the site is completely transformed and does not seem to have 300 square metres of indigenous vegetation available where the development footprint is proposed.** ➢ **The development footprint (i.e. of the PREFERRED LAYOUT PROPOSAL) is also proposed to occur outside of the watercourse, wetland and wetland buffer areas – and the wetland assessment report have specified a development setback line – as set out in more detail in the BIODIVERSITY ASSESSMENT REPORT in Appendix G.**	
GN. R324, 7 April 2017.	3.(14)	*'The development of— (ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs—* *(a) within a watercourse;* *(b) …; 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.* *c. Gauteng* *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 Conservation Plan or in bioregional plans;* *v. Sites identified within threatened ecosystems listed in terms of the National Environmental Management Act: Biodiversity Act (Act No. 10 of 2004);* *vi. Sensitive areas identified in an environmental management framework adopted by the relevant environmental authority;* *vii. Sites or areas identified in terms of an international convention;* *viii. 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;* *ix. Sites designated as nature reserves in terms of municipal Spatial Development Frameworks; or* *x. Sites zoned for conservation use or public open space or equivalent zoning'.*
	The developer proposes a PUBLIC TRANSPORT FACILITY – TAXI RANK to be constructed on **ZOLA EXTENSION 3 TOWNSHIP** to be situated on **A PART OF THE REMAINDER** of the **FARM SOWETO 387 IQ (City of Johannesburg, Gauteng)** which will consist of the following i.e: • Size of site = 1,3178 hectares. • Size of Proposed development (i.e. activity) footprint: [10 631.30 m²]. o 40 TAXI RANKING AREA BAYS o 4 DROP-OFF AREA BAYS o 30 TAXI HOLDING BAYS o 10 ADMINISTRATION PARKING BAYS o 6 TRADING KIOSKS o 3 ABLUTION BLOCKS o SECURITY OFFICE o ADMINISTRATION OFFICE BLOCK + ADMIN SQUARE o REFUSE AREA o RECREATIONAL AREA o PUBLIC SQUARE & STAGE o DRIVEWAY & 10 PUBLIC PARKING BAYS o PAVED WALKWAYS (including covered Walkways) o STORMWATER ATTENUATION PONDS o SOFT LANDSCAPING AREAS o CIVIL SERVICES INFRASTRUCTURE (i.e. stormwater channels, palisade fences, water pipes, sewer pipes, manholes, electricity cables etc). • Wetland & wetland buffer areas: (excluded from proposed development footprint) [1 852.70 m²]. • Existing Public Road: [694 m²]. **NOTE:** ➢ **It is highly unlikely that the development of any infrastructure or structures with a physical footprint of 10 square metres or more will occur in the watercourse and/or wetland and/or wetland buffer areas, since the development footprint (i.e. of the PREFERRED LAYOUT PROPOSAL) is proposed to occur outside of the watercourse, wetland and wetland buffer areas – and the wetland assessment report have specified a development setback line.**	

3. ALTERNATIVES

Describe the proposal and alternatives that are considered in this application. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity could be accomplished. The determination of whether the site or activity (including different processes etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment. The no-go option must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed. **Do not** include the no go option into the alternative table below. **Note:** After receipt of this report the competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent. Please describe the process followed to reach (decide on) the list of alternatives below.

1) Please note that there are no ACTIVITY or SITE alternatives proposed, since:

- **The proposed activity (i.e. PUBLIC TRANSPORT FACILITY – TAXI RANK) was and is the**

applicant's (i.e. CITY OF JOHANNESBURG METROPOLITAN MUNICIPALITY) preferred and only choice due to the constraints imposed by the i.e:- type of activity (i.e. informal TAXI rank) which was already prevalent on site for many years – and,

- **the site available, since an informal TAXI rank have been fully functioning on that specific site for many years and needed legal formalization (i.e. rezoning) in order to continue as a legally recognized activity. It would thereby also provide a much needed and improved facility (i.e. PUBLIC TRANSPORT FACILITY – TAXI RANK) to the SOWETO EMDENI and ZOLA community i.e. the applicant has identified land parcels which are currently being utilized informally by the taxi industry, thus giving rise to the need to formalize the sites and provide infrastructure towards the proposed taxi rank development for holding, loading purposes, as well as the associated ancillary uses that complement the development.**

2) However, <u>TWO (2) Proposed LAYOUT PLAN Alternatives</u> are presented underneath due to certain environmental constraints present on site as set out in more detail underneath.

Provide a description of the alternatives considered.

No.	**Alternative type**, either alternative: site on property, properties, activity, design, technology, energy, operational or other (provide details of "other")	**Description**
1	**Preferred Layout Proposal:**	**1.0 LOCALITY** The site is formally known as the RE 387 - IQ, Soweto and is located on a portion of the Farm 387 Soweto, adjacent to the eastern boundary of the Zola Township in Region D of the City of Johannesburg Municipal Area. The site is situated in Ntshunyana street (Jabavu road) i.e. on the eastern side of Ntshunayana street which is 50 metres south-south-east of the Maholwane street (Bandile road) and Ntshunyana street T-junction in ZOLA, Soweto, Gauteng – South Africa. PLEASE SEE LOCALITY PLANS attached in APPENDIX A. **2.0 PROPOSED DEVELOPOMENT:** The City of Johannesburg through the Johannesburg Development Agency has identified land parcels which are currently being utilized informally by the taxi industry, thus giving rise to the need to formalize the sites and provide infrastructure towards the proposed taxi rank development for holding, loading purposes, as well as the associated ancillary uses that complement the development and therefore it is proposed to establish i.e. develop, **ZOLA EXTENSION 3 TOWNSHIP** to be situated on **A PART OF THE REMAINDER** of the **FARM SOWETO 387 IQ** (City of Johannesburg, Gauteng). It is the intention to utilize the said portions of land, measuring in total ± 1,3178 ha (i.e. 1,2476 hectare Municipal Land + 0,0702 hectare Public road), for the proposed Emdeni-Zola Public Transport Facility. The site is formally known as the RE 387 - IQ, Soweto and is located on a portion of the Farm 387 Soweto, adjacent to the eastern boundary of the Zola Township in Region D of the City of Johannesburg Municipal Area – and the proposed development on the land will consist of the following as also indicated graphically (i.e. visually) in more detail on the attached LAYOUT PLAN in APPENDIX C.

DEVELOPMENT FOOTPRINT: [10 631.30 m²]

- 40 TAXI RANKING AREA BAYS
- 4 DROP-OFF AREA BAYS
- 30 TAXI HOLDING BAYS
- 10 ADMINISTRATION PARKING BAYS
- 6 TRADING KIOSKS
- 3 ABLUTION BLOCKS
- SECURITY OFFICE
- ADMINISTRATION OFFICE BLOCK + ADMIN SQUARE
- REFUSE AREA
- RECREATIONAL AREA
- PUBLIC SQUARE & STAGE
- DRIVEWAY & 10 PUBLIC PARKING BAYS
- PAVED WALKWAYS (including covered Walkways)
- STORMWATER ATTENUATION PONDS
- SOFT LANDSCAPING AREAS
- CIVIL SERVICES INFRASTRUCTURE (i.e. stormwater channels, palisade fences, water pipes, sewer pipes, manholes, electricity cables etc)

WETLAND & WETLAND BUFFER AREAS: (excluded from proposed development footprint) [1 852.70 m²].

EXISTING PUBLIC ROAD AREA: [694 m²].

3.0 ZONING, LAND USE & SURROUNDING LAND USES

The present 'use zone' of the land is 'undetermined'.

The site is vacant and used as an informal taxi rank. The site is located in a township area, surrounded by a residential area.

The surrounding land uses are as follows:

- North: Shops and Residential Houses
- East: Vacant land
- South: Sports Fields
- West: Residential Houses

4.0 CIVIL INFRASTRUCTURE ANALYSIS

A detailed Civil Outline Scheme Report has been prepared by *CSM Consulting Engineers.* The findings of the report are briefly as follows (i.e. Roads, Stormwater, Water & Sewer). Please see the full report attached in APPENDIX G.

5.1 ROADS

PLEASE see TRAFFIC under item 6.0 underneath for more detail.

5.2 STORMWATER INFRASTRUCTURE

Executive Summary:

Johannesburg Development Agency (JDA) plans to develop 1.18 ha portion of land located in Zola, on farm Soweto No 387-IQ as a Public Transportation Facility. The project is referred to as Emdeni/Zola Public Transportation Facility. The conveyance and storage systems that the Stormwater Management Plan is recommending is based on topographical survey data and integrated with the proposed site layout and topography.

All the proposed stormwater conveyances systems are gravity driven. Rainfall intensity-duration-frequency data are source from "Rainfall Statistics for Design Flood Estimation in South Africa" (WRC Project K5/1060).
The Stormwater Management Plan methodology is based on a pre – and post development scenario, and hydrological and runoff specifications as specified by JRA. Runoff flowrates for the 1:5, 1:25 and 1:50 year storm events are determined by application of the Rational Method. Attenuation volume is established by application of the Modified Rational Method.
The pre-development time of concentration are 7.7 minutes, and the post development time of concentration are 4.7 minutes. Attenuation volume requirements, however, are dictated by the critical storm duration of 44 minutes. A series of vegetated attenuation ponds with a total minimum storage volume of 338 m3 with duel outlets and an overflow weir will be provided. The three ponds will be trapezoidal shape with base areas of 145 m2, 135 m2 and 220 m2, respectively. Two staggered NB150 pipes will discharge attenuated 1:5 and 1:25 year stormwater runoff from the pond via a channel to the nearest natural drainage causeway. Each pond will have a designated outlet with no provision made for overflow from one pond to another. Overflowing of the attenuation pond will be prevented by provision of a weir at grade with the expected maximum attenuation depth. A maximum 1:5 discharge rate of 78.05 l/s (less than the pre-development 1:5 peak runoff of 115.63 l/s) and 1:25 discharge rate of 128.52 l/s (less than the pre-development 1:25 peak runoff of 171.58 l/s) will be released into a tributary of Klipspruit via a rock lined channel.

5.3 WATER INFRASTRUCTURE (Summary - the full report is available in APPENDIX G underneath).

Existing Water Infrastructure:

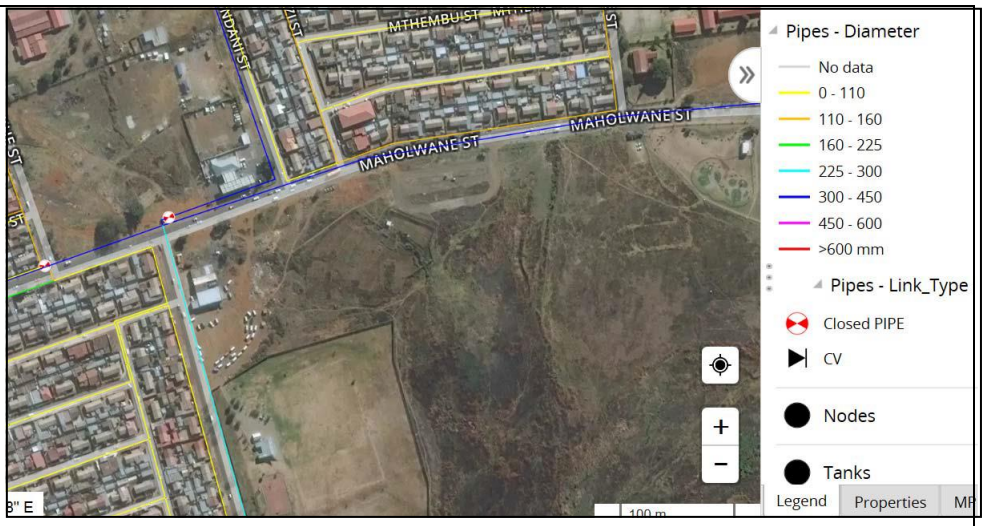
The information obtained from Johannesburg Water, Figure 1, indicates that there is a 300mm asbestos cement water reticulation line running along Ntshunyana/Jabavu Street. The water reticulation system adjacent to the proposed site is part of the Avalon Depot and feeds from Zondi Reservoir. This proposed connection system has a flow of 26.19ℓ/s, a velocity of 0.37m/s with an average residual head of 35.00m.

Water Reticulation Design:

The internal water system is modelled with a single connection to the external bulk network along Ntshunyana Street, which will be formalized with a flow meter, strainer and shut off valve assembly as per Johannesburg Water standards.
Hydraulic analysis of the pipeline using EPANET Software was based on the Darcy-Weisbach equations for turbulent flows, with the estimated flows through the internal network based on terminal water fitting demand which are obtained from the Architect's sanitary schedule. The minimum pressure of 3 bars for reticulation mains is considered at the connection point to the JW infrastructure when conducting the analysis.

The hydraulic analysis reveals that the average pressure available at each node connection is at least 1.5 bars which is sufficient as it is exceeds the minimum pressure requirements. The primary network is preliminary designed as a 75mm uPVC Class 16 pipe. The minimum cover is taken as 1.0m in all trafficked areas with increased installation depth in areas with other pipelines (sewer or stormwater) that are either in close proximity or crossing the water pipeline for additional protection.

FIGURE 1:

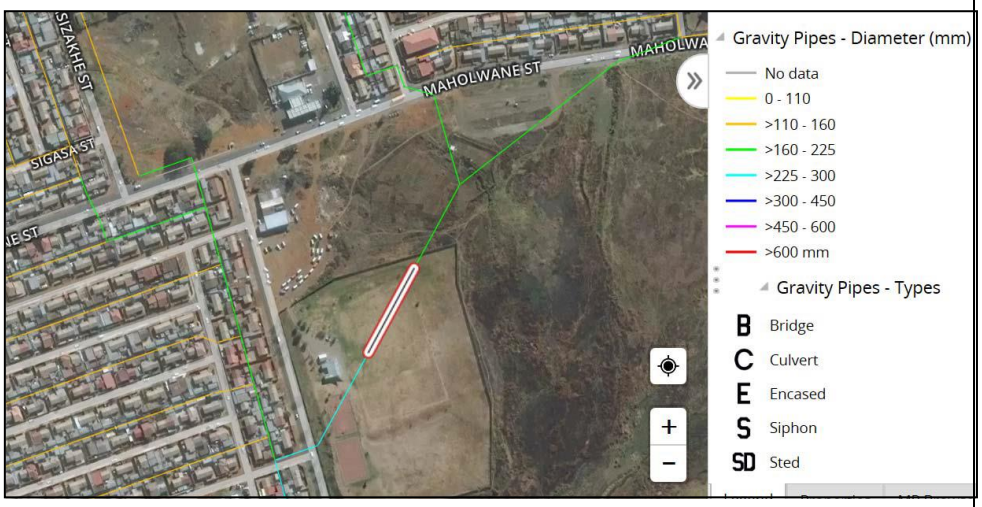


5.4 SEWER INFRASTRUCTURE

Existing Sewer Infrastructure:

The information obtained from Johannesburg Water, indicates that there is an existing 250mm clay sewer pipe crossing the outside boarders of the site on which the sewer connection is proposed. The collective system is part of the Avalon Deport and collects to the Naledi system. This system has a full flow capacity of 57.09 ℓ/s, a full velocity of 1.16m/s and a spare capacity of 77.46%.

FIGURE 2:



Sewer Reticulation Design:

The internal network is designed to have 110DN uPVC Class 34 main line with minimum gradient of 1:85 while ensuring that the maximum flow depth does not exceed the stipulated 67% at peak discharge and the design velocity ranges from 0.7 to 3m/s. The internal reticulation network connects to an existing manholes invert levels of 1627.45m.

5.5 ELECTRICALINFRASTRUCTURE

[Electrical services report summary underneath and the full report is attached in APPENDIX G i.e: *PROJECT: EMDENI PUBLIC TRANSPORT FACILITY DOCUMENT NAME: ELECTRICAL PDR DOCUMENT REFERENCE: EMDENI-ELEC-S2 RPT-01-02 prepared by 'POLYGON PROJECT ENGINEERS date: 04/03/2021'.*

Electrical Power Supply:

The Electrical Power Supply application shall be submitted to City Power, requesting a dedicated 83KVA, 120 A, 400 V supply which will cater for whole facility. This was based on calculations for the various spaces within the project area. Provision has not been made for back-up power.

UPDATE 4 March 2021:
Enquiries were re-initiated with Eskom in 2021, with reference number 405198152. Indications are that power is available and a quotation will be sent through during the course of March 2021.

Building Services :
The following areas will be deemed as buildings for this project, namely:
• Block A: Guardhouse
• Block B: B1-B8 Kiosks
• Block C: Refuse Areas
• Block D: Ablutions
• Block E: Ablutions
• Block F: Admin Offices
• Block G: Ablutions

The site also comprises of the driveways, a Ranking Area and a Recreational Area.

Power Reticulation:
Cabling:
• All cables are sized according to voltage drop over the length of the cable, electrical load requirement, estimated fault level and de-rating factors in accordance with SANS 10142-1 and SANS 1507-3.
• Distribution boards shall be manufactured according to SANS 10142-1 and specified in the electrical drawings and Bill of Quantities
• Cables shall be routed either by burying in the ground or by running through walls and ceilings. At all times, all cables shall be protected by PVC conduits and sleeves.
• Electrical cables will have dedicated conduits and will not share conduits with data or telecommunications cabling to limit electronic interference and reduce the potential for damage caused by multiple contractors working in the same space.
• All cabling related to the Fire detection and suppression systems shall be distributed within steel bosal conduit.

Metering, Main Switchboard and Distribution Boards:
The Main Switchboard shall be housed in an LV/Telkom room adjacent to the Guard house.

The Main switchboard will comprise of the following switchgear:
• The main incomer,
• A feed to each Kiosk,
• Admin Office sub DB,
• General areas.
The Admin Office sub DB will house switchgear to feed the following distribution boards;
• Block D,
• Block E,
• Block G,
• Recreational area,
• General Areas.

Lighting Design:

• Energy efficient luminaires and fixtures shall be specified for both internal and external lighting. Only luminaires that are commonly available shall be specified to optimize spares availability and derive cost savings during both the construction and operational phases of the project.
• Consideration has been taken of the lighting requirements of critical task areas, such as office desks and emergency lighting.
• Internal lighting shall be controlled using conventional wall switches, except for refuse and ablution areas, where motion sensors shall be used.
• External lighting such as wall mounted lighting and parking area lighting shall be controlled by means of photocells.
• The driveways shall be lit using streetlights on GRP poles.
• Post top lamps shall be used to light up the general site areas.

		• All luminaires shall bear a SABS stamp to ensure compliance with local standards and conditions. • All switches shall be specified as the CRABTREE Classic range. • All equipment shall bear an SABS stamp. <u>Small Power Design:</u> • All socket outlets shall be specified as 3-pin, 16A, 220V deemed sufficient for small appliances, computers and other equipment utilizing 220V AC. All sockets shall include the now compulsory SANS 164-2 (ZA plug). • All sockets shall be specified as the CRABTREE Classic range. • Power skirting shall be used for the Admin Offices and the Guard-House buildings. <u>Earthing and Lightning Protection:</u> Earthing and Lightning Protection will be required across the site. • Earthing shall be achieved by means of interlinked earth mats located at various points around the development, arranged in such a manner to comply with SANS 10142-1. • Lightning protection shall use the Rolling-Ball method of calculating the lightning rod coverage. A specialist contractor shall complete the installation according to SANS 10313 and provide the necessary compliance documentation. <u>Water Heating:</u> • Hydroboils will be used for water heating in areas where required, typically at the kiosks and office block. • The ablution blocks will not be equipped with water heating equipment. <u>Space Heating and Cooling:</u> • Air conditioning will NOT be installed in the office areas. • Ceiling fans will be provided in common areas where a roof or ceiling is available to provide cooling. <u>Electronics:</u> **Telecommunication -** • A Telkom room shall be established next to the Guard house. • Sleeving for telephone reticulation shall be provided for from the Telkom room to the guard house and the administrative offices. • Telephone outlets shall be provided for in the Admin offices and the Guard-House. • Fibre ducting shall be allowed for from the Telkom room to the guard house and the administrative offices. <u>Security Installation</u> • CCTV – a CCTV system shall be installed. o Low light, fixed-type, IP cameras shall be used to minimize wiring and installation costs. o Cameras shall be housed in tamper proof housings to mitigate the theft risk. o 22” Viewing screens shall be installed in the guard house, each display capable of monitoring eight (8) cameras shall be installed in the Guard House. o The DVR and related recording equipment shall be housed in the Telkom room. • Access Control of The Guard House, Administrative offices and Telkom room shall be fitted with keypad type access control systems to limit entry to authorized personnel only. Other options such as key tags or biometric scanners may be used but required a dedicated person to manage the system. If / when this person leaves, the system becomes unusable and is usually bypassed, thereby defeating the original purpose. o The access control system shall be intelligently linked to the site security system to alert for intruder activity. • Intruder Alarms o The Guard House, Administrative offices and Telkom room shall be fitted with intruder detection systems. o Control keypads will be installed in each area. Each space shall be operated independently. o All systems shall be linked to an emergency response centre. o At this stage of the design process, it is not known if the Guard house will be

manned 24/7. It is envisaged that the guard house will be manned from 4AM to 9PM – typical travel hours for taxis.
o Kiosks and ablution blocks will not be fitted with intruder detection systems.
o Driveway gates shall not be automated but will be installed for security purposes.

Fire detection:

• Fire detection equipment (smoke and heat detectors) shall be allowed for in the ablution blocks, Guard House, Telkom room and the administration offices.
• Control panels shall be installed in the Guard House.

IT Installation:

• Provision shall be made for the installation of IT hardware.
• Two tier power skirting shall be used to allow for the reticulation of IT cabling.
• CAT-6 cabling shall be used.
• All power skirting lengths shall be linked to the server room (location to be determined) via 25mm diameter PVC conduit.
• Wifi hotspots shall be installed throughout the facility to provide internet connectivity for all commuters.

Solar PV System (Optional)

• The site has the advantage of a north facing roof, with ample available roof space of approximately 2360 m2 to accommodate a solar PV system.
• A solar PV system to provide for the power across the whole site, of capacity 83 kVA will cost approximately R1.6 million.
• At full utilization, it would be possible to pay off this investment within 5 years. With current equipment life expectancy projections, the system would operate for at least 20 years.
• The proposed system would be grid-tied, thus drawing any shortfall in power from the Eskom grid.
• Rising electricity prices would mean reduced operational costs for this transport hub.
• The site is envisaged to enjoy good security thus adding to the attraction of this system.

6.0 TRAFFIC

6.1 A Site Traffic Assessment has been undertaken by Ajayi Jantjies Adams and Associates – Report AJA 007/R003 – 28 February 2018. Please see the full report attached in APPENDIX G.

6.2 Extracted from the report attached and mentioned above the following details are pertinent:

Adjacent Road Network

The Soweto Highway (M70) via Vincent Street (M72) and Chris Hani Road (M68) via Koma Street (M72) provide primary routes for commuters between Emdeni and Johannesburg CBD. In terms of Public Transport, the area is currently serviced by buses and taxis. Other Capital Investment projects planned for the area include:
• improvement of public transport facilities at Merafe and Naledi rail stations;
• Development of a public square and taxi facilities at Merafe and Naledi rail stations;
• Upgrading of Naledi rank;
• Upgrading of Zola office rank;
• Upgrading of Zola Library rank; and
• Improvement of access to stations via connecting roads and pedestrian link bridges of railway lines (City of Jamesburg, 2010).

Adcock Street (R558) runs in the north-south direction some 2km west of Emdeni. The Moroka Bypass (N12) runs in the east-west direction some 6km south of Emdeni. Class Roads surround the Emdeni and provide connectivity with higher order roads. Steve Kgane Road runs in the eastwest direction some 1km north of the proposed site, and Bolani Road is approximately 750m south of the proposed site.

Access to the site

The access to the proposed site is via Ntshunyana Street, approximately 80m south of the intersection of Ntshunyana and Maholwane Streets. Ntshunyana Street is a Class 4 road that is connected to a Class 3 road (Bolani Road) approximately 750m south of the intersection of Ntshunyana and Maholwane Streets. This collector road predominantly serves residential traffic and public transport. Ntshunyana Street carries less than 10 000 vehicles per day and less than 1 000 vehicles in the peak hour.

Bolani Road is a Class 3 road which links Ntshunyana Street with Koma Street to the east, another Class 3, which in turn connects with Chris Hani Road (M68) to the south, a Class 2 metropolitan motorway.

RECOMMENDATIONS

Given the findings in the report, the following recommendations are made:

1. The proposed Site Development Plan should be considered favourably from a traffic engineering point of view by the relevant authorities, given the proposed road upgrades in this report.
2. Detailed designs for the proposed improvements should be undertaken by a professional engineer / technologist with suitable road design experience.
3. Sidewalks of a minimum of 2m wide should be implemented on all site frontages as.

7.0 GEOTECHNICAL CONDITIONS

A geotechnical investigation of the site has been undertaken by *Mshandukani Holdings (Pty) Ltd* - Report Number MS201714 – August 2017. Please see the full report attached in APPENDIX G.

7.1 Based on the results of the investigation, the site can be classified into two site designation zones (class 'R' and 'H'), as set out in the NHBRC (1999) guideline document of which the appropriate tables have been included in Appendix G.

7.2 The impact of the geotechnical constraints on developments may be evaluated according to Table 1 below, which is a summary of the general geotechnical constraints relevant to developments (Partridge, Wood and Brink, 1993). The Class column indicates the severity of the specific constraints for this site.

Foundation Design

The geotechnical investigation was carried for the proposed construction of a public transport facility on Erf Re/7/239-IQ in Emdeni, Soweto, Gauteng. It should be borne in mind that the geotechnical boundaries are inferred. So, some variations to the reported conditions should be expected. The site predominantly falls within NHBRC Site Soil Class R-H1; P (Imported Fill) (7.5-15 mm estimated total settlements) and the proposed structure should be founded on:

 Normal Reinforced Strip Footing foundation it is therefore recommended for the ablution block building where In-situ reconstruction or ripping is done at an average depth of 0.4m below surface on residual material of Basaltic lava.

Proper compaction should be adhered to while back filling the trenches and foundations with G5 material and should be compacted to 95% MODAASHTO at 150mm intervals.

 Pad or Spread Footing foundation is therefore recommended (for the steel columns that will carry the roof structure) at an average depth of 0.4m on Residual material of Basaltic lava.

 Pavement recommendations: In-situ ripping should be at an average depth of at 0.4m on residual material Basaltic lava. The estimated traffic or vehicle per day is <75 vehicles and <5 heavy vehicles per day with a total loading traffic of <0.3x106 E80s per lane (Guideline for human settlement planning and design Vol.2).

 Surface: Pavement bricks can be placed on the surface for walking lanes, and asphalt concrete can be used for a smooth finish along the taxi parking lanes. The binder content present with asphalt acts as a lubricant when hot and as an adhesive and water proofing when cold.

 Base (~150mm): G5 material should be compacted to 95% MOD AASHTO density.

 Sub-base (~250mm): G3 material should be compacted to 98% MOD AASHTO density

		at 150mm interval. Proper compaction should be adhered to while back filling the trenches and foundations with G5 material and should be compacted to 95% MODAASHTO at 150mm interval. Damp proof membrane / course should be able to inhibit the ingress of moisture. Dewatering holes should be commissioned to relieve pore pressure at foundation level. Based on the seepage encountered on site this is however recommended: A detailed geohydrological analysis should be carried out to gain a good understanding on the transmissivity and porosity of the bedrock (aquifer testing). Monitoring holes on the upstream and downstream of the structure should be constructed in order to monitor ground water levels in all seasons. Exterior drainage and foundation wall damp-proof coatings; Capillary breaks at footings and at the top of the foundation wall, Insulation, air barrier and water vapor control, air barrier and thermal insulation systems should be installed to prevent groundwater water from infiltrating; such an impermeable layer can assist as a sealing layer. Strip footing supports a load bearing wall and transfers the load of a structure directly to the underlying soil (Knappett and Craig, 2012). The two main objectives (limit states) that foundations need to satisfy are: The capacity or resistance of the foundation should be adequate enough to support the applied loads and; Foundations should prevent excessive deformation under the applied loads. See Annexure J : Geotechnical Report – Africa Exposed CC. **8. FLOODLINE PLAN & CERTIFICATE:** Please see the FLOODLINE MAP & CERTFICATE for the said site attached in APPENDIX G.
2.	**Alternative #1 Layout Proposal** *(Not preferred)***:**	**1.0 LOCALITY** The site is formally known as the RE 387 - IQ, Soweto and is located on a portion of the Farm 387 Soweto, adjacent to the eastern boundary of the Zola Township in Region D of the City of Johannesburg Municipal Area. The site is situated in Ntshunyana street (Jabavu road) i.e. on the eastern side of Ntshunayana street which is 50 metres south-south-east of the Maholwane street (Bandile road) and Ntshunyana street T-junction in ZOLA, Soweto, Gauteng – South Africa. PLEASE SEE LOCALITY PLANS attached in APPENDIX A. **2.0 PROPOSED DEVELOPOMENT:** The City of Johannesburg through the Johannesburg Development Agency has identified land parcels which are currently being utilized informally by the taxi industry, thus giving rise to the need to formalize the sites and provide infrastructure towards the proposed taxi rank development for holding, loading purposes, as well as the associated ancillary uses that complement the development and therefore it is proposed to establish i.e. develop, **ZOLA EXTENSION 3 TOWNSHIP** to be situated on **A PART OF THE REMAINDER** of the **FARM SOWETO 387 IQ** (City of Johannesburg, Gauteng). It is the intention to utilize the said portions of land, measuring in total ± 1,3178 ha (i.e. 1,2476 hectare Municipal Land + 0,0702 hectare Public road), for the proposed Emdeni-Zola Public Transport Facility. The site is formally known as the RE 387 - IQ, Soweto and is located on a portion of the Farm 387 Soweto, adjacent to the eastern boundary of the Zola Township in Region D of the City of Johannesburg Municipal Area – and the proposed development on the land will consist of the following as also indicated graphically

(i.e. visually) in more detail on the attached LAYOUT PLAN in APPENDIX C.

DEVELOPMENT FOOTPRINT: [**12 484 m² / 1,2484 hectares**]

- **Outside of Wetland & Wetland Buffer Areas**:
  - 40 TAXI RANKING AREA BAYS
  - 4 DROP-OFF AREA BAYS
  - 30 TAXI HOLDING BAYS
  - 10 ADMINISTRATION PARKING BAYS
  - 6 TRADING KIOSKS
  - 3 ABLUTION BLOCKS
  - SECURITY OFFICE
  - ADMINISTRATION OFFICE BLOCK + ADMIN SQUARE
  - REFUSE AREA
  - RECREATIONAL AREA
  - PUBLIC SQUARE & STAGE
  - DRIVEWAY & 10 PUBLIC PARKING BAYS
  - PAVED WALKWAYS (including covered Walkways)
  - SOFT LANDSCAPING AREAS
  - CIVIL SERVICES INFRASTRUCTURE (i.e. stormwater channels, palisade fences, water pipes, sewer pipes, manholes, electricity cables etc).
    - TOTAL DEVELOPMENT FOOTPRINT AREA = 10 631.30 m².
- **Inside of Wetland & Wetland Buffer Areas**:
  - STORMWATER ATTENUATION PONDS.
    - TOTAL DEVELOPMENT FOOTPRINT AREA = 1 852.70 m².

EXISTING PUBLIC ROAD AREA: [694 m²]

3.0 ZONING, LAND USE & SURROUNDING LAND USES

The present 'use zone' of the land is 'undetermined'.

The site is vacant and used as an informal taxi rank. The site is located in a township area, surrounded by a residential area.

The surrounding land uses are as follows:

- North: Shops and Residential Houses
- East: Vacant land
- South: Sports Fields
- West: Residential Houses

5.0 CIVIL INFRASTRUCTURE ANALYSIS

A detailed Civil Outline Scheme Report has been prepared by *CSM Consulting Engineers.* The findings of the report are briefly as follows (i.e. Roads, Stormwater, Water & Sewer). Please see the full report attached in APPENDIX G.

5.1 ROADS

PLEASE see TRAFFIC under item 6.0 underneath for more detail.

5.2 STORMWATER INFRASTRUCTURE

Executive Summary:

Johannesburg Development Agency (JDA) plans to develop 1.18 ha portion of land located in Zola, on farm Soweto No 387-IQ as a Public Transportation Facility. The project is referred to as Emdeni/Zola Public Transportation Facility. The conveyance and storage systems that the Stormwater Management Plan is recommending is based on

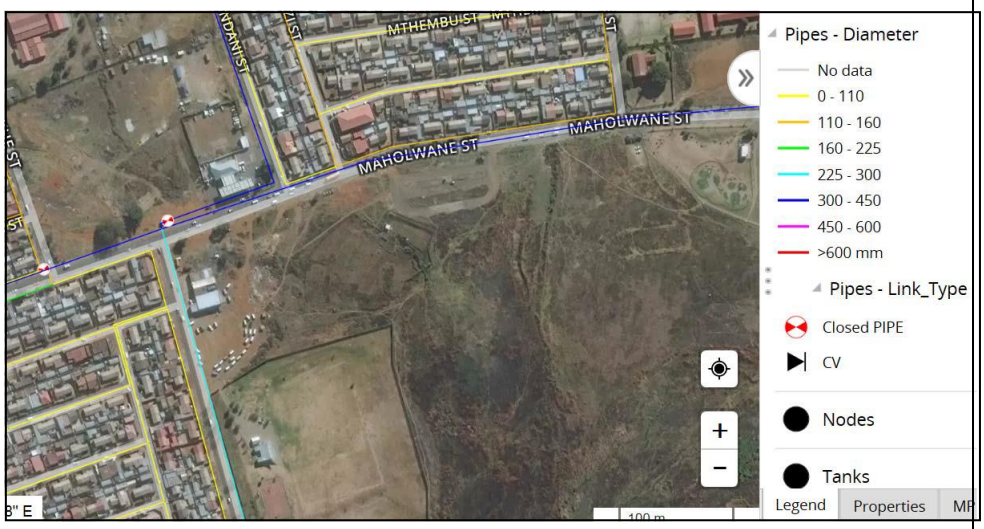
topographical survey data and integrated with the proposed site layout and topography. All the proposed stormwater conveyances systems are gravity driven. Rainfall intensity-duration-frequency data are source from "Rainfall Statistics for Design Flood Estimation in South Africa" (WRC Project K5/1060).
The Stormwater Management Plan methodology is based on a pre – and post development scenario, and hydrological and runoff specifications as specified by JRA. Runoff flowrates for the 1:5, 1:25 and 1:50 year storm events are determined by application of the Rational Method. Attenuation volume is established by application of the Modified Rational Method.
The pre-development time of concentration are 7.7 minutes, and the post development time of concentration are 4.7 minutes. Attenuation volume requirements, however, are dictated by the critical storm duration of 44 minutes. A series of vegetated attenuation ponds with a total minimum storage volume of 338 m3 with duel outlets and an overflow weir will be provided. The three ponds will be trapezoidal shape with base areas of 145 m2, 135 m2 and 220 m2, respectively. Two staggered NB150 pipes will discharge attenuated 1:5 and 1:25 year stormwater runoff from the pond via a channel to the nearest natural drainage causeway. Each pond will have a designated outlet with no provision made for overflow from one pond to another. Overflowing of the attenuation pond will be prevented by provision of a weir at grade with the expected maximum attenuation depth. A maximum 1:5 discharge rate of 78.05 l/s (less than the pre-development 1:5 peak runoff of 115.63 l/s) and 1:25 discharge rate of 128.52 l/s (less than the pre-development 1:25 peak runoff of 171.58 l/s) will be released into a tributary of Klipspruit via a rock lined channel.

5.3 WATER INFRASTRUCTURE (Summary - the full report is available in APPENDIX G underneath).

<u>Existing Water Infrastructure:</u>

The information obtained from Johannesburg Water, Figure 1, indicates that there is a 300mm asbestos cement water reticulation line running along Ntshunyana/Jabavu Street. The water reticulation system adjacent to the proposed site is part of the Avalon Depot and feeds from Zondi Reservoir. This proposed connection system has a flow of 26.19ℓ/s, a velocity of 0.37m/s with an average residual head of 35.00m.

FIGURE 1:



<u>Water Reticulation Design:</u>

The internal water system is modelled with a single connection to the external bulk network along Ntshunyana Street, which will be formalized with a flow meter, strainer and shut off valve assembly as per Johannesburg Water standards.
Hydraulic analysis of the pipeline using EPANET Software was based on the Darcy-Weisbach equations for turbulent flows, with the estimated flows through the internal network based on terminal water fitting demand which are obtained from the

Architect's sanitary schedule. The minimum pressure of 3 bars for reticulation mains is considered at the connection point to the JW infrastructure when conducting the analysis.

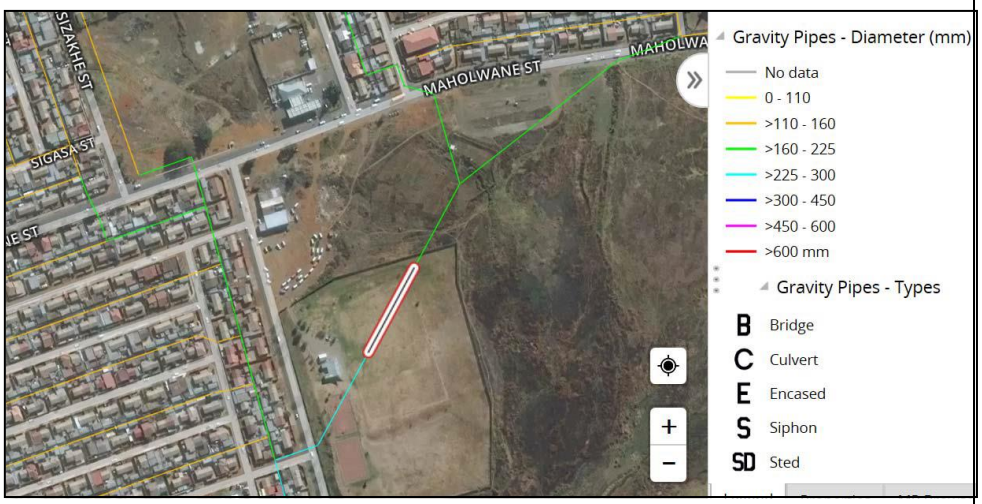
The hydraulic analysis reveals that the average pressure available at each node connection is at least 1.5 bars which is sufficient as it is exceeds the minimum pressure requirements. The primary network is preliminary designed as a 75mm uPVC Class 16 pipe. The minimum cover is taken as 1.0m in all trafficked areas with increased installation depth in areas with other pipelines (sewer or stormwater) that are either in close proximity or crossing the water pipeline for additional protection.

5.4 SEWER INFRASTRUCTURE

Existing Sewer Infrastructure:

The information obtained from Johannesburg Water, indicates that there is an existing 250mm clay sewer pipe crossing the outside boarders of the site on which the sewer connection is proposed. The collective system is part of the Avalon Deport and collects to the Naledi system. This system has a full flow capacity of 57.09 ℓ/s, a full velocity of 1.16m/s and a spare capacity of 77.46%.

FIGURE 2:



Sewer Reticulation Design:

The internal network is designed to have 110DN uPVC Class 34 main line with minimum gradient of 1:85 while ensuring that the maximum flow depth does not exceed the stipulated 67% at peak discharge and the design velocity ranges from 0.7 to 3m/s. The internal reticulation network connects to an existing manholes invert levels of 1627.45m.

5.5 ELECTRICALINFRASTRUCTURE

[Electrical services report summary underneath and the full report is attached in APPENDIX G i.e: *PROJECT: EMDENI PUBLIC TRANSPORT FACILITY DOCUMENT NAME: ELECTRICAL PDR DOCUMENT REFERENCE: EMDENI-ELEC-S2 RPT-01-02 prepared by 'POLYGON PROJECT ENGINEERS date: 04/03/2021'.*

Electrical Power Supply:

The Electrical Power Supply application shall be submitted to City Power, requesting a dedicated 83KVA, 120 A, 400 V supply which will cater for whole facility. This was based on calculations for the various spaces within the project area. Provision has not been made for back-up power.
UPDATE 4 March 2021:
Enquiries were re-initiated with Eskom in 2021, with reference number 405198152. Indications are that power is available and a quotation will be sent through during the course of March 2021.

Building Services :
The following areas will be deemed as buildings for this project, namely:
• Block A: Guardhouse

		• Block B: B1-B8 Kiosks • Block C: Refuse Areas • Block D: Ablutions • Block E: Ablutions • Block F: Admin Offices • Block G: Ablutions The site also comprises of the driveways, a Ranking Area and a Recreational Area. <u>Power Reticulation:</u> **Cabling:** • All cables are sized according to voltage drop over the length of the cable, electrical load requirement, estimated fault level and de-rating factors in accordance with SANS 10142-1 and SANS 1507-3. • Distribution boards shall be manufactured according to SANS 10142-1 and specified in the electrical drawings and Bill of Quantities • Cables shall be routed either by burying in the ground or by running through walls and ceilings. At all times, all cables shall be protected by PVC conduits and sleeves. • Electrical cables will have dedicated conduits and will not share conduits with data or telecommunications cabling to limit electronic interference and reduce the potential for damage caused by multiple contractors working in the same space. • All cabling related to the Fire detection and suppression systems shall be distributed within steel bosal conduit. <u>Metering, Main Switchboard and Distribution Boards:</u> The Main Switchboard shall be housed in an LV/Telkom room adjacent to the Guard house. The Main switchboard will comprise of the following switchgear: • The main incomer, • A feed to each Kiosk, • Admin Office sub DB, • General areas. The Admin Office sub DB will house switchgear to feed the following distribution boards; • Block D, • Block E, • Block G, • Recreational area, • General Areas. <u>Lighting Design:</u> • Energy efficient luminaires and fixtures shall be specified for both internal and external lighting. Only luminaires that are commonly available shall be specified to optimize spares availability and derive cost savings during both the construction and operational phases of the project. • Consideration has been taken of the lighting requirements of critical task areas, such as office desks and emergency lighting. • Internal lighting shall be controlled using conventional wall switches, except for refuse and ablution areas, where motion sensors shall be used. • External lighting such as wall mounted lighting and parking area lighting shall be controlled by means of photocells. • The driveways shall be lit using streetlights on GRP poles. • Post top lamps shall be used to light up the general site areas. • All luminaires shall bear a SABS stamp to ensure compliance with local standards and conditions. • All switches shall be specified as the CRABTREE Classic range. • All equipment shall bear an SABS stamp. <u>Small Power Design:</u> • All socket outlets shall be specified as 3-pin, 16A, 220V deemed sufficient for small

appliances, computers and other equipment utilizing 220V AC. All sockets shall include the now compulsory SANS 164-2 (ZA plug).
• All sockets shall be specified as the CRABTREE Classic range.
• Power skirting shall be used for the Admin Offices and the Guard-House buildings.

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• Earthing shall be achieved by means of interlinked earth mats located at various points around the development, arranged in such a manner to comply with SANS 10142-1.
• Lightning protection shall use the Rolling-Ball method of calculating the lightning rod coverage. A specialist contractor shall complete the installation according to SANS 10313 and provide the necessary compliance documentation.

Water Heating:

• Hydroboils will be used for water heating in areas where required, typically at the kiosks and office block.
• The ablution blocks will not be equipped with water heating equipment.

Space Heating and Cooling:

• Air conditioning will NOT be installed in the office areas.
• Ceiling fans will be provided in common areas where a roof or ceiling is available to provide cooling.

Electronics:

Telecommunication -
• A Telkom room shall be established next to the Guard house.
• Sleeving for telephone reticulation shall be provided for from the Telkom room to the guard house and the administrative offices.
• Telephone outlets shall be provided for in the Admin offices and the Guard-House.
• Fibre ducting shall be allowed for from the Telkom room to the guard house and the administrative offices.

Security Installation
• CCTV – a CCTV system shall be installed. o Low light, fixed-type, IP cameras shall be used to minimize wiring and installation costs.
  o Cameras shall be housed in tamper proof housings to mitigate the theft risk.
  o 22" Viewing screens shall be installed in the guard house, each display capable of monitoring eight (8) cameras shall be installed in the Guard House.
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  o Control keypads will be installed in each area. Each space shall be operated independently.
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  o At this stage of the design process, it is not known if the Guard house will be manned 24/7. It is envisaged that the guard house will be manned from 4AM to 9PM – typical travel hours for taxis.
  o Kiosks and ablution blocks will not be fitted with intruder detection systems.
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Fire detection:

		• Fire detection equipment (smoke and heat detectors) shall be allowed for in the ablution blocks, Guard House, Telkom room and the administration offices. • Control panels shall be installed in the Guard House. <u>IT Installation:</u> • Provision shall be made for the installation of IT hardware. • Two tier power skirting shall be used to allow for the reticulation of IT cabling. • CAT-6 cabling shall be used. • All power skirting lengths shall be linked to the server room (location to be determined) via 25mm diameter PVC conduit. • Wifi hotspots shall be installed throughout the facility to provide internet connectivity for all commuters. <u>Solar PV System (Optional)</u> • The site has the advantage of a north facing roof, with ample available roof space of approximately 2360 m2 to accommodate a solar PV system. • A solar PV system to provide for the power across the whole site, of capacity 83 kVA will cost approximately R1.6 million. • At full utilization, it would be possible to pay off this investment within 5 years. With current equipment life expectancy projections, the system would operate for at least 20 years. • The proposed system would be grid-tied, thus drawing any shortfall in power from the Eskom grid. • Rising electricity prices would mean reduced operational costs for this transport hub. • The site is envisaged to enjoy good security thus adding to the attraction of this system. **6.0 TRAFFIC** 6.1 A Site Traffic Assessment has been undertaken by Ajayi Jantjies Adams and Associates – Report AJA 007/R003 – 28 February 2018. Please see the full report attached in APPENDIX G. 6.2 Extracted from the report attached and mentioned above the following details are pertinent: <u>Adjacent Road Network</u> The Soweto Highway (M70) via Vincent Street (M72) and Chris Hani Road (M68) via Koma Street (M72) provide primary routes for commuters between Emdeni and Johannesburg CBD. In terms of Public Transport, the area is currently serviced by buses and taxis. Other Capital Investment projects planned for the area include: • improvement of public transport facilities at Merafe and Naledi rail stations; • Development of a public square and taxi facilities at Merafe and Naledi rail stations; • Upgrading of Naledi rank; • Upgrading of Zola office rank; • Upgrading of Zola Library rank; and • Improvement of access to stations via connecting roads and pedestrian link bridges of railway lines (City of Jamesburg, 2010). Adcock Street (R558) runs in the north-south direction some 2km west of Emdeni. The Moroka Bypass (N12) runs in the east-west direction some 6km south of Emdeni. Class Roads surround the Emdeni and provide connectivity with higher order roads. Steve Kgane Road runs in the eastwest direction some 1km north of the proposed site, and Bolani Road is approximately 750m south of the proposed site. <u>Access to the site</u> The access to the proposed site is via Ntshunyana Street, approximately 80m south of the intersection of Ntshunyana and Maholwane Streets. Ntshunyana Street is a Class 4 road that is connected to a Class 3 road (Bolani Road) approximately 750m south of the intersection of Ntshunyana and Maholwane Streets. This collector road predominantly serves residential traffic and public transport. Ntshunyana Street carries less than 10 000 vehicles per day and less than 1 000 vehicles in the peak hour.

Bolani Road is a Class 3 road which links Ntshunyana Street with Koma Street to the east, another Class 3, which in turn connects with Chris Hani Road (M68) to the south, a Class 2 metropolitan motorway.

RECOMMENDATIONS

Given the findings in the report, the following recommendations are made:

1. The proposed Site Development Plan should be considered favourably from a traffic engineering point of view by the relevant authorities, given the proposed road upgrades in this report.
2. Detailed designs for the proposed improvements should be undertaken by a professional engineer / technologist with suitable road design experience.
3. Sidewalks of a minimum of 2m wide should be implemented on all site frontages as.

7.0 GEOTECHNICAL CONDITIONS

A geotechnical investigation of the site has been undertaken by *Mshandukani Holdings (Pty) Ltd* - Report Number MS201714 – August 2017. Please see the full report attached in APPENDIX G.

7.1 Based on the results of the investigation, the site can be classified into two site designation zones (class 'R' and 'H'), as set out in the NHBRC (1999) guideline document of which the appropriate tables have been included in Appendix G.

7.2 The impact of the geotechnical constraints on developments may be evaluated according to Table 1 below, which is a summary of the general geotechnical constraints relevant to developments (Partridge, Wood and Brink, 1993). The Class column indicates the severity of the specific constraints for this site.

Foundation Design

The geotechnical investigation was carried for the proposed construction of a public transport facility on Erf Re/7/239-IQ in Emdeni, Soweto, Gauteng. It should be borne in mind that the geotechnical boundaries are inferred. So, some variations to the reported conditions should be expected. The site predominantly falls within NHBRC Site Soil Class R-H1; P (Imported Fill) (7.5-15 mm estimated total settlements) and the proposed structure should be founded on:

 Normal Reinforced Strip Footing foundation it is therefore recommended for the ablution block building where In-situ reconstruction or ripping is done at an average depth of 0.4m below surface on residual material of Basaltic lava.

Proper compaction should be adhered to while back filling the trenches and foundations with G5 material and should be compacted to 95% MODAASHTO at 150mm intervals.

 Pad or Spread Footing foundation is therefore recommended (for the steel columns that will carry the roof structure) at an average depth of 0.4m on Residual material of Basaltic lava.

 Pavement recommendations: In-situ ripping should be at an average depth of at 0.4m on residual material Basaltic lava. The estimated traffic or vehicle per day is <75 vehicles and <5 heavy vehicles per day with a total loading traffic of <0.3x106 E80s per lane (Guideline for human settlement planning and design Vol.2).

 Surface: Pavement bricks can be placed on the surface for walking lanes, and asphalt concrete can be used for a smooth finish along the taxi parking lanes. The binder content present with asphalt acts as a lubricant when hot and as an adhesive and water proofing when cold.

 Base (~150mm): G5 material should be compacted to 95% MOD AASHTO density.

 Sub-base (~250mm): G3 material should be compacted to 98% MOD AASHTO density at 150mm interval.

Proper compaction should be adhered to while back filling the trenches and foundations with G5 material and should be compacted to 95% MODAASHTO at 150mm interval. Damp proof membrane / course should be able to inhibit the ingress of moisture. Dewatering holes should be commissioned to relieve pore pressure at foundation level.

Based on the seepage encountered on site this is however recommended: A detailed geohydrological analysis should be carried out to gain a good understanding on the

		transmissivity and porosity of the bedrock (aquifer testing). Monitoring holes on the upstream and downstream of the structure should be constructed in order to monitor ground water levels in all seasons. Exterior drainage and foundation wall damp-proof coatings; Capillary breaks at footings and at the top of the foundation wall, Insulation, air barrier and water vapor control, air barrier and thermal insulation systems should be installed to prevent groundwater water from infiltrating; such an impermeable layer can assist as a sealing layer. Strip footing supports a load bearing wall and transfers the load of a structure directly to the underlying soil (Knappett and Craig, 2012). The two main objectives (limit states) that foundations need to satisfy are: The capacity or resistance of the foundation should be adequate enough to support the applied loads and; Foundations should prevent excessive deformation under the applied loads. See Annexure J : Geotechnical Report – Africa Exposed CC. **8. FLOODLINE PLAN & CERTIFICATE:** Please see the FLOODLINE MAP & CERTFICATE for the said site attached in APPENDIX G.
2	Alternative 1	**n.a.**
3	Alternative 2	**n.a.**

In the event that no alternative(s) has/have been provided, a motivation must be included in the table below.

N.a.

4. PHYSICAL SIZE OF THE ACTIVITY

Indicate the total physical size (footprint) of the proposal as well as alternatives. Footprints are to include all new infrastructure (roads, services etc), impermeable surfaces and landscaped areas:

	Size of the activity:
Proposed activity *(Total environmental (landscaping, parking, etc.) and the building footprint)*	**1,0631.30 ha (10 631.30 m²)**
Alternatives:	
Alternative 1:	**1,2484 ha (12 484 m²)**
Alternative 2 (if any) **(n/a):**	n.a.
	Ha/ m²

or, for linear activities: **(n/a):**

	Length of the activity:
Proposed activity	n.a.
Alternatives:	
Alternative 1 (if any)	n.a.
Alternative 2 (if any)	n.a.
	m/km

Indicate the size of the site(s) or servitudes (within which the above footprints will occur):

	Size of the site/servitude:
Proposed activity	**291.9278 ha (2 919 278 m²)**
Alternatives:	
Alternative 1 (if any)	**291.9278 ha (2 919 278 m²)**
Alternative 2 (if any)	n.a.
	Ha/m²

5. SITE ACCESS

Proposal

Does ready access to the site exist, or is access directly from an existing road?	**YES**	~~NO~~
If NO, what is the distance over which a new access road will be built		m

Describe the type of access road planned:

Include the position of the access road on the site plan (if the access road is to traverse a sensitive feature the impact thereof must be included in the assessment).

Alternative 1

Does ready access to the site exist, or is access directly from an existing road?	**YES**	~~NO~~
If NO, what is the distance over which a new access road will be built		m

Describe the type of access road planned:

n.a.

Include the position of the access road on the site plan. (if the access road is to traverse a sensitive feature the impact thereof must be included in the assessment).

Alternative 2 (n/a):

Does ready access to the site exist, or is access directly from an existing road?	YES	NO
If NO, what is the distance over which a new access road will be built		m

Describe the type of access road planned:

n.a.

Include the position of the access road on the site plan. (if the access road is to traverse a sensitive feature the impact thereof must be included in the assessment).

PLEASE NOTE: Points 6 to 8 of Section A must be duplicated where relevant for alternatives.

Section A 6-8 has been duplicated [ ] Number of times

(only complete when applicable)

6. LAYOUT OR ROUTE PLAN

A detailed site or route (for linear activities) plan(s) must be prepared for each alternative site or alternative activity. It must be attached to this document. The site or route plans must indicate the following:

- the layout plan is printed in colour and is overlaid with a sensitivity map (if applicable);
- layout plan is of acceptable paper size and scale, e.g.
  - A4 size for activities with development footprint of 10sqm to 5 hectares;
  - A3 size for activities with development footprint of > 5 hectares to 20 hectares;
  - A2 size for activities with development footprint of >20 hectares to 50 hectares);
  - A1 size for activities with development footprint of >50 hectares);
- The following should serve as a guide for scale issues on the layout plan:
  - A0 = 1: 500
  - A1 = 1: 1000
  - A2 = 1: 2000
  - A3 = 1: 4000
  - A4 = 1: 8000 (±10 000)
- shapefiles of the activity must be included in the electronic submission on the CD's;
- the property boundaries and Surveyor General numbers of all the properties within 50m of the site;
- the exact position of each element of the activity as well as any other structures on the site;
- the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, sewage pipelines, septic tanks, storm water infrastructure;
- servitudes indicating the purpose of the servitude;
- sensitive environmental elements on and within 100m of the site or sites (including the relevant buffers as prescribed by the competent authority) including (but not limited thereto):
  - Rivers and wetlands;
  - the 1:100 and 1:50 year flood line;
  - ridges;
  - cultural and historical features;
  - areas with indigenous vegetation (even if it is degraded or infested with alien species);
- Where a watercourse is located on the site at least one cross section of the water course must be included (to allow the position of the relevant buffer from the bank to be clearly indicated)

FOR LOCALITY MAP (NOTE THIS IS ALSO INCLUDED IN THE APPLICATION FORM REQUIREMENTS)

- the scale of locality map must be at least 1:50 000. For linear activities of more than 25 kilometres, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map;
- the locality map and all other maps must be in colour;
- locality map must show property boundaries and numbers within 100m of the site, and for poultry and/or piggery, locality map must show properties within 500m and prevailing or predominant wind direction;
- for gentle slopes the 1m contour intervals must be indicated on the map and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the map;
- areas with indigenous vegetation (even if it is degraded or infested with alien species);
- locality map must show exact position of development site or sites;
- locality map showing and identifying (if possible) public and access roads; and
- the current land use as well as the land use zoning of each of the properties adjoining the site or sites.

7. SITE PHOTOGRAPHS

Colour photographs from the center of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under the appropriate Appendix**.** It should be supplemented with additional photographs of relevant features on the site, where applicable.

8. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of 1:200 for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity to be attached in the appropriate Appendix.

SECTION B: DESCRIPTION OF RECEIVING ENVIRONMENT

Note: Complete Section B for the proposal and alternative(s) (if necessary)

Instructions for completion of Section B for linear activities

1) For linear activities (pipelines etc) it may be necessary to complete Section B for each section of the site that has a significantly different environment.
2) Indicate on a plan(s) the different environments identified
3) Complete Section B for each of the above areas identified
4) Attach to this form in a chronological order
5) Each copy of Section B must clearly indicate the corresponding sections of the route at the top of the next page.

Section B has been duplicated for sections of the route **"insert No. of duplicates"** times

Instructi

ons for completion of Section B for location/route alternatives

1) For each location/route alternative identified the entire Section B needs to be completed
2) Each alterative location/route needs to be clearly indicated at the top of the next page
3) Attach the above documents in a chronological order

Section B has been duplicated for location/route alternatives **"insert No. of duplicates"** times (complete only when appropriate)

Instructions for completion of Section B when both location/route alternatives and linear activities are applicable for the application

Section B is to be completed and attachments order in the following way

- All significantly different environments identified for Alternative 1 is to be completed and attached in a chronological order; then
- All significantly different environments identified for Alternative 2 is to be completed and attached chronological order, etc.

Section B - Section of Route ____ (complete only when appropriate for above)
Section B – Location/route Alternative No. ____ (complete only when appropriate for above)

1. PROPERTY DESCRIPTION

Property description: (Including Physical Address and Farm name, portion etc.)

A PART of the REMAINDER of the FARM SOWETO 387 IQ, Ntshunyana street, Soweto - City of Johannesburg Metropolitan Municipality.

2. ACTIVITY POSITION

Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in decimal degrees. The degrees should have at least six decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

PROPOSAL:

Latitude (S):	Longitude (E):
26° 14' 32.59"	27°50'23.25"

Alternative 1:

Latitude (S):	Longitude (E):
26° 14' 32.59"	27°50'23.25"

In the case of linear activities:
Alternative:

- Starting point of the activity
- Middle point of the activity
- End point of the activity

Latitude (S):	Longitude (E):
°	°
°	°
°	°

For route alternatives that are longer than 500m, please provide co-ordinates taken every 250 meters along the route and attached in the appropriate Appendix Addendum of route alternatives attached ____

The 21 digit Surveyor General code of each cadastral land parcel

PROPOSAL	**T**	**0**	**I**	**Q**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**8**	**7**	**0**	**0**	**0**	**0**	**0**
ALT. 1	**T**	**0**	**I**	**Q**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**8**	**7**	**0**	**0**	**0**	**0**	**0**

NOTE: THE FOLLOWING INFORMATION IS RELEVANT FOR THE PREFERRED PROPOSAL & ALTERNATIVE#1 PROPOSAL:

3. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
	1:50 – 1:20					

4. LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site.

Ridgeline	Plateau	Side slope of hill/ridge	Valley	Plain	Undulating plain/low hills	River front	The site is located on a slightly east-facing slope within a broad slightly undulating plain, with a wetland at the eastern boundary of the site.

5. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

a) Is the site located on any of the following?

	YES	NO
Shallow water table (less than 1.5m deep)		**NO**
Dolomite, sinkhole or doline areas	~~YES~~	**NO**
Seasonally wet soils (often close to water bodies)	**YES**	~~NO~~
Unstable rocky slopes or steep slopes with loose soil	~~YES~~	**NO**
Dispersive soils (soils that dissolve in water)	~~YES~~	**NO**

Soils with high clay content (clay fraction more than 40%)	~~YES~~	**NO**
Any other unstable soil or geological feature	~~YES~~	**NO**
An area sensitive to erosion	~~YES~~	**NO**

(Information in respect of the above will often be available at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by Geological Survey may also be used).

b) are any caves located on the site(s) ~~YES~~ **NO**

If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)

Latitude (S):	**Longitude (E):**
°	°

c) are any caves located within a 300m radius of the site(s) ~~YES~~ **NO**

If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)

Latitude (S):	**Longitude (E):**
°	°

d) are any sinkholes located within a 300m radius of the site(s) ~~YES~~ **NO**

If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)

Latitude (S):	**Longitude (E):**
°	°

If any of the answers to the above are "YES" or "unsure", specialist input may be requested by the Department

6. AGRICULTURE

Does the site have high potential agriculture as contemplated in the Gauteng Agricultural Potential Atlas (GAPA 4)? ~~YES~~ **NO**

Please note: The Department may request specialist input/studies in respect of the above.

7. GROUNDCOVER

To be noted that the location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s). Indicate the types of groundcover present on the site and include the estimated percentage found on site

Natural veld - good condition % =	Natural veld with scattered aliens % =	Natural veld with heavy alien infestation % =	**Veld dominated by alien species % = 65**	Landscaped (vegetation) % = ±40
Sport field % =	Cultivated land % =	**Hard compacted bare soil & parking area / road surface % = ±35**	Building or other structure % = ±5	Bare soil % = 30

Please note: The Department may request specialist input/studies depending on the nature of the groundcover and potential impact(s) of the proposed activity/ies.

Are there any rare or endangered flora or fauna species (including red list species) present on the site ~~YES~~ **NO**

If YES, specify and explain:

Are there any rare or endangered flora or fauna species (including red list species) present within a 200m (if within urban area as defined in the Regulations) or within 600m (if outside the urban area as defined in the Regulations) radius of the site. ~~YES~~ **NO**

If YES, specify and explain:

Are there any special or sensitive habitats or other natural features present on the site? **YES** ~~NO~~

If YES, specify and explain:

Perennial stream (i.e. a tributary of the Rietspruit) **& wetland**

Was a specialist consulted to assist with completing this section **YES** ~~NO~~

If yes complete specialist details

Name of the specialist:	1. GJ Bredenkamp – and, 2. CE Venter of ***Eco-Agent CC***		
Qualification(s) of the specialist:	DSc PrSciNat MSAIE&ES MGSSA & MSc PrSciNat		
Postal address:	PO Box 23355 Monument Park		
Postal code:	0181		
Telephone:	012 3463180	Cell:	082 5767046
E-mail:	ecoagent@mweb.co.za	Fax:	012 460 2525

Are any further specialist studies recommended by the specialist? **YES** ~~NO~~

If YES, specify: **Vegetation & Wetland studies**

If YES, is such a report(s) attached? **YES** ~~NO~~

If YES list the specialist reports attached below

1. ***'A vegetation assessment of the site proposed for development of the Emdeni Public transport Facility in Soweto - by G.J. Bredenkamp** - Commissioned by Pierre Joubert Landscape Architect and Environmental Planner [Eco-Agent CC; PO Box 23355; Monument Park; 0181. Tel 012 3463180 / Fax 012 460 2525 / Cell 082 5767046]. December 2021.)'.*
2. ***'A wetland assessment of the site proposed for development of the Emdeni Public transport Facility in Soweto - by G.J. Bredenkamp & CE Venter** (Commissioned by Pierre Joubert Landscape Architect and Environmental Planner [Eco-Agent CC; PO Box 23355; Monument Park; 0181. Tel 012 3463180 / Fax 012 460 2525 / Cell 082 5767046]. December 2021.)'.*

Signature of specialist: _____ Date: 31 May 2021

Please note; If more than one specialist was consulted to assist with the filling in of this section then this table must be appropriately duplicated.

8. LAND USE CHARACTER OF SURROUNDING AREA

Using the associated number of the relevant current land use or prominent feature from the table below, fill in the position of these land-uses in the vacant blocks below which represent a 500m radius around the site

1. Vacant land	**2. River, stream, wetland**	3. Nature conservation area	**4. Public open space**	5. Koppie or ridge
6. Dam or reservoir	**7. Agriculture**	8. Low density residential	**9. Medium to high density residential**	10. Informal residential
11. Old age home	**12. Retail & Informal retail**	13. Offices	14. Commercial & warehousing	15. Light industrial
16. Heavy industrial[AN]	17. Hospitality facility	18. Church	**19. Education facilities**	20. Sport facilities
21. Golf course/polo fields	22. Airport[N]	23. Train station or shunting yard[N]	24. Railway line[N]	25. Major road (4 lanes or more)[N]
26. Sewage treatment plant[A]	27. Landfill or waste treatment site[A]	28. Historical building	29. Graveyard	30. Archeological site
31. Open cast mine	32. Underground mine	33.Spoil heap or slimes dam[A]	34. Small Holdings	**35. Fuel station.**
Other land uses (describe):	**36. Informal taxi rank and retail trading. 37. Parking Area. 38. Zola Eco Park. 39. Sports field.**			

NOTE: Each block represents an area of 250m X 250m, if your proposed development is larger than this please use the appropriate number and orientation of hashed blocks

NORTH

WEST						EAST
	4,9,12	**4,9,12**	**4,9,12**	**4,9,12**	**4,9,12, 19**	
	9,12,19	**4,9,12**	**2,4,7,9, 12,35, 36,37**	**2,4,7, 12,19, 37,38**	**4,9,12, 35,37**	
	9,12,19	**4,9,12**		**2,4,7, 38**	**2,4,7, 12,35, 37**	
	9,12,19	**4,7,9, 12**	**2,4,7,9, 39,**	**2,4,7, 12**	**2,4,7, 12**	
	2,4,9	**2,4,7,9**	**2,4,7,9, 12,18,19**	**2,4,7,9, 12**	**2,4,9, 12**	

SOUTH

= Site

Note: More than one (1) Land-use may be indicated in a block

Please note: The Department may request specialist input/studies depending on the nature of the land use character of the area and potential impact(s) of the proposed activity/ies. Specialist reports that look at health & air quality and noise impacts may be required for any feature above and in particular those features marked with an "[A]" and with an "[N]" respectively.

Have specialist reports been attached	**YES**	~~NO~~

If yes indicate the type of reports below

***1. 'A vegetation assessment of the site proposed for development of the Emdeni Public transport Facility in Soweto - by G.J. Bredenkamp & CE Venter** - Commissioned by Pierre Joubert Landscape Architect and Environmental Planner [Eco-Agent CC; PO Box 23355; Monument Park; 0181. Tel 012 3463180 / Fax 012 460 2525 / Cell 082 5767046]. December 2021.)'.*

***2. 'A vegetation and wetland assessment of the site proposed for development of the Emdeni Public transport Facility in Soweto - by G.J. Bredenkamp & CE Venter** (Commissioned by Pierre Joubert Landscape Architect and Environmental Planner [Eco-Agent CC; PO Box 23355; Monument Park; 0181. Tel 012 3463180 / Fax 012 460 2525 / Cell 082 5767046]. December 2021.)'.*

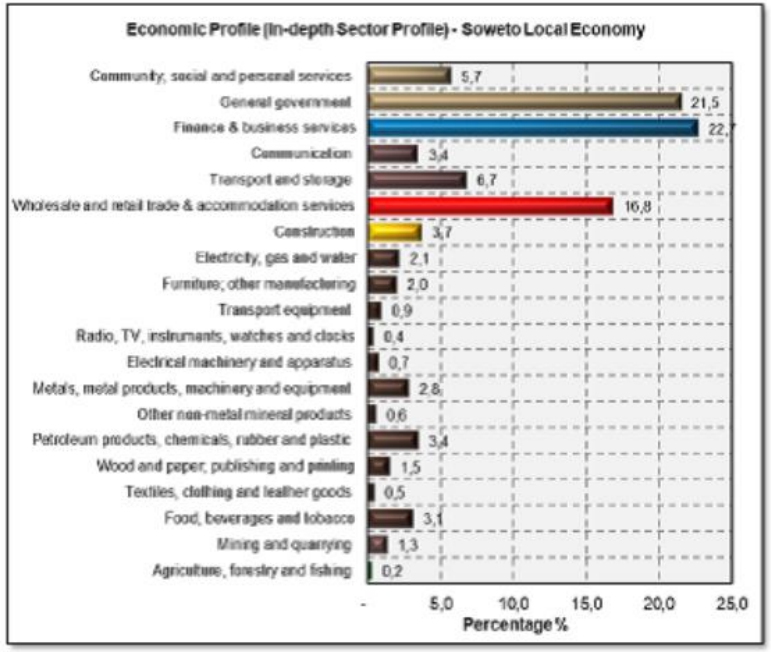
9. SOCIO-ECONOMIC CONTEXT

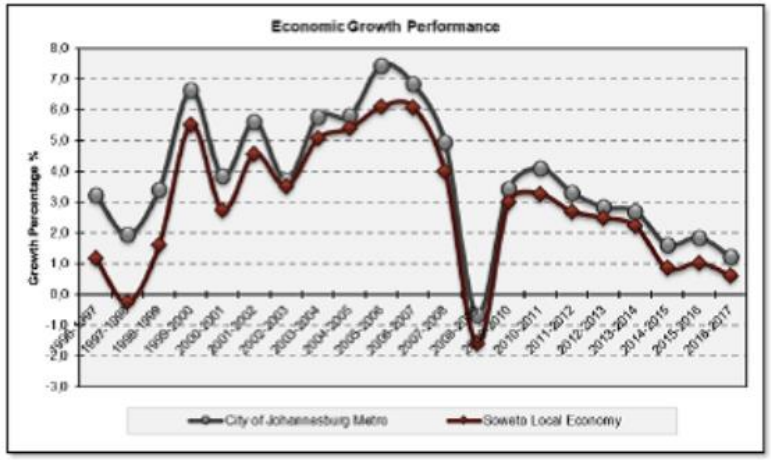
Describe the existing social and economic characteristics of the area and the community condition as baseline information to assess the potential social, economic and community impacts.

FIGURE 3: Existing social and economic characteristics of the SOWETO area and the community condition Information provided by DEMACON MARKET STUDIES.

Economic Base Analysis – Soweto Local Economy

April 2019





SIZE OF THE LOCAL ECONOMY

City of Johannesburg Metro:

- ✓ City of Jhb Metro contributes 39.6% to the Gauteng Province.

SowetoLocal Economy:

- ✓ The Soweto Sub-economy contributes **15,4%** to the City of Jhb Metro Economy.

ECONOMIC PROFILE

- ✓ Finance, insurance, real estate and business services – 22.7%
- ✓ Community, social and personal services – 21.5%
- ✓ Trade – 16.8%
- ✓ Manufacturing – 15.8%

ECONOMIC GROWTH

City of Johannesburg Metro:

- ✓ 3.8% average annual growth rate per year since 1996, 2.0% average annual growth rate per year since 2012

Soweto Local Economy:

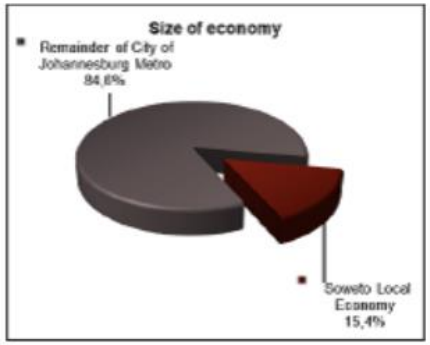
- ✓ **2.9%** average annual growth rate per year since 2002, **1.4%** average annual growth rate per year since 2012

BUSINESS SECTOR PERFORMANCE

- ✓ *Finance & insurance sub-sector* obtained an average growth of 6.2% since 1996 and 1.3% since 2012.
- ✓ *Business sub-sector* obtained average growth of 5.2% since 1996 and experience a decrease to 3.6% since 2012

TRADE SECTOR PERFORMANCE

- ✓ *Wholesale & retail trade sub-sector* obtained an average growth of 3.0% *since1996 – 2017 and 1.3% since 2012.*
- ✓ *Catering and accommodation* obtained an average growth of 1.5% since 1996 and experience a decrease to -1.6% since 2012



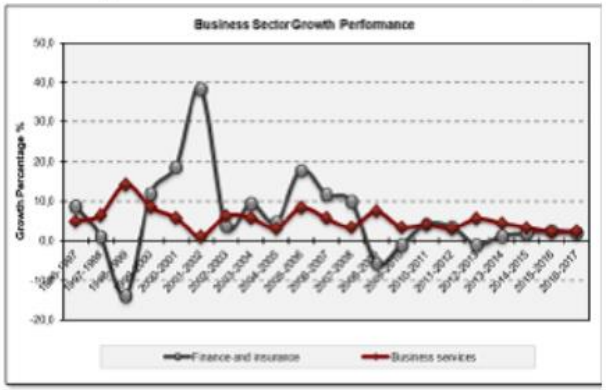
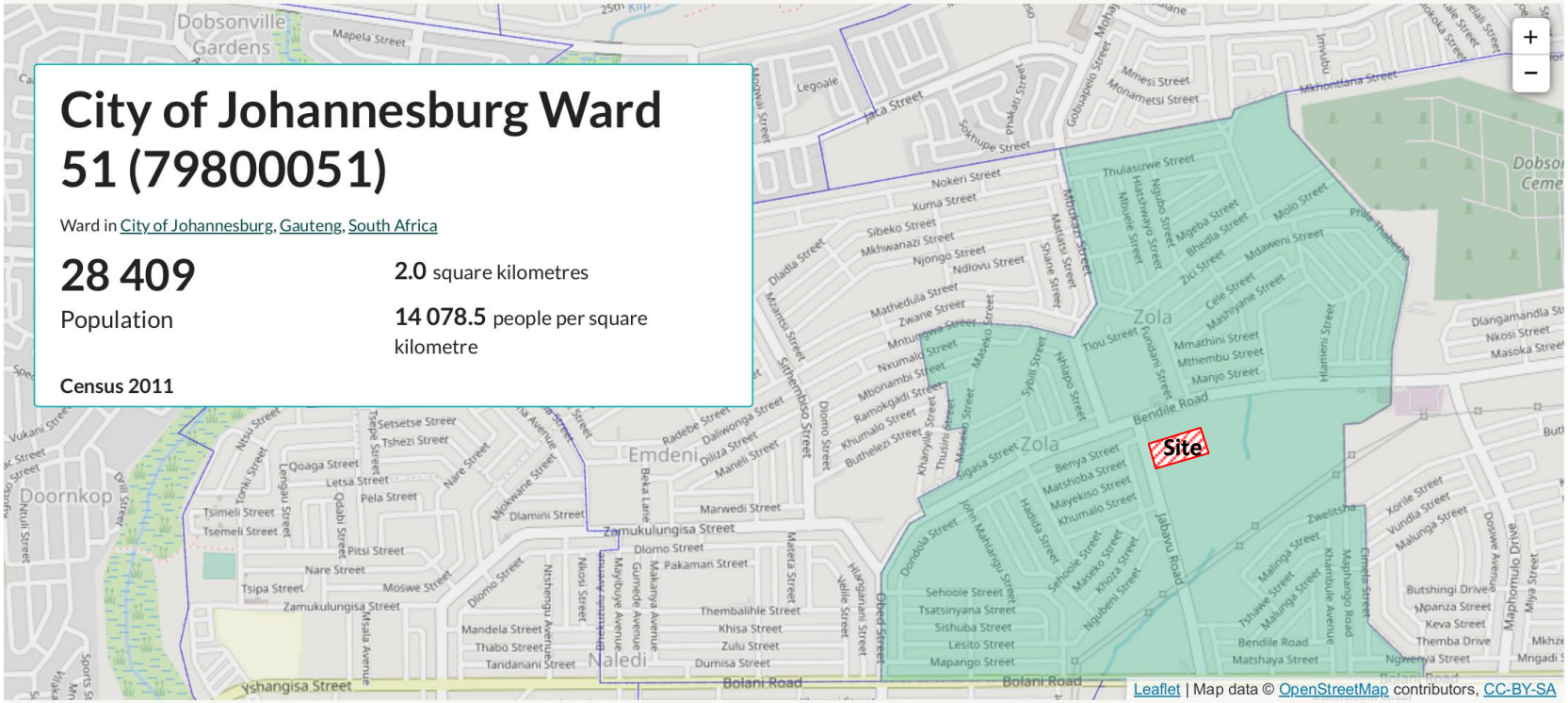


FIGURE 4: Existing social and economic characteristics of the WARD 51, SOWETO area and the community condition Information provided by Wazimap (https://wazimap.co.za/about).

Ward 51 (79800051), City of Johannesburg, Gauteng

Elections | Demographics | Households | Service Delivery | Economics | Education | Children | Child-headed Households



City of Johannesburg Ward 51 (79800051)

Ward in City of Johannesburg, Gauteng, South Africa

28 409
Population

2.0 square kilometres

14 078.5 people per square kilometre

Census 2011

Compare this place with another Start typing a place name or address to compare with...

Interact with charts and statistics for additional information.

Ward 51 (79800051), City of Johannesburg, Gauteng

Number of registered voters

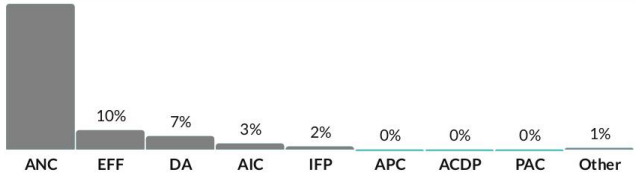
Gauteng: 6 248 106

South Africa: 26 384 470

Of registered voters cast their vote

a little less than the rate in Gauteng: 57.91%

a little less than the rate in South Africa: 57.95%



Source: Municipal Elections 2016

Demographics

Age

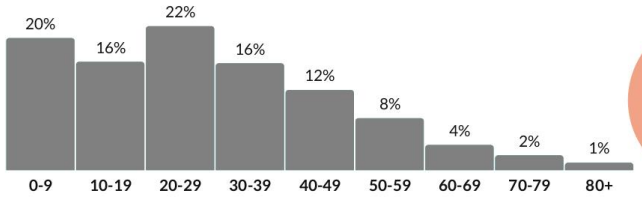
26

Median age

about 90 percent of the figure in Gauteng: 28

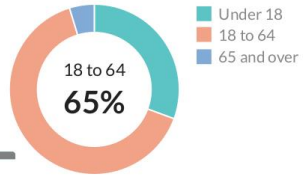
a little higher than the figure in South Africa: 25

Population by age range Chart Options



Source: Census 2011

Population by age category Chart Options



Source: Census 2011

Population

28 409

People

Gauteng: 12,272,263L

Population group Chart Options

Sex Chart Options

Ward 51 (79800051), City of Johannesburg, Gauteng

Source: Census 2011

Source: Census 2011

Language

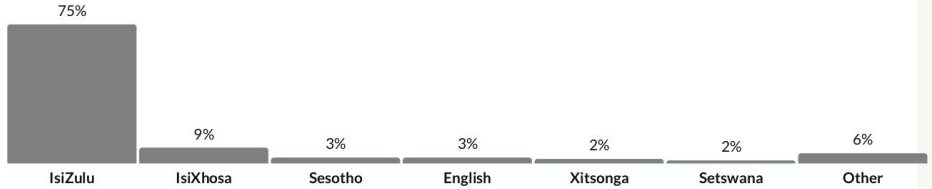
IsiZulu

Language most spoken at home

more than double the figure in Gauteng: 19.48

more than double the figure in South Africa: 22.38

Population by language most spoken at home Chart Options



Source: Census 2011

Migration

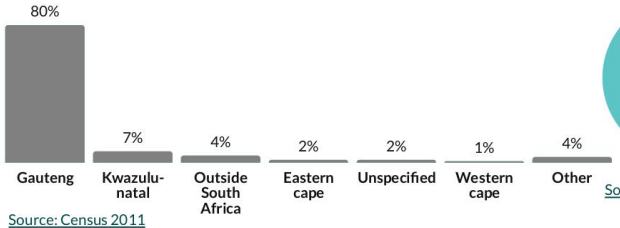
94.2%

Born in South Africa

about 10 percent higher than the rate in Gauteng: 88%

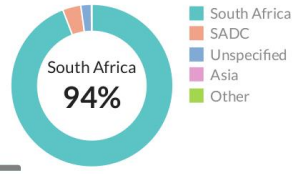
about the same as the rate in South Africa: 92.88%

Province of birth Chart Options



Source: Census 2011

Region of birth Chart Options



Source: Census 2011

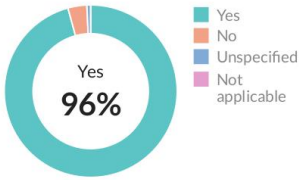
Ward 51 (79800051), City of Johannesburg, Gauteng

citizenship

South African citizens

a little higher than the rate in Gauteng: 90.36%

about the same as the rate in South Africa: 94.55%



Source: Census 2011

Households

Households

7 553

Households

Gauteng: 4,162,491L

South Africa: 15,054,254L

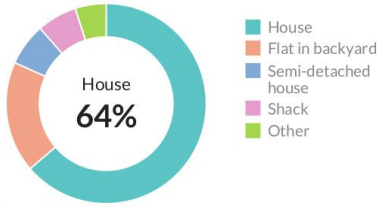
6.5%

Households that are informal dwellings (shacks)

about one-third of the rate in Gauteng: 17.77%

about half the rate in South Africa: 13.04%

Households by type of dwelling Chart Options



Source: Census 2011

Household ownership

29.8%

Households fully owned or being paid off

Households by ownership Chart Options

Ward 51 (79800051), City of Johannesburg, Gauteng

Source: Census 2011

Head of household

44.3%

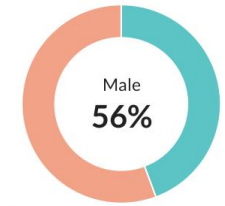
Households with women as their head

about 1.3 times the rate in Gauteng: 34.15%

about 10 percent higher than the rate in South Africa: 40.98%

Head of household by gender

Chart Options



Source: Census 2011

65

Households with heads under 18 years old

less than 10 percent of the figure in Gauteng: 12,668

South Africa: 107,466

Annual household income

Average annual household income is a median estimate, be careful with this value.

R29 400

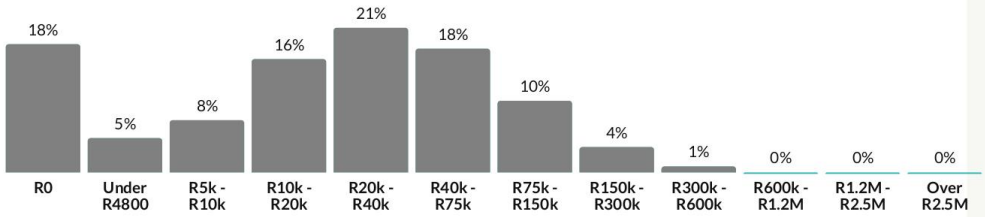
Average annual household income

about the same as the amount in Gauteng: R29 400

about the same as the amount in South Africa: R29 400

Annual household income

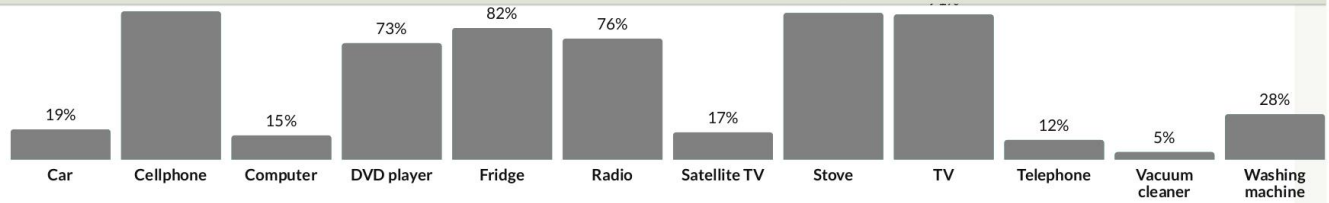
Chart Options



Source: Census 2011

Ward 51 (79800051), City of Johannesburg, Gauteng

Elections | Demographics | Households | Service Delivery | Economics | Education | Children | Child-headed Households



Source: Census 2011

Service delivery

Water

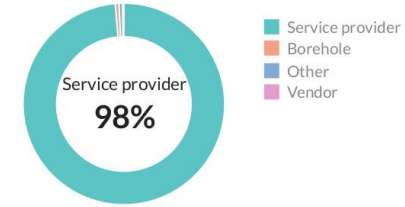
98.5%

Are getting water from a regional or local service provider

a little higher than the rate in Gauteng: 93.52%

about 1.3 times the rate in South Africa: 76.89%

Population by water source Chart Options



Source: Census 2011

Toilet facilities

99.5%

Have access to flush or chemical toilets

0.1%

Have no access to any toilets

about 10 percent of the rate in Gauteng: 1.19%

Population by toilet facilities Chart Options

Ward 51 (79800051), City of Johannesburg, Gauteng

Source: Census 2011

Refuse disposal

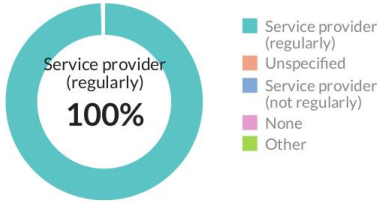
99.7%

Are getting refuse disposal from a local authority or private company

about 10 percent higher than the rate in Gauteng: 89.9%

more than 1.5 times the rate in South Africa: 59.4%

Population by refuse disposal Chart Options



Source: Census 2011

Economics

Employment

35.2%

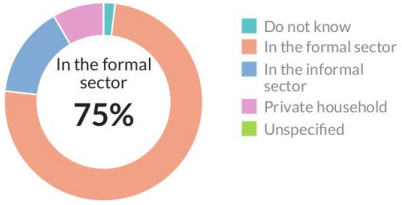
Employed

about two-thirds of the rate in Gauteng: 50.59%

about 90 percent of the rate in South Africa: 38.87%

Population by employment status Chart Options

Sector of employment Chart Options



Ward 51 (79800051), City of Johannesburg, Gauteng

* Universe: Individuals 15 and older

Source: Census 2011

Annual income

Average annual income is a median estimate, be careful with this value.

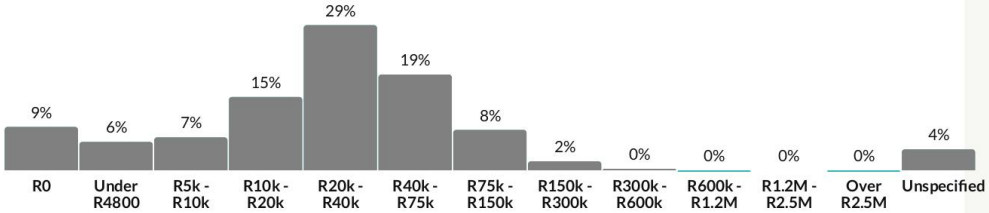
R30 000

Average annual income

about half the amount in Gauteng: R57 500

about the same as the amount in South Africa: R30 000

Employees by annual income Chart Options



* Universe: Employed individuals

Source: Census 2011

Internet access

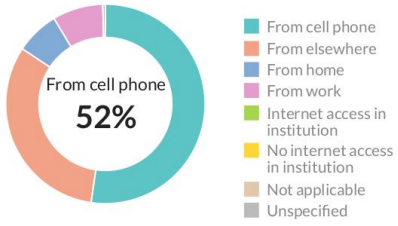
46%

Households with internet access

about the same as the rate in Gauteng: 45.97%

about 1.3 times the rate in South Africa: 35.32%

Primary means of internet access Chart Options



Ward 51 (79800051), City of Johannesburg, Gauteng

Elections | Demographics | Households | Service Delivery | Economics | Education | Children | Child-headed Households

Education

Educational level

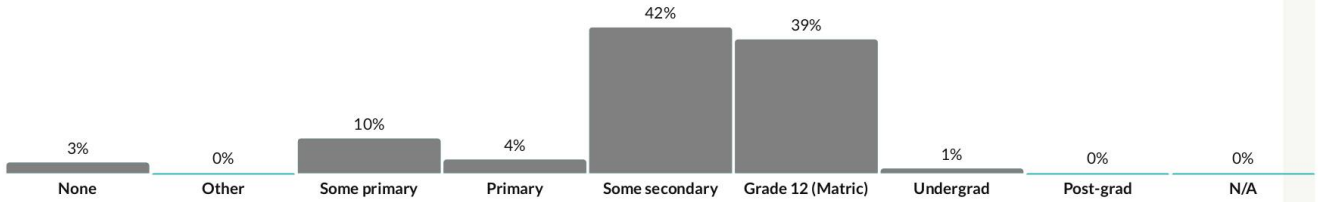
73.3%
Completed Grade 9 or higher

a little less than the rate in Gauteng: 77.27%
about 10 percent higher than the rate in South Africa: 65.83%

40.5%
Completed Matric or higher

about 80 percent of the rate in Gauteng: 50.82%
a little higher than the rate in South Africa: 39.34%

Population by highest educational level Chart Options



* Universe: Individuals 20 and older
Source: Census 2011

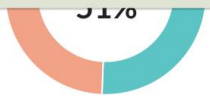
Children

Child population

8 692

Children under 18 by gender Chart Options

Population by age category Chart Options



* Universe: Children under 18

Source: Census 2011

Source: Census 2011

Parents

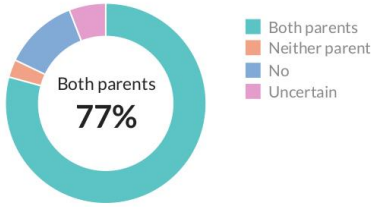
2.8%

Of children 14 and under have no living biological parents

about 1.5 times the rate in Gauteng: 1.89%

a little less than the rate in South Africa: 2.91%

Children 14 and under by biological parental survival Chart Options



* Universe: Children 14 and under

Source: Census 2011

School attendance

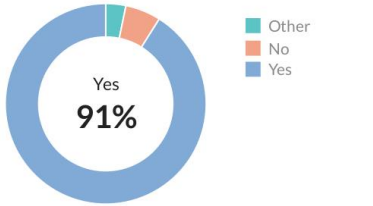
91.1%

School-aged children (5 to 17 years old) are in school

about the same as the rate in Gauteng: 90.35%

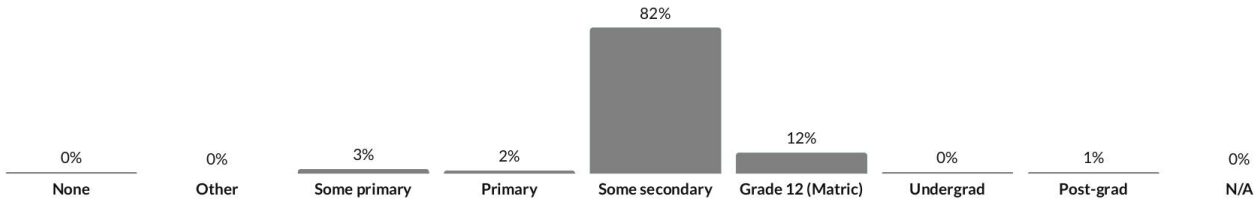
about the same as the rate in South Africa: 90.1%

Children 5 to 17 by school attendance Chart Options



* Universe: Children 5 to 17

Ward 51 (79800051), City of Johannesburg, Gauteng



* Universe: 17-year-old children

Source: Census 2011

Employment of 15- to 17-year-olds

Average annual income is a median estimate, be careful with this value.

R7 500

Average annual income of employed children between 15 and 17

more than double the amount in Gauteng: R2 400

more than double the amount in South Africa: R2 400

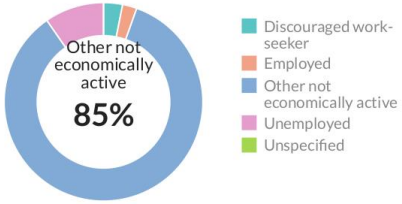
15.1%

Of children between 15 and 17 are in the labour force

about 90 percent of the rate in Gauteng: 16.86%

about 20 percent higher than the rate in South Africa: 13.07%

15- to 17-year olds by employment status Chart Options



* Universe: Children 15 to 17

Source: Census 2011

Child-headed households

Households headed by children under 18 years old

Child-headed households by type of dwelling Chart Options

Ward 51 (79800051), City of Johannesburg, Gauteng

less than 10 percent of the figure in Gauteng: 12,668L

South Africa: 107,466L

about one-third of the rate in Gauteng: 21.8%

about 80 percent of the rate in South Africa: 9.28%

* Universe: Households headed by children under 18

Source: Census 2011

Head of household

50.8%

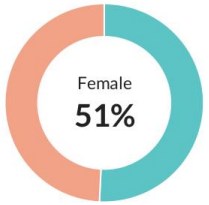
Child-headed households with women as their head

about 20 percent higher than the rate in Gauteng: 42.51%

about 10 percent higher than the rate in South Africa: 44.81%

Head of child-headed household by gender

Chart Options



* Universe: Households headed by children under 18

Source: Census 2011

Annual household income

Average annual household income is a median estimate, be careful with this value.

N/A

Average annual child-headed household income

Annual child-headed household income

Chart Options

* Universe: Households headed by children under 18

Source: Census 2011

Ward 51 (79800051), City of Johannesburg, Gauteng

Elections | Demographics | Households | Service Delivery | Economics | Education | Children | Child-headed Households

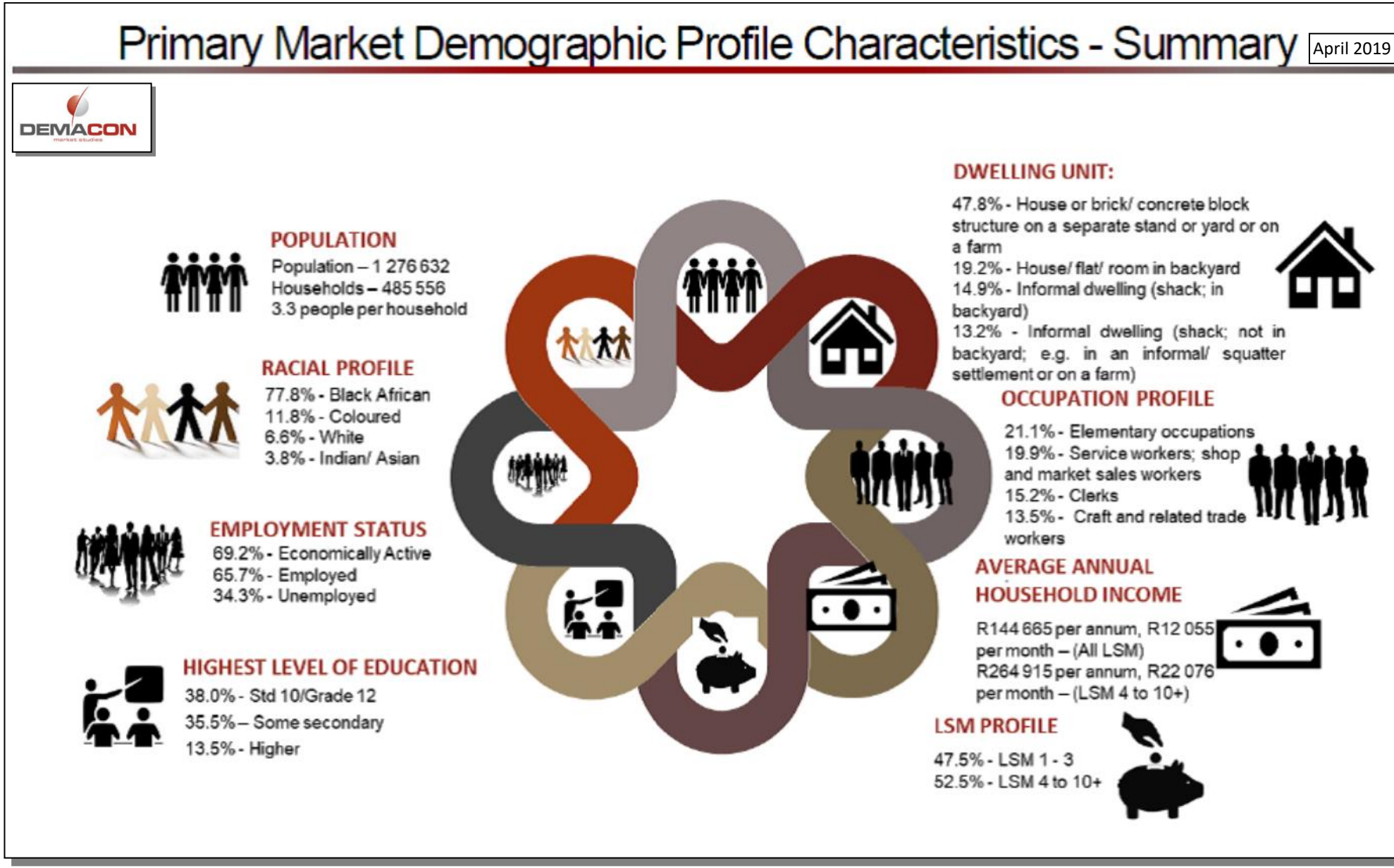
Census 2011

Citations:

Municipal Elections 2016: Electoral Commission of South Africa (IEC), Municipal election results <https://wazimap.co.za/profiles/ward-79800051-city-of-johannesburg-ward-51-79800051/>

Census 2011: Statistics South Africa (2011) South African Population Census 2011. Indicators derived from the full population Census <https://wazimap.co.za/profiles/ward-79800051-city-of-johannesburg-ward-51-79800051/>

FIGURE 5: Existing social and economic characteristics of the SOWETO area and the community condition Information provided by DEMACON MARKET STUDIES.



'City of Johannesburg Metropolitan Municipality: Spatial Development Framework 2040.
In collaboration with: Iyer Urban Design, UN Habitat, Urban Morphology and Complex Systems Institute and the French Development Agency
City of Johannesburg: Department of Development Planning 2016'.
[Pages: 13,16, 38 – 64].

The City of Johannesburg presently displays the inverse of this polycentric urban model with separated land uses and people living far from work opportunities (Figure 5). The metropolitan core does not perform as the strong, structuring centre it should be. High density residential areas (the 'townships') are separated from urban economic centres and movement structures of the city. This pattern of development results in high social, economic and environmental costs.

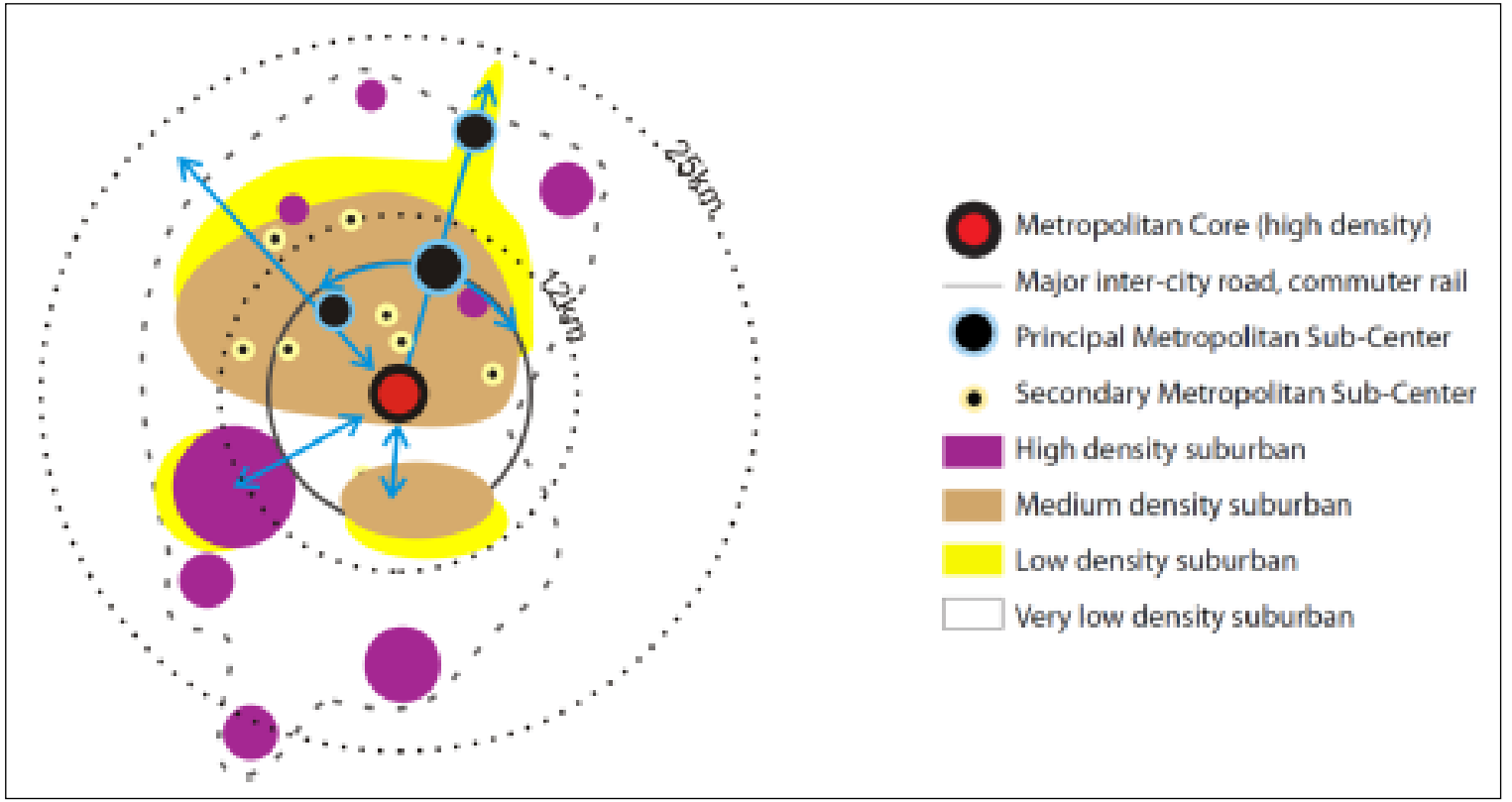


Figure 6: Johannesburg's current metropolitan structure of inverted polycentricity (UMI, 2015)

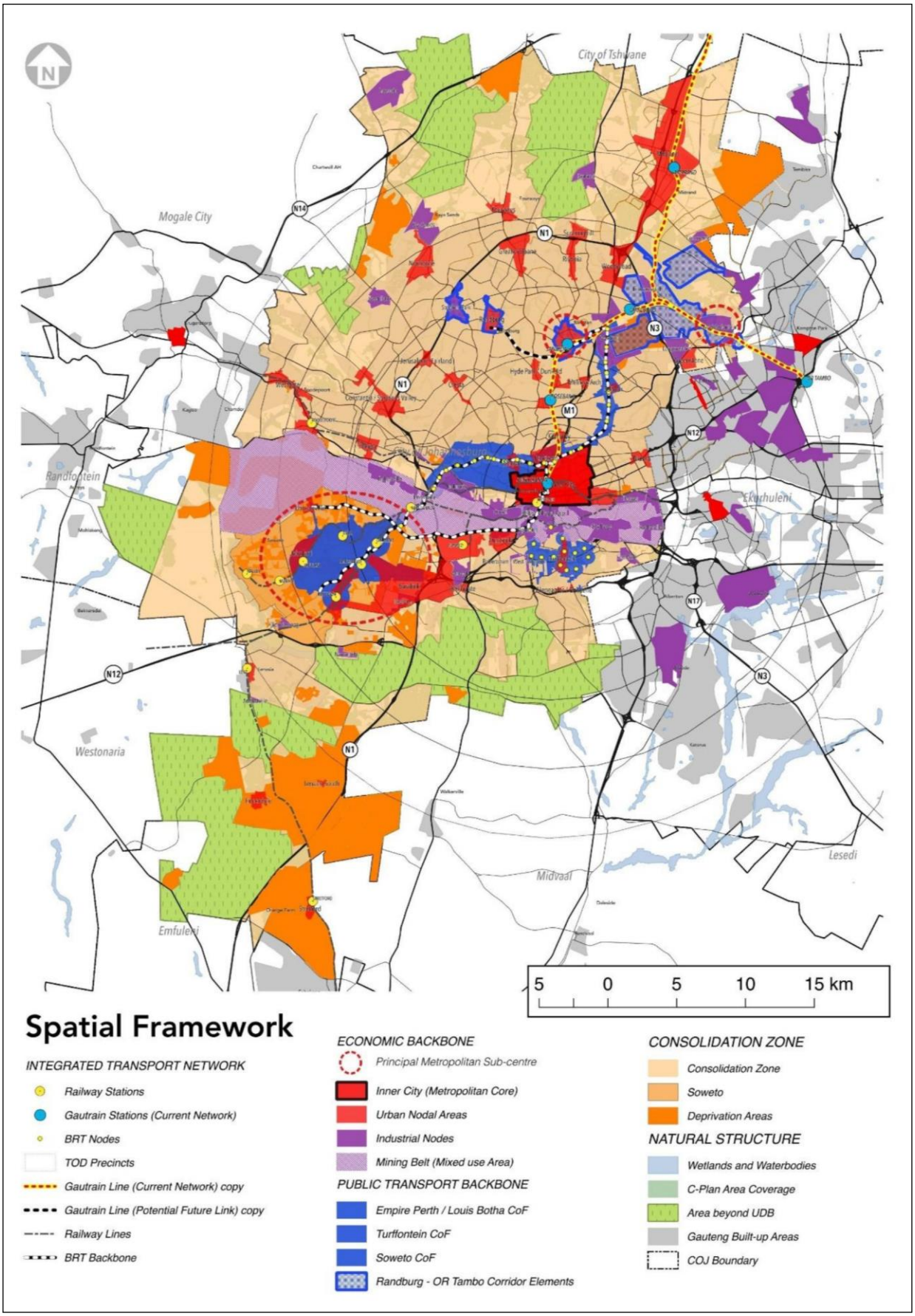


Figure 7: Current Spatial Framework of Johannesburg Metropolitan Region.

2.4.2. Transformation Zone

The Transformation Zone includes areas where investment is prioritised for future urban intensification and growth, as they have the capacity to trigger positive effects on a metropolitan scale. The Transformation Zone also indicates areas where the development of detailed spatial plans, where they don't exist already, will be prioritised. Unlocking Soweto as a True City District – Diversifying and intensifying Soweto to address its largely residential nature by developing mixed land uses (particularly economically productive, job creating ones) and social services, making use of its good street pattern and public transport network. The strategy is to develop Soweto into a series of self-sufficient mixed-use nodes (starting around public transit stations and nodes) as drivers of economic growth and job creation, allowing Soweto to function as a liveable city district in its own right with access to jobs and the full array of urban amenities.

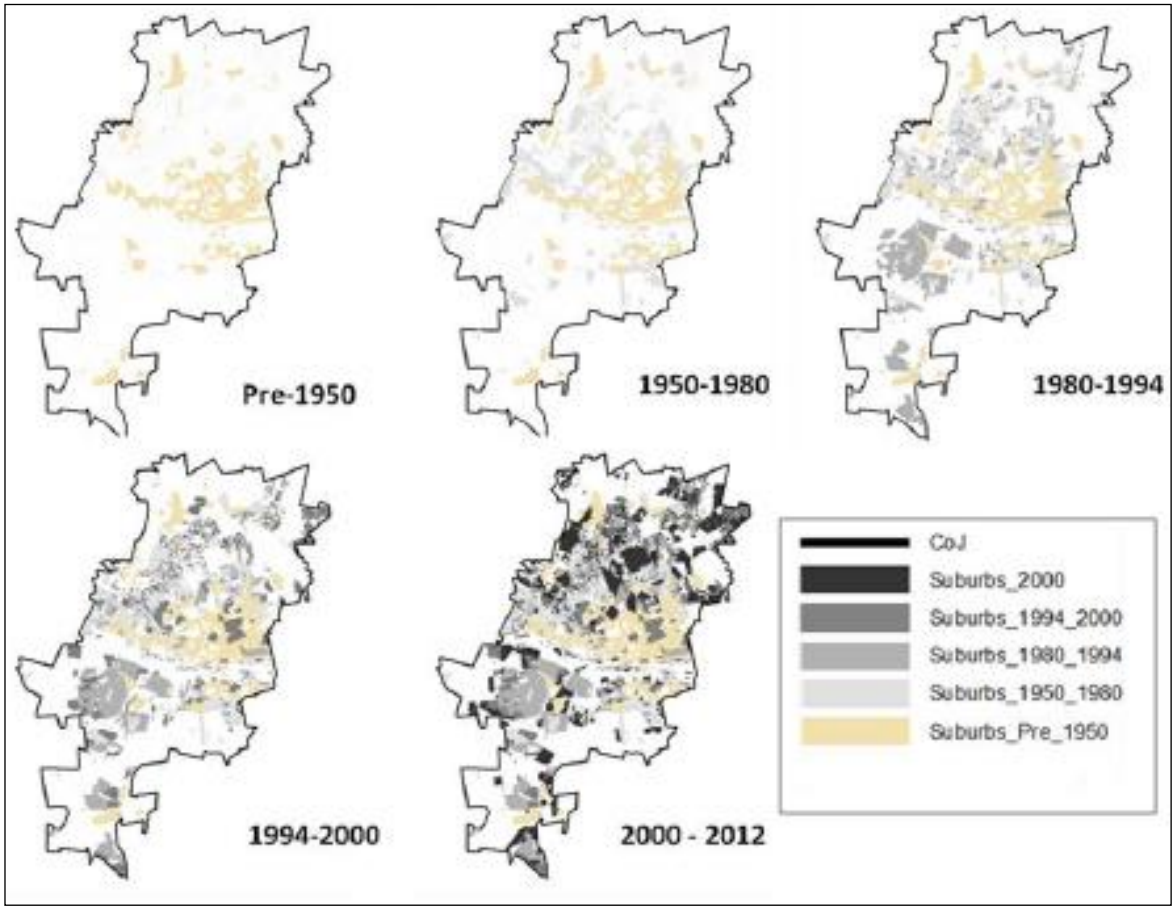


Figure 8: Spatial pattern of growth of Johannesburg, 1950 to 2012 (Source: City of Johannesburg Corporate Geo-Informatics

5. The Current City

Chapter Summary: *The apartheid practices of planning and urbanisation have led to the development of a spatial structure with many shortcomings: spatial inequality (including a stark job-housing mismatch), fragmentation and spatial disconnection, urban sprawl and limiting densities, limited land-use diversity and pressure on the natural environment. Although there is evidence of some reconstructive developments over the past decade the current structure and development patterns require revisiting in order to meet the future urban challenges in a sustainable manner.*

Urbanisation 5.1.

During apartheid, various measures were used to suppress urbanisation in South Africa, including the pass system and legislation such as the Group Areas Act of 1950. This led to a pent-up demand for access to urban areas. The end of Apartheid saw a surge in urbanisation in South Africa, related to meeting pent up demand. Much of this growth happened in South Africa's metropolitan municipalities, including Johannesburg. Data from the United Nations however suggests that the post-apartheid 'boom' in population for the city is slowing,

and that while population growth will continue, it will be at much lower rates than experienced in the 1990s and early 2000s (Figure 8).

According to population data from the 1996, 2001 and 2011 censuses, Johannesburg is continuing to grow, although at a decelerating rate. From 1996 to 2001 its population grew at an average of 4.1% per annum while from 2001 to 2011 it grew on average at 3.2% per annum. The United Nations predicts a further deceleration of growth, to 2% for the period 2015 to 2020, 1.3% for 2020 to 2025 and 1% for 2025 to 2030. As indicated below, however, this is one of the low-range estimates for Johannesburg's growth and is used to illustrate the trend of slowing population growth.

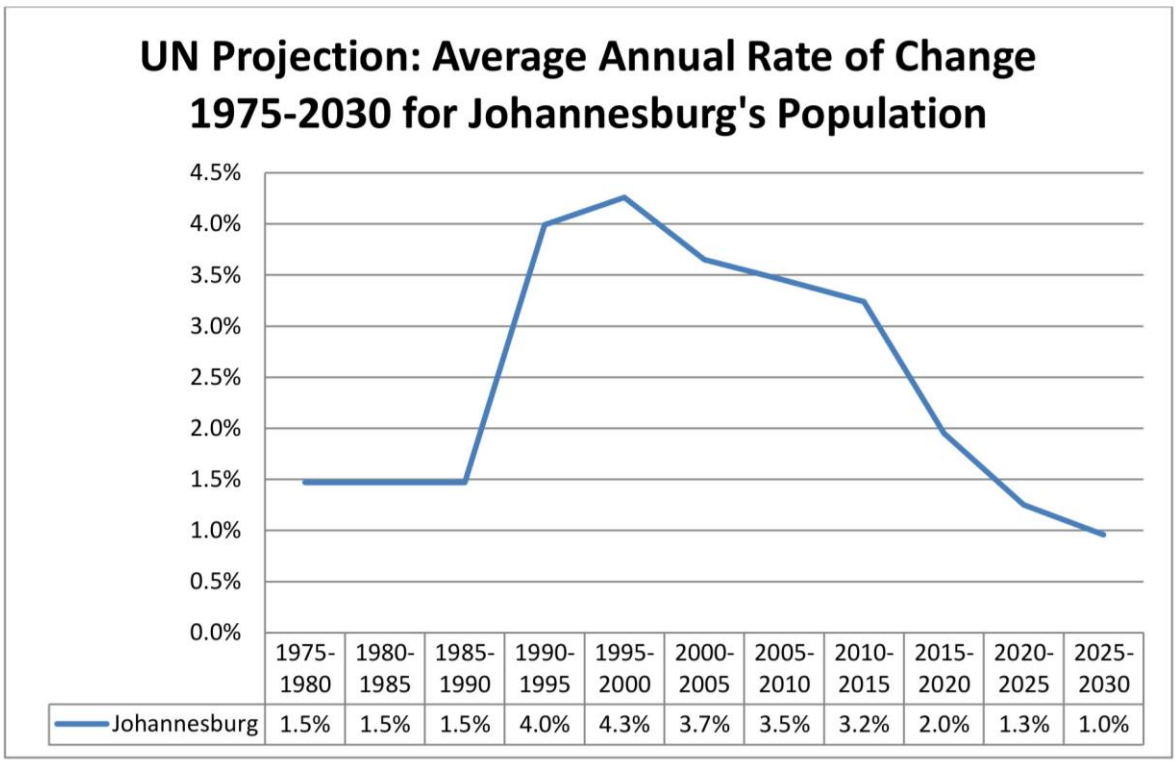


Figure 9: Population Growth Rates for Johannesburg, 1975-2030 (UN Population Division 201426).

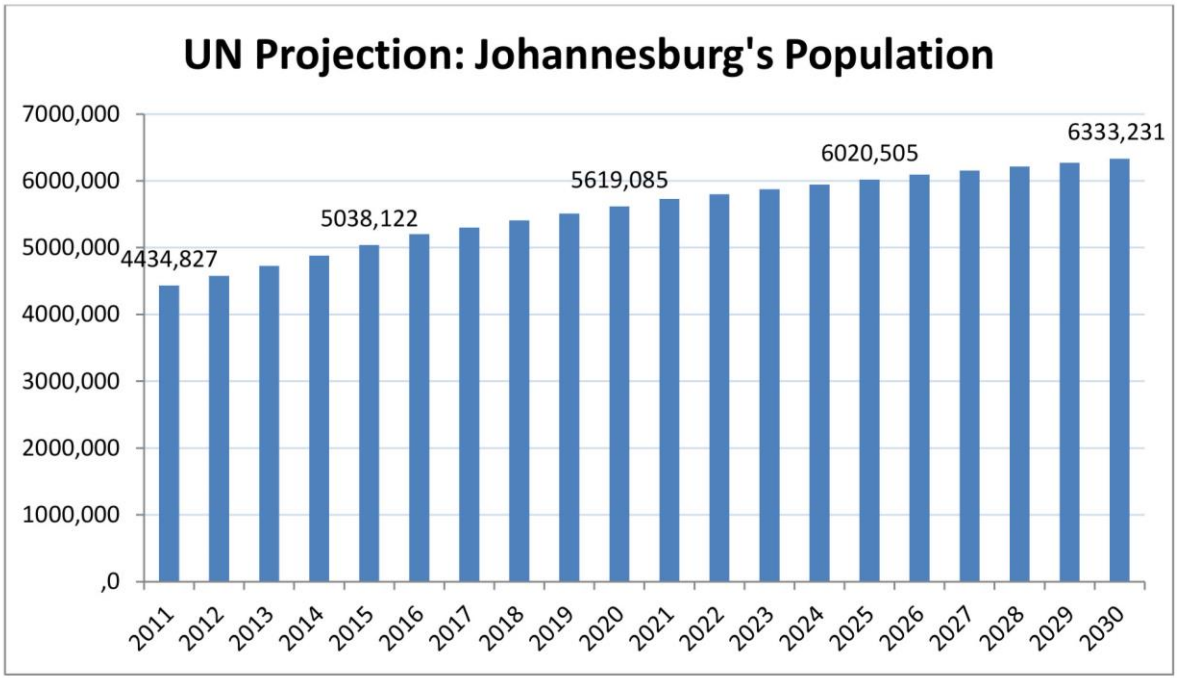


Figure 10: UN Projected Population Growth for Johannesburg using census 2011 as the starting point.

Population growth is certain, but the rate of growth is less clear. Natural growth may account for about 75% of future growth, with immigration, domestic and international, making up the rest. There are many projections for the city of Johannesburg's population over the next 25 years. These are summarised in the City of Johannesburg Consolidated Infrastructure Plan of 2013, with the highest estimate being just under 7 million people in the year 2030. As a city, it is prudent to plan for higher rather than lower estimates. This should be done cautiously however, to prevent the over-investment in infrastructure that could exceed needs. With growth rates declining, the number used to model different growth scenarios for this SDF was an estimated population of 7 million people by 2040. From a growth management perspective, the critical challenge moving forward is threefold. The city needs to concurrently meet the backlog of those living in poverty and unsatisfactory living conditions; accommodate projected (or indeed unforeseen) population increases; and maintain and continually adapt (for greater inclusion and accessibility) those parts of the city that are performing well.

5.2. The City's Spatial Economy

The City is the economic and logistics hub of the country with road, rail and air transport networks radiating outwards to other parts of the country, the region and the world. Johannesburg today continues as the energetic, dominant metropolitan economy in the country. The City contributes some 17% of national output (GDP) and is host "to two-thirds of all South Africa's corporate headquarters and 60% of the top 100 companies".

Johannesburg also acts as an economic gateway to Sub-Saharan Africa, which has emerged as a new global growth region as its natural resource sector develops, infrastructure improves and its middle class and consumer buying power grows.

"Over the past eighteen years Johannesburg's economy has grown faster than that of South Africa as a whole. The result of this performance is a City output which in 2013 was some 92% larger than in 1996 – compared with the 70% for South Africa as a whole. This (in relative terms) favourable economic performance is also reflected in employment statistics: despite inwards migration, the City had in 2013 a higher proportion of working age people in employment than any other South African City i.e. 60%. This statistic does however also expose the scale of the unemployment problem - some 40% of working age people in the City are not in formal employment". Although this rate is lower than that of other metros, it is still unsustainably high with recent data from Stats SA showing that the country and Johannesburg have in the last few years lost rather than created jobs.

"The urgency of achieving faster economic growth and accelerating job creation in the City economy is emphatically underscored by this aggregate data. Without faster economic growth and significantly increased job creation the livelihoods necessary to address poverty and inequality will not be forthcoming". Despite 1996 to 2004 being characterised by good economic growth, the annual estimates of people living in poverty have increased consistently from 2003 to 2013. The percentage of Johannesburg's residents living in poverty increased from 30% in 2003 to 33% in 2013.

The structure of output in the City's economy today is dominated by the financial sector, with community services, trade and accommodation and manufacturing also significant contributors. This is a shift in the economic base of the city from resources and manufacturing to services. In 2013, sector contributions to output were: Finance, Real Estate and Business Services (32%), Community, Social and Personal Services (20%), Wholesale and Retail Trade, Catering and Accommodation (16%), Manufacturing (16%), followed at some distance by Transport Storage and Communication (8%), Construction Contractors (4%), Electricity, Gas and Water (2%), Mining and Quarrying (1%) and Agriculture less than 1%.

Apart from the sectoral structure of the economy, the spatial distribution of the urban economy has significant implications for future growth of the city. Factors such as location, connectivity, accessibility, infrastructure, diversification of activities and services, and levels of interdependence with the economic patterns of the wider city region, have a marked influence on the potential for future development.

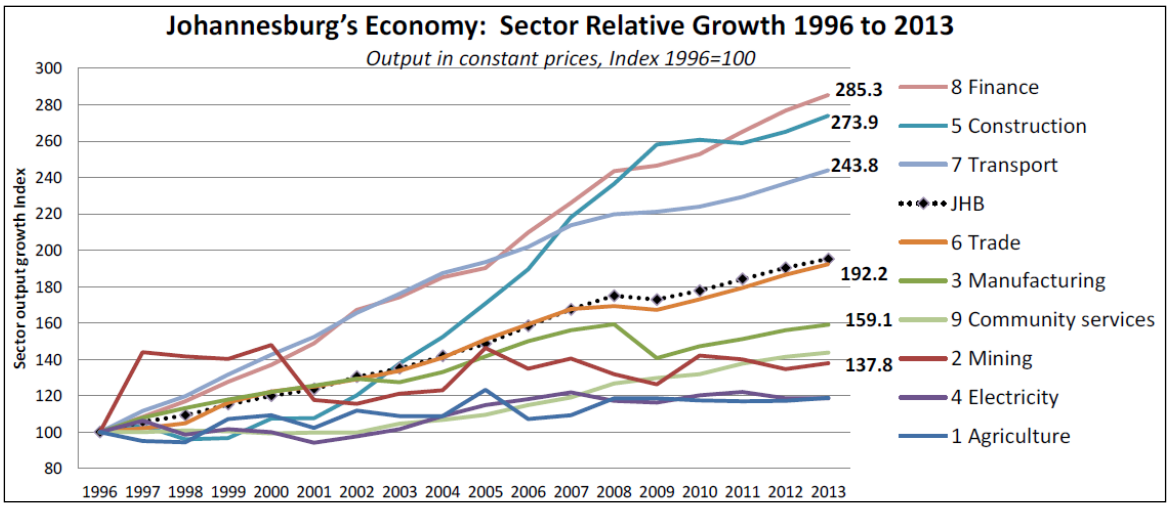


Figure 11: Sector Economic Growth (Economic Development Strategy for the City of Johannesburg, 2015 pg. 8)

Spatial Distribution of the Urban Economy

While economic indicators suggest Johannesburg is well placed in terms of its competitiveness, inequality in the city (specifically the spatial inequality that is apparent in its structure) is a tough reality that must be addressed.

The city economy is centred on two regions of significant economic activity. The Inner City and Sandton nodes and their immediate regions, (Region E and F respectively), constitutes 50% of the city's economic output but only house 23% of the city's population.

In contrast the southwestern regions of the city stretching from Soweto to Orange Farm only contributes to 13%, (9% and 4% respectively), of the city's economy but house 41% of the population. The southern parts of the city have consistently reported the highest percentage of people living in poverty. Most of the southwestern regions' sectoral growth dynamics remain weak when compared to other regions. Most of the areas south of the N12 highway have low interdependence and interconnectedness with the main economic centres in the City region and as a result attract limited economic investment. An exception is in Soweto where the community, social and personal services sector grew the fastest of all regions, reflecting both demand and public sector efforts to improve service delivery in the region.

Apart from the low economic energy in southern Johannesburg, there is also a significant east-west division of the space economy. The economic activity along the M1 that links the CBDs of Johannesburg and Pretoria, and the area east of the M1 accounts for 62% of the city's economy. If the Randburg region (Region B) is added to this total, then 72% of the city's economy is generated in the northern and eastern quadrants of the city. The economic necessity of agglomeration and linking of economic centres in the city region is clearly illustrated by the orientation of the city's economy to Tshwane to the north and Ekurhuleni to the east. This trend is further emphasised by the constant growth and increase in economic share of the north-eastern quadrant of the city over the past 18 years.

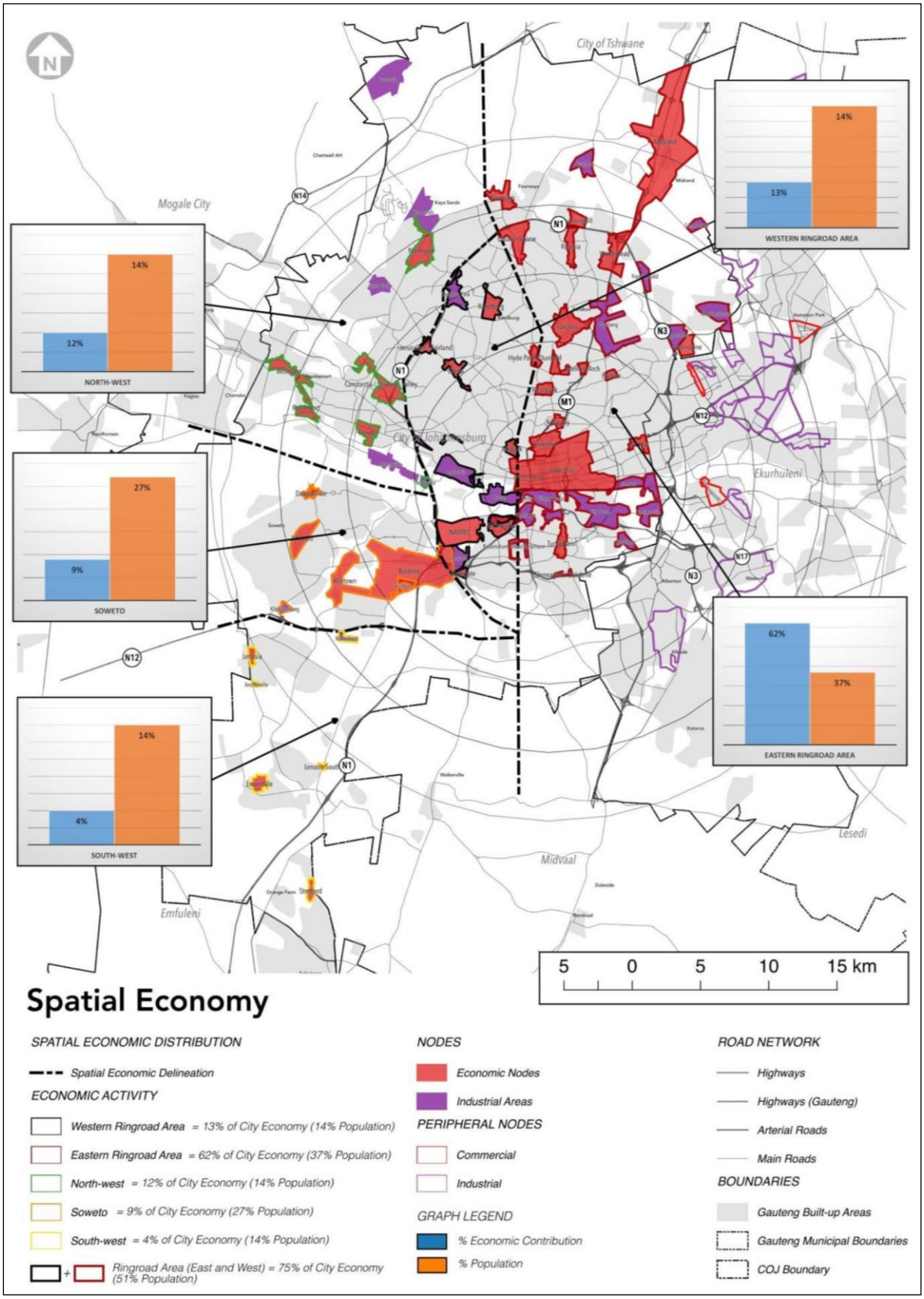


Figure 12: Spatial Economic Distribution (blue: economic contribution; orange: population).

5.3 Housing Backlog: Providing Affordable Housing for the Poor and Improving the Lives of Informal Dwellers.

The primary concern of this SDF, and indeed many other National, Provincial and Municipal policies is the urban inequality that exists in Johannesburg. Although Johannesburg enjoys higher average incomes than other parts of the country, in terms of Gini coefficient, it ranks as one of the most unequal cities in the world. Despite a relatively high average household income of R15270 per month, the 2011 census shows that 50% of households earn less than approximately R3500 per month with the median household income bracket being R1601 - R3200 per month (in 2011 prices) (Census 2011, Quantec EasyData). The Socio-Economic Rights Group of South Africa35 (SERI), details the distribution of household incomes in Johannesburg, showing the importance of not only considering the median income, but also the proportion of people in lower income brackets than the median. Using the National Income Dynamics Study, SERI argues that 50% of households in the city earn less than R3543 a month (city-wide median), 40% less than R2487, 33% less than R2224 a month, and 25% less than R1751 a month (all in 2011 prices).

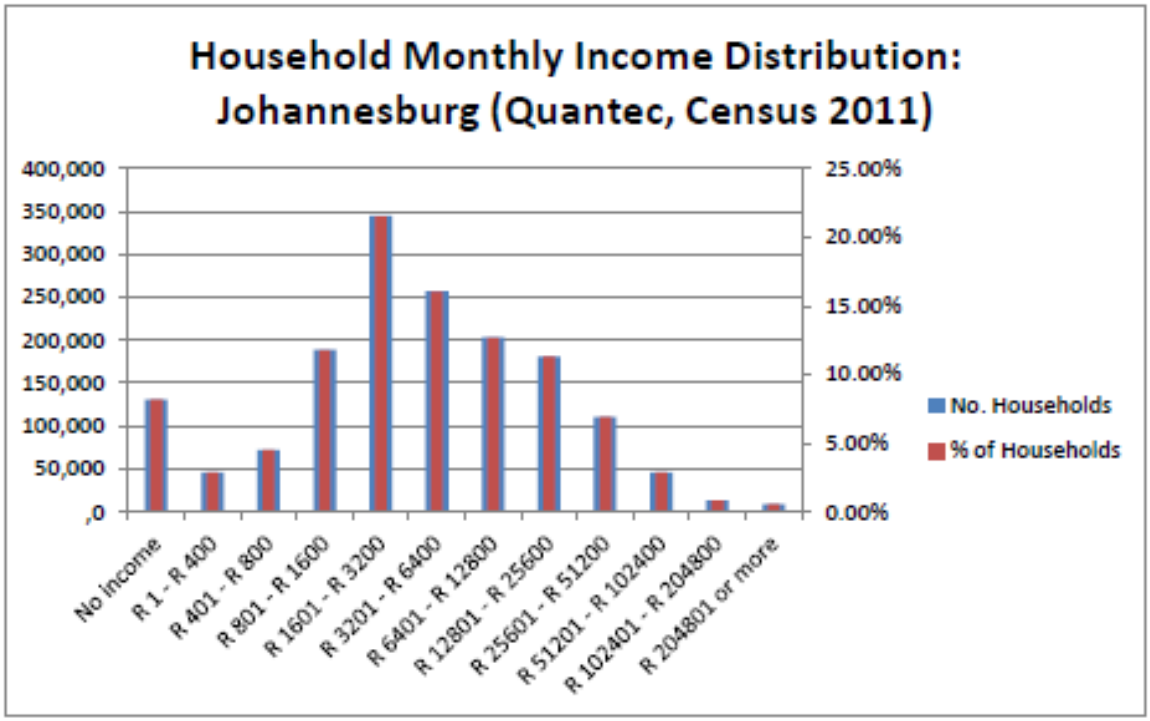


Figure 13: Household Monthly Income Distribution in Johannesburg, 2011 prices (Census 2011: Quantec EasyData)

Although there is some evidence (across censuses and from surveys such as the GCRO's Quality of Life Survey) that quality of life is improving across the city region (in Johannesburg, because of successful service delivery and the introduction of grants), the fact that the wealthy have got richer at a faster rate than lower income groups, has driven inequality.

Significant African cities such as Johannesburg therefore have the vast challenge of improving the lives of those living in informal dwellings and closing the gap between rich and poor. If Johannesburg is to become an inclusionary city, it needs to make space for the urban poor majority through planning initiatives such as densification, diversification, and integration. In looking at housing delivery, it is important to consider the housing backlog, and the distribution of household income in the city. Affordable housing should be provided proportionally to this income distribution and not for the mean or median income. As such 25% of affordable housing should be for households earning below R1751 a month, 15% for the bracket R1751 to R2487 and 10% for the income bracket of R2487 to R3543. Providing housing for low-income households that is well located regarding public transport, hard and soft services and jobs, is imperative.

While the population is growing, there is an existing housing backlog in the city: those who are informally housed in often inadequate living conditions, or those that don't have access to adequate affordable housing. Informal dwellings include informal settlements, informal backyard dwellings, and formal buildings that are informally occupied (sometimes referred to as 'bad buildings'). While these areas are sometimes well located

(a reason that people may have chosen to live there) they are often poorly serviced (if at all), living conditions are often inadequate, and they can pose risks to their inhabitants, from fire to flooding, illness and crime.

Due to the nature of informality, reliable statistics are difficult to achieve, however there are some sources of data. According to the Census 2011, 17.4% of Johannesburg's households live in informal settlements or informal backyard dwellings. The census indicates that there are 125,800 households living in informal settlements, and some 124,000 households living in informal backyard homes.

According the City's studies, however, in 2012 there were an estimated 164,939 informal structures located within informal settlements in the City with the largest concentration in the Ivory Park area. Backyard dwellings accounted for about 320,652 families; higher than what is quoted in census data figures. The largest concentration of backyard dwellings is located in the Soweto area.

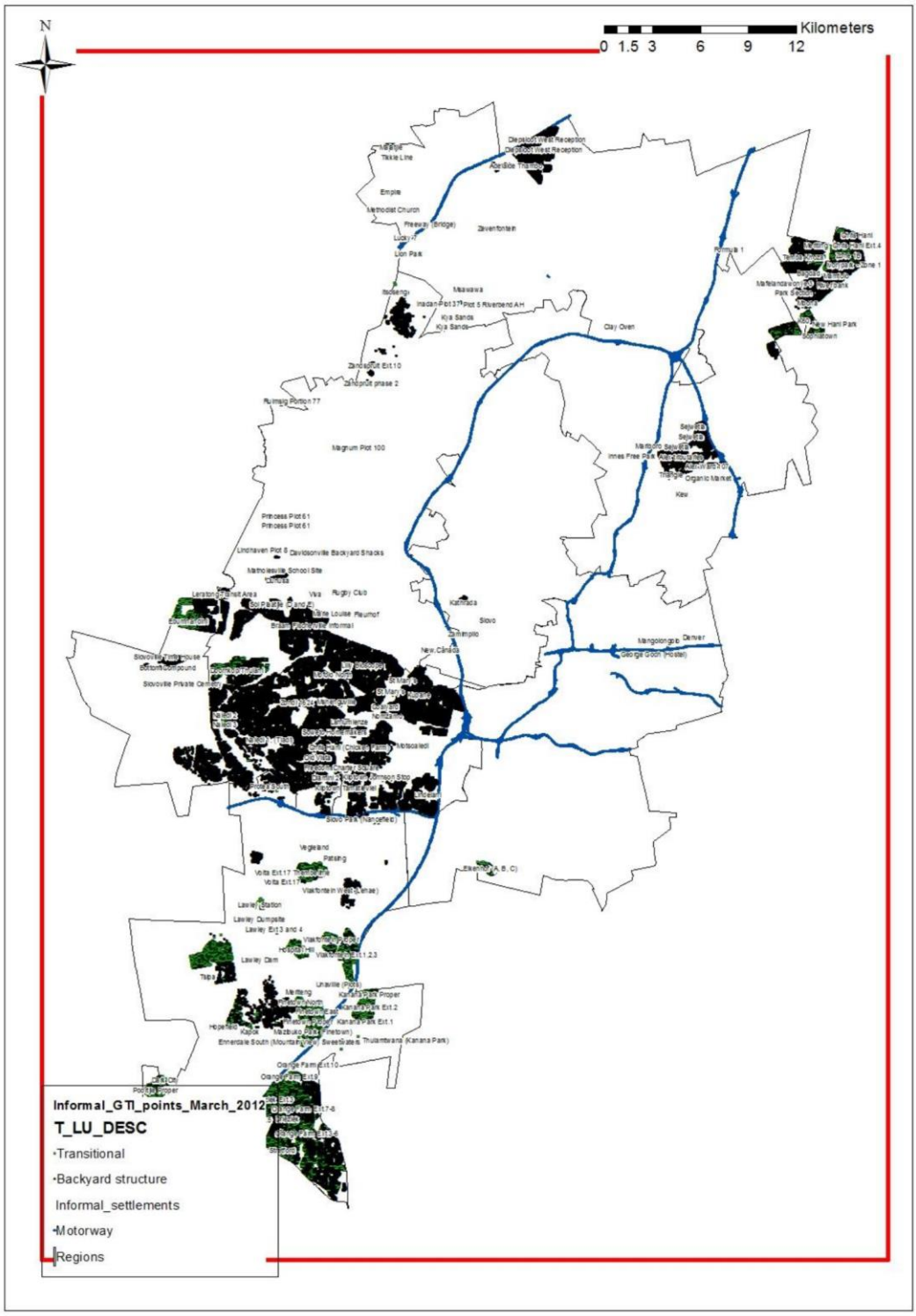


Figure 14: The Location of Informal Backyard Dwellings in Johannesburg (GTI, 2012).

Important to note, according to census figures, is that the number of households living in informal settlements has declined from 2001 to 2011, while households living in informal backyard dwellings have increased significantly. The decline in households living in informal settlements may be due to government housing and upgrading programmes, and due to a move to backyard accommodation. Regardless of this, the backlog is significant and needs to be addressed.

5.4. Existing Spatial Structure

The spatial structure that currently defines the City of Johannesburg can be summarised in terms of the following dominant elements:

- An established Inner-City core or CBD which still functions as a significant economic focus of the City. It is also anchored on the two dominant development corridors that cross the city-region.
- A series of activity nodes of varying intensities and functional characteristics that have established around the core over time.
- An east-west urban corridor system that has grown around the key rail, road, and industrial areas that supported the mining industry that formed the basis of the city's historic growth.
- A related belt of mining land and residue areas, immediately south of the east-west corridor, that is a significant development buffer (but also an area with great development potential) between the northern and southern parts of the city.
- A spatially and economically marginalised pattern of settlement to the south-west, centred around the Soweto area and home to approximately 40% of the city's population, characterised by low to medium residential density sprawling settlement, with relatively low levels of economic activity and generally poor connectivity to the urban areas and economic opportunities to the north.
- An economically strong northern corridor characterised by a major mobility spine supporting accessibility routes, and now a regional mass transit system (Gautrain).
- An area of mainly residential development, predominantly medium to upper income, structured around a series of nodes and radial links between the Inner City and the ring road (N1).
- An area of predominately low income, traditional "blue collar" residential settlement south of the Inner City area, separated by the mining and industrial belt.
- A series of marginalised, predominantly low income, residential areas with low levels of economic activity, jobs and land use diversity.
- A growing fringe of low residential density, and generally spatially exclusive, housing development on the northern fringe of the city.
- Marginalised and environmentally rich areas in the Southern Parts of the City.
- Pockets of under-utilised, well located pieces of land within the urban structure such as those in the Modderfontein and Frankenwald areas.

In interpreting the current city structure morphologically, Johannesburg displays a unique structure of inverted polycentricity, inherited largely from its complex history. This structure is characterised, inter-alia, by peripheral or satellite nodes that are disproportionately large compared to, and disconnected connected from the main urban centre (Inner City). It is also characterised by an illogical density gradient, where core economic areas are surrounded by large low to medium density residential areas. Many high density residential areas are located on the outskirts of the city, and far from job and economic opportunities. This spatial contradiction translates into a job housing mismatch and has a significant impact in terms of social exclusion, energy and carbon intensity (by increasing travel time and travel distances from jobs to housing) and economic productivity (by jeopardising agglomeration economies) with most commuter flows being directed to the city centre.

5.5. Shortcomings of the Current City Structure

The spatial structure of the city presents a number of significant challenges to future urban development processes, most notably:

- Urban sprawl and limiting densities.
- High levels of spatial inequality and a mismatch between jobs and housing.
- Fragmentation and spatial disconnection.
- Limited diversity and inefficient land use patterns.
- Increasing pressure on the natural environment.

Understanding these spatial shortcomings, the dynamics that drive them and the opportunities that exist for addressing them provide a basis for moving forward with a new transformative vision for the city.

5.5.1. **Urban sprawl and limiting densities.**

Urban growth in Johannesburg has not occurred in a compact manner. Despite the fact that over the last 20 years the city has become denser (with population having grown at a faster rate than the built up area footprint38) the city has grown in a fairly sprawled fashion. This is due to both apartheid and post-apartheid planning. Apartheid planning sprawled the city by design, placing large portions of the population in peripheral 'dormitory townships', while post 1994, there has been dispersed and piecemeal growth in the city (including gated and car-oriented developments and public housing developments on the outskirts of the city). As such, densities and concentrations of jobs and people have not adequately developed to support a sustainable city. There have however been successes in diversifying and densifying certain parts of the Johannesburg.
A density analysis shows that one third of the population (1.45 million inhabitants) is concentrated in 5% of the urban area (87km²), with a residential density of 16,000 inhabitants per km².
The City's average population density of 2,695 persons per km2 is often quoted, although it is misleading due to the relatively large (in international terms) area of the municipality. The built up area only makes up a portion of the entire municipal area and has a population density of between 5,700 and 6,500 people per square km.39 Even this is considered low.
Compared to established residential areas of the City, newer townhouse and cluster developments have relatively higher average residential density. These new developments are focused on private vehicle use however and are frequently located in single use clusters, with limited access to public transit infrastructure. As such they generally do not foster walkable neighbourhoods and often have not been met with the requisite public infrastructure (e.g. public schools, clinics etc.).
Important to note is the fact that some of the highest residential densities in the city are some distance from the core, and from economic activity. Soweto, Orange Farm, Diepsloot and Ivory Park for example reflect relatively high residential densities but are all limited in their land use diversity. Erven of 250-350m2 are common in these areas typically translating into densities of 40-60du/ha or 10,000 to 20,000 people per square km.

Extensive analysis of prevailing patterns in land use change, based on different types of development applications, has been undertaken by the city, with some key trends identified:

- Subdivision of land is not necessarily related to the public transportation network and is most prevalent within the northern suburbs of the City and within the ring of freeways to the north and south of the CBD.
- 62% of rezoning applications for higher density development are within walking distance of nodes of the City or public transportation network.
- Residential building applications accounted for more than 96% of applications submitted and 75% of the building area approved.

There are diverse consequences of sprawl for the City. These include increased costs of administering electricity, waste management, water, sewage and transport services through centralised systems. Urban sprawl significantly contributes to climate change. Sprawled and fragmented urban forms have very high per capita carbon emissions and energy consumption. This relates firstly to transportation: low densities and fragmentation create higher average travel distances, and thus higher per capita energy consumption. Second, there are higher energy costs in moving goods, services and waste into, around and out of the city.
Beyond energy and carbon emissions, low densities and sprawled single use settlements impact infrastructure needs per which capita increases when density decreases.

5.5.2 **Spatial inequality and the job-housing mismatch**.

Spatial inequality remains a defining characteristic of the settlement pattern of Johannesburg. When job density is compared to housing density (i.e. places of work versus residential areas) the following is revealed:

- Only 0.3 % of the metropolitan area matches a high density of jobs with a high density of population
- 3% of the metropolitan area hosts 1/3 of the jobs
- 5% of the metropolitan area hosts 1/3 of inhabitants

A job density analysis further illustrates the sharp patterns of spatial concentration of formal jobs in the city:

- One third of the formal jobs are concentrated in 56 km², which represents 3% of the urban area
- One third of the formal jobs are located in 324 km², representing 22% of the urban area
- One third of the formal jobs are scattered in 1240 km², representing 75% of the urban area.

As such, spatial concentration of formal jobs in Johannesburg is much higher than the spatial concentration of housing. This sharp concentration of jobs is an asset for Johannesburg and will feed economic growth if it is articulated with an efficient transportation network in the short term and by increased housing opportunities in close proximity in the long term.

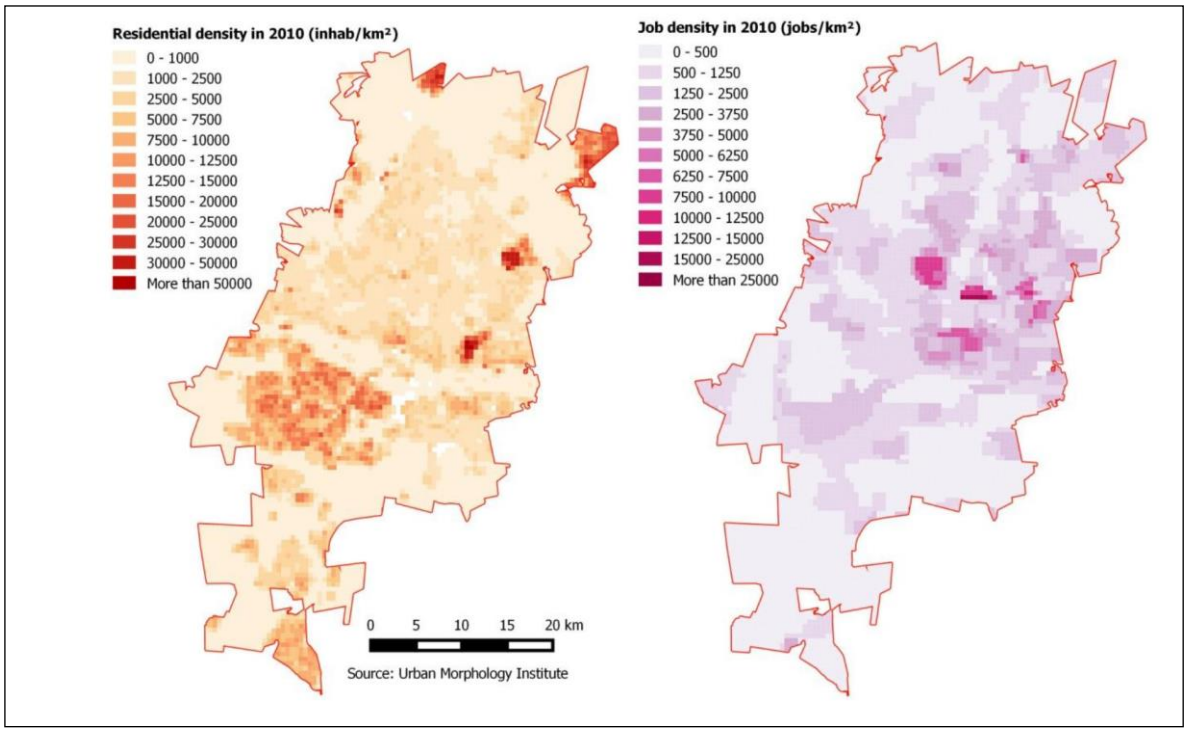
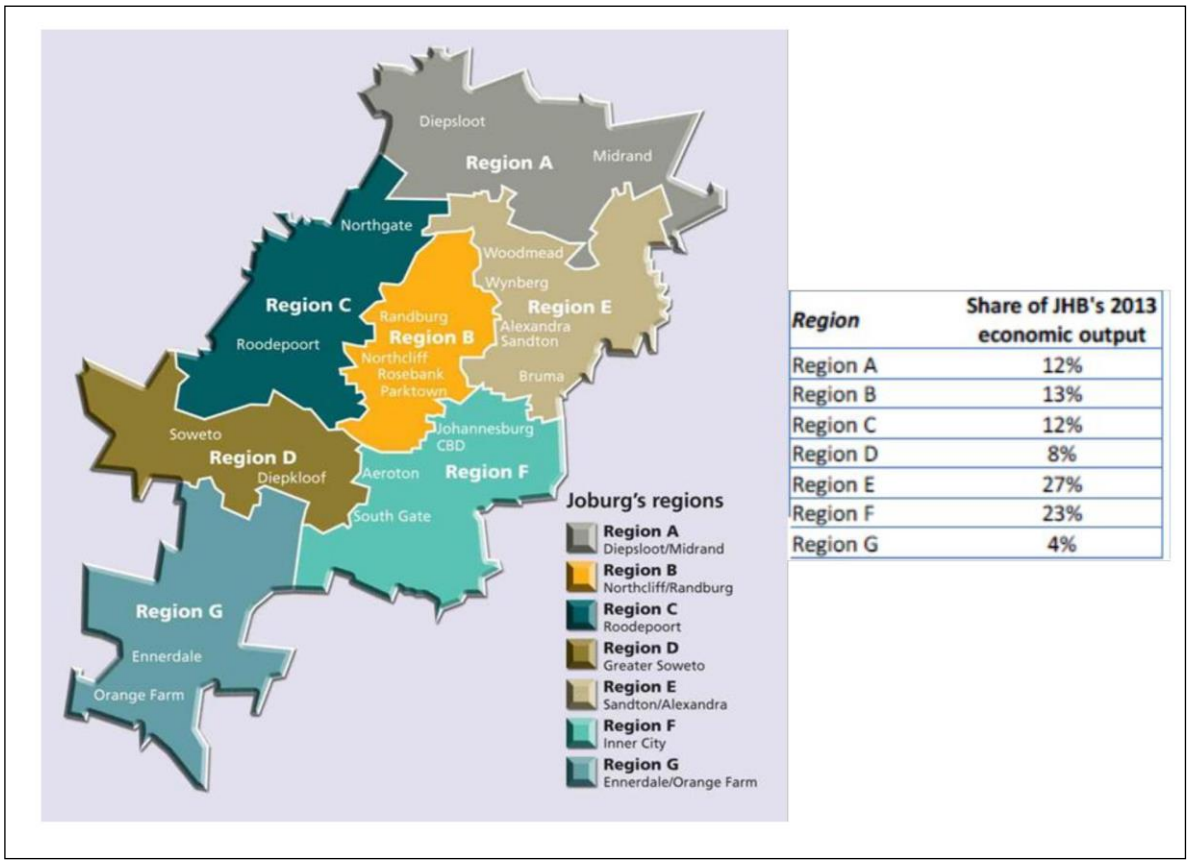


Figure 15: Population density (left) and formal job density (right) in the City of Johannesburg. Source: Urban Morphology Institute.



Region	Share of JHB's 2013 economic output
Region A	12%
Region B	13%
Region C	12%
Region D	8%
Region E	27%
Region F	23%
Region G	4%

Figure 16: Administrative regions in the City of Johannesburg and their share of economic output.

The concentration of jobs relates to the significant variation in economic output across the city's regions. Regions E and F (which house Sandton and the Johannesburg CBD respectively) account for 50% of the city's economic output. Together regions A, B and C contribute 37%, while regions D and G only contribute 13%, despite housing significant proportions of the metro's population.

Historically, housing for low-income residents has been delivered in areas that are distant from main economic sectors on cheap and available land, rather than on land that is optimal for urban development. Continuing to meet housing demand in this manner would not only exacerbate existing socio-economic disparities in the city but entrench a growing pattern of spatial inequality.

In most cases (with exceptions, such as the Inner City), the areas with highest population densities are also the areas with the lowest concentration of formal jobs. These areas include Soweto, Orange Farm, Diepsloot and Ivory Park, to name a few.

This illustrates a job-housing mismatch in the city's spatial form, a significant contributor to inequality. When population densities are overlaid onto a deprivation map, it reveals that, generally, the highest densities are in the most deprived areas which are far from areas of economic opportunity. This spatial inequality is inherited from apartheid planning which was based on racial and functional zoning.

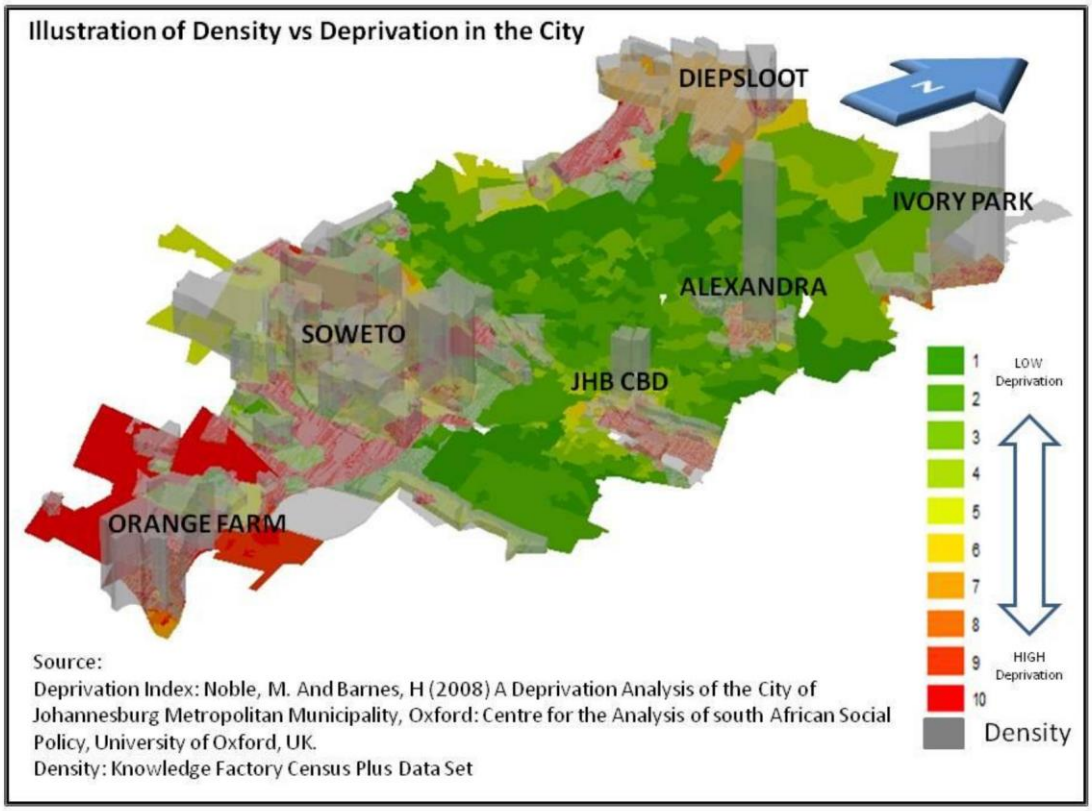


Figure 17: Deprivation (green to red) and Densities (grey columns).

5.5.3. Fragmentation and spatial disconnection

Spatially, the city of Johannesburg displays a high degree of fragmentation that is evident across all scales of development. At the City-Region and metropolitan scale, there is a broad divide between northern and southern development areas, a pattern that is evident across Gauteng.
Two key discontinuities in the urban fabric present significant development potential in the urban system. The first is the mining belt.

While the whole mining belt represents urban fragmentation in the city by dividing it north/south, the effects in the western parts of the belt are most prominent. In particular, it separates Soweto from economic centres along the western corridor from Krugersdorp (in Mogale City) through Roodepoort, towards the Inner City. As already mentioned, this feature, while historically representing fragmentation, holds great potential for development towards the integration and transformation of Johannesburg.

The second key discontinuity lies to the north-east of the city, around the areas of Modderfontein42, Frankenwald and Linbro Park. This area represents a key opportunity to create an east-west connection to Ekurhuleni and OR Tambo Airport and its surrounding Aerotropolis. For various reasons, these areas have remained undeveloped as the city has grown around them, notably along the corridor between Johannesburg and Pretoria. Many are drawing development energy and investment now, however.

At more localised levels, the issues of fragmentation and spatial disconnection are evident, very often as a result of patterns of urban development. The trend in the northern parts of the city towards 'security estates' has major implications in this regard, effectively sterilising large parts of the urban system and creating significant buffers to sustainable and inclusive urban form.

In analysing the connectivity of the street networks in the City of Johannesburg, a mapping exercise was undertaken showing intersections per km². The analysis highlighted most of the metropolitan area (93%) falls below 100 intersections per km², an internationally recognised connectivity benchmark to support walkability. The high level of spatial inequality in the city is reflected in the urban spatial form and in high levels of securitisation with the proliferation of strip malls and gated office parks and townhouse developments. These are characterised by controlled street patterns that have moved from the historically open grid to the clustered cul-de-sac, loop and 'lollipop' configuration contributing to fragmentation and low levels of walkability.

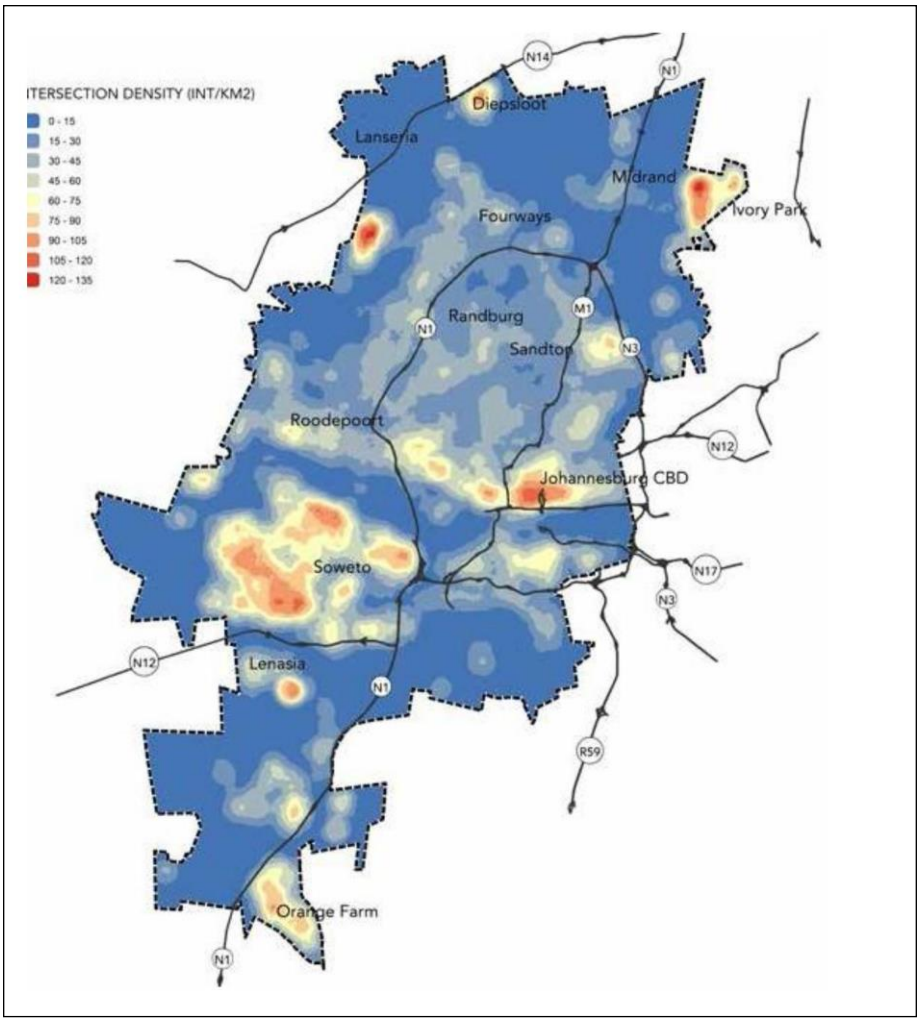


Figure 18: Intersection density across Johannesburg

5.5.4. **Limited diversity and inefficient land use patterns**

The City of Johannesburg covers 1,645 km2 and is characterised by a wide range of land uses and patterns, shaped over time by myriad factors, including geology (the basis of the mining industry), politics (the segregating policies of apartheid planning), industry and more recently national, regional and international migration.

The pattern of land use in the city is dominated by residential development, accounting for almost 30% of total settlement area. Economic activity, or land use that generates jobs, accounts for only 10% of the developed area. This includes land developed for business, commercial, industrial and demarcated mining land.

The two maps in Figure 18 below display the spatial structure of land use in Johannesburg. To map the local diversity of land use, land use diversity indexes have been calculated within a 500m x 500m grid. The higher the land use diversity index, the higher the mix of uses (commercial, residential or community use). These maps show that most of the city has a land use diversity index below 0.8, which is considered as the best practice benchmark. The separation of land uses contributes to increasing average distances travelled. Hence, separation of land uses and zoning impact on (1) climate and energy intensity, by increasing energy needs for transportation, (2) social inclusion, by making jobs and social infrastructure less accessible to low-income households and (3) economic productivity, by separating economic activities from labour and limiting agglomeration economies.43 High levels of land use diversity are paramount, especially around transit stations. To reap the full benefits of public transit investment, the target for land use diversity indexes within 1km catchment areas should be set within the 0.80 - 0.90 range, which will ensure high levels of mixed use in close proximity to transit infrastructures.

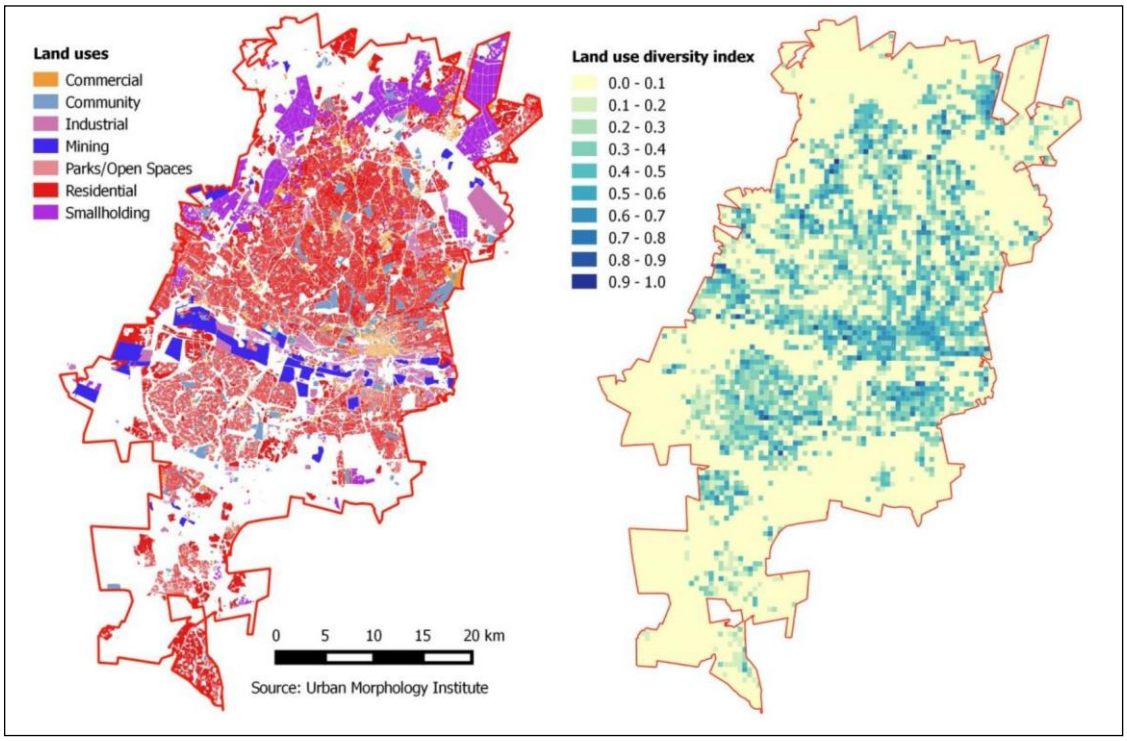


Figure 19: Land uses (left) and land use diversity index (right). Source: Urban Morphology Institute

At the present time, urban areas along the Corridors of Freedom remain significantly lower than international best practice in terms of urban intensity (residential density, job density and built density). To reap the full benefits of transit investments in terms of generalised accessibility and modal switch to public transit, it is essential to implement an ambitious strategy of intensification of the urban fabric in very close proximity to public transit.

Residential and job density analyses carried out within the Corridors of Freedom catchment areas provide valuable insights when compared to international benchmarks and best practices. Figure 20 and Figure 21 compare the share of people living and working within 500m, 1km and 2km of public transit in three cities (London, New York and Copenhagen) and in Johannesburg using the current densities/projected BRT network. In London, New York and Copenhagen one quarter of people live less than 500m from public transit and half live within 1km. In the three cities, between one third and half of all jobs are located less than 500m from public transit, two thirds less than 1km.

With the current/projected BRT scheme in Johannesburg, and taking into account current residential and job density spatial distributions, only a limited number of residents and workers will be in close proximity to transit facilities.

It is acknowledged that the impact of transit infrastructures on modal choices, land use and land prices decrease significantly beyond the 1km catchment area. At the same time, land use patterns tend to be highly segregated along transit corridors. For example, there is a clear separation of uses along the Empire Perth corridor, with 40% of the area dedicated to residential use, concentrated in specific pockets, with monotonous detached single housing, and 30% of the area is dedicated to businesses and commercial activities, mostly in self-contained business parks.

Education and public facilities are equally dispersed, although some concentrations do exist along the future corridor. Open spaces are also scattered, and many are currently unsafe and neglected. The separation of land uses contributes to increasing average distances travelled within the corridor area. It also impacts on: energy intensity, by increasing energy needs for transportation; social inclusion by making jobs and social infrastructure less accessible to low income households; and economic productivity by separating economic activity from labour pools and jeopardising agglomeration economies.

5.5.5. Increasing pressure on the natural environment

The natural environment provides many vital and valuable (socially and financially) environmental services in the City of Johannesburg.

Ecosystem services provided by green infrastructure include:

- **"provisioning services** that relate to the products derived from an ecosystem, including food, fibre and fuel, genetic resources, medicines and pharmaceuticals;
- **regulating services** that involve the benefits derived from the regulation of ecosystem processes, such as air quality regulation, climate regulation, water regulation, erosion regulation, disease regulation, pest regulation and natural hazard regulation;
- **cultural services** are the benefits people obtain from ecosystems such as reflection, recreation, inspiration, and aesthetic enjoyment, and include cultural diversity and educational values, and
- **supporting services** are those necessary for the production of all other ecosystem services, such as soil formation, photosynthesis, primary production, nutrient cycling and water cycling."

As such, these areas are not merely nice to have, but essential in the functioning of the city. If the services are lost, they will need to be replaced, at great cost (in terms of capital outlay and operating cost) by city authorities. A 2013 report by the GCRO for example, calculates the value of ecosystem services provided by open space and natural assets in Johannesburg at between R 38.6 million and R 77 million per annum. The report also gives a current value of these natural assets, of between R966 million and R 1.9 billion.

A key defining characteristic of the City of Johannesburg is its remarkable urban forest, underpinned by an extensive wetland system. There are six million trees in Johannesburg - 1.2 million within the parks and on the pavements, and 4.8 million in private gardens throughout the suburbs. This system provides valuable ecosystem services, including air quality and storm water regulation and should be protected.

- The sheltering and shading effect of trees can save as much as 10% of annual energy consumption, and cut down the air pollution caused by burning fossil fuels and particulates.
- The urban forest plays a major role in moderating rainstorm impact and droughts; the cooling effect of the canopy reduces wear and degradation of the road surface.

Of the 164,499.6ha of the Johannesburg Municipality, only 54,081.7ha (32.9%) remains in a natural state (South African National Biodiversity Institute). There are a total of 10 reserves in the City covering only 993.7ha (0.6% of the municipality). This represents an inadequate level of protection for the city's ecosystems.

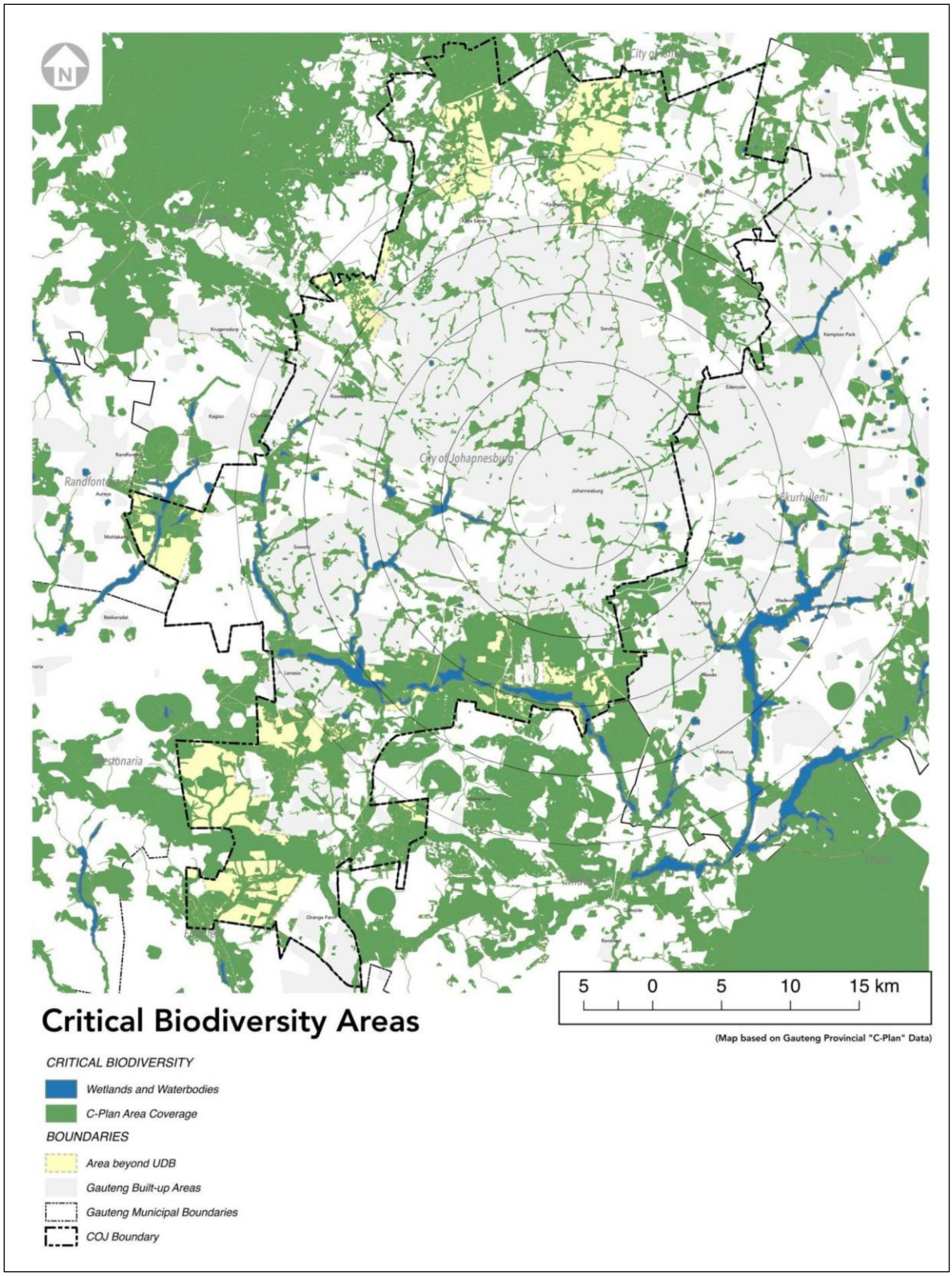


Figure 20: Critical Biodiversity Areas in and around the City of Johannesburg

In response to concerns about the rapid loss and fragmentation of open space resources, the loss of protective vegetation cover, the associated loss of ecosystem goods and services, and the need to respond appropriately to development pressures within the City in a sustainable way, JMOSS (Johannesburg Metropolitan Open Space System) 1 (2002) and JMOSS 2 (2004) were developed. JMOSS 1 comprised an audit of open spaces and classification of these in terms of their primary (Ecological) or secondary (Recreational/parks) value. JMOSS 2 contained policies for open space provisioning and recommendations for all forms of urban greening.

What is particularly significant for this SDF is the spatial trend that is emerging with regards to current development as reflected in the pattern of development and township establishment applications, and the spatial distribution of remaining environmental and ecological resources (Figure 20).

It is imperative the SDF ensures that current open space systems and ecological resources are considered as structuring elements and assets to guide and integrate future urban development, rather than expendable land for development. This is critical in the context of climate change and the need for resilience in the future city.

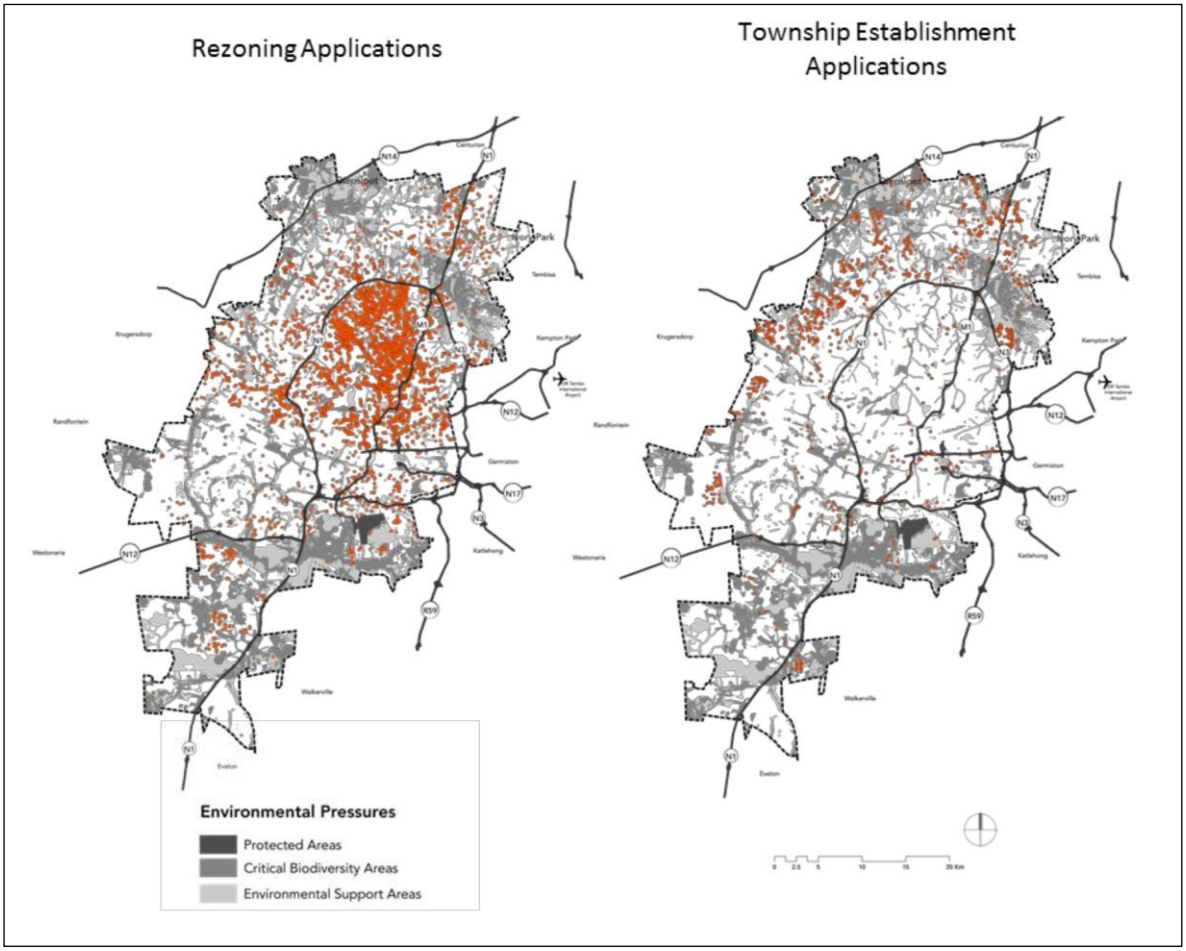


Figure 21: Critical Biodiversity areas (CBA) and development trends

5.6. Implications of the Prevailing Development Pattern

Urbanisation is a reality to which the city's spatial policy and other city policies must respond. It is evident that the current spatial structure and development patterns in the city require revisiting if we are to meet our future urban challenge in a manner that is responsive to the identified policy principles of spatial justice, spatial resilience, spatial sustainability, spatial efficiency, spatial quality and spatial transformation. Although current policy seeks to address the challenges that face our city; the prevailing development pattern, that needs to be addressed, is still one of:

- Sprawl and disconnection.
- A spatial mismatch between residents and jobs.
- Monofunctional land uses with low diversity at the local scale.
- A finite and threatened natural structure with social and spatial fragmentation accentuating the divide between incomes and populations.

The current pattern of job dispersal within the city results in and exacerbates: socio-economic exclusion; poor mobility; high congestion; high energy and carbon intensity; high infrastructure costs and jeopardises urban productivity.

7.2.3. Unlocking Soweto as a True City District.

Transform Soweto into a liveable city district in its own right with access to jobs and the full array of urban amenities. Create a series of self-sufficient mixed-use nodes as growth points for jobs within the area. Develop mixed land uses (particularly economically productive ones) and social services, making use of a good street pattern and public transport.

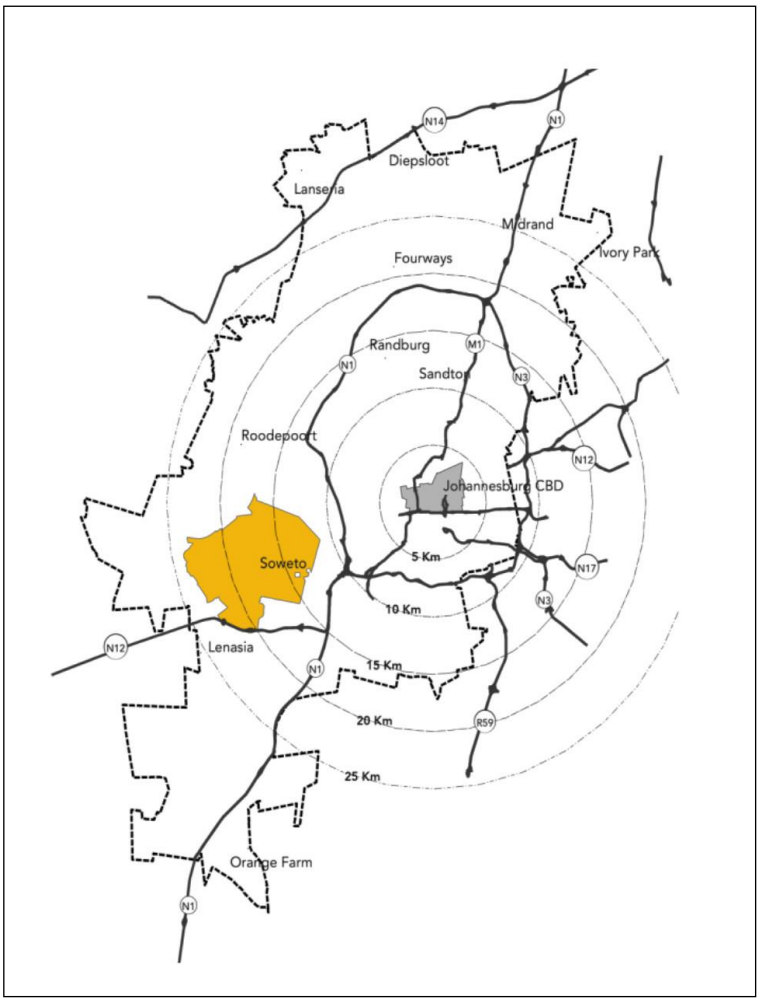


Figure 22: Soweto's Location in Johannesburg

In terms of the Compact Polycentric Urban model the aim is to develop Soweto into a compact Principal Metropolitan Sub-centre. The intended outcome of this is the creation of a strong secondary economic centre with strong links to the main economic centre (Inner City) of the city; but in itself a place where people and jobs are in close proximity. This approach will also address the remaining areas of deprivation within Soweto.

This development focus will directly affect 40% of the population of the city. With a population of around 1.3 million inhabitants Soweto is the size of a self-contained city (Soweto and the City of Paris – not greater Paris- are roughly the same size). However, it remains highly dependent on the wider and Inner City for jobs, with many residents making long daily commutes. A product of apartheid planning, Soweto remains to function as a segregated 'township', that is largely medium to low density residential with limited job producing economic activity or economic activities at scale. Despite the vast gains made through public investment over the past two decades, the area still faces a limited range of housing typologies, sometimes poor living conditions (with overcrowding in places), high unemployment and insufficient infrastructure. Soweto lacks diversity in terms of mixed-use activities, social infrastructure and consolidated public spaces.

Soweto however holds the potential to become a true compact, integrated city district:

 Connectivity: Soweto is in relatively close proximity to the metropolitan core and well connected to it via rail, and now the BRT public transport network. While road connections to the wider city exist, they should be expanded, especially across the mining belt. Existing PRASA stations and newly installed and planned BRT

stations open possibilities for mixed use transit-oriented development. Street networks are well connected internally with high levels of walkability.

 Compact city potential: Soweto is one of the more densely populated areas in the city already, housing more than a third of the City's current population. There is also evidence of a growing middle class. The low density-built form leaves spaces for densification strategies, especially around defined nodes, both mixed use and TOD.

 Generative potential: Although the current low density of jobs is a key barrier to densification, there is a local finer grain economic activity structure, underutilised land and underperforming assets that offer opportunities for the upscaling of economic activities. With a large population, there is also intrinsic demand for goods, services and jobs, all of which could be delivered at more local scales.

 Resilience: A strong open space structure is evident especially around the drainage network that provides the opportunity for ecological functions and a strong spatial structuring component. There is however opportunity to improve on the natural infrastructure within the area. Increased connectivity to the rest of the city together with the existing small businesses and potential to develop mixed use nodes within Soweto will certainly make for a more resilient Soweto.

10. CULTURAL/HISTORICAL FEATURES

Please be advised that if section 38 of the National Heritage Resources Act 25 of 1999 is applicable to your proposal or alternatives, then you are requested to furnish this Department with written comment from the South African Heritage Resource Agency (SAHRA) – Attach comment in appropriate annexure

38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as-

(a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;

(b) the construction of a bridge or similar structure exceeding 50m in length;

(c) any development or other activity which will change the character of a site-

(i) exceeding 5 000 m2 in extent; or

(ii) involving three or more existing erven or subdivisions thereof; or

(iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or

(iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;

(d) the re-zoning of a site exceeding 10 000 m2 in extent; or

(e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

Are there any signs of culturally (aesthetic, social, spiritual, environmental) or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including archaeological or palaeontological sites, on or close (within 20m) to the site?	~~YES~~	**NO**

If YES, explain:

If uncertain, the Department may request that specialist input be provided to establish whether there is such a feature(s) present on or close to the site.

Briefly explain the findings of the specialist if one was already appointed:

Will any building or structure older than 60 years be affected in any way?	~~YES~~	**NO**
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?	~~YES~~	**NO**

If yes, please attached the comments from SAHRA in the appropriate Appendix

SECTION C: PUBLIC PARTICIPATION (SECTION 41)

1. The Environmental Assessment Practitioner must conduct public participation process in accordance with the requirement of the EIA Regulations, 2014.

2. LOCAL AUTHORITY PARTICIPATION

Local authorities are key interested and affected parties in each application and no decision on any application will be made before the relevant local authority is provided with the opportunity to give input. The planning and the environmental sections of the local authority must be informed of the application at least thirty (30) calendar days before the submission of the application to the competent authority.

Was the draft report submitted to the local authority for comment?	**YES**	~~NO~~
If yes, has any comments been received from the local authority?	~~**YES**~~	**NO**

If "YES", briefly describe the comment below (also attach any correspondence to and from the local authority to this application):

If "NO" briefly explain why no comments have been received or why the report was not submitted if that is the case.

We are in the process of currently conducting i.e. in accordance with the relevant NEMA EIA 2014 REGULATIONS - the PUBLIC PARTICIPATION PROCESS, and this DRAFT BASIC ASSESSMENT REPORT was forwarded for comments to the CITY of JOHANNESBURG METROPOLITAN MUNICIPALITY, and we are currently awaiting comments from them and will be included in the FINAL BASIC ASSESSMENT REPORT.

3. CONSULTATION WITH OTHER STAKEHOLDERS

Any stakeholder that has a direct interest in the activity, site or property, such as servitude holders and service providers, should be informed of the application at least **thirty (30) calendar days** before the submission of the application and be provided with the opportunity to comment.

Has any comment been received from stakeholders?	**YES**	~~NO~~

If "YES", briefly describe the feedback below (also attach copies of any correspondence to and from the stakeholders to this application):

Various Public participation processes (i.e. two in total) were conducted by i.e:-

A. A Stakeholder engagement participation process was conducted by *Thagasello Network Solutions* (TNS) in 2017 and 2018, which included the following i.e:

i. A Preliminary Design Presentation [i.e. regarding the Zola Public Transport Facility (PTF)] to CoJ (Ciyt of Johannesburg) Transport was conducted on the 27th March 2017 in the JDA (Johannesburg Development Agency) Chancellor Boardroom.
ii. The Architects were requested to use the rank 5 structure of Roodepoort as precedence.
iii. TNS:
   - Requiring an indication if the Project Preliminary Design for Zola PTF is on/off track.
   - Requesting assistance with facilitation of intro to the Local Taxi Association in order for the CPC to proceed with the process of engagement.
iv. There is a need to determine the full extent of the site.
v. The area at the back by the ablutions to be fenced.
vi. The guard house security to still be decided on.
vii. Dept. of Transport highlighted some of its recommendations to the designs:
   a. Ms. Khumalo (CoJ) indicated that her department proposed the need to accommodate the morning taxi rank (closer to Engen).
   b. Consultations are underway with all the relevant stakeholders to consolidate the two taxi ranks.
   c. There is a need for a holding area as the taxis operate in a que system- about 50-100 spaces to be considered.
   d. Xolani from DED to advice on the designs as well for the kiosks for the traders.
   e. There is also a need for an office space with a small boardroom.
   f. Recommendations were made that the ablutions facilities be more innovative and consist of showers for the operators.
   g. The exit facility within the loading bays be incorporated for ease of movement.
   h. JPC to maintain and manage the facility beyond completion.
   i. Agreements to be signed between the LTA's and the JPC, Dept. of transport to facilitate the process.
   j. Refuse area and Seating arrangements to be incorporated.
   k. Two (2) different taxi associations were identified namely:
      1. Witwatersrand African Taxi Association (WATA).
      2. Soweto Taxi Services (STS).
   l. The Architect requested a report of all the routes operating on the new taxi rank.
   m. CoJ Transport advised that the project be called Zola PTF instead Emdeni PTF.

2. A Stakeholder Consultation with Taxi Associations/CoJ/JDA was conducted on the 20thJuly 2017 in the RD Office Boardroom (Jabulani Multipurpose Centre) (i.e. minutes of this meeting will be made available on request and in the DRAFT & FINAL BASIC ASSESSMENT REPORT under the relevant section or PUBLIC PARTICIPATION PROCESS).

a. WATA/JTA (Johannesburg TAXI association) raised an issue that it needs to be clarified in writing that WATA is the resident association and STS (Soweto Taxi Services) is the tenant association:
    a. CoJ-Transport agreed to facilitate and draft the MOU, the MOU document needs to be discussed by members prior to sign-off.
    b. There was an agreement that an MOU be drafted for both the Resident association (WATA) and the Tenant association (STS).
    c. The MOU to outline the role of both Associations on the project.
    d. The MOU further indicates that the development of the Pubic Transport facility is to be done in 2 phases and further highlighted that GJNTA is the mother body regarding the construction of the facility.
    e. Feedback to be given to members regarding the MOU.
b. Both WATA and STS acknowledge that their agreement to operate in the area where the facility will be operated will be subject to the rules and regulations of the Registration and Licensing Directorate.
c. Furthermore, both the associations (WATA &STS) acknowledge that their agreement to operate in the facility to be constructed will be subject to the rank allocation policy of COJ.
d. Both WATA & STS agree that once the facility is completed, they will be willing to peacefully operate side by side for the benefit of commuters, subject to the rules governing Operating Licenses/ Taxi Permits in Gauteng as set by the Gauteng Department of Roads and Transport Registration and Licensing Directorate.
e. There was a question about the 2 phases and the naming of the project precinct.
    a. Mr. Ntuli responded that the project may be completed in 2 phases dependent on the budget. It was also mentioned that it was possible for the project to be completed in the current financial year.
f. The temporary relocation of the current taxi operation during the construction phase also came into question.
g. Mr. Kubheka suggested the multipurpose centre across the road from the facility to be developed. Ms. Khumalo indicated that consultation with relevant stakeholders will be conducted prior to relocation of the taxi members (WATA & STS) and other structures on the ground.
h. Ms. Khumalo then requested for a presentation of the Preliminary design from the Architect.
i. Facility intersection of Maholwane, Matsunyane Str. and Jabavu roads to be considered.
j. There is a need to consider re-zoning.
k. There will be a need for temporary relocation for approximately 9 months.
l. There is additional information required for the multi -purpose center that is currently undergoing feasibility study.
m. Accommodation schedule in respect of the holding bays, loading bays to be confirmed by CoJ and Taxi Associations.
n. The Transport study led by the JDA needs to be done to inform the details. It is currently suspended due to the school holidays, to resume after the school holidays.
o. It's important to be cognisant of the budget limitations as there are other competing factors in the City e.g. Housing, Water, and Electricity etc.
p. The solar energy, solar lights and rainwater harvesting to be used.
q. Alternative ranking to be found for taxi members during the construction phase.
r. Fencing around the facility to be done allowing for facility closure outside working hours.
s. The taxi associations requested to provide CoJ and JDA with routes and numbers for both associations.
t. If budget allows cameras for extra security were requested by the RD
u. WATA and STS to provide the number of the bays required.
v. It was suggested that merging the fence for the facility and the soccer fields to ensure that there is no passage in between to assist in eliminating street crime.
w. The architect to confirm the number of cubicles in the ablution blocks.
x. Consideration be given to the slowing of traffic on Jabavu rd. and Maholwane intersection.
y. Ongoing consultation required so that project momentum is not lost.
z. The RD requested the deadlines for the finalization of the designs, JDA indicated that the Detail design Phase is expected end of September.

3. A Stakeholder Consultation with Taxi Associations/CoJ/JDA was conducted on the 31stAugust 2017 in the RD Office Boardroom (Jabulani Multipurpose Centre) (i.e. minutes of this meeting will be made available on request and in the DRAFT & FINAL BASIC ASSESSMENT REPORT under the relevant section or PUBLIC PARTICIPATION PROCESS).

a. The current draft of the MOU has been approved by the WATA/JTA participants, however STS proposed that both WATA/JTA and STS should hold a separate meeting which the associations will facilitate independently to discuss the contents of the MOU prior to final approval.
b. Facility intersection of Maholwane, Matsunyane Str. and Jabavu roads to be considered
c. There will be a need for temporary relocation for an estimated 9 months, discussions are underway.
d. Accommodation schedule in respect of the holding bays, loading bays to be confirmed by CoJ and Taxi Associations, also depending on the traffic study.
e. *The taxi associations were requested to provide CoJ and JDA with routes and numbers for both associations.*
f. The above schedule will are only at concept phase, however the associations are required to give their input and recommendations.

Question - Mr. Maphalala (WATA/JTA) - how many vehicles will the holding bays cater for?

 Answer- At the moment, 55 holding bays were identified. The associations required to submit their recommended numbers in order to finalise the concept.

Question- What will be done to mitigate the rise in traffic as the same street is being utilised for coming in and going out of the facility?

 Answer- Traffic light/circle and or Road widening to be considered, an engineer is currently undertaking a traffic study.

Question- Mr Thabelo Ratshilumela- When will the designs be finalised?

 Answer- This will depend on the outcome of the meeting between WATA/JTA and STS.

 Input- Mr. Skhumbuzo Ntuli (Ward Committee) appreciated that the 2 associations are meeting and will as a result reach a consensus regarding the tabled MOU

Mr. Ratshilumela (JRA) to work together with the architects and look at other facilities around the area such as Ndingilizi and Phazini

 The designs to cater for future growth.

The temporary ranking space during construction phase to be prioritized.

 Ms. Khumalo requested the number of the operating vehicles from the temporary rank across the road as they need to be catered for as well.

4. A CPC PROCESSES and PRELIMINARY DESIGN PRESENTATION to the JOHANNESBURG MUNICIPALITY WARD COUNCELLOR and the WARD COMMITTEE MEETING was conducted on the 4th of December 2017 in the ZOLA BOARDROOM (i.e. minutes of this initial meeting will be made available on request and in the DRAFT & FINAL BASIC ASSESSMENT REPORT under the relevant section or PUBLIC PARTICIPATION PROCESS).

a. Facility intersection of Maholwane, Matsunyane Str. and Jabavu roads to be considered.
b. Accommodation schedule in respect of the holding bays, loading bays is as follows: however, these numbers require confirmation by CoJ and Taxi Associations, also depending on the traffic study.
c. Local Labour payment issues to be addressed.
d. Kiosk must be occupied by ward 51 occupants only.
e. Entrance and Exit required on one street i.e. 2 each.

5. A JOHANNESBURG MUNICIPALITY REGION D – STAKEHOLDER MEETING was conducted on the 28th of May 2018 (i.e. proof of this meeting will be made available in the DRAFT & FINAL BASIC ASSESSMENT REPORT under the relevant section or PUBLIC PARTICIPATION PROCESS).

6. The first PUBLIC MEETING was held on the 25th of July 2018 in the ADMINISTRATION OFFICE HALL ZOLA 3, during which the Proposed '*ZOLA PUBLIC TRANSPORT FACILITY – Ward 51'* project was presented to the community (i.e. minutes of this meeting will be made available on request and in the DRAFT & FINAL BASIC ASSESSMENT REPORT under the relevant section or PUBLIC PARTICIPATION PROCESS).

Question 1: Who did the JDA consult before appointing the Team and deciding on the project?
Have any consultations being done with the Taxi associations?

Answer:

- CoJ Transport appointed the JDA as the implementing Agent on their behalf, in turn, JDA appoints a professional team to assist with the implementation. The appointment process of the Professional team was conducted through an open tender which was advertised in the media (newspaper and website).Any company with the required expertise and experience was free to apply.
- Yes, consultations were conducted with both taxi associations (WATA/STS) and the presentation of the concept designs was done at the RD's office.

Question 2: How will the existing businesses be affected at the identified site?

- **Answer:** The facility is expected to bring more traffic for the current businesses. The current taxi operations will be relocated to the nearest space during construction.

Question 3: (i) What does TNS mean?
(ii) How many labours will the project hire?
(iii) When was the RFP advertised for this tender?

- **Answers:** (i) TNS means Thagasello Network Solutions. The company's expertise lies in Community Participation/Public Participation. The role of TNS will be to facilitate participation and consultation with the stakeholders and the Community, promote a positive climate for the project and facilitate the flow of information between stakeholder, the client and the project team.
- **Answer** (ii)- Local Labour will be sourced from the community and the main contractor will impart skills on the community.
- **Answer** (iii)- It was an open tender that was published in the media where anyone could have applied. The advert by the client (JDA) for the professional team was advertised end 2016 or early 2017.There are internal procurement processes that JDA applies for all appointments.

Question 5: How will the Kiosks be allocated?

- **Answer:** There are 4 traders operating at the current facility, the architect made provision for 4 more kiosks to make them 8 in total. The contractor is expected to be on site around April 2019, until then, there is enough time for Department of Economic Development to do their verification and ultimately allocating the trading stalls accordingly. No traders have been allocated stalls currently.
- TNS suggested that DED can be invited to Public Meetings going forward.

Question 6: Is it Mandatory to have Matric to qualify for a CLO Position?

- **Answer:** As it stands, yes, however TNS can engage the Region on the matter as the appointment of the CLOs resides with the Region/s and not the JDA.

Question 7: A budget of R26M was communicated at one of our IDP meetings, why is it that there is no budget now?

- **Answer:** Bheki from the Cllr's office indicated that as far as the office of the Cllr is aware, the budget has not changed, it is still the way it was communicated by email. The project team was merely in attendance to share the Concept design and the CPC Processes.

Question 8: (i) SMME from other areas normally get projects in Zola, whereas people from Zola are side-lined.

- **Answer:** (i) Ward Governance responded that they are aware that SMME verification has proven to be very tricky in the past, however, the office of the Cllr together with the CLO will do their best to ensure that appointed SMME's are from Ward 51

Question 8: (ii) Will people with skills but no certificates not be considered? And is there an age limit?

- **Answer 8:** (ii) People will be evaluated based on what they have presented on their CV's, Profiles etc. and it important to highlight your capability and experience I your documents.

Question 9: The property is privately owned?

- **Answer:** There is a team of specialists whose role is to investigate and advise. The Architect indicated that the property was state owned.

Question 10: Is it possible to have 2 entrances and 2 exits for each taxi association?

- **Answer:** The Traffic Impact Study that was conducted recommended that there be a right turn only lane instead, unfortunately we are unable to accommodate different entrances and exits for each taxi association due to space constraints.

Question 11: Can the Architects have a look at the already bloated sewer system?

- **Answer:** The sewer system has been considered, and a TIA application has been submitted to Joburg Water for approval.

7. A STAKEHOLDER MEETING was conducted on the 18th of September 2018 in the JOHANNESBURG CIVIC CENTRE (ground floor boardroom, Jabulani) (i.e. minutes of this meeting will be made available on request and in the DRAFT & FINAL BASIC ASSESSMENT REPORT under the relevant section or PUBLIC PARTICIPATION PROCESS).

a. The Title Deed for the property has not yet been registered.
b. There is still a challenge in submission of the Detail Designs.
c. The MOU that was given to the Taxi Associations has not been signed yet.
d. Associations will meet on the 21st Sept to conclude who the Resident Association will be and who the Tenant Association will be. Once their meeting is held, they will provide feedback stakeholders.

Question 1: Will there be washing bays in the rank? Will the bays accommodate many cars?

- **Answer:** Washing Bays will be available by the holding area and it will be big enough to accommodate many cars

Question 2: Are CCTV cameras upgraded yet? People have been killed and robbed in or around the rank and when the CCTV cameras are requested, you find that they were not operating.

- **Answer:** The management will make sure that the CCTV cameras are fully functional at all times.

Conclusion:

Cllr Motsamai stated that the project will go ahead regardless of the associations issues as the project is done for the community.

8. A Final Summary i.e. '*COMMUNITY PARTICIPATION STAKEHOLDER ENGAGEMENT REPORT',* was compiled by TNS (07-12-2018) re: ZOLA PUBLIC TRANSPORT FACILITY PROGRAMME which was as follows i.e:

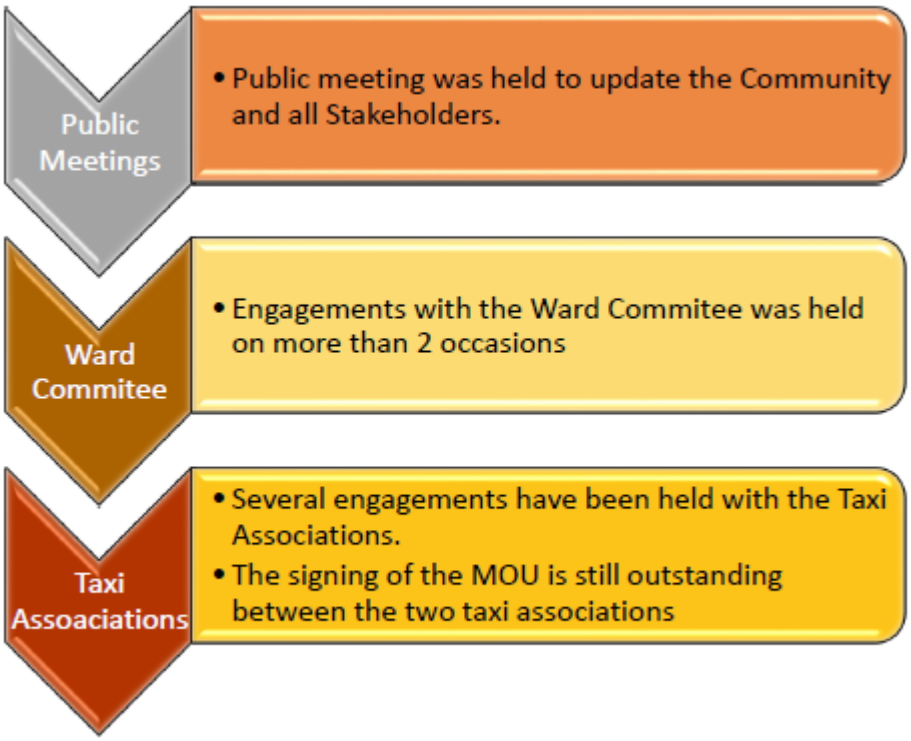
BACKGROUND:

TNS has been consistent with continuous engagements with the following stakeholders/structures:

- RD's office
- Councillor's office
- Ward Committee/s
- Public Meeting
- Taxi Associations

The report outlined the activities that have taken place for the Zola PTF programme, which was expected to be concluded in 3 financial years.

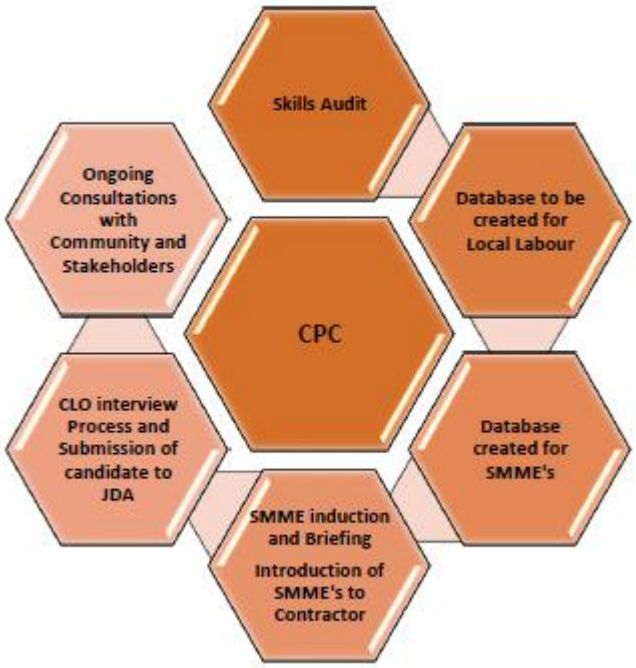
PROCESS OF ENGAGEMENT:



Community Participation Processes:

- The Regional Director was engaged on the 12 April 2017 to introduce the project.
- The Cllr was first engaged on the 04th December 2017 with her Ward Governance team, where the CPC processes were presented.
- A public meeting was held on the 25th July 2018 to formerly introduce the project to the community and related stakeholders, another public meeting will be held when the bid spec process is almost finalised and ready for the tender process.
- Skills audit for CLO, SMMEs and labour will be conducted for at a date agreed by Cllr and the Client (JDA)
- Database skills assessed from the Ward will be created and sent to related parties, including Contractor.
- CLO appointment process to be done by Ward Governance with the JDA and TNS overseeing the process.
- On-going meetings are being held with relevant stakeholders to discuss project related issues.

Community Consultation Processes summarized in the diagram below:



STAKEHOLDER MEETINGS HELD TO DATE:

Continuous stakeholder engagements are underway to ensure all the affected stakeholders are brought up to date with the project progress – and, the following stakeholder meetings were held for to date:

Project Meeting date/s	Objective of the Meeting
12 April 2017	First Project introduction to the RD office to formally introduce the project
04 May 2017	Follow-up Meeting with the RD to give update
20 July 2017	Consultation with the Taxi Associations to formerly introduce the project
31 August 2017	Follow-up consultation with the Taxi Associations
04 December 2017	First Engagement with the Cllr and the Ward Committee to introduce the project
25 July 2018	First Public Meeting to introduce the project to the Community Stakeholders
18 September 2018	Follow up meeting to give update and resolve pending issues

CHALLENGES:

- The Soweto Stakeholder Forum made contact with the office of the mayor regarding the Zola Public Transport Facility.
  - Their main concern was that the project will not benefit the local community as their preference would be the construction of the Multipurpose centre.
  - In their letter they noted that the City promised to build a multi-purpose facility, however they are concerned when nothing has been said and a new project is introduced.
  - It was noted that Zola Public Transport Facility will not in any way affect or interfere with the planning of the proposed Multi-Purpose Centre in Zola.
  - There also seems to be some confusion where some community members may not know what the functions of the different MOE's are within the City (The JDA is merely an implementing agent to approved projects)

CONCLUSION:

- TNS, Transport, JDA, RD's office and the Councillor were eager to proactively address the objections tabled in the letter, however, due to the forum being illegitimate, it has been the greatest challenge to strategize and engage with the said party.
- TNS has communicated extensively with Region D and it was indicated that the structure objecting to the construction of the Taxi Facility is not recognized by the Community.
- The Councillor also attempted to access their contact details to schedule a meeting for deliberations with no success.
- The Councillor has also indicated that the forum that sent the objection is not legitimate. There were no contact details listed on the objection letter making it impossible to reach them to explore the concerns raised.
- The objecting forum has not been in contact with any stakeholder nor the region since their initial contact.

B: ***URBAN INNOVATE CONSULTING cc*** from 18th of June 2021 to the 26th of July 2022, which included the following i.e:

1. Two A2 size PUBLIC PARTICIPATION PROCESS SITE NOTICES of the BASIC ASSESSMENT process of the proposed ZOLA EXTENSION 3 TOWNSHIP to be situated on a Portion of the Remainder of FARM SOWETO 387-IQ (City of Johannesburg Metropolitan Municipality – GAUTENG) were placed on the site on the 18th of June 2021.
2. PUBLIC PARTICIPATION PROCESS NOTICES of the BASIC ASSESSMENT process of the proposed ZOLA EXTENSION 3 TOWNSHIP to be situated on a Portion of the Remainder of FARM SOWETO 387-IQ (City of Johannesburg Metropolitan Municipality – GAUTENG) were hand-delivered in person to the Adjacent landowners of the site on the 18th of June 2021. The adjacent landowners also signed a 'PROOF OF RECEIPT' of the hand-delivered notices on the 18th of June 2021 upon receipt of such.
3. A NEWSPAPER advertisement was placed in the DAILY SUN of the PUBLIC PARTICIPATION PROCESS (i.e. Friday, 18th of June 2021) of the BASIC ASSESSMENT process conducted for the proposed ZOLA EXTENSION 3 TOWNSHIP to be situated on a Portion of the Remainder of FARM SOWETO 387-IQ (City of Johannesburg Metropolitan Municipality – GAUTENG).
4. A DRAFT BASIC ASSESSMENT REPORT was placed in the Emdeni Public Library in SOWETO, Johannesburg for any Interested and Affected Party's viewing and/or comments. PROOF of receipt of the BAR and placement of such was signed by the staff on duty in the public library on the 18th of June 2021.
5. A DRAFT BASIC ASSESSMENT REPORT was submitted to the CITY of JOHANNESBURG METROPOLITAN MUNICIPALITY (CoJ) on the 18th of June 2021 for comments.
    a. Written comments were received from CoJ on 27 July 2021 and responded to.
6. A DRAFT BASIC ASSESSMENT REPORT was submitted to the GAUTENG DEPT. AGRICULTURE & RURAL DEVELOPMENT (GDARD) on the 18th of June 2021 for comments.
    a. Written comments were received from GDARD (i.e. dated 5 August 2021) and the EIA APPLICATION were forthwith withdrawn and no FINAL BASIC ASSESSMENT REPORT was submitted to GDARD in order to avoid a negative decision and also to effectively address the issues mentioned in GDARD's comments before submitting another EIA APPLICATION for the same proposed development.
7. The PUBLIC PARTICIPATION PROCESS NOTICE of the BASIC ASSESSMENT process of the proposed ZOLA EXTENSION 3 TOWNSHIP to be situated on a Portion of the Remainder of FARM SOWETO 387-IQ (City of Johannesburg Metropolitan Municipality – GAUTENG) was emailed to the following potential interested and affected parties and stakeholders for comments i.e:
    a. *SANCO (South African National Civic Organisation).*
    b. *SOWETO CONSERVANCY.*
    c. *Soweto Taxi Services.*
    d. *WARD 51 COUNCILLOR:*
    e. *Witwatersrand African Taxi Association*

If "NO" briefly explain why no comments have been received

4. GENERAL PUBLIC PARTICIPATION REQUIREMENTS

The Environmental Assessment Practitioner must ensure that the public participation process is adequate and must determine whether a public meeting or any other additional measure is appropriate or not based on the particular nature of each case. Special attention should be given to the involvement of local community structures such as Ward Committees and ratepayers associations. Please note that public concerns that emerge at a later stage that should have been addressed may cause the competent authority to withdraw any authorisation it may have issued if it becomes apparent that the public participation process was flawed. The EAP must record all comments and respond to each comment of the public / interested and affected party before the application report is submitted. The comments and responses must be captured in a Comments and Responses Report as prescribed in the regulations and be attached to this application.

5. APPENDICES FOR PUBLIC PARTICIPATION

All public participation information is to be attached in the appropriate Appendix. The information in this Appendix is to be ordered as detailed below
Appendix 1 – Proof of site notice
Appendix 2 – Written notices issued as required in terms of the regulations.
Appendix 3 – Proof of newspaper advertisements
Appendix 4 –Communications to and from interested and affected parties.
Appendix 5 – Minutes of any public and/or stakeholder meetings
Appendix 6 - Comments and Responses Report
Appendix 7 –Comments from I&APs on Basic Assessment (BA) Report
Appendix 8 –Comments from I&APs on amendments to the BA Report
Appendix 9 – Copy of the register of I&Aps

SECTION D: RESOURCE USE AND PROCESS DETAILS

Note: Section D is to be completed for the proposal and alternative(s) (if necessary)

Instructions for completion of Section D for alternatives

1) For each alternative under investigation, where such alternatives will have different resource and process details (e.g. technology alternative), the entire Section D needs to be completed
4) Each alterative needs to be clearly indicated in the box below
5) Attach the above documents in a chronological order

Section D has been duplicated for alternatives | **"insert No. of duplicates"** | times

(complete only when appropriate)

Section D Alternative No. | "insert alternative number" | (complete only when appropriate for above)

NOTE: THE FOLLOWING INFORMATION IS RELEVANT FOR THE PREFERRED PROPOSAL & ALTERNATIVE#1 PROPOSAL:

1. WASTE, EFFLUENT, AND EMISSION MANAGEMENT

Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?	**YES**	~~NO~~
If yes, what estimated quantity will be produced per month?	5-10m^3	

How will the construction solid waste be disposed of (describe)?

The main building contractor is to remove the construction solid waste to a Registered Municipal landfill site

Where will the construction solid waste be disposed of (describe)?

The main building contractor is to remove the construction solid waste to a Registered Municipal landfill site

Will the activity produce solid waste during its operational phase?	**YES**	~~NO~~
If yes, what estimated quantity will be produced per month?	**Max. of ±5-10m^3**	

How will the solid waste be disposed of (describe)?

The standard municipal waste collection services (i.e. the normal current municipal waste stream) will collect the solid waste since the proposed PUBLIC TRANSPORT FACILITIES (i.e. TAXI RANK) would not generate any other waste than the normal residential & taxi-related waste which the normal standard municipal collection services collect in residential areas of SOWETO, Johannesburg.

Has the municipality or relevant service provider confirmed that sufficient air space exists for treating/disposing of the solid waste to be generated by this activity?	~~YES~~	**NO**

Where will the solid waste be disposed if it does not feed into a municipal waste stream (describe)?

Note: If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation?	~~YES~~	**NO**

If yes, inform the competent authority and request a change to an application for scoping and EIA.

Is the activity that is being applied for a solid waste handling or treatment facility?	~~YES~~	**NO**

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Describe the measures, if any, that will be taken to ensure the optimal reuse or recycling of materials:

None

Liquid effluent (other than domestic sewage)

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?	~~YES~~	**NO**
If yes, what estimated quantity will be produced per month?	m^3	
If yes, has the municipality confirmed that sufficient capacity exist for treating / disposing of the liquid effluent to be generated by this activity(ies)?	YES	NO
Will the activity produce any effluent that will be treated and/or disposed of on site?	~~Yes~~	**NO**
If yes, what estimated quantity will be produced per month?	m^3	

If yes describe the nature of the effluent and how it will be disposed.

N.a.

Note that if effluent is to be treated or disposed on site the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA

Will the activity produce effluent that will be treated and/or disposed of at another facility?	~~YES~~	**NO**

If yes, provide the particulars of the facility:

Facility name:	
Contact person:	
Postal address:	
Postal code:	

Telephone:		Cell:	
E-mail:		Fax:	

Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:

N.a.

Liquid effluent (domestic sewage)

Will the activity produce domestic effluent that will be disposed of in a municipal sewage system?	**YES**	~~NO~~
If yes, what estimated quantity will be produced per month?	**162,6 m³**	
If yes, has the municipality confirmed that sufficient capacity exist for treating / disposing of the domestic effluent to be generated by this activity(ies)?	**YES**	~~NO~~
Will the activity produce any effluent that will be treated and/or disposed of on site?	~~YES~~	**NO**

If yes describe how it will be treated and disposed of.

Emissions into the atmosphere

Will the activity release emissions into the atmosphere?	~~YES~~	**NO**
If yes, is it controlled by any legislation of any sphere of government?	~~YES~~	NO

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.
If no, describe the emissions in terms of type and concentration:

2. WATER USE

Indicate the source(s) of water that will be used for the activity

municipal	~~Directly from water board~~	~~groundwater~~	~~river, stream, dam or lake~~	~~other~~	~~the activity will not use water~~

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month: liters

If Yes, please attach proof of assurance of water supply, e.g. yield of borehole, in the appropriate Appendix

Does the activity require a water use permit from the Department of Water Affairs?	~~YES~~	**NO**

If yes, list the permits required

If yes, have you applied for the water use permit(s)?	YES	NO
If yes, have you received approval(s)? (attached in appropriate appendix)	YES	NO

3. POWER SUPPLY

Please indicate the source of power supply eg. Municipality / Eskom / Renewable energy source

ESKOM

If power supply is not available, where will power be sourced from?

4. ENERGY EFFICIENCY

Describe the design measures, if any, that have been taken to ensure that the activity is energy efficient:

The design complies with SANS 10400-XA i.e:

1. HOT WATER: 12,6 MJ Q Factor; primary element: 3.5kWh Heat Pump.
2. SERVICES: LIGHTS: 1759,7 W/m2 (per annum); primary element: compact fluorescents & LED lights.
3. ROOFS: R Value of 4.256; primary element: 135mm “Alutherm FG” o.e.a. Fibre Glass Insulation.
4. FENESTRATION: CSHGC of 14.53; Total Cu of 89.47; primary element: Tinted double low E glazing.

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

N.a.

SECTION E: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2014, and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts as well as the impacts of not implementing the activity (Section 24(4)(b)(i).

1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summarise the issues raised by interested and affected parties.

The public participation process is currently being conducted and all issues raised by interested and affected parties will be included in the FINAL BASIC ASSESSMENT REPORT.

However, other previous Public participation processes were conducted by A: *Thagasello Network Solutions* (TNS) in 2017 and 2018 – and, B: *URBAN INNOVATE CONSULTING cc* from 18th of June 2021 to

the 26th of July 2022. Please see a summary of the issues which were raised at that time underneath i.e:-

1. 27th March 2017: Discussions, questions and resolutions (i.e. decisions) regarding - recommendations, considerations and clarification regarding various technical issues as part of the planning, design and implementation phases with relevant professionals (i.e. architects, engineers etc), authorities (i.e. CoJ/JDA municipality etc) and other stakeholders (i.e. taxi associations etc) **[*DQR]** i.e:

- Architectural design & layout aspects e.g. use of rank 5 structure of Roodepoort as precedence, fencing, guard house security, accommodation of morning taxi rank, consolidation of 2 taxi ranks, holding area, kiosks for traders, offices, ablution facilities, exit, refuse area & seating arrangements etc.
- Two TAXI associations identified i.e. WATA & STS.

2. 20thJuly 2017: ***DQR** i.e:

- Resident TAXI association versus tenant association and MOU to be drafted outlining roles of each party.
- Name of project precinct, temporary relocation of current taxi rank, rezoning consideration, traffic intersection, multipurpose centre across road, transport study to be performed, budget limitations, alternative 'green' energy & water resources, security aspects, number of bays required, number of cubicles in ablution facilities, revised design deadlines etc.

3. 31stAugust 2017: ***DQR** i.e:

- Contents of MOU between TAXI associations to be discussed in more detail is separate meeting.
- Facility road intersection, holding bay schedule, TAXI associations to provide input re: various technical requirements & issues.
- Amount of vehicles in holding bays, mitigation due to rise in traffic, finalisation of designs, designs to cater for future growth etc.

4. 4th of December 2017: ***DQR** as part of the preliminary design presentation to the JOHANNESBURG MUNICIPALITY WARD COUNCELLOR and the WARD COMMITTEE MEETING i.e:

- Facility intersection, accommodation schedule re: holding bays, loading bays t.b.c. by CoJ and Taxi Associations, Local Labour payment issues, Kiosk occupants, Entrance and Exit requirements.

5. 4th of December 2017: A ***DQR** re: CPC processes & preliminary design presentation to the JOHANNESBURG MUNICIPALITY WARD COUNCELLOR and the WARD COMMITTEE MEETING.

6. PUBLIC MEETING - 25th of July 2018:

- JDA's appointment of Team & project consultants,
- Consultations with Taxi associations,
- Existing businesses affected,
- Meaning of TNS,
- Labourers for project,
- RFP advertised for tender,
- Allocation o**f** Kiosks,
- Matric qualification mandatory,
- Lack of budget,
- Allocation of projects for SMME concerns,
- Unskilled workers and age concerns,
- Ownership of property,
- Seperate entrances and exits for taxi associations,
- Sewer system concerns.
- Skills audit for CLO, SMMEs & labour to be conducted at date agreed by Cllr & Client (JDA)
- Database skills assessed from the Ward will be created and sent to related parties, including Contractor.
- CLO appointment process to be done by Ward Governance with JDA & TNS overseeing the process.
- On-going meetings are being held with relevant stakeholders to discuss project related issues.

7. 18th of September 2018: ***DQR -**

- Title Deed registration issues.
- Detail Designs issues.
- MOU of Taxi Associations to be signed.
- Washing bays.
- Bays to accommodate cars.
- CCTV cameras upgrade.

8. Soweto Stakeholder Forum:

- TAXI rank to benefit local community versus Multipurpose centre.
- City's promise to build multi-purpose facility questioned versus new unannounced project.
- Perceived confusion of community members re: functions of MOE's in CoJ/JDA.

9. Job-related enquiry.

Summary of response from the practitioner to the issues raised by the interested and affected parties (including the manner in which the public comments are incorporated or why they were not included) (A full response must be provided in the Comments and Response Report that must be attached to this report):

The public participation process is currently being conducted and the response by the practitioner to all the issues raised by interested and affected parties will be included in the FINAL BASIC ASSESSMENT REPORT.

However, other previous Public participation processes were conducted by A: *Thagasello Network Solutions* (TNS) in 2017 and 2018 – and, B: *URBAN INNOVATE CONSULTING cc* from 18th of June 2021 to the 26th of July 2022. Please see a summary of the responses from the practitioners at that time underneath i.e:-

1. Resolutions re: technical aspects noted and munited and were forwarded to all parties present to implement.
2. Resolutions re: technical aspects noted and munited and were forwarded to all parties present to implement.
3. Resolutions re: technical aspects noted and munited and were forwarded to all parties present to implement.
4. Resolutions re: technical aspects noted and munited and were forwarded to all parties present to implement.
5. Resolutions re: technical aspects noted and munited and were forwarded to all parties present to implement.
6.

- JDA appointment process via open tender.
- Consultations were conducted with both taxi associations (WATA/STS).
- Facility to bring more traffic for businesses & current taxi operations to be relocated to nearest space.
- Thagasello Network Solutions.
- Local Labour to be sourced from community and main contractor to impart skills.
- Open tender published in the media.
- 4 traders operating at current facility & architect to provide 4 additional kiosks. Dept. Economic Dev. to do verification & allocating of trading stalls.
- DED to be invited to Public Meetings going forward.
- TNS to engage Region & appointment of CLOs resides with Region/s and not JDA.

7. Resolutions re: technical aspects noted and munited and were forwarded to all parties present to implement.
8.

- Since objecting forum is illegitimate, it's not possible to strategize & engage with the said party.
- The forum objecting to construction of Taxi Facility is not recognized by Community.
- Councillor attempted to access forum's contact details to schedule meeting with no success & has also indicated that forum is illegitimate & no contact details listed on their objection letter.
- The forum has not been in contact since their initial contact.

9. Not the appropriate platform to apply for a job.

2. IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION AND OPERATIONAL PHASE

Briefly describe the methodology utilised in the rating of significance of impacts.

"Impact Significance is the value placed on the change by different affected parties (i.e. level of significance & acceptability). It is an anthropocentric concept, which makes use of value judgements & science-based criteria (i.e. biophysical, social & economic). Such judgement reflects the political reality of impact assessment in which significance is translated into public acceptability of impacts. The Process of determining impact significance includes the following tasks: impact identification, impact prediction and impact evaluation. The Impact Significance is determined predominantly by using systematic generic and judgemental criteria i.e. extent of spatial scale of the impact; intensity or severity of the impact; duration of the impact; mitigatory potential; acceptability; degree of certainty; status of the impact; and legal requirements."[1] Rating of significance of each impact will be indicated by the following symbols: L = low; L-M = low to medium; M=medium; M-H= medium to high; H= high; VH= very high. Positive Impact = (Pos) or +; Negative Impact = (Neg) or –".

Criteria for Assessment of Impacts:

These criteria are drawn from the EIA Regulations, published by the Department of Environmental Affairs and Tourism (April 1998) in terms of the Environmental Conservation Act No. 73 of 1989.The criteria include:

Nature of the impact:

This is an appraisal of the type of effect the construction, operation and maintenance of a development would have on the affected environment. This description should include what is to be affected and how.

Extent of the Impact:

[1] DEAT (2004) Integrated Environmental Management, Information Series, Department of Environmental Affairs and Tourism (DEAT), Pretoria.

The environmental consultant &/or any relevant specialists should describe whether the impact will be:

(1) Site (i.e. extending only as far as the development boundary of the site area),
(2) Local/Surrounds (i.e. the area and its immediate surroundings within 5km of the site),
(3) Municipal (i.e. Merafong Local Municipal Region),
(4) Provincial (i.e. Gauteng),
(5) National (i.e. South Africa), or
(6) International (i.e. Africa, Europe, USA etc).

Duration of the Impact:

The environmental consultant &/or any relevant specialists should indicate whether the lifespan of the impact would be:

(1) Immediate (>1year),
(2) Short term (1-5 years),
(3) Medium term (6-15 years),
(4) Long term (16-30 years and/or the impact will cease after the operational life span of the project), or
(5) Permanent (no mitigation measure of natural process will reduce the impact after construction).

Magnitude/Intensity:

The environmental consultant &/or any relevant specialists should establish whether the impact is destructive or benign and should be qualified i.e. the severity of the impacts is indicated as either:
(0) None (where the aspect will have no impact on the environment,
(2) Minor (where the impact affects the environment in such a way that natural, cultural and social functions and processes are not affected),
(4) Low (where the impact affects the environment in such a way that natural, cultural and social functions and processes are slightly affected),
(6) Moderate/Medium (where the affected environment is altered but natural, cultural and social functions and processes continue albeit in a modified way),
(8) High (where natural, cultural or social functions or processes are altered to the extent that it will temporarily cease), or
(10) Very High / don't know (where natural, cultural or social functions or processes are altered to the extent that it will permanently cease.

Probability of occurrence:

The environmental consultant &/or any relevant specialists should describe the probability (i.e. likelihood) of the impact actually occurring and should be described as either:

(0) None (the impact will not occur),
(1) Improbable (low likelihood – the possibility of the impact materializing is very low as a result of design, historic experience, or implementation of adequate corrective actions),
(2) Low Probability (there is a possibility that the impact will occur),
(3) Medium Probability (distinct possibility – the impact may occur),
(4) High Probability (it is most likely that the impact will occur), or
(5) Definite / I don't know (the impact will occur regardless of the implementation of any prevention measures and/or corrective actions, or you don't know what the probability will be based on too little published information).

Status of the Impact:

The environmental consultant &/or any relevant specialists should determine whether the impacts are:

Negative Effect (i.e. at a "cost" of the environment),
Positive Effect, (i.e. a "benefit" to the environment), or
Neutral effect on the environment.

The impacts are to be assessed in terms of their effect on the project and the environment. For example, an impact that is positive for the proposed development may be negative for the environment. It is important that this distinction is made in the analysis.

Degree of confidence in predictions:

The environmental consultant &/or any relevant specialists should state what degree of confidence (low, medium or high) is there in the predictions based on the available information and level of knowledge and expertise.

Significance of the Impact:

Based on the information contained in the points above, the potential impacts are assigned as significance weighting (S). This weighting is formulated by adding the sum of the numbers assigned to extent (E), duration (D) and Magnitude (M) and multiplying this sum by the probability (P) of the Impact.

$S=(E+D+M)P$

(0) No significance: (The impacts do not influence the proposed development and/or environment in any way),

(<30) Low: (The impacts will have a minor influence on the proposed development and/or environment i.e. where this impact would not have a direct influence on the decision to develop in the area. These impacts could possibly require some attention to modification of the project design where possible, or alternative mitigation.

(30-60)Moderate/Medium: (The impacts will have a moderate influence on the proposed development and/or environment. The impact can be ameliorated by a modification in the project design or implementation of effective mitigation measures i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated).

(>60) High: (i.e where the impact must have an influence on the decision process to develop in the area. The impacts will be likely to have the "no-go" implication on the development or portions of the development regardless of any mitigation measures that could be implemented. This level of significance must be well motivated.

PLEASE NOTE:

It is a function of the Basic Assessment Process to consider all the Issues and Concerns Identified during the Process and provide a brief assessment of the significance of these Issues and Impacts as well as any alternatives. The Table below provides an environmental impact statement in that it summarizes the impacts of the preferred proposal (no alternatives have been considered) may have on the environment in that it provides an assessment of the issues raised in the public participation process and the potential impacts of the development. It must be noted that in the Table underneath only Issues considered relevant and/or important for decision-making have been listed and also relates to Impacts that have been or can be addressed through design and mitigation. Recommendations regarding these Issues/Impacts have also been incorporated into an environmental management program (i.e. attached in ***Appendix H***) that are formulated for construction and operations and/or in the detailed design; and, there are no other known Impacts that cannot be readily addressed and/or require more detailed consideration to determine their significance and/or to inform recommendations regarding mitigation measures and/or detailed design.

Briefly describe and compare the potential impacts (as appropriate), significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the construction phase for the various alternatives of the proposed development. This must include an assessment of the significance of all impacts.

PREFERRED LAYOUT PROPOSAL:
PROPOSED ZOLA EXTENSION 3 TOWNSHIP to be situated on A PART OF THE REMAINDER OF THE FARM SOWETO 387 IQ - with associated Civil Services infrastructure

POTENTIAL IMPACTS on the TERRESTRIAL VEGETATION & FLORA BIODIVERSITY:

[Taken from i.e. quoted directly, from the specialist reports contained in APPENDIX G – '1. ***'A vegetation assessment of the site proposed for development of the Emdeni Public transport Facility in Soweto - by G.J. Bredenkamp & CE Venter*** *- Commissioned by Pierre Joubert Landscape Architect and Environmental Planner [Eco-Agent CC; PO Box 23355; Monument Park; 0181. Tel 012 3463180 / Fax 012 460 2525 / Cell 082 5767046]. December 2021.)*]

1. Potential Direct & Indirect Impacts on natural terrestrial vegetation.

Nature: The public transport facility will be constructed on totally transformed weed vegetation. The weed vegetation of the site will be destroyed. The impact on natural vegetation is therefore nullified.

	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	n.a.	0	n.a.	0
Duration	n.a.	0	n.a.	0
Extent	n.a.	0	n.a.	0
Magnitude	n.a.	0	n.a.	0
Significance	n.a.	**0**	n.a.	**0**
Status (positive or negative)	n.a.		n.a.	
CONSTRUCTION PHASE				
Probability	Definite	5	Definite	5
Duration	Short-term	2	Short term	2
Extent	Local	1	Local	1
Magnitude	Low	0	Low	0
Significance	**Minor**	**15**	**Minor**	**15**
Status (positive or negative)	Negative		Negative	
OPERATIONAL PHASE				
Probability	Definite	5	Definite	5
Duration	Permanent	5	Permanent	5
Extent	Local	1	Local	1
Magnitude	Low	0	Low	0
Significance	**Low**	**30**	**Low**	**30**
Status (positive or negative)	Negative		Negative	
DECOMMISSIONING & CLOSURE PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
Reversibility	No		No	
Irreplaceable loss of resources?	No		No	
Can impacts be mitigated?	No			

Mitigation:

- There is no natural vegetation left on the site.
- Remove and control all alien woody plant species that may appear during construction and operational phases.

Cumulative impacts: Limited accumulative effects as Soweto areas are already developed.

Residual Risks: None anticipated provided that the mitigation measures are implemented correctly.

POTENTIAL IMPACTS on the WETLAND:

[Taken from i.e. quoted directly, from the specialist reports contained in APPENDIX G – '***A wetland assessment of the site proposed for development of the Emdeni Public transport Facility in Soweto - by G.J. Bredenkamp & CE Venter*** *(Commissioned by Pierre Joubert Landscape Architect and Environmental Planner [Eco-Agent CC; PO Box 23355; Monument Park; 0181. Tel 012 3463180 / Fax 012 460 2525 / Cell 082 5767046]. December 2021.)'.*

1. Potential Direct & Indirect Impacts on the wetland habitat, species composition and functions.

Nature: The loss of wetland habitat and functions due to the development of a taxi rank on site. The wetland adjacent to the site is the most altered of all the habitat units and largely dominated by alien species, mainly Kikuyu (*Pennisetum clandestinum*).

1. Loss of indigenous plant species, wetland habitat and habitat for species of conservation importance

This alternative is located on deep infill adjacent to the wetland unit. The area is very disturbed and the vegetation is altered. The alien species *Pennisetum clandestinum* (Kikuyu) is the dominant species in the wetland unit. The proposed development is therefore unlikely to result in a loss or alteration of the wetland unit.

2. Infestation by invasive plant species

Invasive plant species tend to establish in and around disturbed areas. A few alien and invasive species were observed on site during the site visit. These species may become established in disturbed areas on site and several other species may also be present. Several invasive species may become established on site during the construction or operational phases of the project. These species are most likely to become established in areas disturbed areas.

3. Stormwater management

3.1 Construction Phase

The increase of impermeable surfaces on site, with the associated increase in runoff from the site may result in a slight alteration to the hydrology and geomorphology of the site. Increased flow may result in erosion in the wetland or wetland catchment, with associated sedimentation in the downstream wetland areas. The areas cleared of vegetation is also more likely to be eroded until the stormwater system is in place and stabilised.

The potential of erosion and sedimentation affecting the wetland unit is smaller for this alternative than for Alternative#1, due to the buffer area around the wetland.

3.2 Operational Phase

Development on site results in a significant increase in sealed surfaces in the wetland catchment. This will in turn result in increased runoff, which increase the risk of erosion and sedimentation on site and in the wetland units.

4. Construction camp and prevention of pollution of the water resources

The most likely source of contaminants associated with the project is the possibility of sewage entering the wetland system. Ablution facilities at the taxi rank is strongly advised for the operational phase of the project. Additional potential sources of pollution include littering and the spillage of petrochemicals.

	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
CONSTRUCTION PHASE				
Probability	Improbable	2	Improbable	2
Duration	Short term	1	Short term	1
Extent	Local	1	Local	1
Magnitude	Slight	4	Slight	4
Significance	**Low**	**12**	**Low**	**12**
Status (positive or negative)	Negative		Negative	
OPERATIONAL PHASE				
Probability	Improbable	2	Very improbable	1
Duration	Permanent	5	Permanent	5
Extent	Local	1	Local	1
Magnitude	None	0	None	0
Significance	**Low**	**12**	**Low**	**6**

Status (positive or negative)	Negative		Negative	
DECOMMISSIONING & CLOSURE PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
Reversibility	n.a.		n.a.	
Irreplaceable loss of resources?	No		No	
Can impacts be mitigated?	Yes			

Mitigation:

- The wetland and open space area must be clearly demarcated on site, preferably with a fence. No construction activities may take place in these areas, including the temporary storage of materials, location of the construction camp and location of temporary ablution facilities.
- No vehicle movement or clearing of vegetation may take place in these areas.
- The long-term weather prediction for the site must be consulted for the site prior to the commencement of construction of the stormwater system in the wetland buffer. Do not proceed if there is a likelihood of rain.
- Include soft structures in the design of the stormwater system.
- Use permeable surfaces wherever possible.
- Securely fence the site to prevent trampling of the wetland area by persons trying to take short-cuts to the site. The only access point must be from the road.
- Compile an alien and invasive species control and monitoring plan.
- Populations of invasive species on site must be controlled, during the construction and operational phases.
- The spread of invasive and weedy species from the site must be prevented.
- Several alien and invasive species resemble indigenous species, especially as seedlings. Care must be taken not to control indigenous species during the control of invasive species.
- Construction must take place during the winter season to limit the risk of erosion on site and sedimentation in the wetland.
- Ensure that no sediment-laden stormwater enter the wetlands directly.
- Monitoring during the operation phases may take place as part of the inspection and maintenance of stormwater system.
- Implement an erosion control fence / berm along the edge of the wetland unit to prevent sedimentation entering the wetland area.
- No construction vehicles may pass the erosion fence.
- Construction must take place during the winter season to limit the risk of erosion on site and sedimentation in the wetland.
- Ensure that no sediment-laden stormwater enter the wetlands directly.
- Stabilise and revegetate all areas bare of vegetation as soon as possible.
- Monitor the entire site for signs of erosion throughout the construction and operational phases of the project. This may take place as part of the regular inspections for maintenance on site.
- All erosion features must be rehabilitated as soon as possible.
- Implement erosion control measures where necessary.
- Implement sediment fences around erosion prone areas.
- Adhere to all requirements and recommendations included in the ecological stormwater and rehabilitation plan compiled for the site by Habitat Landscape Architects.
- Storm water may not enter the watercourses directly, it must be attenuated before exiting the storm water system.

General mitigation:

- The construction camp and all associated facilities must be located outside the wetland and wetland buffer and outside all designated open space areas.
- Adhere to all other mitigation measures in this report.

Mitigation for littering:

- Sufficient rubbish bins must be provided on site and cleared on a regular basis.
- Rubbish must be disposed of at a registered landfill.
- Rubbish may not be dumped on site or allowed to spread from the rubbish bins on site.

Mitigation for pollution by petrochemicals:

- Refuelling and maintenance must preferably take place off-site.
- Refuelling may only take place at a registered fuel depot.
- The vehicles must be inspected for oil leaks etc. regularly and any observed leaks must be repaired as soon as possible.
- Any spillages of hydrocarbon fuels must be cleaned up immediately.
- All regulations etc. included in the waste act must be adhered to.

Mitigation for temporary ablution facilities:

- The wetland and wetland buffer zone must be clearly demarcated on site and no construction activities may take place in these areas, including the temporary storage of materials and location of temporary ablution facilities.
- Sufficient temporary ablution facilities must be provided for the workers during the construction phase.
- Any portable toilets must be cleaned regularly to prevent overflow and spillages.

Cumulative impacts: Expected that very little accumulative effects will occur at wetland.

Residual Risks: None is anticipated provided that the mitigation measures are implemented correctly.

2. Potential Direct & Indirect Impacts on the wetland due to sedimentation and erosion.

Nature: The loss of wetland habitat due to sedimentation and erosion. Sedimentation and erosion are a risk on site in the absence of a sufficient stormwater plan, but can be mitigated with an appropriate management plan (as provided).
1. Clearing of vegetation from the site and increased runoff on site may result in a slight increase in the erosion on site and in the downstream wetland areas. This may potentially cause damage to the wetland systems on site and downstream of the site. An increased sediment load in the water on site may result in excess sedimentation in downstream areas or in depression wetlands.
This preferred proposal is unlikely to have an adverse impact on the wetland unit. The mitigation measures included in this report must however be adhered to, to ensure the potential erosion and sedimentation impact is minimised.

	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	n.a.	0	n.a.	0
Duration	n.a.	0	n.a.	0
Extent	n.a.	0	n.a.	0
Magnitude	n.a.	0	n.a.	0
Significance	**n.a.**	**0**	**n.a.**	**0**
Status (positive or negative)	Negative		Negative	
CONSTRUCTION PHASE				
Probability	Probable	3	Improbable	2
Duration	Short term	1	Short term	1
Extent	Local	1	Local	1
Magnitude	Slight	4	Slight	4
Significance	**Low**	**18**	**Low**	**12**
Status (positive or negative)	Negative		Negative	
OPERATIONAL PHASE				
Probability	Improbable	2	Very improbable	1
Duration	Permanent	5	Long term	4
Extent	Local	1	Local	1
Magnitude	No impact	0	No impact	0
Significance	**Low**	**12**	**Low**	**5**
Status (positive or negative)	Negative		Positive	
DECOMMISSIONING & CLOSURE PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	

Reversibility	N.a.	N.a.
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	

Mitigation:

- The wetland and open space area must be clearly demarcated on site, preferably with a fence. No construction activities may take place in these areas, including the temporary storage of materials, location of the construction camp and location of temporary ablution facilities.
- No vehicle movement or clearing of vegetation may take place in these areas.
- The long-term weather prediction for the site must be consulted for the site prior to the commencement of construction of the stormwater system in the wetland buffer. Do not proceed if there is a likelihood of rain.
- Include soft structures in the design of the stormwater system.
- Use permeable surfaces wherever possible.
- Securely fence the site to prevent trampling of the wetland area by persons trying to take short-cuts to the site. The only access point must be from the road.
- Compile an alien and invasive species control and monitoring plan.
- Populations of invasive species on site must be controlled, during the construction and operational phases.
- The spread of invasive and weedy species from the site must be prevented.
- Several alien and invasive species resemble indigenous species, especially as seedlings. Care must be taken not to control indigenous species during the control of invasive species.
- Construction must take place during the winter season to limit the risk of erosion on site and sedimentation in the wetland.
- Ensure that no sediment-laden stormwater enter the wetlands directly.
- Monitoring during the operation phases may take place as part of the inspection and maintenance of stormwater system.
- Implement an erosion control fence / berm along the edge of the wetland unit to prevent sedimentation entering the wetland area.
- No construction vehicles may pass the erosion fence.
- Construction must take place during the winter season to limit the risk of erosion on site and sedimentation in the wetland.
- Ensure that no sediment-laden stormwater enter the wetlands directly.
- Stabilise and revegetate all areas bare of vegetation as soon as possible.
- Monitor the entire site for signs of erosion throughout the construction and operational phases of the project. This may take place as part of the regular inspections for maintenance on site.
- All erosion features must be rehabilitated as soon as possible.
- Implement erosion control measures where necessary.
- Implement sediment fences around erosion prone areas.
- Adhere to all requirements and recommendations included in the ecological stormwater and rehabilitation plan compiled for the site by Habitat Landscape Architects.
- Storm water may not enter the watercourses directly, it must be attenuated before exiting the storm water system.

General mitigation:

- The construction camp and all associated facilities must be located outside the wetland and wetland buffer and outside all designated open space areas.

Mitigation for littering:

- Sufficient rubbish bins must be provided on site and cleared on a regular basis.
- Rubbish must be disposed of at a registered landfill.
- Rubbish may not be dumped on site or allowed to spread from the rubbish bins on site.

Mitigation for pollution by petrochemicals:

- Refuelling and maintenance must preferably take place off-site.
- Refuelling may only take place at a registered fuel depot.
- The vehicles must be inspected for oil leaks etc. regularly and any observed leaks must be repaired as soon as possible.
- Any spillages of hydrocarbon fuels must be cleaned up immediately.
- All regulations etc. included in the waste act must be adhered to.

Mitigation for temporary ablution facilities:

- The wetland and wetland buffer zone must be clearly demarcated on site and no construction activities may take place in these areas, including the temporary storage of materials and location of temporary ablution facilities.
- Sufficient temporary ablution facilities must be provided for the workers during the construction phase.
- Any portable toilets must be cleaned regularly to prevent overflow and spillages.

Cumulative impacts:
Expected that little accumulative effects will occur at the wetland, as the impacts are not expected to be significantly different to the current impacts on site.

Residual Risks:
None is anticipated provided that the mitigation measures are implemented correctly.

POTENTIAL IMPACTS on the AQUATIC ASPECTS of the BIOPHYSICAL ENVIRONMENT:

[Taken from i.e. quoted directly, from the specialist reports contained in APPENDIX G – '***Aquatic Ecology Specialist Study for the ZOLA-EMDENI PUBLIC TRANSPORT FACILITY SOWETO, Gauteng***. *Prepared By: Ecotone Freshwater Consultants Suite 342, Private Bag X1, Florida Hills, 1716 Cell: +27 84 585 7479. Tel: +27 (11) 672 1375 Fax: 088 011 673 1192 . contact@ecotone-sa.co.za www.ecotone-sa.co.za Prepared For: Larchitect Pierre Joubert pierre.joubert.larchitect@gmail.com. Reference: Larchitect_ Zola-Emdeni_Public_Transport_Facility_Soweto_Aquatic_January_2022_Final Date: January 2022 Version: Final'].*

1. Potential Direct & Indirect Impacts on the Hydrology.

Nature: CONSTRUCTION PHASE: The Construction activity will involve some vegetation clearing and topsoil removal in the area adjacent to the drainage line (site Z1) which will result in the alteration of the surface runoff characteristics, which in turn will affect the hydrology of the downslope area. The development area already has a compacted soil surface, so the impact on the hydrology during the construction phase will be low.
OPERATIONAL PHASE: The impermeable surface of the transport facility and additional impacts to surface runoff rates may impact on the hydrology of the receiving aquatic system during the operational phase.

	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
CONSTRUCTION PHASE				
Probability	Medium	3	Low	2
Duration	Short term	2	Immediate	1
Extent	Municipal	3	Local	2
Magnitude	Low	4	Minor	2
Significance	**Low**	**27**	**Low**	**10**
Status (positive or negative)	Negative		Negative	
Degree of Confidence	Medium		Medium	
OPERATIONAL PHASE				
Probability	High	4	Medium	3
Duration	Permanent	5	Medium	3
Extent	Local	2	Site	1
Magnitude	Medium	6	Minor	2
Significance	**n.a.**	**52**	**Low**	**18**
Status (positive or negative)	Negative		Negative	
Degree of Confidence	Medium		Medium	
DECOMMISSIONING & CLOSURE PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	

Reversibility	n.a.	n.a.
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	

Mitigation:

CONSTRUCTION PHASE:

- Limit the extent of vegetation clearing and site preparations to the authorised footprint.
- Limit the extent and movement of heavy machinery to the authorised footprint only.
- Avoid in channel construction activity and any flow diversions.
- No water abstraction or discharge of any water should occur into the drainage line during the construction phase.

OPERATIONAL PHASE:

- The storm water system should be designed with sufficient attenuation capacity to compensate for the loss in permeable surfaces associated with the footprint of the development. This may be achieved through the incorporation of bio-swales or other ecological engineering structures.
- The general design should aim to maximise permeability and water retention on site. This will include measures to increase the general surface roughness of paved areas and measures to effectively dissipate runoff energy.

Cumulative impacts: None anticipated i.e. the receiving aquatic system that will be affected by the construction is small in extent with no ecological sensitive features present. The system is part of a catchment that is under cumulative stress due to extensive catchment alteration, resulting in habitat destruction and fragmentation. It is unlikely that the proposed expansion will contribute notably to additional loss of ecological integrity of the system.

Residual Risks: None anticipated provided that the mitigation measures are implemented correctly.

2. Potential Direct & Indirect Impacts on surface water quality.

Nature: CONSTRUCTION PHASE: During the construction phase water quality deterioration will result because of increased sediment loads within the drainage lines and through pollutants derived from spillage, leakage and incorrect disposal of hazardous substances on site. Incorrect waste management and disposal is also likely to contribute further to water quality deterioration.
OPERATIONAL PHASE: Storm water runoff may be polluted with hydrocarbons and other hazardous substances from parking areas and impermeably surface. This may result in a decrease in water quality within the receiving watercourses.

	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
CONSTRUCTION PHASE				
Probability	High	3	Medium	2
Duration	Short term	2	Immediate	1
Extent	Provincial	4	Site	1
Magnitude	Moderate	6	Low	4
Significance	**Medium**	**36**	**Low**	**12**
Status (positive or negative)	Negative		Negative	
Degree of Confidence	Medium		Medium	
OPERATIONAL PHASE				
Probability	High	4	Medium	2
Duration	Permanent	5	Immediate	1
Extent	Local	2	Site	1
Magnitude	Low	4	Minor	2
Significance	**Medium**	**44**	**Low**	**8**
Status (positive or negative)	Negative		Negative	
Degree of Confidence	Medium		Medium	

DECOMMISSIONING & CLOSURE PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
Reversibility	n.a.		n.a.	
Irreplaceable loss of resources?	No		No	
Can impacts be mitigated?	Yes			

Mitigation:

CONSTRUCTION PHASE:

- Accidental spillage should be prevented always. This will require suitable chemical storage and refuelling practices.
- Accidental spills or any contaminated water should be isolated and treated as soon as possible. An emergency spill procedure should be drafted, and the construction team should be versed in identifying and responding to accidental spill events.
- Changing of oil, refuelling and lubricating of equipment should not be carried out near the drainage lines to minimize the potential for water pollution.
- If oil storage and workshop areas are needed on-site, they should be surrounded by a bund wall to contain spillages. In the case where soil becomes contaminated with oil, it must be removed for proper disposal or treatment.
- No dumping of any building rubble, soil, litter, organic matter or chemical substances should occur within the drainage line. Dumping and temporary storage of the above should only occur at predetermined locations.
- In the case of dewatering a construction site, water should be treated, and all suspended particles should be removed. Water removed from a construction site should not be released directly in the water course. Discharge should occur into a sump to aid settling of suspended particle or into a well vegetated area which will help trap sediment and residual contaminants.
- Contaminated or potentially contaminated water or runoff should be managed in a controlled way.
- Sediment and erosion control measures should be in place and maintained prior to, and during, construction activities.
- *In situ* water quality should be monitored at all three sites associated with the construction activity.

OPERATIONAL PHASE:

- Runoff from the parking area should go through a litter, sediment and oil trap prior to release into the environment.
- Use environmentally friendly solvents and paints during routine maintenance. This will aid in preventing water pollution during the operational phase.

Cumulative impacts: None anticipated i.e. the receiving aquatic system that will be affected by the construction is small in extent with no ecological sensitive features present. The system is part of a catchment that is under cumulative stress due to extensive catchment alteration, resulting in habitat destruction and fragmentation. It is unlikely that the proposed expansion will contribute notably to additional loss of ecological integrity of the system.

Residual Risks: None anticipated provided that the mitigation measures are implemented correctly.

3. Potential Direct & Indirect Impacts related to erosion and sedimentation.

Nature: CONSTRUCTION PHASE: The disturbance of vegetation and soil during construction will pose the risk of erosion. Eroded soils are likely to increase sedimentation which will lead to changes in vegetation composition and aquatic fauna. Erosion is likely to be highest during the summer months due to increased precipitation.
OPERATIONAL PHASE: Inappropriate storm water releases may lead to erosion and downstream sedimentation.

	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	

CONSTRUCTION PHASE				
Probability	Definite	4	Definite	3
Duration	Short term	2	Short term	2
Extent	Municipal	3	Local	2
Magnitude	Moderate	6	Minor	2
Significance	**Medium**	**44**	**Low**	**18**
Status (positive or negative)	None		None	
Degree of Confidence	Medium		Medium	
OPERATIONAL PHASE				
Probability	High	4	Medium	3
Duration	Permanent	5	Short term	2
Extent	Local	2	Local	2
Magnitude	Medium	6	Minor	2
Significance	**Medium**	**52**	**Low**	**18**
Status (positive or negative)	Negative		Negative	
Degree of Confidence	Medium		Medium	
DECOMMISSIONING & CLOSURE PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
Reversibility	n.a.		n.a.	
Irreplaceable loss of resources?	No		No	
Can impacts be mitigated?	Yes			

Mitigation:

CONSTRUCTION PHASE:

- Erosion and silt control mechanisms must be in place prior to the onset of construction activities. This includes the management of surface flow through the construction site.
- It is recommended that construction activities should make use of the dry seasonal construction window. This will further reduce the risk associated with erosion/siltation.
- Clearing of vegetation needs to be limited in order to limit erosion and should only take place immediately before construction commences.
- Sumps or spoil berms need to be constructed to contain excavated spoil/topsoil so that sediment-laden runoff does not enter the drainage lines.

OPERATIONAL PHASE:

- Design runoff control features to minimize soil erosion and avoid placement of infrastructure and sites on unstable slopes and consider conditions that can cause slope instability, such as groundwater aquifers, precipitation and slope angles.
- Areas where storm water is released should be well armoured against erosion and regularly inspected for stability.
- Areas exposed to a higher erosion risk include storm water releases. These areas should be protected against erosion and regularly inspected.
- The storm water system should be designed with sediment trapping abilities, these should regularly be inspected and manually emptied.

Cumulative impacts: None anticipated i.e. the receiving aquatic system that will be affected by the construction is small in extent with no ecological sensitive features present. The system is part of a catchment that is under cumulative stress due to extensive catchment alteration, resulting in habitat destruction and fragmentation. It is unlikely that the proposed expansion will contribute notably to additional loss of ecological integrity of the system.

Residual Risks: None anticipated provided that the mitigation measures are implemented correctly.

4. Potential Direct & Indirect Impacts related to increase alien/pioneer vegetation in disturbed areas.

Nature: CONSTRUCTION PHASE: The disturbed areas may temporarily provide the opportunity for alien and invasive species to establish. The area is already impacted on my alien vegetation so the further impact due to the construction of the transport facility is considered low.
OPERATIONAL PHASE: Under baseline conditions the drainage lines have high cover and abundance of alien and invasive species. It is possible that disturbed areas can provide a longer-term source of encroachment if not managed.

	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
CONSTRUCTION PHASE				
Probability	Improbable	2	None	1
Duration	Short term	2	Immediate	1
Extent	Local	2	Local	2
Magnitude	Low	4	Minor	2
Significance	**Low**	**16**	**Low**	**5**
Status (positive or negative)	None		None	
Degree of Confidence	Medium		Medium	
OPERATIONAL PHASE				
Probability	High	4	Medium	2
Duration	Medium term	3	Short term	2
Extent	Local	2	Site	1
Magnitude	Minor	2	Minor	2
Significance	**Low**	**28**	**Low**	**10**
Status (positive or negative)	Negative		Negative	
Degree of Confidence	Medium		Medium	
DECOMMISSIONING & CLOSURE PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
Reversibility	n.a.		n.a.	
Irreplaceable loss of resources?	No		No	
Can impacts be mitigated?	Yes			

Mitigation:
CONSTRUCTION PHASE:

- A team of two or three labourers should be trained in the identification and control of key invasive alien species already in the area or highly likely to occur once construction is underway.
- The team should be provided with the correct equipment (e.g. knapsack sprayers) and correct herbicides, which should be stored in a secure facility each day.
- Regular monitoring of all areas of exposed soil should take place during Construction Phases.

OPERATIONAL PHASE:

- The areas that have been decommissioned during the Operational Phase (such as the construction camp) should also be monitored for invasive alien species.

Cumulative impacts: None anticipated i.e. the receiving aquatic system that will be affected by the construction is small in extent with no ecological sensitive features present. The system is part of a catchment that is under cumulative stress due to extensive catchment alteration, resulting in habitat destruction and fragmentation. It is unlikely that the proposed expansion will contribute

notably to additional loss of ecological integrity of the system.

Residual Risks: None anticipated provided that the mitigation measures are implemented correctly.

POTENTIAL IMPACTS on the HYDROGEOLOGICAL ASPECTS of the BIOPHYSICAL ENVIRONMENT:

[Taken from i.e. quoted directly, from the specialist reports contained in APPENDIX G – **i.** '***Hydrogeological Investigation – Proposed Emdemi Public Transport Facility. Report Version – 1 14 December 2021. Urban Innovate. GCS Project Number: 19-075 Prepared by GCS Water and Environment (Pty) Ltd (GCS)'.*** 63 Wessel Road Rivonia 2128 PO Box 2597 Rivonia 2128 South Africa Telephone: +27 (0)11 803 5726 Facsimile: +27 (0)11 803 5745 Web: www.gcs-sa.biz] – and, **ii.** ***'DEVELOPMENT of an ECOLOGICAL STORMWATER MANAGEMENT & REHABILITATION PLAN (ESMRP) for SUBMISSION as Part of WATER USE LICENCE APPLICATION for the PROPOSED TOWNSHIP ZOLA EXTENSION 3 in order to accommodate the EMENDENI PUBLIC TRANSPORT FACILITY on a Part of the REMAINDER of the FARM SOWETO 387 IQ – GAUTENG, PROPOSED PREFERRED LAYOUT PROPOSAL. January 2022*** *' by HABITAT LANDSCAPE ARCHITECTS (Pty) Ltd'.* Siegwalt U Küsel [Prof L Arch (SA) Reg. no. 20182 / ASAPA no. 367]. Principal Landscape Architect & Archaeologist. 101 Harvest crescent, Lynnwood, 0081. Pretoria, South Africa / Plot 237 Kameelfontein, 0035. Pretoria, South Africa. E-mail: siegwalt@habitatdesign.co.za / info@habitatdesign.co.za Mobile: +27(0)82 775 4803
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1. Potential Direct & Indirect Impacts on the Groundwater:

Nature:

CONSTRUCTION PHASE: i. Hydrocarbon contamination is possible due to the presence of heavy machinery on site. Spillages may occur which may impact both the soil and groundwater environment. The impacts are costly and difficult to clean up, however, only small amounts are envisaged to be stored on site. The magnitude of said impacts are however of lesser significance given that hydrocarbon contamination has already been identified within the groundwater on site**.**

OPERATIONAL PHASE: i. Impacts to the soil and groundwater environment may result from the release of potentially impacted stormwater into the adjacent stream or from faulty stormwater infrastructure. On-site stormwater will be managed via drainage into the proposed attenuation dam (located in the south-east corner of the site boundary), prior to being drained out into an adjacent stream located to the east. Given that the proposed site is a transport facility minor hydrocarbon impacts may result from leaking vehicles on-site that will be collected by the stormwater system. If the potentially contaminated stormwater is released into the wetland, or if the associated infrastructure of the dam becomes impaired (e.g. leaking of underground pipes), the soil and groundwater environment would be negatively impacted. However, to mitigate the identified risks a series of ecological attenuation dams that would serve to reduce any potentially hazardous substances present in surface run-off (a plan depicting the layout of said dams is provided in Appendix D) has been included in the facility design. In particular, the stormwater will be intercepted and routed to flow through a series of retention ponds, attenuation dams and bioswales. Included in this design is re-vegetating each section of the series through a targeted mixture of various plant species selected to aid in reducing/eliminating dissolved phase chemicals of potential concern (refer to the March 2020 report prepared by Habitat Landscape Architects for the list of proposed plant species).

	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
CONSTRUCTION PHASE				
Probability	Medium	3	Low	2
Duration	Short term	2	Short term	2
Extent	Local	2	Local	2
Magnitude	Moderate	6	Moderate	6
Significance	**Medium**	**30**	**Low**	**20**
Status (positive or negative)	Negative		Negative	
OPERATIONAL PHASE				
Probability	Medium	3	Low	2
Duration	Long term	4	Long term	4
Extent	Local	2	Local	2
Magnitude	High	8	Moderate	6

Significance	**Medium**	**42**	**Low**	**24**
Status (positive or negative)	Negative		Negative	
DECOMMISSIONING & CLOSURE PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
Reversibility	n.a.		n.a.	
Irreplaceable loss of resources?	No		No	
Can impacts be mitigated?	Yes			

Mitigation:

CONSTRUCTION PHASE:

- The mitigation measures would include containing the contaminated groundwater within the appropriate areas and preventing such water from entering the wetland and associated streams.
- In addition, ensure clean up protocols are in place and followed. Additionally, the municipality should be informed that up-gradient activities are affecting the groundwater quality at the site prior to construction.

OPERATIONAL PHASE:

- To mitigate the identified risks a series of ecological attenuation dams that would serve to reduce any potentially hazardous substances present in surface run-off (a plan depicting the layout of said dams is provided in Appendix D) has been included in the facility design. In particular, the stormwater will be intercepted and routed to flow through a series of retention ponds, attenuation dams and bioswales. A 30m wetland buffer was also included in this design to reduce the probability of potentially contaminated surface run-off reaching the wetland. Included in this design is re-vegetating each section of the series through a targeted mixture of various plant species selected to aid in reducing/eliminating dissolved phase chemicals of potential concern (refer to the March 2020 report prepared by Habitat Landscape Architects for the list of proposed plant species).
- Further mitigation measures would include the implementation of the groundwater monitoring program (detailed in Section 9) for the site and surrounding area whereby the dam water and adjacent streams are monitored and sampled on a regular basis. This would allow for the early detection of water quality deterioration associated with the site. Maintenance and in-house inspections of the attenuation dam system should be undertaken regularly.
- It is recommended that the attenuation dams be sampled on a monthly basis to ensure that the system is functioning, and that no contamination is released into the associated wetland. Samples should also be collected from down- and up-gradient of the attenuation dam to assess the impact the dam has on the water quality of the nearby wetland.
- Groundwater monitoring should be conducted on a bi-annual basis for inorganic and hydrocarbon constituents and a trend analysis should be compiled to ensure the facility does not have any detrimental effect on the groundwater environment i.e. time-series data should be presented via trend analyses after each sampling event to determine if the facility has any detrimental effects on the water resources and to assess for increasing concentrations of targeted contamination compounds and relevant inorganic indicators. It is recommended that access and approval for off-site sampling be obtained from the landowner.
- The groundwater monitoring plan should commence once the site is operational.
- It is recommended that the attenuation dams and associated infrastructure are installed according to regulations stipulated in the National Water act 36 of 1998: Regulations regarding the safety of dams in terms of section 123(1) of the National Water Act, 1998 (act no. 36 of 1998).

Cumulative impacts: None anticipated provided that the mitigation measures are implemented correctly.

Residual Risks: None anticipated provided that the mitigation measures are implemented correctly.

2. Potential Direct & Indirect Impacts on the Groundwater:

Nature:
CONSTRUCTION PHASE: ii. Given that there is shallow, hydrocarbon-impacted groundwater at the site and that soil will be excavated during the construction phase (which could potentially expose the contaminated groundwater), a potential pathway between the groundwater and off-site wetland with associated streams has been identified.
OPERATIONAL PHASE: ii. Impacts to the soil and groundwater environment may result from the release of potentially impacted leaking vehicles. Hydrocarbon impacts associated with leaking vehicles may also affect the soil and groundwater environment through leakages entering the subsoils.

	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
CONSTRUCTION PHASE				
Probability	Medium	3	Low	2
Duration	Short term	2	Short term	2
Extent	Local	2	Local	2
Magnitude	Very high	10	Very high	10
Significance	**Medium**	**42**	**Low**	**28**
Status (positive or negative)	Negative		Negative	
OPERATIONAL PHASE				
Probability	Low	3	Low	2
Duration	Long term	4	Long term	4
Extent	Local	2	Local	2
Magnitude	Medium	6	Medium	6
Significance	**Medium**	**36**	**Low**	**24**
Status (positive or negative)	Negative		Negative	
DECOMMISSIONING & CLOSURE PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
Reversibility	n.a.		n.a.	
Irreplaceable loss of resources?	No		No	
Can impacts be mitigated?	Yes			

Mitigation:
CONSTRUCTION PHASE:

- The mitigation measures would include containing the contaminated groundwater within the appropriate areas and preventing such water from entering the wetland and associated streams.
- In addition, ensure clean up protocols are in place and followed. Additionally, the municipality should be informed that up-gradient activities are affecting the groundwater quality at the site prior to construction.

OPERATIONAL PHASE:

- To mitigate the identified risks a series of ecological attenuation dams that would serve to reduce any potentially hazardous substances present in surface run-off (a plan depicting the layout of said dams is provided in Appendix D) has been included in the facility design. In particular, the stormwater will be intercepted and routed to flow through a series of retention ponds, attenuation dams and bioswales. A 30m wetland buffer was also included in this design to reduce the probability of potentially contaminated surface run-off reaching the wetland. Included in this design is re-vegetating each section of the series through a

targeted mixture of various plant species selected to aid in reducing/eliminating dissolved phase chemicals of potential concern (refer to the March 2020 report prepared by Habitat Landscape Architects for the list of proposed plant species).

- Further mitigation measures would include the implementation of the groundwater monitoring program (detailed in Section 9) for the site and surrounding area whereby the dam water and adjacent streams are monitored and sampled on a regular basis. This would allow for the early detection of water quality deterioration associated with the site. Maintenance and in-house inspections of the attenuation dam system should be undertaken regularly.
- It is recommended that the attenuation dams be sampled on a monthly basis to ensure that the system is functioning, and that no contamination is released into the associated wetland. Samples should also be collected from down- and up-gradient of the attenuation dam to assess the impact the dam has on the water quality of the nearby wetland.
- Groundwater monitoring should be conducted on a bi-annual basis for inorganic and hydrocarbon constituents and a trend analysis should be compiled to ensure the facility does not have any detrimental effect on the groundwater environment i.e. time-series data should be presented via trend analyses after each sampling event to determine if the facility has any detrimental effects on the water resources and to assess for increasing concentrations of targeted contamination compounds and relevant inorganic indicators. It is recommended that access and approval for off-site sampling be obtained from the landowner.
- The groundwater monitoring plan should commence once the site is operational.
- It is recommended that the attenuation dams and associated infrastructure are installed according to regulations stipulated in the National Water act 36 of 1998: Regulations regarding the safety of dams in terms of section 123(1) of the National Water Act, 1998 (act no. 36 of 1998).

Cumulative impacts: None anticipated provided that the mitigation measures are implemented correctly.

Residual Risks: None anticipated provided that the mitigation measures are implemented correctly.

3. Potential Direct & Indirect Impacts on the Groundwater:

Nature:

OPERATIONAL PHASE: Impacts to the soil and groundwater environment may result from the release of potentially impacted on-site sewer system i.e. leaks or other inadequacies resulting from the sewer system may negatively impact the soil and groundwater environment.

	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
CONSTRUCTION PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	**n.a.**		**n.a.**	
Status (positive or negative)	None		None	
OPERATIONAL PHASE				
Probability	Medium	3	Low	2
Duration	Long term	4	Long term	4
Extent	Local	2	Local	2
Magnitude	Medium	6	Medium	6
Significance	**Medium**	**36**	**Low**	**24**
Status (positive or negative)	Negative		Negative	
DECOMMISSIONING & CLOSURE PHASE				
Probability	n.a.		n.a.	

Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
Reversibility	n.a.		n.a.	
Irreplaceable loss of resources?	No		No	
Can impacts be mitigated?	Yes			

Mitigation:

OPERATIONAL PHASE:

- To mitigate the identified risks a series of ecological attenuation dams that would serve to reduce any potentially hazardous substances present in surface run-off (a plan depicting the layout of said dams is provided in Appendix D) has been included in the facility design. In particular, the stormwater will be intercepted and routed to flow through a series of retention ponds, attenuation dams and bioswales. A 30m wetland buffer was also included in this design to reduce the probability of potentially contaminated surface run-off reaching the wetland. Included in this design is re-vegetating each section of the series through a targeted mixture of various plant species selected to aid in reducing/eliminating dissolved phase chemicals of potential concern (refer to the March 2020 report prepared by Habitat Landscape Architects for the list of proposed plant species).
- Further mitigation measures would include the implementation of the groundwater monitoring program (detailed in Section 9) for the site and surrounding area whereby the dam water and adjacent streams are monitored and sampled on a regular basis. This would allow for the early detection of water quality deterioration associated with the site. Maintenance and in-house inspections of the attenuation dam system should be undertaken regularly.
- It is recommended that the attenuation dams be sampled on a monthly basis to ensure that the system is functioning, and that no contamination is released into the associated wetland. Samples should also be collected from down- and up-gradient of the attenuation dam to assess the impact the dam has on the water quality of the nearby wetland.
- Groundwater monitoring should be conducted on a bi-annual basis for inorganic and hydrocarbon constituents and a trend analysis should be compiled to ensure the facility does not have any detrimental effect on the groundwater environment i.e. time-series data should be presented via trend analyses after each sampling event to determine if the facility has any detrimental effects on the water resources and to assess for increasing concentrations of targeted contamination compounds and relevant inorganic indicators. It is recommended that access and approval for off-site sampling be obtained from the landowner.
- The groundwater monitoring plan should commence once the site is operational.
- It is recommended that the attenuation dams and associated infrastructure are installed according to regulations stipulated in the National Water act 36 of 1998: Regulations regarding the safety of dams in terms of section 123(1) of the National Water Act, 1998 (act no. 36 of 1998).

Cumulative impacts: None anticipated provided that the mitigation measures are implemented correctly.

Residual Risks: None anticipated provided that the mitigation measures are implemented correctly.

POTENTIAL IMPACTS on the SOIL & HYDROPEDOLOGY ASPECTS of the BIOPHYSICAL ENVIRONMENT:

[Taken from i.e. quoted directly, from the specialist reports contained in APPENDIX G – ***'SPECIALIST REPORT Soil and hydropedological assessment of the proposed Zola Public Transport Facility development area in Soweto, Gauteng Province'.*** *Requested By Ecotone Freshwater Consultants Compiled By Rehab Green Monitoring Consultants CC. Environmental and Rehabilitation Monitoring Consultant cc P.I. Steenekamp (Cert.Sci.Nat.). Report No: RG/2019/08/02/1. Date: 17 January 2022. Status: Edition 2. PO Box 12636, Queenswood, 0121. Pretoria. Cell: 082 560 0592. Fax: 086 678 1690. E-mail: rehabgreen@ee-sa.com'*

1. Potential Direct & Indirect Impacts on the Soil.

Nature: **CONSTRUCTION PHASE: Soil** - Complete cease of the soil's productive capability due to the soil surface being covered by concrete, tar and paving. The soil's productive capability will not be destroyed but will cease permanently or until the structure is removed completely.

	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	

Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
CONSTRUCTION PHASE				
Probability	High	5	High	5
Duration	Permanent	5	Permanent	5
Extent	Site	1	Site	1
Magnitude	High	8	High	8
Significance	**High**	**70**	**High**	**70**
Status (positive or negative)	Negative		Negative	
Degree of Confidence	High		Medium	
OPERATIONAL PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	**n.a.**		n.a.	
Status (positive or negative)	n.a.		n.a.	
Degree of Confidence	n.a.		n.a.	
DECOMMISSIONING & CLOSURE PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
Reversibility	Yes		Yes	
Irreplaceable loss of resources?	No. However, the soil resource underneath structures are not lost although the productive capability will remain ceased until the structures are removed.		No. However, the soil resource underneath structures are not lost although the productive capability will remain ceased until the structures are removed.	
Can impacts be mitigated?	No			

Mitigation:

CONSTRUCTION PHASE:

- The reality is that wherever natural soils are covered by concrete, tar or paving the soil's productive capability will cease. This is an impact that is unavoidable in expanding urban areas. Within larger developments the soil's productive capability in-between structures can be preserved, but with a single structure there are no mitigation measures.

Cumulative impacts: The cumulative impact is certainly high since there is a high development rate in the country and soils are covered by structures everywhere.

Residual Risks: None anticipated.

2. Potential Direct & Indirect Impacts on Hydropedology.

Nature: CONSTRUCTION PHASE: **Hydropedology** – this footprint intersects only the recharge hydropedological zone and not the interflow or responsive zones. Water will not infiltrate the soil at the structure footprint but will infiltrate the soil after being channelled off the footprint or it may be channelled directly into the nearby wetland. It will not cause a reduction of water quantities in the nearby wetlands.

	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	n.a.		n.a.	

Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
CONSTRUCTION PHASE				
Probability	Improbable	1	Improbable	1
Duration	Permanent	5	Permanent	5
Extent	Site	1	Site	1
Magnitude	Minor	2	Minor	2
Significance	**Low**	**8**	**Low**	**8**
Status (positive or negative)	Negative		Negative	
Degree of Confidence	Medium		Medium	
OPERATIONAL PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
Degree of Confidence	n.a.		n.a.	
DECOMMISSIONING & CLOSURE PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
Reversibility	n.a.		n.a.	
Irreplaceable loss of resources?	No		No	
Can impacts be mitigated?	Yes			

Mitigation:

CONSTRUCTION PHASE:

- There are hardly any impact and therefore no mitigation measures.

Cumulative impacts: None anticipated.

Residual Risks: None anticipated.

POTENTIAL IMPACTS on the SOCIO-ECONOMIC ASPECTS of the ENVIRONMENT:

[No specialists were appointed for the SOCIO-ECONOMIC ENVIRONMENTAL aspects].

1. Potential Direct & Indirect Impacts on the SOCIO-ECONOMIC ENVIRONMENT

Nature:

CONSTRUCTION PHASE IMPACTS:

- Job Creation -
  - The construction of the proposed development may create approximately 100 employment opportunities during the construction phase.

OPERATIONAL PHASE IMPACTS:

- Job Creation
  - Minor increased production as a result of the proposed development will create and sustain new job opportunities in only that specific sector of the economy in which the current industry is functioning in (i.e. TAXI transport & a few informal

market opportunities) trade in. Approximately 50 permanent local jobs stand (i.e. excluding informal trading) to be created, and then sustained annually.				
	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
CONSTRUCTION PHASE				
Probability	Low	2	Low	2
Duration	Very Short-term	1	Very Short-term	1
Extent	Local	2	Local	2
Magnitude	Very Low	1	Very Low	1
Significance	**Very Low**	**8**	**Very Low**	**8**
Status (positive or negative)	Positive		Positive	
OPERATIONAL PHASE				
Probability	Medium	3	Medium	3
Duration	Permanent	5	Permanent	5
Extent	Local	2	Local	2
Magnitude	Very low	1	Very low	1
Significance	**Low**	**24**	**Low**	**24**
Status (positive or negative)	Positive		Positive	
DECOMMISSIONING & CLOSURE PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
Reversibility	N.a.		N.a.	
Irreplaceable loss of resources?	No		No	
Can impacts be mitigated?	N.a.			

Mitigation:

- No mitigation measures are proposed, since there are no negative impacts foreseen, except if the proposed development would not proceed which will be minor in nature.
- Prerequisites that need to be considered i.e. in order for surrounding areas to capitalise optimally on the development there are certain aspects which will have certain minor positive implications on the surrounding areas**:**
    - Invest in education, i.e. expand and strengthen educational opportunities and programmes, especially relating to the CONSTRUCTION (i.e. buildings/facilities/infrastructure), TRANSPORT & INFORMAL TRADING industries;
    - Promote and implement skills development and social upliftment interventions;
    - Local opportunities need to be enhanced by means of preferential procurement and local labour promotion;
    - Local labour should be employed as far as possible during both construction and operations of the proposed development.
- The following steps/programmes are some aspects to consider, in ensuring the maximum benefit of the proposed development within the local economy even if it is minor in it's effect i.e:
    - **Expanding and Strengthening Educational Programmes and Opportunities**

      Education remains one of the key challenges within South Africa, which leads to skills shortages and therefore hinders jobseekers to be gainfully employed and as a result be able to contribute to economic development and growth.

The key, and starting point in creating sustainable job opportunities, lies with investment in education and skills development. Investments in education foster opportunities for developing a skilled labour force. Education allows the youth to acquire the necessary skills to take on higher quality jobs, and those jobs in turn promote economic development and growth.

The following paragraphs describe some programmes and initiatives that can be implemented to increase economic and employment opportunities.

- ***Local Labour Promotion***

The unemployment rate within the immediate market catchment area is lower compared to the national average. However, job creation and skills development remain high on the national agenda. In the context of the above the proposed development will not only fulfil an important support function but will also assist in creating job opportunities along certain critical segments of the economic value chain. Skills development and training is one of the most important instruments to address structural unemployment.

- ***Skills and Education Training***

Skills development and training is one of the more important requirements for people to get employed. Throughout South Africa the need for skills in the marketplace is one of the obstacles preventing higher economic growth. The provision of skills and training to the unemployed would assist in enabling people to apply for jobs and to be able to execute their responsibilities.

Cumulative impacts: An appropriate development i.e. an essential and long overdue formalised basic services (transport) amenity, which is also compatible with its environment and which is also in line with legislation, policies, guidelines etc – is always on asset to the local economy in various ways and also creates the positive image of progress, wealth, safety, security and prosperity which in turn could possibly be a 'drawing card' for further development in the same area.

Residual Risks: None anticipated.

2. Potential Direct & Indirect Impacts on the SOCIO-ECONOMIC ENVIRONMENT

Nature:

CONSTRUCTION PHASE IMPACTS:

- Local Economic Growth
  - New construction activity will create minor capital investment that will in turn benefit the local economy in a minor way.

OPERATIONAL PHASE IMPACTS:

- Local Economic Growth
  - The proposed development could facilitate minor investment in key local sectors, which will translate into additional business sales (i.e. transport industry & informal market) and additional GGP.

	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
CONSTRUCTION PHASE				
Probability	Low	2	Low	2
Duration	Very short term	1	Very short term	1
Extent	Local	2	Local	2
Magnitude	Minor	2	Minor	2
Significance	**Low**	**10**	**Low**	**10**
Status (positive or negative)	Positive		Positive	
OPERATIONAL PHASE				
Probability	Low	2	Low	2
Duration	Permanent	5	Pemanent	5
Extent	Local	2	Local	2
Magnitude	Minor	2	Minor	2

Significance	**Low**	**18**	**Low**	**18**
Status (positive or negative)	Positive		Positive	
DECOMMISSIONING & CLOSURE PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
Reversibility	High		High	
Irreplaceable loss of resources?	No		No	
Can impacts be mitigated?	N.a.			

Mitigation:

- No mitigation measures are proposed, since there are no negative impacts foreseen, except if the proposed development would not proceed which will be minor in nature.
- Prerequisites that need to be considered i.e. in order for surrounding areas to capitalise optimally on the development there are certain aspects which will have certain minor positive implications on the surrounding areas**:**
    - Invest in education, i.e. expand and strengthen educational opportunities and programmes;
    - Promote and implement skills development and social upliftment interventions;
    - Local opportunities need to be enhanced by means of preferential procurement and local labour promotion;
    - Local labour should be employed as far as possible during both construction and operations of the proposed development.
- The following steps/programmes are some aspects to consider, in ensuring the maximum benefit of the proposed development within the local economy even if it is minor in it's effect i.e:
    - **Expanding and Strengthening Educational Programmes and Opportunities**

      Education remains one of the key challenges within South Africa, which leads to skills shortages and therefore hinders job-seekers to be gainfully employed and as a result be able to contribute to economic development and growth.

      The key, and starting point in creating sustainable job opportunities, lies with investment in education and skills development. Investments in education foster opportunities for developing a skilled labour force. Education allows the youth to acquire the necessary skills to take on higher quality jobs, and those jobs in turn promote economic development and growth.

      The following paragraphs describe some programmes and initiatives that can be implemented to increase economic and employment opportunities.

        - ***Local Labour Promotion***

      The unemployment rate within the immediate market catchment area is lower compared to the national average. However, job creation and skills development remain high on the national agenda. In the context of the above the proposed development will not only fulfil an important support function but will also assist in creating job opportunities along certain critical segments of the economic value chain. Skills development and training is one of the most important instruments to address structural unemployment.

        - ***Skills and Education Training***

      Skills development and training is one of the more important requirements for people to get employed. Throughout South Africa the need for skills in the marketplace is one of the obstacles preventing higher economic growth. The provision of skills and training to the unemployed would assist in enabling people to apply for jobs and to be able to execute their responsibilities.

Cumulative impacts: An appropriate development i.e. an essential and long overdue formalised basic services (transport) amenity, compatible with its environment and which is also in line with legislation, policies, guidelines etc – is always on asset to the local economy in various ways and also creates the positive image of progress, wealth, safety, security and prosperity which in turn could possibly be a 'drawing card' for further development in the same area.

Residual Risks: None anticipated.

3. Potential Direct & Indirect Impacts on the SOCIO-ECONOMIC ENVIRONMENT

Nature:

CONSTRUCTION PHASE IMPACTS:

- Infrastructure Investment & Development
  - This proposed Public Transport Facility which is an essential and long overdue formalised basic services (transport) amenity, would not only be compatible with its environment but is a low asset to the local economy in various ways.

OPERATIONAL PHASE IMPACTS:

- Rates & Tax Base Expansion
  - The development would facilitate real estate investment, job creation and economic growth, which, in turn will contribute to the creation of productive, rateable assets (i.e. transport services, informal market etc) in a minor way. The proposed development could also possibly contribute in terms of payable property rates to the local fiscus in a minor way, if the applicant would opt to make certain aspects of the proposed development (i.e. floor/parking/market area space etc) available at a minor rental amount.

	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
CONSTRUCTION PHASE				
Probability	Low	2	Low	2
Duration	Very short term	1	Very short term	1
Extent	Local	2	Local	2
Magnitude	Minor	1	Minor	1
Significance	**Very low**	**8**	**Very low**	**8**
Status (positive or negative)	Positive		Positive	
OPERATIONAL PHASE				
Probability	Low	2	Low	2
Duration	Permanent	5	Permanent	5
Extent	Local	2	Local	2
Magnitude	Minor	1	Minor	1
Significance	**Low**	**16**	**Low**	**16**
Status (positive or negative)	Positive		Positive	
DECOMMISSIONING & CLOSURE PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
Reversibility	High		High	
Irreplaceable loss of resources?	No		No	
Can impacts be mitigated?	N.a.			

Mitigation and/or Recommendations:

- No mitigation measures are proposed, since there are no negative impacts foreseen, except if the proposed development would not proceed which will be minor in nature.
- Prerequisites that need to be considered i.e. in order for surrounding areas to capitalise optimally on the development there are certain aspects which will have certain minor positive implications on the surrounding areas**:**

- Invest in education, i.e. expand and strengthen educational opportunities and programmes;
- Promote and implement skills development and social upliftment interventions;
- Local opportunities need to be enhanced by means of preferential procurement and local labour promotion;
- Local labour should be employed as far as possible during both construction and operations of the proposed development.

- The following steps/programmes are some aspects to consider, in ensuring the maximum benefit of the proposed development within the local economy even if it is minor in it's effect i.e:
  - **Expanding and Strengthening Educational Programmes and Opportunities**

    Education remains one of the key challenges within South Africa, which leads to skills shortages and therefore hinders jobseekers to be gainfully employed and as a result be able to contribute to economic development and growth.

    The key, and starting point in creating sustainable job opportunities, lies with investment in education and skills development. Investments in education foster opportunities for developing a skilled labour force. Education allows the youth to acquire the necessary skills to take on higher quality jobs, and those jobs in turn promote economic development and growth.

    The following paragraphs describe some programmes and initiatives that can be implemented to increase economic and employment opportunities.

    - ***Local Labour Promotion***

    The unemployment rate within the immediate market catchment area is lower compared to the national average. However, job creation and skills development remain high on the national agenda. In the context of the above the proposed development will not only fulfil an important support function but will also assist in creating job opportunities along certain critical segments of the economic value chain. Skills development and training is one of the most important instruments to address structural unemployment.

    - ***Skills and Education Training***

    Skills development and training is one of the more important requirements for people to get employed. Throughout South Africa the need for skills in the marketplace is one of the obstacles preventing higher economic growth. The provision of skills and training to the unemployed would assist in enabling people to apply for jobs and to be able to execute their responsibilities.

Cumulative impacts: An appropriate development i.e. an essential and long overdue formalised basic services (transport) amenity, compatible with its environment and which is also in line with legislation, policies, guidelines etc – is always on asset to the local economy in various ways and also creates the positive image of progress, wealth, safety, security and prosperity which in turn could possibly be a 'drawing card' for further development in the same area.

Residual Risks: None anticipated.

POTENTIAL IMPACTS on the VISUAL & AESTHETIC ENVIRONMENT:

1. Potential Direct & Indirect Impacts on the VISUAL & AESTHETIC ENVIRONMENT

Nature:

PLANNING & DESIGN PHASE:

- The visual and aesthetical environment impact caused by the potential lack of adequate (i.e. sensitive, appropriate, in-context with the local surroundings and visual qualities of the site and other related visual aspects) – town planning, urban planning/design, architectural, landscape architectural design of facilities and site – and, the full implementation of the proposed mitigation measures. The applicant has appointed such specialists as indicated above and therefore employed sufficient measures (mitigation) i.e. as far as possible, to make the proposed development an attractive and visually uplifting improvement on the site and aesthetically appealing towards the directly adjacent township environment.

CONSTRUCTION PHASE:

- Visual and aesthetical environment impact caused by construction related activities such as, stockpile material, trucks, construction offices, hoarding and excavation machinery, clearance of vegetation, excavation and storage of construction materials and equipment. This impact will be temporary in nature, limited to the construction phase.

OPERATIONAL PHASE:

- The presence of the proposed facilities [i.e. proposed Public Transport Facility which is an essential and long overdue formalised basic services (transport) amenity, in the midst of a township (i.e. Emdeni & Zola in SOWETO) with a plethora of mixed uses, facilities, activities and elements (i.e. litter and refuse dumping) which creates in general a visual 'confusion' of

disconnectedness (i.e. not integrated in a sensitive cohesive way visually and aesthetically) and gross unpleasantness to the urban-township, remaining heavily impacted (i.e. totally transformed, compromised and *Seriously* modified ecosystem state) natural environment (i.e. wetland within a valley bottom system with shallow water and no distinct riparian zone) and other surrounding land uses in that area (e.g. fuel station etc), with no visual 'theme' or specific architectural and/or landscape architectural style or character which unifies the visual 'landscape' as a whole] - will have a minor positive visual impact in the area, particularly for the directly adjacent land occupiers and users, public transport vehicle users and drivers, motor vehicle drivers and/or pedestrians - especially if the landowner/developer will develop the proposed facilities in a visual sensitive way which responds positively to its natural and surrounding built-up environment and rehabilitates the wetland and stream and maintain it a good condition. The applicant has appointed such specialists as indicated above and therefore employed sufficient measures i.e. as far as possible, to make the proposed development an attractive and visually uplifting improvement on the site and aesthetically appealing towards the directly adjacent township environment. This proposed development (i.e. facilities, infrastructure, landscaping, attenuation ponds etc) however, calls for and would require as an essential part of the successful functioning of the facilities and maintaining the original visual character and aesthetical appeal of it - a highly efficient maintenance and effective full time management program.

DECOMMISSIONING & CLOSURE PHASE:

- Trucks used for decommissioning activities, rubble and stockpiles may cause a visual impact.

	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	Low	2	High	4
Duration	Long-term	4	Long-term	4
Extent	Local	2	Local	2
Magnitude	Minor	1	Minor	2
Significance	**Low**	**14**	**Medium**	**32**
Status (positive or negative)	Negative		Positive	
CONSTRUCTION PHASE				
Probability	Low	2	Low	2
Duration	Immediate	1	Immediate	1
Extent	Local	2	Local	2
Magnitude	Low	2	Low	2
Significance	**Low**	**10**	**Low**	**14**
Status (positive or negative)	Negative		Negative	
OPERATIONAL PHASE				
Probability	Low	2	High	4
Duration	Long-term	4	Long-term	4
Extent	Local	2	Local	2
Magnitude	Minor	1	Minor	2
Significance	**Low**	**14**	**Medium**	**32**
Status (positive or negative)	Negative		Positive	
DECOMMISSIONING & CLOSURE PHASE				
Probability	Improbable	1	Improbable	1
Duration	Immediate	1	Immediate	1
Extent	Local	2	Local	2
Magnitude	High	8	Medium	6
Significance	**Low**	**11**	**Low**	**9**
Status (positive or negative)	Negative		Negative	
Reversibility	Low		Medium	
Irreplaceable loss of resources?	No.		No.	
Can impacts be mitigated?	Yes			

Mitigation:

PLANNING & DESIGN PHASE:

- Planners, Architects & Landscape Architects and any other related professional, project managers and/or building contractor to

plan, design and implement in the development proposal in such a sensitive manner which would be aesthetically pleasing and visually uplifting in it's current township setting e.g. sympathetic materials and colours with the surrounding environment like hues of brown, grey etc; all yards and storage areas to be enclosed by masonry walls or screens which is screened by indigenous local biodiversity vegetation; external lighting should be confined to essential areas; lights should be low-level, where possible, and fitted with reflectors to avoid light spillage; lights and signage should be fixed to buildings or walls, where possible, to avoid unnecessary masts and visual clutter; other corporate or advertising signage and flags should be avoided or restricted etc. The visual and aesthetical environment impact caused by the potential lack of adequate (i.e. sensitive, appropriate, in-context with the local surroundings and visual qualities of the site and other related visual aspects) – town planning, urban planning/design, architectural, landscape architectural design of facilities and site – and, the full implementation of the proposed mitigation measures. The applicant has appointed such specialists as indicated above and therefore employed sufficient measures (mitigation) i.e. as far as possible, to make the proposed development an attractive and visually uplifting improvement on the site and aesthetically appealing towards the directly adjacent township environment.

- The relevant professionals i.e. Architect, Civil engineers, Landscape Architect etc, should be appointed by the developer to implement the final construction and planting plans & drawings which at least complies with the above-mentioned mitigation measures.

CONSTRUCTION PHASE:

- Limit dust and screen construction from viewers along adjacent road with strips of shade cloth; the construction site, material stores, stockpiles and lay-down area should be kept tidy; measures to control wastes and litter should be included in the contract specification documents; wind-blown dust from stockpiles and construction activities, should be controlled; an environmental; management program (EMPr) should be prepared and an environmental control officer (ECO) employed for the duration of the construction.

OPERATIONAL PHASE:

- Install landscaping and rehabilitation as soon as possible; Litter and waste should be effectively managed to avoid visual problems in the area; buildings and landscaping and rehabilitation should receive on-going maintenance to avoid visual decay; lights should be low-level, where possible, and fitted with reflectors to avoid light spillage; lights and signage should be fixed to buildings or walls, where possible, to avoid unnecessary masts and visual clutter.

DECOMMISSIONING & CLOSURE PHASE:

- The decommissioning area must be fenced, and shade cloth attached, where necessary. At the end of the life of the project, structures no longer required must be demolished and removed from the site. Roads, parking and other paved areas no longer required must be broken up and the site re-instated or redeveloped.

Cumulative impacts: An appropriate development aesthetically uplifting and visually pleasing to its current' environment and which is also in line with legislation, policies, guidelines etc – is always an asset to the local community in various ways and also creates the positive image of progress, wealth, safety, security and prosperity which in turn could possibly be a 'drawing card' for further development in the same area.

Residual Risks: None anticipated.

POTENTIAL IMPACTS of ACCESS ROADS on the ENVIRONMENT:

1. Potential Direct & Indirect Impacts of ACCESS ROADS on the ENVIRONMENT

Nature:

PLANNING & DESIGN PHASE:

- ACCESS ROADS:
  - New access roads and haulage routes could impact on areas of sensitivity (fauna and flora, wetlands, spruit etc.).

CONSTRUCTION PHASE:

- ACCESS ROADS:
  - New access roads and haulage routes could impact on areas of sensitivity (fauna and flora, wetlands and spruit etc.).

	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	Medium	3	Improbable	1
Duration	Long-term	4	Medium-term	3
Extent	Site	1	Site	1
Magnitude	Moderate	8	Low	4
Significance	**Medium**	**33**	**Low**	**8**

Status (positive or negative)	Negative		Negative	
CONSTRUCTION PHASE				
Probability	Medium	3	Improbable	1
Duration	Short term	2	Short term	2
Extent	Site	1	Site	1
Magnitude	Moderate	8	Low	2
Significance	Medium	**33**	Very low	**5**
Status (positive or negative)	Negative		Negative	
OPERATIONAL PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
DECOMMISSIONING & CLOSURE PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
Reversibility	Low		High	
Irreplaceable loss of resources?	Yes		No	
Can impacts be mitigated?	Yes			

Mitigation:

PLANNING & DESIGN PHASE:

- Temporary access and haulage routes must be designed prior to construction commencing to ensure that the most preferable access and haulage routes has been identified. Provision made for the erection of appropriate warning signs.
- Road safety must be taken into account when planning access to the site.
- Use should be made of existing roads as far as possible.

Cumulative impacts: None

Residual Risks: None anticipated.

POTENTIAL IMPACTS of EROSION & SOIL DISTURBANCE on the ENVIRONMENT:

1. Potential Direct & Indirect Impacts of EROSION & SOIL DISTURBANCE on the ENVIRONMENT

Nature:

CONSTRUCTION PHASE:

- Erosion & Soil Disturbance:
  - Sources of water and soil pollution on construction sites include: diesel and oil; paint, solvents, cleaners and other harmful chemicals; and construction debris and dirt.
  - Spillages of oil, lubricants and fuel from construction vehicles, plant and machinery has the potential to contaminate the soil.
  - When portions of the site are cleared, combined with the failure to implement erosion control measures effectively, silt-bearing run-off and sedimentation pollution will result.
  - Ground disturbing activities such as blasting, and foundation construction can lead to increased erosion.
  - Stormwater runoff has the potential to erode the topsoil.
  - Soil compaction due to construction activities will reduce aeration, permeability, and water holding capacity of the soils

and cause an increase in surface runoff, potentially causing increased sheet or gully erosion.				
	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
CONSTRUCTION PHASE				
Probability	High	4	Low	2
Duration	Short-term	2	Immediate	1
Extent	Site	1	Site	1
Magnitude	High	8	Low	4
Significance	**Medium**	**44**	**Low**	**12**
Status (positive or negative)	Negative		Negative	
OPERATIONAL PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
DECOMMISSIONING & CLOSURE PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
Reversibility	Low		High	
Irreplaceable loss of resources?	Yes		No	
Can impacts be mitigated?	Yes			

Mitigation:

CONSTRUCTION PHASE:

- Apply erosion controls (e.g., berms, sandbags and hessian sheets) to prevent/minimise soil erosion during construction activities.
- The topsoil layer of not less than 200mm (or as per geotechnical soil profiling result) must be removed and stockpiled in mounds no more than 2m in height in a designated area for use during progressive rehabilitation.
- Care must be taken to prevent the compaction of topsoil in any way, especially by trucks and other construction machinery.
- Apply a protective covering on disturbed soils with suitable vegetation after completion of construction activities.
- Save topsoil removed during construction and use it to reclaim disturbed areas upon completion of construction activities.
- Avoid creating excessive slopes during excavation.
- Implement a stormwater management plan to ensure compliance with regulations and prevent off-site migration of contaminated stormwater or increased soil erosion during the construction phase.
- Excavation (temporary) to comply with SANS 10400-G:2011 guidelines.

Cumulative impacts: None

Residual Risks: None anticipated.

POTENTIAL IMPACTS on AIR QUALITY of the ENVIRONMENT:

1. Potential Direct & Indirect Impacts on AIR QUALITY of the ENVIRONMENT

Nature:

CONSTRUCTION PHASE:

- Air quality impacts may arise during the construction phase as a result of dust generated by the exposure and disturbance of soil.
- Fugitive dust may become a nuisance for surrounding land users and occupiers.
- Further air quality impacts will arise as a result of the exhaust emissions from construction vehicles and plant.

DECOMMISSIONING & CLOSURE PHASE:

- There is potential for the air quality to be impacted through the decommissioning activities that may generate dust through excavation activities and disturbing the ground.
- Exhaust emissions produced by construction equipment will be dispersed and it is not anticipated that they will cause a nuisance to surrounding landowners.

	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
CONSTRUCTION PHASE				
Probability	Low	3	Very Low	1
Duration	Short-term	2	Immediate	1
Extent	Site	1	Site	1
Magnitude	Low	2	Minor	1
Significance	**Low**	**15**	**Minor**	**1**
Status (positive or negative)	Negative		Negative	
OPERATIONAL PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	**n.a.**		**n.a.**	
Status (positive or negative)	None		none	
DECOMMISSIONING & CLOSURE PHASE				
Probability	Low	3	Very low	1
Duration	Immediate	1	Immediate	1
Extent	Site	1	Site	1
Magnitude	Low	2	Minor	1
Significance	**Low**	**12**	**Minor**	**1**
Status (positive or negative)	Negative		Negative	
Reversibility	Medium		High	
Irreplaceable loss of resources?	No		No	
Can impacts be mitigated?	Yes			

Mitigation:

CONSTRUCTION PHASE:

- Dust minimisation and control measures should be implemented on the construction site at regular intervals. This could include irrigation by water tankers.

- The frequency of implementation of dust suppression measures should be increased when it is expected that high wind conditions will develop.
- Vegetation clearing should only take place immediately prior to the commencement of construction activities in an area, in order to minimise the amount of exposed soil on the site.
- Stockpiles and spoil heaps must be covered with tarpaulins or straw to prevent fugitive dust.
- All construction vehicles must be appropriately maintained to minimise exhaust emissions.

DECOMMISSIONING & CLOSURE PHASE:

- Dust suppression methods, such as wetting or laying straw, should be applied where there are large tracks of exposed surfaces.
- Stockpiles and soil heaps must be covered with tarpaulins or straw to prevent fugitive dust.
- All construction vehicles must be appropriately maintained to minimise exhaust emissions.

Cumulative impacts: None

Residual Risks: None anticipated.

POTENTIAL IMPACTS of TRAFFIC on the ENVIRONMENT:

1. Potential Direct & Indirect Impacts of TRAFFIC on the ENVIRONMENT

Nature:

CONSTRUCTION PHASE:

- Increased traffic volumes will be generated, including heavy vehicles delivering materials to the site. This could cause slight delays in existing traffic operations. The heavy vehicles may also cause damage to the public road.

DECOMMISSIONING & CLOSURE PHASE:

- Vehicle traffic around the site may increase during the decommissioning phase and impact the natural traffic flow around the site.

	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
CONSTRUCTION PHASE				
Probability	Medium	3	Low	2
Duration	Short-term	2	Short-term	2
Extent	Local	2	Local	2
Magnitude	Moderate	6	Low	4
Significance	**Medium**	**30**	**Low**	**16**
Status (positive or negative)	Negative		Negative	
OPERATIONAL PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	**n.a.**		**n.a.**	
Status (positive or negative)	Non		None	
DECOMMISSIONING & CLOSURE PHASE				
Probability	Low	3	Low	2
Duration	Immediate	1	Immediate	1
Extent	Local	2	Local	2
Magnitude	Moderate	6	Low	4

Significance	**Low**	**27**	**Low**	**14**
Status (positive or negative)	Negative		Negative	
Reversibility	Medium		High	
Irreplaceable loss of resources?	No		No	
Can impacts be mitigated?	Yes			

Mitigation:

CONSTRUCTION & DECOMMISSIONING & CLOSURE PHASE:

PHASE:

- The Contractor should ensure that traffic on the local roads is disrupted as little as possible which should include measures for the optimization of the amount of travel on the local roads, thereby reducing impacts.
- The delivery of construction equipment and material should be limited to hours outside peak traffic times (including weekends).
- Where obvious damage to the road infrastructure has occurred as a result of the project, repairs should be undertaken in accordance with the relevant authority's specifications and requirements.
- Co-ordination of movement of vehicles on and off site to reduce risks and prevent congestion on roads in the vicinity of the site.
- No vehicles or machinery should be serviced or refuelled onsite.
- Peak traffic hours should be avoided.
- Large vehicle turning must take place onsite and not in the adjacent roads.
- In cases where activities may obstruct traffic, local traffic officials must be contacted.

Cumulative impacts: None

Residual Risks: None anticipated.

POTENTIAL IMPACTS of WASTE GENERATION on the ENVIRONMENT:

1. Potential Direct & Indirect Impacts of WASTE GENERATION on the ENVIRONMENT

Nature:

CONSTRUCTION & DECOMMISSIONING & CLOSURE PHASES:

- Waste generation during the construction & decommissioning/closure phases will have a negative impact on the environment, if not controlled adequately. Waste on site includes domestic waste, mixed concrete, paint cans and brushes, insulation material, building rubble and other construction waste.

	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
CONSTRUCTION PHASE				
Probability	Moderate	4	Low	2
Duration	Short term	2	Short-term	2
Extent	Site	1	Site	1
Magnitude	Moderate	6	Low	4
Significance	**Medium**	**36**	**Low**	**14**
Status (positive or negative)	Negative		Negative	
OPERATIONAL PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	

Significance	**n.a.**		**n.a.**	
Status (positive or negative)	None		none	
DECOMMISSIONING & CLOSURE PHASE				
Probability	Low	3	Low	2
Duration	Immediate	1	Immediate	1
Extent	Local	2	Local	2
Magnitude	Moderate	6	Low	4
Significance	**Low**	**27**	**Low**	**14**
Status (positive or negative)	Negative		Negative	
Reversibility	Medium		High	
Irreplaceable loss of resources?	No		No	
Can impacts be mitigated?	Yes			

Mitigation:

CONSTRUCTION PHASE:

- General waste disposal bins will be made available for employees to use throughout the construction phase.
- Where possible construction waste on site should be recycled or reused.
- Waste will be temporarily stored on site (less than 90 days) before being disposed of appropriately.
- General waste should be placed in a watertight container and disposed of on a regular basis.
- Records of all waste being taken off site must be recorded and kept as evidence.
- Evidence of correct disposal must be kept.
- Construction rubble will be disposed of at an appropriate site.
- Burning of waste material will not be permitted.
- Hazardous materials will be generated if there are spillages during construction and maintenance periods. This waste should be cleaned up using absorbent material provided in spill kits on site and must be disposed of accordingly at a hazardous waste landfill.
- Absorbent materials used to clean up spillages should be disposed of in a separate hazardous waste bin.
- The storage area for hazardous material must be concreted, bunded, covered, labelled and well ventilated.
- Provide employees with appropriate PPE for handling hazardous materials.
- All hazardous waste will be disposed of in a registered hazardous waste disposal facility.

Cumulative impacts: None

Residual Risks: None anticipated.

POTENTIAL IMPACTS of NOISE on the ENVIRONMENT:

1. Potential Direct & Indirect Impacts of NOISE on the ENVIRONMENT

Nature:

CONSTRUCTION PHASE:

- Noise impacts will arise as a result of the use of construction vehicles and machinery. These noise impacts may be a nuisance to surrounding land users and occupiers.
- It is anticipated that the construction activities will contribute to ambient noise levels during working hours.

OPERATIONAL PHASE:

- During operation, the noises that may be associated with a public transport facility may include loud music, shouting and vehicles revving as they leave the premises.

DECOMMISSIONING & CLOSURE PHASE:

- Vehicles and other machinery required for decommissioning will increase the noise levels during working hours.
- Decommissioning activities which are likely to cause vibrations.
- Entry and use of construction vehicles as well as cranes on site.

	Without mitigation	With mitigation
PLANNING & DESIGN PHASE		

Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
CONSTRUCTION PHASE				
Probability	High	4	Low	2
Duration	Immediate	1	Immediate	1
Extent	Local	2	Local	2
Magnitude	Moderate	6	Low	3
Significance	**Medium**	**36**	**Low**	**12**
Status (positive or negative)	Negative		Negative	
OPERATIONAL PHASE				
Probability	High	4	Low	2
Duration	Long-term	4	Long-term	3
Extent	Local	2	Site	1
Magnitude	Moderate	6	Low	3
Significance	**Medium**	**48**	**Low**	**14**
Status (positive or negative)	Negative		Negative	
DECOMMISSIONING & CLOSURE PHASE				
Probability	High	4	Low	2
Duration	Immediate	1	Immediate	1
Extent	Local	2	Site	1
Magnitude	Moderate	6	Low	3
Significance	**Moderate**	**36**	**Low**	**10**
Status (positive or negative)	Negative		Negative	
Reversibility	Medium		High	
Irreplaceable loss of resources?	No		No	
Can impacts be mitigated?	Yes			

Mitigation:

CONSTRUCTION PHASE:

- Construction activities should be limited to normal working hours (08:00 – 17:00) and limited to weekdays.
- No work should occur on weekends or on public holidays.
- The contractor will adhere to local authority by-laws relating to noise control.
- Mechanical equipment with lower sound power levels must be selected to ensure that the permissible occupation noise-rating limit of 85 dBA is not exceeded.
- Equipment must be fitted with silencers as far as possible to reduce noise.
- All equipment to be adequately maintained and kept in good working order to reduce noise.
- Neighbouring landowners should be informed prior to the initiation of noisy activities e.g. high intensity drilling. A grievance procedure will be established whereby noise complaints can be received, recorded and responded to appropriately.
- All construction workers and personnel must wear hearing protection during working hours.
- Noise levels must comply with the SANS 100103 – 0994 (recommended noise levels).

OPERATIONAL PHASE:

- A grievance procedure will be established whereby noise complaints can be received, recorded and responded to appropriately.
- Equipment such as mechanical equipment etc - that are fitted with noise reduction facilities (e.g. side flaps, silencers etc.) must be used as per operating instructions and maintained properly.
- Noise levels should comply with the SANS Code of Practice 100103 – 0994 (recommended noise levels).
- Local by-laws for noise levels must be adhered to.

DECOMMISSIONING & CLOSURE PHASE:

- The contractor will adhere to local authority by-laws relating to noise control.

- Decommissioning activities will be restricted to regular working hours, i.e. Monday to Friday (08:00 – 17:00).
- Mechanical equipment with lower sound power levels will be selected to ensure that the permissible occupation noise-rating limit of 85 dBA is not exceeded.
- Equipment will be fitted with silencers as far as possible to reduce noise.

Cumulative impacts: None

Residual Risks: None anticipated.

POTENTIAL IMPACTS of HEALTH & SAFETY on the ENVIRONMENT:

1. Potential Direct & Indirect Impacts of HEALTH & SAFETY on the ENVIRONMENT

Nature:

CONSTRUCTION PHASE:

- Potential human health and safety impacts during the operations and maintenance phase would include:
  - Exposures to hazardous materials such as petroleum, oils, lubricants, and herbicides can cause serious health problems.
  - The risk of serious injuries or accidents associated with maintenance of infrastructure.
- Adverse impacts could also occur from the risk of fires caused by development activities.

OPERATIONAL PHASE:

- Open and/or unattended fires in unallocated (i.e. undesignated areas) for heating and/or cooking purposes is considered potentially dangerous, especially in the informal trade areas. Therefore, there is a minor risk of fire on site, which could pose a minor threat to on-site employees and surrounding land users and occupiers.
- Potential TAXI 'fighting or wars', feuds and/or violence between competing factions i.e. taxi associations, groups etc. – could pose an enormous safety risk for not only the taxi customers and drivers of the taxis, but also the surrounding/adjacent land occupiers and also the passers-by.

DECOMMISSIONING & CLOSURE PHASE:

- During the decommissioning phase, open excavations, vehicle movement and other construction activities may pose a health and safety hazard to workers.
- Storage, handling and transport of fuel are potentially dangerous to humans and properties due to the risk of fire and explosions.

	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
CONSTRUCTION PHASE				
Probability	Moderate	3	Low	2
Duration	Immediate	1	Immediate	1
Extent	Site	1	Site	1
Magnitude	Moderate	6	Low	3
Significance	**Low**	**24**	**Low**	**10**
Status (positive or negative)	Negative		Negative	
OPERATIONAL PHASE				
Probability	Medium	3	Minor	2
Duration	Long-term	4	Long-term	4
Extent	Local	2	Site	1
Magnitude	Low	4	Minor	1
Significance	**Medium**	**30**	**Low**	**12**
Status (positive or negative)	Negative		Negative	

DECOMMISSIONING & CLOSURE PHASE

Probability	Medium	3	Low	2
Duration	Immediate	1	Immediate	1
Extent	Site	1	Site	1
Magnitude	Moderate	6	Low	3
Significance	**Low**	**24**	**Low**	**10**
Status (positive or negative)	Negative		Negative	
Reversibility	Medium		High	
Irreplaceable loss of resources?	No		No	
Can impacts be mitigated?	Yes			

Mitigation:

CONSTRUCTION PHASE:

- The construction site must be fenced off to prohibit unauthorised access and site access must be strictly controlled.
- All employees, contractors and sub- contractors to wear appropriate PPE.
- Open excavations must be clearly marked.
- Appropriate health and safety signage must be displayed on site.
- Safety Audits must be conducted on a monthly basis and submitted to the relevant departments.

OPERATIONAL PHASE:

- Fire extinguishers and sandbags must be readily available onsite and easily accessible.
- Fire-fighting equipment must comply with SANS 1151 (Portable rechargeable fire extinguishers - Halogenated hydrocarbon type extinguishers) and must be inspected regularly.
- Appropriate health and safety signage must be displayed on site.
- An Emergency Response Plan must be in place for the site, this must clearly describe emergency procedures and include emergency contact numbers.
- Staff must be trained adequately so as to identify potential high-risk situations and implement the Emergency Response Plan.
- The local municipality (i.e. the applicant) should have an ANTI-TAXI WAR POLICY and IMPLIMENTATION STRATEGY PLAN compiled and enacted, which should include at least the assistance of the SOUTH AFRICAN POLICER SERVICES, the employment of a full time PRIVATE SAFETY & SECURITY COMPANY SERVICES – and, the official agreement and active participation of all the TAXI ASSOCIATIONS and/or GROUPS to maintain peace and mutual respect etc.

DECOMMISSIONING & CLOSURE PHASE:

- The construction site must be fenced off to prohibit unauthorised access and site access must be strictly controlled.
- All employees, contractors and sub- contractors to wear appropriate PPE.
- Open excavations must be clearly marked.
- All employees, contractors and sub- contractors must comply with the relevant Health and Safety Policy.
- Fire safety should be considered, and all vehicles should have fire extinguisher.
- Employees should be trained on fire safety.
- Local emergency fire brigade number should be known to everybody.
- Appropriate health and safety signage must be displayed on site.

Cumulative impacts: None

Residual Risks: None anticipated.

LAYOUT ALTERNATIVE#1 (not preferred):
PROPOSED ZOLA EXTENSION 3 TOWNSHIP to be situated on A PART OF THE REMAINDER OF THE FARM SOWETO 387 IQ - with associated Civil Services infrastructure

POTENTIAL IMPACTS on the TERRESTRIAL VEGETATION & FLORA BIODIVERSITY:

[Taken from i.e. quoted directly, from the specialist reports contained in APPENDIX G – '1. ***'A vegetation assessment of the site proposed for development of the Emdeni Public transport Facility in Soweto - by G.J. Bredenkamp & CE Venter*** *- Commissioned by Pierre Joubert Landscape Architect and Environmental Planner [Eco-Agent CC; PO Box 23355; Monument Park; 0181. Tel 012 3463180 / Fax 012 460 2525 / Cell 082 5767046]. January 2021.)*]

1. Potential Direct & Indirect Impacts on natural terrestrial vegetation.

Nature: The public transport facility will be constructed on totally transformed weed vegetation. The weed vegetation of the site will be destroyed. The impact on natural vegetation is therefore nullified.

	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	n.a.	0	n.a.	0
Duration	n.a.	0	n.a.	0
Extent	n.a.	0	n.a.	0
Magnitude	n.a.	0	n.a.	0
Significance	n.a.	**0**	n.a.	**0**
Status (positive or negative)	n.a.		n.a.	
CONSTRUCTION PHASE				
Probability	Definite	5	Definite	5
Duration	Short-term	2	Short term	2
Extent	Local	1	Local	1
Magnitude	Low	0	Low	0
Significance	**Minor**	**15**	**Minor**	**15**
Status (positive or negative)	Negative		Negative	
OPERATIONAL PHASE				
Probability	Definite	5	Definite	5
Duration	Permanent	5	Permanent	5
Extent	Local	1	Local	1
Magnitude	Low	0	Low	0
Significance	**Low**	**30**	**Low**	**30**
Status (positive or negative)	Negative		Negative	
DECOMMISSIONING & CLOSURE PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
Reversibility	No		No	
Irreplaceable loss of resources?	No		No	
Can impacts be mitigated?	No			

Mitigation:

- There is no natural vegetation left on the site.
- Remove and control all alien woody plant species that may appear during construction and operational phases.

Cumulative impacts: Limited accumulative effects as Soweto areas are already developed.

Residual Risks: None anticipated provided that the mitigation measures are implemented correctly.

POTENTIAL IMPACTS on the WETLAND:

[Taken from i.e. quoted directly, from the specialist reports contained in APPENDIX G – '***A wetland assessment of the site proposed for development of the Emdeni Public transport Facility in Soweto - by G.J. Bredenkamp & CE Venter*** *(Commissioned by Pierre Joubert Landscape Architect and Environmental Planner [Eco-Agent CC; PO Box 23355; Monument Park; 0181. Tel 012 3463180 / Fax 012 460 2525 / Cell 082 5767046]. April 2020.)'.*

1. Potential Direct & Indirect Impacts on the wetland habitat, species composition and functions.

Nature: The loss of wetland habitat and functions due to the development of a taxi rank on site. The wetland adjacent to the site is the most altered of all the habitat units and largely dominated by alien species, mainly Kikuyu (*Pennisetum clandestinum*).

1. Loss of indigenous plant species, wetland habitat and habitat for species of conservation importance

Several actions related to construction activities may result in a loss of wetland habitat and functioning, including construction activities within wetlands, vehicle movement and roads through wetland areas, dumping and temporary storage of materials in wetlands, clearing of vegetation and removal of soil.

Alterations to the hydrology and geomorphology of the wetland and wetland catchment may result in changes to the wetland habitat and species composition as well. This includes increased areas bare of vegetation and sealed surfaces, resulting in increased runoff from the catchment area. The runoff from the development must be controlled in a sufficient stormwater management plan for the site, or it may result in a slight increase in the erosion and sedimentation in the wetland. This is of particular importance during the construction phase.

The proposed stormwater attenuation ponds are located inside the 19m wetland buffer and is present almost up to the edge of the wetland. Due to the location of the proposed stormwater attenuation ponds the construction impacts have a medium risk. The portion of the wetland located adjacent to the site is however the most degraded portion of the wetland and approximately 40cm of imported sediment is present across most of this wetland unit. In addition, the construction impacts will be a short-term impact, whereas the installation of the proposed stormwater attenuation system will result in an overall improvement to the site. The assessed risk during the construction phase has therefore been lowered to a low risk, as per professional opinion. This has been lowered in consultation with a second wetland specialist and the aquatic specialist.

2. Infestation by invasive plant species

Invasive plant species tend to establish in and around disturbed areas. A few alien and invasive species were observed on site during the site visit. These species may become established in disturbed areas on site and several other species may also be present. Several invasive species may become established on site during the construction or operational phases of the project. These species are most likely to become established in areas disturbed areas.

3. Stormwater management

3.1 Construction Phase

The increase of impermeable surfaces on site, with the associated increase in runoff from the site may result in a slight alteration to the hydrology and geomorphology of the site. Increased flow may result in erosion in the wetland or wetland catchment, with associated sedimentation in the downstream wetland areas. The areas cleared of vegetation is also more likely to be eroded until the stormwater system is in place and stabilised. This is especially true of the attenuation pond located on the edge of the wetland. There is no buffer between the wetland and the attenuation pond. The construction activities are highly likely to cause damage to the wetland unit. Sedimentation is highly likely to take place in the wetland.

3.2 Operational Phase

Development on site results in a significant increase in sealed surfaces in the wetland catchment. This will in turn result in increased runoff, which increase the risk of erosion and sedimentation on site and in the wetland units.

4. Construction camp and prevention of pollution of the water resources

The most likely source of contaminants associated with the project is the possibility of sewage entering the wetland system. Ablution facilities at the taxi rank is strongly advised for the operational phase of the project. Additional potential sources of pollution include littering and the spillage of petrochemicals.

	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
CONSTRUCTION PHASE				
Probability	Probable	3	Probable	3

Duration	Short term	1	Short term	1
Extent	Local	1	Local	1
Magnitude	Slight	4	Slight	4
Significance	**Low**	**18**	**Low**	**18**
Status (positive or negative)	Negative		Negative	
OPERATIONAL PHASE				
Probability	Probable	3	Very improbable	1
Duration	Permanent	5	Permanent	5
Extent	Local	1	Local	1
Magnitude	None	0	None	0
Significance	**Low**	**18**	**Low**	**6**
Status (positive or negative)	Negative		Negative	
DECOMMISSIONING & CLOSURE PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
Reversibility	n.a.		n.a.	
Irreplaceable loss of resources?	No		No	
Can impacts be mitigated?	Yes			

Mitigation:

- The wetland and open space area must be clearly demarcated on site, preferably with a fence. No construction activities may take place in these areas, including the temporary storage of materials, location of the construction camp and location of temporary ablution facilities.
- No vehicle movement or clearing of vegetation may take place in these areas.
- Construction must take place in the winter reason when rainfall on site is unlikely.
- The long-term weather prediction for the site must be consulted for the site prior to the commencement of construction of the stormwater system in the wetland buffer. Do not proceed if there is a likelihood of rain.
- All mitigation measures included in this report must be adhered to, including the recommendations with regard to stormwater management and to control erosion and sedimentation.
- Adhere to all requirements and recommendations included in the ecological stormwater and rehabilitation plan compiled for the site by Habitat Landscape Architects.
- Include soft structures in the design of the stormwater system.
- Use permeable surfaces wherever possible.
- Securely fence the site to prevent trampling of the wetland area by persons trying to take short-cuts to the site. The only access point must be from the road.
- Compile an alien and invasive species control and monitoring plan.
- Populations of invasive species on site must be controlled, during the construction and operational phases.
- The spread of invasive and weedy species from the site must be prevented.
- Several alien and invasive species resemble indigenous species, especially as seedlings. Care must be taken not to control indigenous species during the control of invasive species.
- Construction must take place during the winter season to limit the risk of erosion on site and sedimentation in the wetland.
- Ensure that no sediment-laden stormwater enter the wetlands directly.
- Stabilise and revegetate all areas bare of vegetation as soon as possible.
- Monitor the entire site for signs of erosion throughout the construction and operational phases of the project. This may take place as part of the regular inspections for maintenance on site.
- All erosion features must be rehabilitated as soon as possible.
- Implement erosion control measures where necessary.
- Implement sediment fences around erosion prone areas.

- Adhere to all requirements and recommendations included in the ecological stormwater and rehabilitation plan compiled for the site by Habitat Landscape Architects.
- Storm water may not enter the watercourses directly, it must be attenuated before exiting the storm water system.

General mitigation:

- The construction camp and all associated facilities must be located outside the wetland and wetland buffer and outside all designated open space areas.
- Adhere to all other mitigation measures in this report.

Mitigation for littering:

- Sufficient rubbish bins must be provided on site and cleared on a regular basis.
- Rubbish must be disposed of at a registered landfill.
- Rubbish may not be dumped on site or allowed to spread from the rubbish bins on site.

Mitigation for pollution by petrochemicals:

- Refuelling and maintenance must preferably take place off-site.
- Refuelling may only take place at a registered fuel depot.
- The vehicles must be inspected for oil leaks etc. regularly and any observed leaks must be repaired as soon as possible.
- Any spillages of hydrocarbon fuels must be cleaned up immediately.
- All regulations etc. included in the waste act must be adhered to.

Mitigation for temporary ablution facilities:

- The wetland and wetland buffer zone must be clearly demarcated on site and no construction activities may take place in these areas, including the temporary storage of materials and location of temporary ablution facilities.
- Sufficient temporary ablution facilities must be provided for the workers during the construction phase.
- Any portable toilets must be cleaned regularly to prevent overflow and spillages.

Cumulative impacts: Expected that very little accumulative effects will occur at wetland.

Residual Risks: None is anticipated provided that the mitigation measures are implemented correctly.

2. Potential Direct & Indirect Impacts on the wetland due to sedimentation and erosion.

Nature: The loss of wetland habitat due to sedimentation and erosion. Sedimentation and erosion is a risk on site in the absence of a sufficient stormwater plan, but can be mitigated with an appropriate management plan.

1. Clearing of vegetation from the site and increased runoff on site may result in a slight increase in the erosion on site and in the downstream wetland areas. This may potentially cause damage to the wetland systems on site and downstream of the site. An increased sediment load in the water on site may result in excess sedimentation in downstream areas or in depression wetlands.

The portions of the project located outside the wetland buffer is unlikely to have an adverse impact. The attenuation pond for the site is however located on the edge of the wetland, and completely inside the wetland buffer. The attenuation pond will attenuate flow entering the wetland, but the construction of the attenuation pond may result in damages to the wetland, including some erosion and sedimentation in the wetland. Since no buffer is present between the attenuation pond and the wetland, the impacts will affect the wetland directly.

	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	n.a.	0	n.a.	0
Duration	n.a.	0	n.a.	0
Extent	n.a.	0	n.a.	0
Magnitude	n.a.	0	n.a.	0
Significance	**n.a.**	**0**	**n.a.**	**0**
Status (positive or negative)	Negative		Negative	
CONSTRUCTION PHASE				
Probability	Probable	3	Probable	3
Duration	Short term	1	Short term	1
Extent	Local	1	Local	1
Magnitude	Slight	4	Slight	4
Significance	**Low**	**18**	**Low**	**18**
Status (positive or negative)	Negative		Negative	

OPERATIONAL PHASE				
Probability	Probable	3	Very improbable	1
Duration	Permanent	5	Long term	4
Extent	Local	1	Local	1
Magnitude	No impact	0	No impact	0
Significance	**Low**	**18**	**Low**	**5**
Status (positive or negative)	Negative		Positive	
DECOMMISSIONING & CLOSURE PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
Reversibility	N.a.		N.a.	
Irreplaceable loss of resources?	No		No	
Can impacts be mitigated?	Yes			

Mitigation:

- The wetland and open space area must be clearly demarcated on site, preferably with a fence. No construction activities may take place in these areas, including the temporary storage of materials, location of the construction camp and location of temporary ablution facilities.
- No vehicle movement or clearing of vegetation may take place in these areas.
- The long-term weather prediction for the site must be consulted for the site prior to the commencement of construction of the stormwater system in the wetland buffer. Do not proceed if there is a likelihood of rain.
- Include soft structures in the design of the stormwater system.
- Use permeable surfaces wherever possible.
- Securely fence the site to prevent trampling of the wetland area by persons trying to take short-cuts to the site. The only access point must be from the road.
- Compile an alien and invasive species control and monitoring plan.
- Populations of invasive species on site must be controlled, during the construction and operational phases.
- The spread of invasive and weedy species from the site must be prevented.
- Several alien and invasive species resemble indigenous species, especially as seedlings. Care must be taken not to control indigenous species during the control of invasive species.
- Construction must take place during the winter season to limit the risk of erosion on site and sedimentation in the wetland.
- Ensure that no sediment-laden stormwater enter the wetlands directly.
- Monitoring during the operation phases may take place as part of the inspection and maintenance of stormwater system.
- Implement an erosion control fence / berm along the edge of the wetland unit to prevent sedimentation entering the wetland area.
- No construction vehicles may pass the erosion fence.
- Construction must take place during the winter season to limit the risk of erosion on site and sedimentation in the wetland.
- Ensure that no sediment-laden stormwater enter the wetlands directly.
- Stabilise and revegetate all areas bare of vegetation as soon as possible.
- Monitor the entire site for signs of erosion throughout the construction and operational phases of the project. This may take place as part of the regular inspections for maintenance on site.
- All erosion features must be rehabilitated as soon as possible.
- Implement erosion control measures where necessary.
- Implement sediment fences around erosion prone areas.
- Adhere to all requirements and recommendations included in the ecological stormwater and rehabilitation plan compiled for the site by Habitat Landscape Architects.
- Storm water may not enter the watercourses directly, it must be attenuated before exiting the storm water system.

General mitigation:

- The construction camp and all associated facilities must be located outside the wetland and wetland buffer and outside all

designated open space areas.

Mitigation for littering:

- Sufficient rubbish bins must be provided on site and cleared on a regular basis.
- Rubbish must be disposed of at a registered landfill.
- Rubbish may not be dumped on site or allowed to spread from the rubbish bins on site.

Mitigation for pollution by petrochemicals:

- Refuelling and maintenance must preferably take place off-site.
- Refuelling may only take place at a registered fuel depot.
- The vehicles must be inspected for oil leaks etc. regularly and any observed leaks must be repaired as soon as possible.
- Any spillages of hydrocarbon fuels must be cleaned up immediately.
- All regulations etc. included in the waste act must be adhered to.

Mitigation for temporary ablution facilities:

- The wetland and wetland buffer zone must be clearly demarcated on site and no construction activities may take place in these areas, including the temporary storage of materials and location of temporary ablution facilities.
- Sufficient temporary ablution facilities must be provided for the workers during the construction phase.
- Any portable toilets must be cleaned regularly to prevent overflow and spillages.

Cumulative impacts:

Expected that little accumulative effects will occur at the wetland, as the impacts are not expected to be significantly different to the current impacts on site.

Residual Risks:

None is anticipated provided that the mitigation measures are implemented correctly.

POTENTIAL IMPACTS on the AQUATIC ASPECTS of the BIOPHYSICAL ENVIRONMENT:

[Taken from i.e. quoted directly, from the specialist reports contained in APPENDIX G – '***Aquatic Ecology Specialist Study for the ZOLA-EMDENI PUBLIC TRANSPORT FACILITY SOWETO, Gauteng***. *Prepared By: Ecotone Freshwater Consultants Suite 342, Private Bag X1, Florida Hills, 1716 Cell: +27 84 585 7479. Tel: +27 (11) 672 1375 Fax: 088 011 673 1192 . contact@ecotone-sa.co.za www.ecotone-sa.co.za Prepared For: Larchitect Pierre Joubert pierre.joubert.larchitect@gmail.com. Reference: Larchitect_ Zola-Emdeni_Public_Transport_Facility_Soweto_Aquatic_December_2019_Final Date: December 2019 Version: Final'].*

1. Potential Direct & Indirect Impacts on the Hydrology.

Nature: CONSTRUCTION PHASE: The Construction activity will involve some vegetation clearing and topsoil removal in the area adjacent to the drainage line (site Z1) which will result in the alteration of the surface runoff characteristics, which in turn will affect the hydrology of the downslope area. The development area already has a compacted soil surface, so the impact on the hydrology during the construction phase will be low.

OPERATIONAL PHASE: The impermeable surface of the transport facility and additional impacts to surface runoff rates may impact on the hydrology of the receiving aquatic system during the operational phase.

	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
CONSTRUCTION PHASE				
Probability	Medium	3	Low	2
Duration	Short term	2	Immediate	1
Extent	Municipal	3	Local	2
Magnitude	Low	4	Minor	2
Significance	**Low**	**27**	**Low**	**10**
Status (positive or negative)	Negative		Negative	
Degree of Confidence	Medium		Medium	

OPERATIONAL PHASE				
Probability	High	4	Medium	3
Duration	Permanent	5	Medium	3
Extent	Local	2	Site	1
Magnitude	Medium	6	Minor	2
Significance	**n.a.**	**52**	**Low**	**18**
Status (positive or negative)	Negative		Negative	
Degree of Confidence	Medium		Medium	
DECOMMISSIONING & CLOSURE PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
Reversibility	n.a.		n.a.	
Irreplaceable loss of resources?	No		No	
Can impacts be mitigated?	Yes			

Mitigation:

CONSTRUCTION PHASE:

- Limit the extent of vegetation clearing and site preparations to the authorised footprint.
- Limit the extent and movement of heavy machinery to the authorised footprint only.
- Avoid in channel construction activity and any flow diversions.
- No water abstraction or discharge of any water should occur into the drainage line during the construction phase.

OPERATIONAL PHASE:

- The storm water system should be designed with sufficient attenuation capacity to compensate for the loss in permeable surfaces associated with the footprint of the development. This may be achieved through the incorporation of bio-swales or other ecological engineering structures.
- The general design should aim to maximise permeability and water retention on site. This will include measures to increase the general surface roughness of paved areas and measures to effectively dissipate runoff energy.

Cumulative impacts: None anticipated i.e. the receiving aquatic system that will be affected by the construction is small in extent with no ecological sensitive features present. The system is part of a catchment that is under cumulative stress due to extensive catchment alteration, resulting in habitat destruction and fragmentation. It is unlikely that the proposed expansion will contribute notably to additional loss of ecological integrity of the system.

Residual Risks: None anticipated provided that the mitigation measures are implemented correctly.

2. Potential Direct & Indirect Impacts on surface water quality.

Nature: CONSTRUCTION PHASE: During the construction phase water quality deterioration will result because of increased sediment loads within the drainage lines and through pollutants derived from spillage, leakage and incorrect disposal of hazardous substances on site. Incorrect waste management and disposal is also likely to contribute further to water quality deterioration.
OPERATIONAL PHASE: Storm water runoff may be polluted with hydrocarbons and other hazardous substances from parking areas and impermeably surface. This may result in a decrease in water quality within the receiving watercourses.

	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	

CONSTRUCTION PHASE				
Probability	High	4	Medium	3
Duration	Short term	2	Immediate	1
Extent	Provincial	4	Site	1
Magnitude	Moderate	6	Low	4
Significance	**Medium**	**48**	**Low**	**18**
Status (positive or negative)	Negative		Negative	
Degree of Confidence	Medium		Medium	
OPERATIONAL PHASE				
Probability	High	4	Medium	3
Duration	Permanent	5	Immediate	1
Extent	Local	2	Site	1
Magnitude	Low	4	Minor	2
Significance	**Medium**	**44**	**Low**	**12**
Status (positive or negative)	Negative		Negative	
Degree of Confidence	Medium		Medium	
DECOMMISSIONING & CLOSURE PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
Reversibility	n.a.		n.a.	
Irreplaceable loss of resources?	No		No	
Can impacts be mitigated?	Yes			

Mitigation:

CONSTRUCTION PHASE:

- Accidental spillage should be prevented always. This will require suitable chemical storage and refuelling practices.
- Accidental spills or any contaminated water should be isolated and treated as soon as possible. An emergency spill procedure should be drafted, and the construction team should be versed in identifying and responding to accidental spill events.
- Changing of oil, refuelling and lubricating of equipment should not be carried out near the drainage lines to minimize the potential for water pollution.
- If oil storage and workshop areas are needed on-site, they should be surrounded by a bund wall to contain spillages. In the case where soil becomes contaminated with oil, it must be removed for proper disposal or treatment.
- No dumping of any building rubble, soil, litter, organic matter or chemical substances should occur within the drainage line. Dumping and temporary storage of the above should only occur at predetermined locations.
- In the case of dewatering a construction site, water should be treated, and all suspended particles should be removed. Water removed from a construction site should not be released directly in the water course. Discharge should occur into a sump to aid settling of suspended particle or into a well vegetated area which will help trap sediment and residual contaminants.
- Contaminated or potentially contaminated water or runoff should be managed in a controlled way.
- Sediment and erosion control measures should be in place and maintained prior to, and during, construction activities.
- *In situ* water quality should be monitored at all three sites associated with the construction activity.

OPERATIONAL PHASE:

- Runoff from the parking area should go through a litter, sediment and oil trap prior to release into the environment.
- Use environmentally friendly solvents and paints during routine maintenance. This will aid in preventing water pollution during the operational phase.

Cumulative impacts: None anticipated i.e. the receiving aquatic system that will be affected by the construction is small in extent with no ecological sensitive features present. The system is part of a catchment that is under cumulative stress due to extensive catchment alteration, resulting in habitat destruction and fragmentation. It is unlikely that the proposed expansion will contribute notably to additional loss of ecological integrity of the system.

Residual Risks: None anticipated provided that the mitigation measures are implemented correctly.

3. Potential Direct & Indirect Impacts related to erosion and sedimentation.

Nature: CONSTRUCTION PHASE: The disturbance of vegetation and soil during construction will pose the risk of erosion. Eroded soils are likely to increase sedimentation which will lead to changes in vegetation composition and aquatic fauna. Erosion is likely to be highest during the summer months due to increased precipitation.
OPERATIONAL PHASE: Inappropriate storm water releases may lead to erosion and downstream sedimentation.

	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
CONSTRUCTION PHASE				
Probability	Definite	5	Definite	5
Duration	Short term	2	Short term	2
Extent	Municipal	3	Local	2
Magnitude	Moderate	6	Minor	2
Significance	**Medium**	**55**	**Low**	**30**
Status (positive or negative)	None		None	
Degree of Confidence	Medium		Medium	
OPERATIONAL PHASE				
Probability	High	4	Medium	3
Duration	Permanent	5	Short term	2
Extent	Local	2	Local	2
Magnitude	Medium	6	Minor	2
Significance	**Medium**	**52**	**Low**	**18**
Status (positive or negative)	Negative		Negative	
Degree of Confidence	Medium		Medium	
DECOMMISSIONING & CLOSURE PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
Reversibility	n.a.		n.a.	
Irreplaceable loss of resources?	No		No	
Can impacts be mitigated?	Yes			

Mitigation:
CONSTRUCTION PHASE:

- Erosion and silt control mechanisms must be in place prior to the onset of construction activities. This includes the management of surface flow through the construction site.
- It is recommended that construction activities should make use of the dry seasonal construction window. This will further reduce the risk associated with erosion/siltation.
- Clearing of vegetation needs to be limited in order to limit erosion and should only take place immediately before construction commences.
- Sumps or spoil berms need to be constructed to contain excavated spoil/topsoil so that sediment-laden runoff does not enter the

drainage lines.

OPERATIONAL PHASE:

- Design runoff control features to minimize soil erosion and avoid placement of infrastructure and sites on unstable slopes and consider conditions that can cause slope instability, such as groundwater aquifers, precipitation and slope angles.
- Areas where storm water is released should be well armoured against erosion and regularly inspected for stability.
- Areas exposed to a higher erosion risk include storm water releases. These areas should be protected against erosion and regularly inspected.
- The storm water system should be designed with sediment trapping abilities, these should regularly be inspected and manually emptied.

Cumulative impacts: None anticipated i.e. the receiving aquatic system that will be affected by the construction is small in extent with no ecological sensitive features present. The system is part of a catchment that is under cumulative stress due to extensive catchment alteration, resulting in habitat destruction and fragmentation. It is unlikely that the proposed expansion will contribute notably to additional loss of ecological integrity of the system.

Residual Risks: None anticipated provided that the mitigation measures are implemented correctly.

4. Potential Direct & Indirect Impacts related to increase alien/pioneer vegetation in disturbed areas.

Nature: CONSTRUCTION PHASE: The disturbed areas may temporarily provide the opportunity for alien and invasive species to establish. The area is already impacted on my alien vegetation so the further impact due to the construction of the transport facility is considered low.

OPERATIONAL PHASE: Under baseline conditions the drainage lines have high cover and abundance of alien and invasive species. It is possible that disturbed areas can provide a longer-term source of encroachment if not managed.

	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
CONSTRUCTION PHASE				
Probability	Improbable	2	None	1
Duration	Short term	2	Immediate	1
Extent	Local	2	Local	2
Magnitude	Low	4	Minor	2
Significance	**Low**	**16**	**Low**	**5**
Status (positive or negative)	None		None	
Degree of Confidence	Medium		Medium	
OPERATIONAL PHASE				
Probability	High	4	Medium	3
Duration	Medium term	3	Short term	2
Extent	Local	2	Site	1
Magnitude	Minor	2	Minor	2
Significance	**Low**	**28**	**Low**	**15**
Status (positive or negative)	Negative		Negative	
Degree of Confidence	Medium		Medium	
DECOMMISSIONING & CLOSURE PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	

Reversibility	n.a.	n.a.
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	

Mitigation:

CONSTRUCTION PHASE:

- A team of two or three labourers should be trained in the identification and control of key invasive alien species already in the area or highly likely to occur once construction is underway.
- The team should be provided with the correct equipment (e.g. knapsack sprayers) and correct herbicides, which should be stored in a secure facility each day.
- Regular monitoring of all areas of exposed soil should take place during Construction Phases.

OPERATIONAL PHASE:

- The areas that have been decommissioned during the Operational Phase (such as the construction camp) should also be monitored for invasive alien species.

Cumulative impacts: None anticipated i.e. the receiving aquatic system that will be affected by the construction is small in extent with no ecological sensitive features present. The system is part of a catchment that is under cumulative stress due to extensive catchment alteration, resulting in habitat destruction and fragmentation. It is unlikely that the proposed expansion will contribute notably to additional loss of ecological integrity of the system.

Residual Risks: None anticipated provided that the mitigation measures are implemented correctly.

POTENTIAL IMPACTS on the HYDROGEOLOGICAL ASPECTS of the BIOPHYSICAL ENVIRONMENT:

[Taken from i.e. quoted directly, from the specialist reports contained in APPENDIX G – **i.** '***Hydrogeological Investigation – Proposed Emdemi Public Transport Facility. Report Version – 1 22 November 2019. Urban Innovate. GCS Project Number: 19-0753 Prepared by GCS Water and Environment (Pty) Ltd (GCS)'.*** 63 Wessel Road Rivonia 2128 PO Box 2597 Rivonia 2128 South Africa Telephone: +27 (0)11 803 5726 Facsimile: +27 (0)11 803 5745 Web: www.gcs-sa.biz] – and, **ii.** ***'DEVELOPMENT of an ECOLOGICAL STORMWATER MANAGEMENT & REHABILITATION PLAN (ESMRP) for SUBMISSION as Part of WATER USE LICENCE APPLICATION for the PROPOSED ZOLA EMENDENI PUBLIC TRANSPORT FACILITY on a Part of the REMAINDER of the FARM SOWETO 387 IQ – GAUTENG, March 2020'*** *by HABITAT LANDSCAPE ARCHITECTS (Pty) Ltd'.* Siegwalt U Küsel [Prof L Arch (SA) Reg. no. 20182 / ASAPA no. 367]. Principal Landscape Architect & Archaeologist. 101 Harvest crescent, Lynnwood, 0081. Pretoria, South Africa / Plot 237 Kameelfontein, 0035. Pretoria, South Africa. E-mail: siegwalt@habitatdesign.co.za / info@habitatdesign.co.za Mobile: +27(0)82 775 4803 Web: www.habitatlandscapearchitects.com

1. Potential Direct & Indirect Impacts on the Groundwater:

Nature:

CONSTRUCTION PHASE: i. Hydrocarbon contamination is possible due to the presence of heavy machinery on site. Spillages may occur which may impact both the soil and groundwater environment. The impacts are costly and difficult to clean up, however, only small amounts are envisaged to be stored on site. The magnitude of said impacts are however of lesser significance given that hydrocarbon contamination has already been identified within the groundwater on site**.**

OPERATIONAL PHASE: i. Impacts to the soil and groundwater environment may result from the release of potentially impacted stormwater into the adjacent stream or from faulty stormwater infrastructure. On-site stormwater will be managed via drainage into the proposed attenuation dam (located in the south-east corner of the site boundary), prior to being drained out into an adjacent stream located to the east. Given that the proposed site is a transport facility minor hydrocarbon impacts may result from leaking vehicles on-site that will be collected by the stormwater system. If the potentially contaminated stormwater is released into the wetland, or if the associated infrastructure of the dam becomes impaired (e.g. leaking of underground pipes), the soil and groundwater environment would be negatively impacted. However, to mitigate the identified risks a series of ecological attenuation dams that would serve to reduce any potentially hazardous substances present in surface run-off (a plan depicting the layout of said dams is provided in Appendix D) has been included in the facility design. In particular, the stormwater will be intercepted and routed to flow through a series of retention ponds, attenuation dams and bioswales. Included in this design is re-vegetating each section of the series through a targeted mixture of various plant species selected to aid in reducing/eliminating dissolved phase chemicals of potential concern (refer to the March 2020 report prepared by Habitat Landscape Architects for the list of proposed plant species).

	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	n.a.		n.a.	

Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
CONSTRUCTION PHASE				
Probability	High	4	Medium	3
Duration	Short term	2	Short term	2
Extent	Local	2	Local	2
Magnitude	Low	4	Low	4
Significance	**Medium**	**32**	**Low**	**24**
Status (positive or negative)	Negative		Negative	
OPERATIONAL PHASE				
Probability	High	5	Low	2
Duration	Long term	4	Long term	4
Extent	Local	2	Local	2
Magnitude	High	8	Moderate	8
Significance	**High**	**70**	**Low**	**28**
Status (positive or negative)	Negative		Negative	
DECOMMISSIONING & CLOSURE PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
Reversibility	n.a.		n.a.	
Irreplaceable loss of resources?	No		No	
Can impacts be mitigated?	Yes			

Mitigation:

CONSTRUCTION PHASE:

- The mitigation measures would include containing the contaminated groundwater within the appropriate areas and preventing such water from entering the wetland and associated streams.
- In addition, ensure clean up protocols are in place and followed. Additionally, the municipality should be informed that up-gradient activities are affecting the groundwater quality at the site prior to construction.

OPERATIONAL PHASE:

- It is recommended that the attenuation dam be sampled on a monthly basis to ensure that the system is functioning, and that no contamination is released into the associated wetland. Samples should also be collected from down- and up-gradient of the attenuation dam to assess the impact the dam has on the water quality of the nearby wetland.
- Groundwater monitoring should be conducted on a bi-annual basis for inorganic and hydrocarbon constituents and a trend analysis should be compiled to ensure the facility does not have any detrimental effect on the groundwater environment i.e. time-series data should be presented via trend analyses after each sampling event to determine if the facility has any detrimental effects on the water resources and to assess for increasing concentrations of targeted contamination compounds and relevant inorganic indicators. It is recommended that access and approval for off-site sampling be obtained from the landowner.
- The groundwater monitoring plan should commence once the site is operational.
- It is recommended that the attenuation dam and associated infrastructure are installed according to regulations stipulated in the National Water act 36 of 1998: Regulations regarding the safety of dams in terms of section 123(1) of the National Water Act, 1998 (act no. 36 of 1998).

Cumulative impacts: None anticipated provided that the mitigation measures are implemented correctly.

Residual Risks: None anticipated provided that the mitigation measures are implemented correctly.

2. Potential Direct & Indirect Impacts on the Groundwater:

Nature:

CONSTRUCTION PHASE: ii. Given that there is shallow, hydrocarbon-impacted groundwater at the site and that soil will be excavated during the construction phase (which could potentially expose the contaminated groundwater), a potential pathway between the groundwater and off-site wetland with associated streams has been identified.

OPERATIONAL PHASE: ii. Impacts to the soil and groundwater environment may result from the release of potentially impacted leaking vehicles. Hydrocarbon impacts associated with leaking vehicles may also affect the soil and groundwater environment through leakages entering the subsoils.

	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
CONSTRUCTION PHASE				
Probability	High	4	Medium	3
Duration	Short term	2	Short term	2
Extent	Local	2	Local	2
Magnitude	Very high	10	Very high	10
Significance	**Medium**	**56**	**Medium**	**42**
Status (positive or negative)	Negative		Negative	
OPERATIONAL PHASE				
Probability	Low	3	Low	2
Duration	Long term	4	Long term	4
Extent	Local	2	Local	2
Magnitude	Medium	6	Medium	6
Significance	**Medium**	**36**	**Low**	**24**
Status (positive or negative)	Negative		Negative	
DECOMMISSIONING & CLOSURE PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
Reversibility	n.a.		n.a.	
Irreplaceable loss of resources?	No		No	
Can impacts be mitigated?	Yes			

Mitigation:

CONSTRUCTION PHASE:

- The mitigation measures would include containing the contaminated groundwater within the appropriate areas and preventing such water from entering the wetland and associated streams.
- In addition, ensure clean up protocols are in place and followed. Additionally, the municipality should be informed that up-gradient activities are affecting the groundwater quality at the site prior to construction.

OPERATIONAL PHASE:

- It is recommended that the attenuation dam be sampled on a monthly basis to ensure that the system is functioning, and that no contamination is released into the associated wetland. Samples should also be collected from down- and up-gradient of the attenuation dam to assess the impact the dam has on the water quality of the nearby wetland.

- Groundwater monitoring should be conducted on a bi-annual basis for inorganic and hydrocarbon constituents and a trend analysis should be compiled to ensure the facility does not have any detrimental effect on the groundwater environment i.e. time-series data should be presented via trend analyses after each sampling event to determine if the facility has any detrimental effects on the water resources and to assess for increasing concentrations of targeted contamination compounds and relevant inorganic indicators. It is recommended that access and approval for off-site sampling be obtained from the landowner.
- The groundwater monitoring plan should commence once the site is operational.
- It is recommended that the attenuation dam and associated infrastructure are installed according to regulations stipulated in the National Water act 36 of 1998: Regulations regarding the safety of dams in terms of section 123(1) of the National Water Act, 1998 (act no. 36 of 1998).

Cumulative impacts: None anticipated provided that the mitigation measures are implemented correctly.

Residual Risks: None anticipated provided that the mitigation measures are implemented correctly.

3. Potential Direct & Indirect Impacts on the Groundwater:

Nature:

OPERATIONAL PHASE: Impacts to the soil and groundwater environment may result from the release of potentially impacted on-site sewer system i.e. leaks or other inadequacies resulting from the sewer system may negatively impact the soil and groundwater environment.

	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
CONSTRUCTION PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	**n.a.**		**n.a.**	
Status (positive or negative)	None		None	
OPERATIONAL PHASE				
Probability	Medium	3	Low	2
Duration	Long term	4	Long term	4
Extent	Local	2	Local	2
Magnitude	Medium	6	Medium	6
Significance	**Medium**	**36**	**Low**	**24**
Status (positive or negative)	Negative		Negative	
DECOMMISSIONING & CLOSURE PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
Reversibility	n.a.		n.a.	
Irreplaceable loss of resources?	No		No	

Can impacts be mitigated?	Yes

Mitigation:

OPERATIONAL PHASE:

- It is recommended that the attenuation dam be sampled on a monthly basis to ensure that the system is functioning, and that no contamination is released into the associated wetland. Samples should also be collected from down- and up-gradient of the attenuation dam to assess the impact the dam has on the water quality of the nearby wetland.
- Groundwater monitoring should be conducted on a bi-annual basis for inorganic and hydrocarbon constituents and a trend analysis should be compiled to ensure the facility does not have any detrimental effect on the groundwater environment i.e. time-series data should be presented via trend analyses after each sampling event to determine if the facility has any detrimental effects on the water resources and to assess for increasing concentrations of targeted contamination compounds and relevant inorganic indicators. It is recommended that access and approval for off-site sampling be obtained from the landowner.
- The groundwater monitoring plan should commence once the site is operational.
- It is recommended that the attenuation dam and associated infrastructure are installed according to regulations stipulated in the National Water act 36 of 1998: Regulations regarding the safety of dams in terms of section 123(1) of the National Water Act, 1998 (act no. 36 of 1998).

Cumulative impacts: None anticipated provided that the mitigation measures are implemented correctly.

Residual Risks: None anticipated provided that the mitigation measures are implemented correctly.

POTENTIAL IMPACTS on the SOIL & HYDROPEDOLOGY ASPECTS of the BIOPHYSICAL ENVIRONMENT:

[Taken from i.e. quoted directly, from the specialist reports contained in APPENDIX G – ***'SPECIALIST REPORT Soil and hydropedological assessment of the proposed Zola Public Transport Facility development area in Soweto, Gauteng Province'.*** *Requested By Ecotone Freshwater Consultants Compiled By Rehab Green Monitoring Consultants CC. Environmental and Rehabilitation Monitoring Consultant cc P.I. Steenekamp (Cert.Sci.Nat.). Report No: RG/2019/08/02/1. Date: 17 January 2022. Status: Edition 2. PO Box 12636, Queenswood, 0121. Pretoria. Cell: 082 560 0592. Fax: 086 678 1690. E-mail: rehabgreen@ee-sa.com'*

1. Potential Direct & Indirect Impacts on the Soil.

Nature: **CONSTRUCTION PHASE: Soil** - Complete cease of the soil's productive capability due to the soil surface being covered by concrete, tar and paving. The soil's productive capability will not be destroyed but will cease permanently or until the structure is removed completely.

	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
CONSTRUCTION PHASE				
Probability	High	5	High	5
Duration	Permanent	5	Permanent	5
Extent	Site	1	Site	1
Magnitude	High	8	High	8
Significance	**High**	**70**	**High**	**70**
Status (positive or negative)	Negative		Negative	
Degree of Confidence	High		Medium	
OPERATIONAL PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	**n.a.**		n.a.	
Status (positive or negative)	n.a.		n.a.	

Degree of Confidence	n.a.		n.a.	
DECOMMISSIONING & CLOSURE PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
Reversibility	Yes		Yes	
Irreplaceable loss of resources?	No. However, the soil resource underneath structures are not lost although the productive capability will remain ceased until the structures are removed.		No. However, the soil resource underneath structures are not lost although the productive capability will remain ceased until the structures are removed.	
Can impacts be mitigated?	No			

Mitigation:

CONSTRUCTION PHASE:

- The reality is that wherever natural soils are covered by concrete, tar or paving the soil's productive capability will cease. This is an impact that is unavoidable in expanding urban areas. Within larger developments the soil's productive capability in-between structures can be preserved, but with a single structure there are no mitigation measures.

Cumulative impacts: The cumulative impact is certainly high since there is a high development rate in the country and soils are covered by structures everywhere.

Residual Risks: None anticipated.

2. Potential Direct & Indirect Impacts on Hydropedology.

Nature: CONSTRUCTION PHASE: **Hydropedology** – this footprint intersects only the recharge hydropedological zone and not the interflow or responsive zones. Water will not infiltrate the soil at the structure footprint but will infiltrate the soil after being channelled off the footprint or it may be channelled directly into the nearby wetland. It will not cause a reduction of water quantities in the nearby wetlands. However, structures that are erected within the interflow zone may disturb the flow path and causes a minor reduction of water quantities in the nearby wetlands.

	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
CONSTRUCTION PHASE				
Probability	Low	4	Low	2
Duration	Permanent	5	Permanent	5
Extent	Site	1	Site	1
Magnitude	Medium	6	Low	4
Significance	**Medium**	**48**	**Low**	**20**
Status (positive or negative)	Negative		Negative	
Degree of Confidence	High		High	
OPERATIONAL PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	

Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
Degree of Confidence	n.a.		n.a.	
DECOMMISSIONING & CLOSURE PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
Reversibility	Yes/No i.e. If the flow path within the soil profile is destroyed during construction, then the impact cannot be reversed.		Yes/No i.e. If the flow path within the soil profile is destroyed during construction, then the impact cannot be reversed.	
Irreplaceable loss of resources?	Yes i.e. The disturbance of a flow path can in some way be seen as loss of a resource.		Yes i.e. The disturbance of a flow path can in some way be seen as loss of a resource.	
Can impacts be mitigated?	Yes/No i.e i.e. the interflow zone can be in-filled. If construction of foundations takes place above the flow path it will not be disturbed or damaged and water quantities in the wetland will probably not be influenced.			

Mitigation:
CONSTRUCTION PHASE:

- None i.e. the interflow zone can be in-filled. If construction of foundations takes place above the flow path it will not be disturbed or damaged and water quantities in the wetland will probably not be influenced.

Cumulative impacts: Low i.e. since most developments are placed outside of wetland systems.

Residual Risks: None anticipated.

POTENTIAL IMPACTS on the SOCIO-ECONOMIC ASPECTS of the ENVIRONMENT:
[No specialists were appointed for the SOCIO-ECONOMIC ENVIRONMENTAL aspects].

1. Potential Direct & Indirect Impacts on the SOCIO-ECONOMIC ENVIRONMENT

Nature:
CONSTRUCTION PHASE IMPACTS:

- Job Creation -
  - The construction of the proposed development may create approximately 100 employment opportunities during the construction phase.

OPERATIONAL PHASE IMPACTS:

- Job Creation
  - Minor increased production as a result of the proposed development will create and sustain new job opportunities in only that specific sector of the economy in which the current industry is functioning in (i.e. TAXI transport & a few informal market opportunities) trade in. Approximately 50 permanent local jobs stand (i.e. excluding informal trading) to be created, and then sustained annually.

	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
CONSTRUCTION PHASE				

Probability	Low	2	Low	2
Duration	Very Short-term	1	Very Short-term	1
Extent	Local	2	Local	2
Magnitude	Very Low	1	Very Low	1
Significance	**Very Low**	**8**	**Very Low**	**8**
Status (positive or negative)	Positive		Positive	
OPERATIONAL PHASE				
Probability	Medium	3	Medium	3
Duration	Permanent	5	Permanent	5
Extent	Local	2	Local	2
Magnitude	Very low	1	Very low	1
Significance	**Low**	**24**	**Low**	**24**
Status (positive or negative)	Positive		Positive	
DECOMMISSIONING & CLOSURE PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
Reversibility	N.a.		N.a.	
Irreplaceable loss of resources?	No		No	
Can impacts be mitigated?	N.a.			

Mitigation:

- No mitigation measures are proposed, since there are no negative impacts foreseen, except if the proposed development would not proceed which will be minor in nature.
- Prerequisites that need to be considered i.e. in order for surrounding areas to capitalise optimally on the development there are certain aspects which will have certain minor positive implications on the surrounding areas**:**
    - Invest in education, i.e. expand and strengthen educational opportunities and programmes, especially relating to the CONSTRUCTION (i.e. buildings/facilities/infrastructure), TRANSPORT & INFORMAL TRADING industries;
    - Promote and implement skills development and social upliftment interventions;
    - Local opportunities need to be enhanced by means of preferential procurement and local labour promotion;
    - Local labour should be employed as far as possible during both construction and operations of the proposed development.
- The following steps/programmes are some aspects to consider, in ensuring the maximum benefit of the proposed development within the local economy even if it is minor in it's effect i.e:
    - **Expanding and Strengthening Educational Programmes and Opportunities**

      Education remains one of the key challenges within South Africa, which leads to skills shortages and therefore hinders jobseekers to be gainfully employed and as a result be able to contribute to economic development and growth.

      The key, and starting point in creating sustainable job opportunities, lies with investment in education and skills development. Investments in education foster opportunities for developing a skilled labour force. Education allows the youth to acquire the necessary skills to take on higher quality jobs, and those jobs in turn promote economic development and growth.
      The following paragraphs describe some programmes and initiatives that can be implemented to increase economic and employment opportunities.

        - ***Local Labour Promotion***

      The unemployment rate within the immediate market catchment area is lower compared to the national average. However, job creation and skills development remain high on the national agenda. In the context of the above the proposed development will not only fulfil an important support function but will also assist in creating job opportunities along certain critical segments of the economic value chain. Skills development and

training is one of the most important instruments to address structural unemployment.

- ***Skills and Education Training***

Skills development and training is one of the more important requirements for people to get employed. Throughout South Africa the need for skills in the marketplace is one of the obstacles preventing higher economic growth. The provision of skills and training to the unemployed would assist in enabling people to apply for jobs and to be able to execute their responsibilities.

Cumulative impacts: An appropriate development i.e. an essential and long overdue formalised basic services (transport) amenity, which is also compatible with its environment and which is also in line with legislation, policies, guidelines etc – is always on asset to the local economy in various ways and also creates the positive image of progress, wealth, safety, security and prosperity which in turn could possibly be a 'drawing card' for further development in the same area.

Residual Risks: None anticipated.

2. Potential Direct & Indirect Impacts on the SOCIO-ECONOMIC ENVIRONMENT

Nature:

CONSTRUCTION PHASE IMPACTS:

- Local Economic Growth
  - New construction activity will create minor capital investment that will in turn benefit the local economy in a minor way.

OPERATIONAL PHASE IMPACTS:

- Local Economic Growth
  - The proposed development could facilitate minor investment in key local sectors, which will translate into additional business sales (i.e. transport industry & informal market) and additional GGP.

	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
CONSTRUCTION PHASE				
Probability	Low	2	Low	2
Duration	Very short term	1	Very short term	1
Extent	Local	2	Local	2
Magnitude	Minor	2	Minor	2
Significance	**Low**	**10**	**Low**	**10**
Status (positive or negative)	Positive		Positive	
OPERATIONAL PHASE				
Probability	Low	2	Low	2
Duration	Permanent	5	Pemanent	5
Extent	Local	2	Local	2
Magnitude	Minor	2	Minor	2
Significance	**Low**	**18**	**Low**	**18**
Status (positive or negative)	Positive		Positive	
DECOMMISSIONING & CLOSURE PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	

Reversibility	High	High
Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	N.a.	

Mitigation:

- No mitigation measures are proposed, since there are no negative impacts foreseen, except if the proposed development would not proceed which will be minor in nature.
- Prerequisites that need to be considered i.e. in order for surrounding areas to capitalise optimally on the development there are certain aspects which will have certain minor positive implications on the surrounding areas**:**
    - Invest in education, i.e. expand and strengthen educational opportunities and programmes;
    - Promote and implement skills development and social upliftment interventions;
    - Local opportunities need to be enhanced by means of preferential procurement and local labour promotion;
    - Local labour should be employed as far as possible during both construction and operations of the proposed development.
- The following steps/programmes are some aspects to consider, in ensuring the maximum benefit of the proposed development within the local economy even if it is minor in it's effect i.e:
    - **Expanding and Strengthening Educational Programmes and Opportunities**

      Education remains one of the key challenges within South Africa, which leads to skills shortages and therefore hinders job-seekers to be gainfully employed and as a result be able to contribute to economic development and growth.

      The key, and starting point in creating sustainable job opportunities, lies with investment in education and skills development. Investments in education foster opportunities for developing a skilled labour force. Education allows the youth to acquire the necessary skills to take on higher quality jobs, and those jobs in turn promote economic development and growth.

      The following paragraphs describe some programmes and initiatives that can be implemented to increase economic and employment opportunities.

        - ***Local Labour Promotion***

      The unemployment rate within the immediate market catchment area is lower compared to the national average. However, job creation and skills development remain high on the national agenda. In the context of the above the proposed development will not only fulfil an important support function but will also assist in creating job opportunities along certain critical segments of the economic value chain. Skills development and training is one of the most important instruments to address structural unemployment.

        - ***Skills and Education Training***

      Skills development and training is one of the more important requirements for people to get employed. Throughout South Africa the need for skills in the marketplace is one of the obstacles preventing higher economic growth. The provision of skills and training to the unemployed would assist in enabling people to apply for jobs and to be able to execute their responsibilities.

Cumulative impacts: An appropriate development i.e. an essential and long overdue formalised basic services (transport) amenity, compatible with its environment and which is also in line with legislation, policies, guidelines etc – is always on asset to the local economy in various ways and also creates the positive image of progress, wealth, safety, security and prosperity which in turn could possibly be a 'drawing card' for further development in the same area.

Residual Risks: None anticipated.

3. Potential Direct & Indirect Impacts on the SOCIO-ECONOMIC ENVIRONMENT

Nature:

CONSTRUCTION PHASE IMPACTS:

- Infrastructure Investment & Development
    - This proposed Public Transport Facility which is an essential and long overdue formalised basic services (transport) amenity, would not only be compatible with its environment but is a low asset to the local economy in various ways.

OPERATIONAL PHASE IMPACTS:

- Rates & Tax Base Expansion
    - The development would facilitate real estate investment, job creation and economic growth, which, in turn will contribute to the creation of productive, rateable assets (i.e. transport services, informal market etc) in a minor way.

	The proposed development could also possibly contribute in terms of payable property rates to the local fiscus in a minor way, if the applicant would opt to make certain aspects of the proposed development (i.e. floor/parking/market area space etc) available at a minor rental amount.			
	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
CONSTRUCTION PHASE				
Probability	Low	2	Low	2
Duration	Very short term	1	Very short term	1
Extent	Local	2	Local	2
Magnitude	Minor	1	Minor	1
Significance	**Very low**	**8**	**Very low**	**8**
Status (positive or negative)	Positive		Positive	
OPERATIONAL PHASE				
Probability	Low	2	Low	2
Duration	Permanent	5	Permanent	5
Extent	Local	2	Local	2
Magnitude	Minor	1	Minor	1
Significance	**Low**	**16**	**Low**	**16**
Status (positive or negative)	Positive		Positive	
DECOMMISSIONING & CLOSURE PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
Reversibility	High		High	
Irreplaceable loss of resources?	No		No	
Can impacts be mitigated?	N.a.			

Mitigation and/or Recommendations:

- No mitigation measures are proposed, since there are no negative impacts foreseen, except if the proposed development would not proceed which will be minor in nature.
- Prerequisites that need to be considered i.e. in order for surrounding areas to capitalise optimally on the development there are certain aspects which will have certain minor positive implications on the surrounding areas**:**
    - Invest in education, i.e. expand and strengthen educational opportunities and programmes;
    - Promote and implement skills development and social upliftment interventions;
    - Local opportunities need to be enhanced by means of preferential procurement and local labour promotion;
    - Local labour should be employed as far as possible during both construction and operations of the proposed development.
- The following steps/programmes are some aspects to consider, in ensuring the maximum benefit of the proposed development within the local economy even if it is minor in it's effect i.e:
    - **Expanding and Strengthening Educational Programmes and Opportunities**

      Education remains one of the key challenges within South Africa, which leads to skills shortages and therefore hinders jobseekers to be gainfully employed and as a result be able to contribute to economic development and growth.

The key, and starting point in creating sustainable job opportunities, lies with investment in education and skills development. Investments in education foster opportunities for developing a skilled labour force. Education allows the youth to acquire the necessary skills to take on higher quality jobs, and those jobs in turn promote economic development and growth.

The following paragraphs describe some programmes and initiatives that can be implemented to increase economic and employment opportunities.

- ***Local Labour Promotion***

The unemployment rate within the immediate market catchment area is lower compared to the national average. However, job creation and skills development remain high on the national agenda. In the context of the above the proposed development will not only fulfil an important support function but will also assist in creating job opportunities along certain critical segments of the economic value chain. Skills development and training is one of the most important instruments to address structural unemployment.

- ***Skills and Education Training***

Skills development and training is one of the more important requirements for people to get employed. Throughout South Africa the need for skills in the marketplace is one of the obstacles preventing higher economic growth. The provision of skills and training to the unemployed would assist in enabling people to apply for jobs and to be able to execute their responsibilities.

Cumulative impacts: An appropriate development i.e. an essential and long overdue formalised basic services (transport) amenity, compatible with its environment and which is also in line with legislation, policies, guidelines etc – is always on asset to the local economy in various ways and also creates the positive image of progress, wealth, safety, security and prosperity which in turn could possibly be a 'drawing card' for further development in the same area.

Residual Risks: None anticipated.

POTENTIAL IMPACTS on the VISUAL & AESTHETIC ENVIRONMENT:

1. Potential Direct & Indirect Impacts on the VISUAL & AESTHETIC ENVIRONMENT

Nature:

PLANNING & DESIGN PHASE:

- The visual and aesthetical environment impact caused by the potential lack of adequate (i.e. sensitive, appropriate, in-context with the local surroundings and visual qualities of the site and other related visual aspects) – town planning, urban planning/design, architectural, landscape architectural design of facilities and site – and, the full implementation of the proposed mitigation measures. The applicant has appointed such specialists as indicated above and therefore employed sufficient measures (mitigation) i.e. as far as possible, to make the proposed development an attractive and visually uplifting improvement on the site and aesthetically appealing towards the directly adjacent township environment.

CONSTRUCTION PHASE:

- Visual and aesthetical environment impact caused by construction related activities such as, stockpile material, trucks, construction offices, hoarding and excavation machinery, clearance of vegetation, excavation and storage of construction materials and equipment. This impact will be temporary in nature, limited to the construction phase.

OPERATIONAL PHASE:

- The presence of the proposed facilities [i.e. proposed Public Transport Facility which is an essential and long overdue formalised basic services (transport) amenity, in the midst of a township (i.e. Emdeni & Zola in SOWETO) with a plethora of mixed uses, facilities, activities and elements (i.e. litter and refuse dumping) which creates in general a visual 'confusion' of disconnectedness (i.e. not integrated in a sensitive cohesive way visually and aesthetically) and gross unpleasantness to the urban-township, remaining heavily impacted (i.e. totally transformed, compromised and *Seriously* modified ecosystem state) natural environment (i.e. wetland within a valley bottom system with shallow water and no distinct riparian zone) and other surrounding land uses in that area (e.g. fuel station etc), with no visual 'theme' or specific architectural and/or landscape architectural style or character which unifies the visual 'landscape' as a whole] - will have a minor positive visual impact in the area, particularly for the directly adjacent land occupiers and users, public transport vehicle users and drivers, motor vehicle drivers and/or pedestrians - especially if the landowner/developer will develop the proposed facilities in a visual sensitive way which responds positively to its natural and surrounding built-up environment and rehabilitates the wetland and stream and maintain it a good condition. The applicant has appointed such specialists as indicated above and therefore employed sufficient measures i.e. as far as possible, to make the proposed development an attractive and visually uplifting improvement on the site and aesthetically appealing towards the directly adjacent township environment. This proposed development (i.e. facilities,

infrastructure, landscaping, attenuation ponds etc) however, calls for and would require as an essential part of the successful functioning of the facilities and maintaining the original visual character and aesthetical appeal of it - a highly efficient maintenance and effective full time management program.

DECOMMISSIONING & CLOSURE PHASE:

- Trucks used for decommissioning activities, rubble and stockpiles may cause a visual impact.

	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	Low	2	High	4
Duration	Long-term	4	Long-term	4
Extent	Local	2	Local	2
Magnitude	Minor	1	Minor	2
Significance	**Low**	**14**	**Medium**	**32**
Status (positive or negative)	Negative		Positive	
CONSTRUCTION PHASE				
Probability	Low	2	Low	2
Duration	Immediate	1	Immediate	1
Extent	Local	2	Local	2
Magnitude	Low	2	Low	2
Significance	**Low**	**10**	**Low**	**14**
Status (positive or negative)	Negative		Negative	
OPERATIONAL PHASE				
Probability	Low	2	High	4
Duration	Long-term	4	Long-term	4
Extent	Local	2	Local	2
Magnitude	Minor	1	Minor	2
Significance	**Low**	**14**	**Medium**	**32**
Status (positive or negative)	Negative		Positive	
DECOMMISSIONING & CLOSURE PHASE				
Probability	Improbable	1	Improbable	1
Duration	Immediate	1	Immediate	1
Extent	Local	2	Local	2
Magnitude	High	8	Medium	6
Significance	**Low**	**11**	**Low**	**9**
Status (positive or negative)	Negative		Negative	
Reversibility	Low		Medium	
Irreplaceable loss of resources?	No.		No.	
Can impacts be mitigated?	Yes			

Mitigation:

PLANNING & DESIGN PHASE:

- Planners, Architects & Landscape Architects and any other related professional, project managers and/or building contractor to plan, design and implement in the development proposal in such a sensitive manner which would be aesthetically pleasing and visually uplifting in it's current township setting e.g. sympathetic materials and colours with the surrounding environment like hues of brown, grey etc; all yards and storage areas to be enclosed by masonry walls or screens which is screened by indigenous local biodiversity vegetation; external lighting should be confined to essential areas; lights should be low-level, where possible, and fitted with reflectors to avoid light spillage; lights and signage should be fixed to buildings or walls, where possible, to avoid unnecessary masts and visual clutter; other corporate or advertising signage and flags should be avoided or restricted etc. The visual and aesthetical environment impact caused by the potential lack of adequate (i.e. sensitive, appropriate, in-context with the local surroundings and visual qualities of the site and other related visual aspects) – town planning, urban planning/design, architectural, landscape architectural design of facilities and site – and, the full implementation of the proposed mitigation measures. The applicant has appointed such specialists as indicated above and therefore employed sufficient measures (mitigation) i.e. as far as possible, to make the proposed development an attractive and visually uplifting improvement

on the site and aesthetically appealing towards the directly adjacent township environment.

- The relevant professionals i.e. Architect, Civil engineers, Landscape Architect etc, should be appointed by the developer to implement the final construction and planting plans & drawings which at least complies with the above-mentioned mitigation measures.

CONSTRUCTION PHASE:

- Limit dust and screen construction from viewers along adjacent road with strips of shade cloth; the construction site, material stores, stockpiles and lay-down area should be kept tidy; measures to control wastes and litter should be included in the contract specification documents; wind-blown dust from stockpiles and construction activities, should be controlled; an environmental; management program (EMPr) should be prepared and an environmental control officer (ECO) employed for the duration of the construction.

OPERATIONAL PHASE:

- Install landscaping and rehabilitation as soon as possible; Litter and waste should be effectively managed to avoid visual problems in the area; buildings and landscaping and rehabilitation should receive on-going maintenance to avoid visual decay; lights should be low-level, where possible, and fitted with reflectors to avoid light spillage; lights and signage should be fixed to buildings or walls, where possible, to avoid unnecessary masts and visual clutter.

DECOMMISSIONING & CLOSURE PHASE:

- The decommissioning area must be fenced, and shade cloth attached, where necessary. At the end of the life of the project, structures no longer required must be demolished and removed from the site. Roads, parking and other paved areas no longer required must be broken up and the site re-instated or redeveloped.

Cumulative impacts: An appropriate development aesthetically uplifting and visually pleasing to its current' environment and which is also in line with legislation, policies, guidelines etc – is always an asset to the local community in various ways and also creates the positive image of progress, wealth, safety, security and prosperity which in turn could possibly be a 'drawing card' for further development in the same area.

Residual Risks: None anticipated.

POTENTIAL IMPACTS of ACCESS ROADS on the ENVIRONMENT:

1. Potential Direct & Indirect Impacts of ACCESS ROADS on the ENVIRONMENT

Nature:

PLANNING & DESIGN PHASE:

- ACCESS ROADS:
  - New access roads and haulage routes could impact on areas of sensitivity (fauna and flora, wetlands, spruit etc.).

CONSTRUCTION PHASE:

- ACCESS ROADS:
  - New access roads and haulage routes could impact on areas of sensitivity (fauna and flora, wetlands and spruit etc.).

	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	Medium	3	Improbable	1
Duration	Long-term	4	Medium-term	3
Extent	Site	1	Site	1
Magnitude	Moderate	8	Low	4
Significance	**Medium**	**33**	**Low**	**8**
Status (positive or negative)	Negative		Negative	
CONSTRUCTION PHASE				
Probability	Medium	3	Improbable	1
Duration	Short term	2	Short term	2
Extent	Site	1	Site	1
Magnitude	Moderate	8	Low	2
Significance	Medium	**33**	Very low	**5**
Status (positive or negative)	Negative		Negative	
OPERATIONAL PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	

Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
DECOMMISSIONING & CLOSURE PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
Reversibility	Low		High	
Irreplaceable loss of resources?	Yes		No	
Can impacts be mitigated?	Yes			

Mitigation:

PLANNING & DESIGN PHASE:

- Temporary access and haulage routes must be designed prior to construction commencing to ensure that the most preferable access and haulage routes has been identified. Provision made for the erection of appropriate warning signs.
- Road safety must be taken into account when planning access to the site.
- Use should be made of existing roads as far as possible.

Cumulative impacts: None

Residual Risks: None anticipated.

POTENTIAL IMPACTS of EROSION & SOIL DISTURBANCE on the ENVIRONMENT:

1. Potential Direct & Indirect Impacts of EROSION & SOIL DISTURBANCE on the ENVIRONMENT

Nature:

CONSTRUCTION PHASE:

- Erosion & Soil Disturbance:
  - Sources of water and soil pollution on construction sites include: diesel and oil; paint, solvents, cleaners and other harmful chemicals; and construction debris and dirt.
  - Spillages of oil, lubricants and fuel from construction vehicles, plant and machinery has the potential to contaminate the soil.
  - When portions of the site are cleared, combined with the failure to implement erosion control measures effectively, silt-bearing run-off and sedimentation pollution will result.
  - Ground disturbing activities such as blasting, and foundation construction can lead to increased erosion.
  - Stormwater runoff has the potential to erode the topsoil.
  - Soil compaction due to construction activities will reduce aeration, permeability, and water holding capacity of the soils and cause an increase in surface runoff, potentially causing increased sheet or gully erosion.

	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
CONSTRUCTION PHASE				
Probability	High	4	Low	2

Duration	Short-term	2	Immediate	1
Extent	Site	1	Site	1
Magnitude	High	8	Low	4
Significance	**Medium**	**44**	**Low**	**12**
Status (positive or negative)	Negative		Negative	
OPERATIONAL PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
DECOMMISSIONING & CLOSURE PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
Reversibility	Low		High	
Irreplaceable loss of resources?	Yes		No	
Can impacts be mitigated?	Yes			

Mitigation:

CONSTRUCTION PHASE:

- Apply erosion controls (e.g., berms, sandbags and hessian sheets) to prevent/minimise soil erosion during construction activities.
- The topsoil layer of not less than 200mm (or as per geotechnical soil profiling result) must be removed and stockpiled in mounds no more than 2m in height in a designated area for use during progressive rehabilitation.
- Care must be taken to prevent the compaction of topsoil in any way, especially by trucks and other construction machinery.
- Apply a protective covering on disturbed soils with suitable vegetation after completion of construction activities.
- Save topsoil removed during construction and use it to reclaim disturbed areas upon completion of construction activities.
- Avoid creating excessive slopes during excavation.
- Implement a stormwater management plan to ensure compliance with regulations and prevent off-site migration of contaminated stormwater or increased soil erosion during the construction phase.
- Excavation (temporary) to comply with SANS 10400-G:2011 guidelines.

Cumulative impacts: None

Residual Risks: None anticipated.

POTENTIAL IMPACTS on AIR QUALITY of the ENVIRONMENT:

1. Potential Direct & Indirect Impacts on AIR QUALITY of the ENVIRONMENT

Nature:

CONSTRUCTION PHASE:

- Air quality impacts may arise during the construction phase as a result of dust generated by the exposure and disturbance of soil.
- Fugitive dust may become a nuisance for surrounding land users and occupiers.
- Further air quality impacts will arise as a result of the exhaust emissions from construction vehicles and plant.

DECOMMISSIONING & CLOSURE PHASE:

- There is potential for the air quality to be impacted through the decommissioning activities that may generate dust through

excavation activities and disturbing the ground.

- Exhaust emissions produced by construction equipment will be dispersed and it is not anticipated that they will cause a nuisance to surrounding landowners.

	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
CONSTRUCTION PHASE				
Probability	Low	3	Very Low	1
Duration	Short-term	2	Immediate	1
Extent	Site	1	Site	1
Magnitude	Low	2	Minor	1
Significance	**Low**	**15**	**Minor**	**1**
Status (positive or negative)	Negative		Negative	
OPERATIONAL PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	**n.a.**		**n.a.**	
Status (positive or negative)	None		none	
DECOMMISSIONING & CLOSURE PHASE				
Probability	Low	3	Very low	1
Duration	Immediate	1	Immediate	1
Extent	Site	1	Site	1
Magnitude	Low	2	Minor	1
Significance	**Low**	**12**	**Minor**	**1**
Status (positive or negative)	Negative		Negative	
Reversibility	Medium		High	
Irreplaceable loss of resources?	No		No	
Can impacts be mitigated?	Yes			

Mitigation:

CONSTRUCTION PHASE:

- Dust minimisation and control measures should be implemented on the construction site at regular intervals. This could include irrigation by water tankers.
- The frequency of implementation of dust suppression measures should be increased when it is expected that high wind conditions will develop.
- Vegetation clearing should only take place immediately prior to the commencement of construction activities in an area, in order to minimise the amount of exposed soil on the site.
- Stockpiles and spoil heaps must be covered with tarpaulins or straw to prevent fugitive dust.
- All construction vehicles must be appropriately maintained to minimise exhaust emissions.

DECOMMISSIONING & CLOSURE PHASE:

- Dust suppression methods, such as wetting or laying straw, should be applied where there are large tracks of exposed surfaces.
- Stockpiles and soil heaps must be covered with tarpaulins or straw to prevent fugitive dust.
- All construction vehicles must be appropriately maintained to minimise exhaust emissions.

Cumulative impacts: None

Residual Risks: None anticipated.

POTENTIAL IMPACTS of TRAFFIC on the ENVIRONMENT:

1. Potential Direct & Indirect Impacts of TRAFFIC on the ENVIRONMENT

Nature:

CONSTRUCTION PHASE:

- Increased traffic volumes will be generated, including heavy vehicles delivering materials to the site. This could cause slight delays in existing traffic operations. The heavy vehicles may also cause damage to the public road.

DECOMMISSIONING & CLOSURE PHASE:

- Vehicle traffic around the site may increase during the decommissioning phase and impact the natural traffic flow around the site.

	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
CONSTRUCTION PHASE				
Probability	Medium	3	Low	2
Duration	Short-term	2	Short-term	2
Extent	Local	2	Local	2
Magnitude	Moderate	6	Low	4
Significance	**Medium**	**30**	**Low**	**16**
Status (positive or negative)	Negative		Negative	
OPERATIONAL PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	**n.a.**		**n.a.**	
Status (positive or negative)	Non		None	
DECOMMISSIONING & CLOSURE PHASE				
Probability	Low	3	Low	2
Duration	Immediate	1	Immediate	1
Extent	Local	2	Local	2
Magnitude	Moderate	6	Low	4
Significance	**Low**	**27**	**Low**	**14**
Status (positive or negative)	Negative		Negative	
Reversibility	Medium		High	
Irreplaceable loss of resources?	No		No	
Can impacts be mitigated?	Yes			

Mitigation:

CONSTRUCTION & DECOMMISSIONING & CLOSURE PHASE:

PHASE:

- The Contractor should ensure that traffic on the local roads is disrupted as little as possible which should include measures for

the optimization of the amount of travel on the local roads, thereby reducing impacts.

- The delivery of construction equipment and material should be limited to hours outside peak traffic times (including weekends).
- Where obvious damage to the road infrastructure has occurred as a result of the project, repairs should be undertaken in accordance with the relevant authority's specifications and requirements.
- Co-ordination of movement of vehicles on and off site to reduce risks and prevent congestion on roads in the vicinity of the site.
- No vehicles or machinery should be serviced or refuelled onsite.
- Peak traffic hours should be avoided.
- Large vehicle turning must take place onsite and not in the adjacent roads.
- In cases where activities may obstruct traffic, local traffic officials must be contacted.

Cumulative impacts: None

Residual Risks: None anticipated.

POTENTIAL IMPACTS of WASTE GENERATION on the ENVIRONMENT:

1. Potential Direct & Indirect Impacts of WASTE GENERATION on the ENVIRONMENT

Nature:

CONSTRUCTION & DECOMMISSIONING & CLOSURE PHASES:

- Waste generation during the construction & decommissioning/closure phases will have a negative impact on the environment, if not controlled adequately. Waste on site includes domestic waste, mixed concrete, paint cans and brushes, insulation material, building rubble and other construction waste.

	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
CONSTRUCTION PHASE				
Probability	Moderate	4	Low	2
Duration	Short term	2	Short-term	2
Extent	Site	1	Site	1
Magnitude	Moderate	6	Low	4
Significance	**Medium**	**36**	**Low**	**14**
Status (positive or negative)	Negative		Negative	
OPERATIONAL PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	**n.a.**		**n.a.**	
Status (positive or negative)	None		none	
DECOMMISSIONING & CLOSURE PHASE				
Probability	Low	3	Low	2
Duration	Immediate	1	Immediate	1
Extent	Local	2	Local	2
Magnitude	Moderate	6	Low	4
Significance	**Low**	**27**	**Low**	**14**
Status (positive or negative)	Negative		Negative	
Reversibility	Medium		High	

Irreplaceable loss of resources?	No	No
Can impacts be mitigated?	Yes	

Mitigation:

CONSTRUCTION PHASE:

- General waste disposal bins will be made available for employees to use throughout the construction phase.
- Where possible construction waste on site should be recycled or reused.
- Waste will be temporarily stored on site (less than 90 days) before being disposed of appropriately.
- General waste should be placed in a watertight container and disposed of on a regular basis.
- Records of all waste being taken off site must be recorded and kept as evidence.
- Evidence of correct disposal must be kept.
- Construction rubble will be disposed of at an appropriate site.
- Burning of waste material will not be permitted.
- Hazardous materials will be generated if there are spillages during construction and maintenance periods. This waste should be cleaned up using absorbent material provided in spill kits on site and must be disposed of accordingly at a hazardous waste landfill.
- Absorbent materials used to clean up spillages should be disposed of in a separate hazardous waste bin.
- The storage area for hazardous material must be concreted, bunded, covered, labelled and well ventilated.
- Provide employees with appropriate PPE for handling hazardous materials.
- All hazardous waste will be disposed of in a registered hazardous waste disposal facility.

Cumulative impacts: None

Residual Risks: None anticipated.

POTENTIAL IMPACTS of NOISE on the ENVIRONMENT:

1. Potential Direct & Indirect Impacts of NOISE on the ENVIRONMENT

Nature:

CONSTRUCTION PHASE:

- Noise impacts will arise as a result of the use of construction vehicles and machinery. These noise impacts may be a nuisance to surrounding land users and occupiers.
- It is anticipated that the construction activities will contribute to ambient noise levels during working hours.

OPERATIONAL PHASE:

- During operation, the noises that may be associated with a public transport facility may include loud music, shouting and vehicles revving as they leave the premises.

DECOMMISSIONING & CLOSURE PHASE:

- Vehicles and other machinery required for decommissioning will increase the noise levels during working hours.
- Decommissioning activities which are likely to cause vibrations.
- Entry and use of construction vehicles as well as cranes on site.

	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
CONSTRUCTION PHASE				
Probability	High	4	Low	2
Duration	Immediate	1	Immediate	1
Extent	Local	2	Local	2
Magnitude	Moderate	6	Low	3
Significance	**Medium**	**36**	**Low**	**12**

Status (positive or negative)	Negative		Negative	
OPERATIONAL PHASE				
Probability	High	4	Low	2
Duration	Long-term	4	Long-term	3
Extent	Local	2	Site	1
Magnitude	Moderate	6	Low	3
Significance	**Medium**	**48**	**Low**	**14**
Status (positive or negative)	Negative		Negative	
DECOMMISSIONING & CLOSURE PHASE				
Probability	High	4	Low	2
Duration	Immediate	1	Immediate	1
Extent	Local	2	Site	1
Magnitude	Moderate	6	Low	3
Significance	**Moderate**	**36**	**Low**	**10**
Status (positive or negative)	Negative		Negative	
Reversibility	Medium		High	
Irreplaceable loss of resources?	No		No	
Can impacts be mitigated?	Yes			

Mitigation:

CONSTRUCTION PHASE:

- Construction activities should be limited to normal working hours (08:00 – 17:00) and limited to weekdays.
- No work should occur on weekends or on public holidays.
- The contractor will adhere to local authority by-laws relating to noise control.
- Mechanical equipment with lower sound power levels must be selected to ensure that the permissible occupation noise-rating limit of 85 dBA is not exceeded.
- Equipment must be fitted with silencers as far as possible to reduce noise.
- All equipment to be adequately maintained and kept in good working order to reduce noise.
- Neighbouring landowners should be informed prior to the initiation of noisy activities e.g. high intensity drilling. A grievance procedure will be established whereby noise complaints can be received, recorded and responded to appropriately.
- All construction workers and personnel must wear hearing protection during working hours.
- Noise levels must comply with the SANS 100103 – 0994 (recommended noise levels).

OPERATIONAL PHASE:

- A grievance procedure will be established whereby noise complaints can be received, recorded and responded to appropriately.
- Equipment such as mechanical equipment etc - that are fitted with noise reduction facilities (e.g. side flaps, silencers etc.) must be used as per operating instructions and maintained properly.
- Noise levels should comply with the SANS Code of Practice 100103 – 0994 (recommended noise levels).
- Local by-laws for noise levels must be adhered to.

DECOMMISSIONING & CLOSURE PHASE:

- The contractor will adhere to local authority by-laws relating to noise control.
- Decommissioning activities will be restricted to regular working hours, i.e. Monday to Friday (08:00 – 17:00).
- Mechanical equipment with lower sound power levels will be selected to ensure that the permissible occupation noise-rating limit of 85 dBA is not exceeded.
- Equipment will be fitted with silencers as far as possible to reduce noise.

Cumulative impacts: None

Residual Risks: None anticipated.

POTENTIAL IMPACTS of HEALTH & SAFETY on the ENVIRONMENT:

1. Potential Direct & Indirect Impacts of HEALTH & SAFETY on the ENVIRONMENT

Nature:

CONSTRUCTION PHASE:

- Potential human health and safety impacts during the operations and maintenance phase would include:
  - Exposures to hazardous materials such as petroleum, oils, lubricants, and herbicides can cause serious health problems.
  - The risk of serious injuries or accidents associated with maintenance of infrastructure.
- Adverse impacts could also occur from the risk of fires caused by development activities.

OPERATIONAL PHASE:

- Open and/or unattended fires in unallocated (i.e. undesignated areas) for heating and/or cooking purposes is considered potentially dangerous, especially in the informal trade areas. Therefore, there is a minor risk of fire on site, which could pose a minor threat to on-site employees and surrounding land users and occupiers.
- Potential TAXI 'fighting or wars', feuds and/or violence between competing factions i.e. taxi associations, groups etc. – could pose an enormous safety risk for not only the taxi customers and drivers of the taxis, but also the surrounding/adjacent land occupiers and also the passers-by.

DECOMMISSIONING & CLOSURE PHASE:

- During the decommissioning phase, open excavations, vehicle movement and other construction activities may pose a health and safety hazard to workers.
- Storage, handling and transport of fuel are potentially dangerous to humans and properties due to the risk of fire and explosions.

	Without mitigation		With mitigation	
PLANNING & DESIGN PHASE				
Probability	n.a.		n.a.	
Duration	n.a.		n.a.	
Extent	n.a.		n.a.	
Magnitude	n.a.		n.a.	
Significance	n.a.		n.a.	
Status (positive or negative)	n.a.		n.a.	
CONSTRUCTION PHASE				
Probability	Moderate	3	Low	2
Duration	Immediate	1	Immediate	1
Extent	Site	1	Site	1
Magnitude	Moderate	6	Low	3
Significance	**Low**	**24**	**Low**	**10**
Status (positive or negative)	Negative		Negative	
OPERATIONAL PHASE				
Probability	Medium	3	Minor	2
Duration	Long-term	4	Long-term	4
Extent	Local	2	Site	1
Magnitude	Low	4	Minor	1
Significance	**Medium**	**30**	**Low**	**12**
Status (positive or negative)	Negative		Negative	
DECOMMISSIONING & CLOSURE PHASE				
Probability	Medium	3	Low	2
Duration	Immediate	1	Immediate	1
Extent	Site	1	Site	1
Magnitude	Moderate	6	Low	3
Significance	**Low**	**24**	**Low**	**10**
Status (positive or negative)	Negative		Negative	
Reversibility	Medium		High	
Irreplaceable loss of resources?	No		No	
Can impacts be mitigated?	Yes			

Mitigation:

CONSTRUCTION PHASE:

- The construction site must be fenced off to prohibit unauthorised access and site access must be strictly controlled.
- All employees, contractors and sub- contractors to wear appropriate PPE.
- Open excavations must be clearly marked.
- Appropriate health and safety signage must be displayed on site.
- Safety Audits must be conducted on a monthly basis and submitted to the relevant departments.

OPERATIONAL PHASE:

- Fire extinguishers and sandbags must be readily available onsite and easily accessible.
- Fire-fighting equipment must comply with SANS 1151 (Portable rechargeable fire extinguishers - Halogenated hydrocarbon type extinguishers) and must be inspected regularly.
- Appropriate health and safety signage must be displayed on site.
- An Emergency Response Plan must be in place for the site, this must clearly describe emergency procedures and include emergency contact numbers.
- Staff must be trained adequately so as to identify potential high-risk situations and implement the Emergency Response Plan.
- The local municipality (i.e. the applicant) should have an ANTI-TAXI WAR POLICY and IMPLIMENTATION STRATEGY PLAN compiled and enacted, which should include at least the assistance of the SOUTH AFRICAN POLICER SERVICES, the employment of a full time PRIVATE SAFETY & SECURITY COMPANY SERVICES – and, the official agreement and active participation of all the TAXI ASSOCIATIONS and/or GROUPS to maintain peace and mutual respect etc.

DECOMMISSIONING & CLOSURE PHASE:

- The construction site must be fenced off to prohibit unauthorised access and site access must be strictly controlled.
- All employees, contractors and sub- contractors to wear appropriate PPE.
- Open excavations must be clearly marked.
- All employees, contractors and sub- contractors must comply with the relevant Health and Safety Policy.
- Fire safety should be considered, and all vehicles should have fire extinguisher.
- Employees should be trained on fire safety.
- Local emergency fire brigade number should be known to everybody.
- Appropriate health and safety signage must be displayed on site.

Cumulative impacts: None

Residual Risks: None anticipated.

NO GO ALTERNATIVE

PLANNING & DESIGN PHASE

DIRECT IMPACTS

- The long overdue need as identified by the landowner/developer/applicant would not be met i.e. the City of Johannesburg through the Johannesburg Development Agency has identified land parcels which have are currently being utilized informally by the taxi industry, thus giving rise to the need to formalize the sites and provide infrastructure towards the proposed taxi rank development for holding, loading purposes, as well as the associated ancillary uses that complement the development.
- No employment opportunities would be created for further detailed design and assessment-related services, neither such as architects, engineers, town planners and environmental consultants, nor for the regional and national authorities responsible for reviewing the applications made in terms of the relevant legislation.
- The PLANNING initiatives & LEGISLATIVE requirements of the LOCAL, PROVINCIAL & NATIONAL AUTHORITIES would not be met in a minor was as outlined in the following documentation i.e:
    - Spatial Development Framework 2040;
    - RSDF 2010/2011 i.e. the site is situated in Region G, Sub-area 4;
    - THE SPATIAL PLANNING AND LAND USE MANAGEMENT ACT, 2013 (ACT 16 OF 2013) – SPLUMA;
    - Gauteng Spatial Development Framework 2011;
    - National Spatial Development Perspective (NSDP);
    - Gauteng Spatial Development Perspective (GSDP);
    - National Development Plan vision for 2030.

INDIRECT IMPACTS
• None
CUMULATIVE IMPACTS
• **None**

NO GO ALTERNATIVE

CONSTRUCTION PHASE

DIRECT, INDIRECT & CUMULATIVE IMPACTS

- The further spread and increase of alien invasive plant species in the wetland and spruit as a result of the lack of rehabilitation initiatives.
- No minor disturbance of the soil on the site, no potential for contamination or an increase in erosion of the site.
- No minor additional traffic volumes or associated impacts.
- No minor increase in negative air quality impacts and no dust nuisance to local land users and occupiers or road users.
- No minor increase in noise impacts.
- No medium positive alteration to the visual environment.
- No minor occupational health and safety risks.
- No job creation opportunity.
- No job security for employees of the appointed contractor.
- No minor positive potential for economic growth in the metropolitan area.
- Potential increase in criminal activity in the areas surrounding the construction site, associated with the presence of transient job seekers on the site.

OPERATIONAL PHASE

INDIRECT IMPACTS (i.e. OTHER/FURTHER POSSIBLE)

ECONOMIC IMPACTS:

- No stimulus of the local economy.
- The lack of the following i.e. the presence of a public transport facility may cause a minor or perceived increase in property values in the adjacent area. The reverse is that the amenity benefit may be attractive to some neighbouring occupiers. The in-filling of such areas with appropriate development also accords with urban planning principles.

CUMULATIVE IMPACTS (i.e. OTHER/FURTHER POSSIBLE)

Litter:

- Risk of increased litter generation (if wastes are improperly handled, stored and disposed of).

Economic Impacts:

- No Increased wealth in the community and trading opportunities created by the Proposed Development. (Minor positive Impact Noted).

Social Impacts

- No Skills development. (Positive Impact Noted).
- No potential for skills development.

List any specialist reports that were used to fill in the above tables. Such reports are to be attached in the appropriate Appendix.

1. ***'A vegetation assessment of the site proposed for development of the Emdeni Public transport Facility in Soweto - by G.J. Bredenkamp*** *- Commissioned by Pierre Joubert Landscape Architect and Environmental Planner [Eco-Agent CC; PO Box 23355; Monument Park; 0181. Tel 012 3463180 / Fax 012 460 2525 / Cell 082 5767046]. December 2021.)'.*
2. ***'A wetland assessment of the site proposed for development of the Emdeni Public transport Facility in Soweto - by G.J. Bredenkamp & CE Venter*** *(Commissioned by Pierre Joubert Landscape Architect and Environmental Planner [Eco-Agent CC; PO Box 23355; Monument Park; 0181. Tel 012 3463180 / Fax 012 460 2525 / Cell 082 5767046]. December 2021.)'.*
3. '***Aquatic Ecology Specialist Study for the ZOLA-EMDENI PUBLIC TRANSPORT FACILITY SOWETO, Gauteng****. Prepared By: Ecotone Freshwater Consultants Suite 342, Private Bag X1, Florida Hills, 1716 Cell: +27 84 585 7479. Tel: +27 (11) 672 1375 Fax: 088 011 673 1192 . contact@ecotone-sa.co.za www.ecotone-sa.co.za Prepared For: Larchitect Pierre Joubert pierre.joubert.larchitect@gmail.com. Reference: Larchitect_ Zola-Emdeni_Public_Transport_Facility_Soweto_Aquatic_ January_2022_Final Date: January 2022 Version: Final'].*

4. ***'SPECIALIST REPORT Soil and hydropedological assessment of the proposed Zola Public Transport Facility development area in Soweto, Gauteng Province'.*** *Requested By Ecotone Freshwater Consultants Compiled By Rehab Green Monitoring Consultants CC. Environmental and Rehabilitation Monitoring Consultant cc P.I. Steenekamp (Cert.Sci.Nat.). Report No: RG/2019/08/02/1. Date: 17 January 2022. Status: Edition 2. PO Box 12636, Queenswood, 0121. Pretoria. Cell: 082 560 0592. Fax: 086 678 1690. E-mail: rehabgreen@ee-sa.com'*
5. '***Hydrogeological Investigation – Proposed Emdemi Public Transport Facility. Report Version – 1 14 December 2021. Urban Innovate. GCS Project Number: 19-075 Prepared by GCS Water and Environment (Pty) Ltd (GCS)'.*** 63 Wessel Road Rivonia 2128 PO Box 2597 Rivonia 2128 South Africa Telephone: +27 (0)11 803 5726 Facsimile: +27 (0)11 803 5745 Web: www.gcs-sa.biz].
6. ***'DEVELOPMENT of an ECOLOGICAL STORMWATER MANAGEMENT & REHABILITATION PLAN (ESMRP) for SUBMISSION as Part of WATER USE LICENCE APPLICATION for the PROPOSED TOWNSHIP ZOLA EXTENSION 3 in order to accommodate the EMENDENI PUBLIC TRANSPORT FACILITY on a Part of the REMAINDER of the FARM SOWETO 387 IQ – GAUTENG, PROPOSED PREFERRED LAYOUT PROPOSAL. January 2022'*** *by HABITAT LANDSCAPE ARCHITECTS (Pty) Ltd'.* Siegwalt U Küsel [Prof L Arch (SA) Reg. no. 20182 / ASAPA no. 367]. Principal Landscape Architect & Archaeologist. 101 Harvest crescent, Lynnwood, 0081. Pretoria, South Africa / Plot 237 Kameelfontein, 0035. Pretoria, South Africa. E-mail: siegwalt@habitatdesign.co.za / info@habitatdesign.co.za Mobile: +27(0)82 775 4803 Web: www.habitatlandscapearchitects.com

Describe any gaps in knowledge or assumptions made in the assessment of the environment and the impacts associated with the proposed development.

None.

3. IMPACTS THAT MAY RESULT FROM THE DECOMISSIONING AND CLOSURE PHASE

Briefly describe and compare the potential impacts (as appropriate), significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the decommissioning and closure phase for the various alternatives of the proposed development. This must include an assessment of the significance of all impacts.

NOTE: *AS SET OUT in the IMPACT TABLES above whenever/where it is relevant.*

Proposal

Potential impacts:	**Significance rating of impacts(positive or negative):**	**Proposed mitigation:**	**Significance rating of impacts after mitigation:**	**Risk of the impact** and **mitigation not being implemented**

Alternative 1

Potential impacts:	**Significance rating of impacts(positive or negative):**	**Proposed mitigation:**	**Significance rating of impacts after mitigation:**	**Risk of the impact** and **mitigation not being implemented**

Alternative 2

Potential impacts:	**Significance rating of impacts (positive or negative):**	**Proposed mitigation:**	**Significance rating of impacts after mitigation:**	**Risk of the impact** and **mitigation not being implemented**

Where applicable indicate the detailed financial provisions for rehabilitation, closure and ongoing post decommissioning management for the negative environmental impacts.

N.a.

4. CUMULATIVE IMPACTS

Describe potential impacts that, on their own may not be significant, but is significant when added to the impact of other activities or existing impacts in the environment. Substantiate response:

NOTE: *AS SET OUT in the IMPACT TABLES above whenever/where it is relevant.*

5. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that sums up the impact that the proposal and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

Preferred Layout Proposal:

This Draf Basic Assessment Report (dBAR) for the proposed PROPOSED ZOLA EXTENSION 3 TOWNSHIP to be situated on A PART OF THE REMAINDER OF THE FARM SOWETO 387 IQ with associated Civil Services infrastructure, has been undertaken in accordance with the National Environmental Management Amendment Act (as amended) ("NEMA") (Act 107 of 1998) Amendment of the Environmental Impact Assessment Regulations 2014, GNR: 324-327, 7 April 2017.

The PUBLIC PARTICIPATION PROCESS is currently being conducted, and the findings will be included in the FINAL BASIC ASSESSMENT REPORT – and, the following preliminary findings is herewith presented i.e:

The EIA process has so far succeeded in identifying the significant environmental issues and addressing them adequately. The process is currently and have engaged with stakeholders and the specialist's input has assisted in identifying and assessing the potential impacts.

This draft BAR provides an assessment of both the benefits and potential negative impacts anticipated as a result of the proposed ZOLA EXTENSION 3 TOWNSHIP construction.

The EIA process has been adequately rigorous in identifying various issues especially related to the socio-economic, biophysical-ecological (i.e. vegetation, wetland, aquatic, hydrogeological, soil & hydropedology), health & safety, traffic, air quality, noise and visual impacts with regard to the planning and design phase, the construction phase, operational phase as well as the decommissioning phase (i.e. in some instances).

The results of the specialist studies undertaken indicate that the proposed development is likely to yield both potentially low to minor negative and some minor, low to medium positive socio-economic & visual impacts. However, the positive socio-economic & visual aspects outweigh the negative impacts, expect that there is one impact which cannot be mitigated i.e. *SOIL & HYDROPEDOLOGY: Soil - Complete cease of the soil's productive capability, since the soil's surface being covered by concrete, tar and paving. The soil's productive capability will not be destroyed but will cease permanently or until the structure is removed completely.*

Except for the one impact which cannot be mitigate, the proposed project would result in only low to minor negative impacts on the biophysical-ecological environment (i.e. vegetation, wetland, aquatic & geohydrological, soil & hydropedology) during the construction & operational phase if the recommended mitigation measures were implemented. The professional ecological, biodiversity, aquatic, hydrogeological, soil & hydropedological consultants also SUPPORTS the proposed development's approval subject to the implementation of their prescribed mitigation measures, predominantly since the preferred layout proposal does not fall within the WETLAND BUFFER areas and/or the WETLAND.

Other various potential construction related impacts were assessed, in general, to be of low to very low negative significance, due to their local to site nature and short-term durations. Impacts would decrease to lower levels of significance with the implementation of the recommended mitigation measures. During the operational phase, the impacts relating to the contamination of the surrounding area through operational activities was found to be of medium to low significance, however through the implementation of the recommended mitigation measures these could be reduced to low negative impact significance.

Irrespective that one impact cannot be mitigated, the environmental practitioner is satisfied that an adequate understanding is achieved of the nature and extent of the issues and how to mitigate the negative impacts and enhance potential benefits.

The above-mentioned must be considered by the Department in its evaluation of the environmental authorisation application.

Alternative#1 Layout Proposal (not preferred):

This Draf Basic Assessment Report (dBAR) for the proposed PROPOSED ZOLA EXTENSION 3 TOWNSHIP to be situated on A PART OF THE REMAINDER OF THE FARM SOWETO 387 IQ with associated Civil Services infrastructure, has been undertaken in accordance with the National Environmental Management Amendment Act (as amended) ("NEMA") (Act 107 of 1998) Amendment of the Environmental Impact Assessment Regulations 2014, GNR: 324-327, 7 April 2017.

The PUBLIC PARTICIPATION PROCESS is currently being conducted, and the findings will be included in the FINAL BASIC ASSESSMENT REPORT – and, the following preliminary findings is herewith presented i.e:

The EIA process has so far succeeded in identifying the significant environmental issues and addressing them adequately. The process is currently and have engaged with stakeholders and the specialist's input has assisted in identifying and assessing the potential impacts.

This draft BAR provides an assessment of both the benefits and potential negative impacts anticipated as a result of the proposed ZOLA EXTENSION 3 TOWNSHIP construction.

The EIA process has been adequately rigorous in identifying various issues especially related to the socio-economic, biophysical-ecological (i.e. vegetation, wetland, aquatic, geohydrological, soil & hydropedology), health & safety, traffic, air quality, noise and visual impacts with regard to the planning and design phase, the construction phase, operational phase as well as the decommissioning phase (i.e. in some instances).

The results of the specialist studies undertaken indicate that the proposed development is likely to yield potentially moderate, low to minor negative and some medium, low to minor positive socio-economic & visual impacts. However, the positive socio-economic & visual aspects outweigh the negative impacts, expect that there is one impact which cannot be mitigate i.e. *SOIL & HYDROPEDOLOGY: Soil - Complete cease of the soil's productive capability, since the soil's surface being covered by concrete, tar and paving. The soil's productive capability will not be destroyed but will cease permanently or until the structure is removed completely.*

Except for the one impact which cannot be mitigate, the proposed project would result in one moderate negative, and for the rest only low to minor negative impacts on the biophysical-ecological environment (i.e. vegetation, wetland, aquatic & geohydrological, soil & hydropedology) during the construction & operational phase if the recommended mitigation measures were implemented. However, the professional ecological, biodiversity, aquatic, hydrogeological, soil & hydropedological consultants DO NOT support this ALTERNATIVE proposed development's approval even if it's subject to the implementation of their prescribed mitigation measures, since a portion of the proposed alternative layout (i.e. ecological stormwater attenuation ponds) would fall within the WETLAND BUFFER areas and a small portion of the WETLAND.

Other various potential construction related impacts were assessed, in general, to be of low to very low negative significance, due to their local to site nature and short-term durations. Impacts would decrease to lower levels of significance with the implementation of the recommended mitigation measures. During the operational phase, the impacts relating to the contamination of the surrounding area through operational activities was found to be of medium to low significance, however through the implementation of the recommended mitigation measures these could be reduced to low negative impact significance.

Irrespective that one impact cannot be mitigated, the environmental practitioner is satisfied that an adequate understanding is achieved of the nature and extent of the issues and how to mitigate the negative impacts and enhance potential benefits.

The above-mentioned must be considered by the Department in its evaluation of the environmental authorisation application.

No-go alternative (compulsory)

The no-go option is not preferred as the economic and social challenges related to the ZOLA-EMDENI area in SOWETO and its immediate surrounding areas will continue.

It is further anticipated that maintaining the status quo could have potentially direct, indirect & cumulative negative impacts on the environment - due to:

Direct Impacts:

- the likelihood of rehabilitation of the biophysical environment to occur i.e. especially the wetland, is highly unlikely should no facilities be allowed to be developed – since the cost of rehabilitation would outweigh the anticipated benefits. This implies that this area could become a neglected valley-bottom wetland area which has potential to be rehabilitated and potentially adding value to the Visual and Biophysical environment.
- The applicant would not be able to meet the long overdue need as identified i.e. the City of Johannesburg (CoJ) through the Johannesburg Development Agency has identified land parcels which have are currently being utilized informally by the taxi industry, thus giving rise to the need to formalize the sites and provide infrastructure towards the proposed taxi rank development for holding, loading purposes, as well as the associated ancillary uses that complement the development.
- The current site will remain under-utilised, and this will not be in line with the overall planning within the Johannesburg Metropolitan Municipal area - especially considering that the PUBLIC TRANSPORT sector provides much critically required viable transport for many individuals to and from their employment (i.e. jobs) of the local municipality area and is a good contributor to the local economy.

Indirect impacts:

- No stimulus of the local economy.
- The lack of the following i.e. the presence of a public transport facility may cause a minor or perceived increase in property values in the adjacent area. The reverse is that the amenity benefit may be attractive to some neighbouring occupiers. The in-filling of such areas with appropriate commercial development also accords with urban planning principles.
- The settlement of potential illegal squatters i.e. informal settlers, which could also potentially cause a more insecure, unhealthy and aesthetically unpleasing environment by indirectly allowing crime and illegal dumping and health hazards to potentially ensue.

Cumulative impacts:

- Risk of increased litter generation.
- No Increased wealth in the community and trading opportunities created by the Proposed Development.
- No Skills development (minor).
- In a minor way, the public transport sector will remain economically static in that area with little to no potential for increased effective transport of individuals to the employment places and/or provision of additional employment opportunities. In view of the fact the site is located directly opposite other residential developments & is mainly an open vacant area, which is difficult and costly to maintain, it could in future also have a negative indirect impact on the safety i.e. security, of the area.

6. IMPACT SUMMARY OF THE PROPOSAL OR PREFERRED ALTERNATIVE

For proposal:

Please see IMPACT SUMMARY underneath of Proposal.

For alternative:

Please see IMPACT SUMMARY underneath of Alternative.

Having assessed the significance of impacts of the proposal and alternative(s), please provide an overall summary and reasons for selecting the proposal or preferred alternative.

Please see IMPACT SUMMARY underneath of Proposal and Alternative, and reasons for selecting the proposal above under item 5.

Preferred Layout Proposal: IMPACT SUMMARY

PLANNING & DESIGN PHASE Summary of Impacts with Mitigation Measures:								
Impact	**Mitigation**	**Impact**					**Significance**	
		Nature	**E**	**D**	**M**	**P**		
Visual & Aesthetic Impacts	Yes	Positive	2	4	2	4	32	Low
Access roads impacts on areas of sensitivity	Yes	Negative	1	3	4	1	8	Very Low
AVERAGE	**Yes**						**8**	**Low Negative**
AVERAGE	**Yes**						**32**	**Low Positive**

CONSTRUCTION PHASE Summary of Impacts with Mitigation Measures:								
Impact	**Mitigation**	**Impact**					**Significance**	
		Nature	**E**	**D**	**M**	**P**		
Terrestrial Vegetation Impacts:	Yes	Negative	1	2	0	5	15	Low
Wetland Impacts:								
• Habitat, Species composition & functions.	Yes	Negative	1	1	4	2	12	Low
• Sedimentation and erosion.	Yes	Negative	1	1	4	2	12	Low
Aquatic Impacts:								
• Surface runoff - Hydrology.	Yes	Negative	2	1	2	2	10	Low
• Surface water Quality.	Yes	Negative	1	1	4	2	12	Low
• Erosion and sedimentation.	Yes	Negative	2	2	2	3	18	Low
• Increase alien/pioneer vegetation in disturbed areas.	Yes	Negative	2	1	2	1	5	Very low
Hydrogeological Impacts:								
• Hydrocarbon contamination re: soil & groundwater.	Yes	Negative	2	2	6	2	20	Low
• Excavated soil create potential pathway for existing hydrocarbon contaminated groundwater to wetland.	Yes	Negative	2	2	10	2	28	Low
Soil & Hydropedology Impacts:								
• Soil - Complete cease of the soil's productive capability.	No	Negative	1	5	8	5	70	High
• Hydropedology – reduction of water infiltration in the soil.	Yes	Negative	1	5	2	1	8	Low
Socio-Economic impacts: Job Creation	Yes	Positive	2	1	1	2	8	Very low
Socio-Economic impacts: Local Economic Growth	Yes	Positive	2	1	2	2	10	Low

Visual & Aesthetic Impacts	Yes	Negative	2	1	2	2	14	Low
Access roads	Yes	Negative	1	2	2	1	5	Very low
Erosion & soil disturbance	Yes	Negative	1	1	4	2	12	Low
Air Quality	Yes	Negative	1	1	1	1	1	Minor
Traffic impacts	Yes	Negative	2	2	4	2	16	Low
Solid & Liquid Waste generation	Yes	Negative	1	2	4	2	14	Low
Noise Impacts	Yes	Negative	2	1	3	2	12	Low
Health & Safety	Yes	Negative	1	1	3	2	10	Low
TOTAL SCORE/WEIGHT:							**294**	**Negative**
TOTAL SCORE/WEIGHT:							**18**	**Positive**
AVERAGE	**Yes**						**15.47**	**Low Negative**
AVERAGE	**Yes**						**9**	**Low Positive**

OPERATIONAL PHASE

Summary of Impacts with Mitigation Measures:

Impact	Mitigation	Impact					Significance	
		Nature	E	D	M	P		
Terrestrial Vegetation Impacts:	Yes	Negative	1	5	0	5	30	Low
Wetland Impacts:								
• Habitat, Species composition & functions.	Yes	Negative	1	5	0	1	6	Very Low
• Sedimentation and erosion.	Yes	Negative	1	4	0	1	5	Very Low
Aquatic Impacts:								
• Surface runoff - Hydrology.	Yes	Negative	1	3	2	3	18	Low
• Surface water Quality.	Yes	Negative	1	1	2	2	8	Low
• Erosion and sedimentation.	Yes	Negative	2	2	2	3	18	Low
• Increase alien/pioneer vegetation in disturbed areas.	Yes	Negative	1	2	2	2	10	Low
Hydrogeological Impacts:								
• Contaminated stormwater re: soil & groundwater.	Yes	Negative	2	4	6	2	24	Low
• Leaking vehicles re: soil & groundwater.	Yes	Negative	2	4	6	2	24	Low
• Leaking sewer system re: soil & groundwater.	Yes	Negative	2	4	6	2	24	Low
Socio-Economic impacts: Job Creation	Yes	Positive	2	5	1	3	24	Low
Socio-Economic impacts: Local Economic Growth	Yes	Positive	2	5	2	2	18	Low
Socio-Economic impacts: Rates & Tax Base Expansion	Yes	Positive	2	4	2	4	32	Medium

Visual & Aesthetic Impacts:	Yes	Positive	1	4	1	2	14	Low
Noise Impacts:	Yes	Negative	1	3	3	2	14	Low
Health & Safety Impacts:	Yes	Negative	1	4	1	2	12	Low
TOTAL SCORE/WEIGHT:							**193**	**Negative**
TOTAL SCORE/WEIGHT:							**88**	**Positive**
AVERAGE	**Yes**						**16.08**	**Low Negative**
AVERAGE	**Yes**						**22**	**Low Positive**

DECOMMISSIONING & CLOSURE PHASE

Summary of Impacts with Mitigation Measures:

Impact	Mitigation	Impact					Significance	
		Nature	E	D	M	P		
Visual & Aesthetic Impacts	Yes	Negative	2	1	6	1	9	Very low
Air Quality	Yes	Negative	1	1	1	1	1	Very low
Traffic impacts	Yes	Negative	2	1	4	2	14	Low
Waste generation	Yes	Negative	2	1	4	2	14	Low
Noise Impacts	Yes	Negative	1	1	3	2	10	Low
Health & Safety	Yes	Negative	1	1	3	2	10	Low
TOTAL SCORE/WEIGHT:							**58**	**Negative**
AVERAGE	**Yes**						**9.67**	**Low Negative**

* **PLEASE NOTE**: that the figures highlighted in YELLOW in the tables above of the PREFERRED LAYOUT PROPOSAL, are the only impacts which differ from the ALTERNATIVE#1 LAYOUT PROPOSAL i.e. nine (9) in total, and - are the Wetland, Aquatic and Hydrogeological related aspects.

- 7 Of the highlighted in YELLOW impacts do almost NOT differ at all (i.e. between the PREFERRED LAYOUT PROPOSAL and the ALTERNATIVE#1 LAYOUT PROPOSAL) except for two (2) impacts which shows a slight increase during the construction phase (i.e. for the ALTERNATIVE#1 LAYOUT PROPOSAL) which are the:-
  - **AQUATIC: Erosion and sedimentation** [12 points increase] – and,
  - **HYDROGEOLOGICAL: Excavated soil create potential pathway for existing hydrocarbon contaminated groundwater to wetland** [14 points increase].
- In TOTAL there is only a slight difference i.e.:- 2,53 AVERAGE POINTS (Construction phase) & 1,09 AVERAGE POINTS (Operational phase) - between the PREFERRED LAYOUT PROPOSAL, and the ALTERNATIVE#1 LAYOUT PROPOSAL.
- There is however ONE (1) HIGH impact (i.e. 70 points) which cannot be mitigated i.e**. SOIL & HYDROPEDOLOGY:** Soil - Complete cease of the soil's productive capability, since the soil's surface being covered by concrete, tar and paving. The soil's productive capability will not be destroyed but will cease permanently or until the structure is removed completely.

Alternative#1 Layout Proposal (not preferred): IMPACT SUMMARY

PLANNING & DESIGN PHASE Summary of Impacts with Mitigation Measures:								
Impact	**Mitigation**	**Impact**					**Significance**	
		Nature	**E**	**D**	**M**	**P**		
Visual & Aesthetic Impacts	Yes	Positive	2	4	2	4	32	Low
Access roads impacts on areas of sensitivity	Yes	Negative	1	3	4	1	8	Very Low
AVERAGE	**Yes**						**8**	**Low Negative**
AVERAGE	**Yes**						**32**	**Low Positive**

CONSTRUCTION PHASE Summary of Impacts with Mitigation Measures:								
Impact	**Mitigation**	**Impact**					**Significance**	
		Nature	**E**	**D**	**M**	**P**		
Terrestrial Vegetation Impacts:	Yes	Negative	1	2	0	5	15	Low
Wetland Impacts:								
• Habitat, Species composition & functions.	Yes	Negative	1	1	4	2	18	Low
• Sedimentation and erosion.	Yes	Negative	1	1	4	2	18	Low
Aquatic Impacts:								
• Surface runoff - Hydrology.	Yes	Negative	2	1	2	2	10	Low
• Surface water Quality.	Yes	Negative	1	1	4	2	18	Low
• Erosion and sedimentation.	Yes	Negative	2	2	2	3	30	Low
• Increase alien/pioneer vegetation in disturbed areas.	Yes	Negative	2	1	2	1	5	Very low
Hydrogeological Impacts:								
• Hydrocarbon contamination re: soil & groundwater.	Yes	Negative	2	2	6	2	24	Low
• Excavated soil create potential pathway for existing hydrocarbon contaminated groundwater to wetland.	Yes	Negative	2	2	10	2	42	Medium
Soil & Hydropedology Impacts:								
• Soil - Complete cease of the soil's productive capability.	No	Negative	1	5	8	5	70	High
• Hydropedology – reduction of water infiltration in the soil.	Yes	Negative	1	5	2	1	8	Low
Socio-Economic impacts: Job Creation	Yes	Positive	2	1	1	2	8	Very low
Socio-Economic impacts: Local Economic Growth	Yes	Positive	2	1	2	2	10	Low

Visual & Aesthetic Impacts	Yes	Negative	2	1	2	2	14	Low
Access roads	Yes	Negative	1	2	2	1	5	Very low
Erosion & soil disturbance	Yes	Negative	1	1	4	2	12	Low
Air Quality	Yes	Negative	1	1	1	1	1	Minor
Traffic impacts	Yes	Negative	2	2	4	2	16	Low
Solid & Liquid Waste generation	Yes	Negative	1	2	4	2	14	Low
Noise Impacts	Yes	Negative	2	1	3	2	12	Low
Health & Safety	Yes	Negative	1	1	3	2	10	Low
TOTAL SCORE/WEIGHT:							**342**	**Negative**
TOTAL SCORE/WEIGHT:							**18**	**Positive**
AVERAGE	**Yes**						**18**	**Low Negative**
AVERAGE	**Yes**						**9**	**Low Positive**

OPERATIONAL PHASE

Summary of Impacts with Mitigation Measures:

Impact	Mitigation	Impact					Significance	
		Nature	E	D	M	P		
Terrestrial Vegetation Impacts:	Yes	Negative	1	5	0	5	30	Low
Wetland Impacts:								
• Habitat, Species composition & functions.	Yes	Negative	1	5	0	1	6	Very Low
• Sedimentation and erosion.	Yes	Negative	1	4	0	1	5	Very Low
Aquatic Impacts:								
• Surface runoff - Hydrology.	Yes	Negative	1	3	2	3	18	Low
• Surface water Quality.	Yes	Negative	1	1	2	2	12	Low
• Erosion and sedimentation.	Yes	Negative	2	2	2	3	18	Low
• Increase alien/pioneer vegetation in disturbed areas.	Yes	Negative	1	2	2	2	15	Low
Hydrogeological Impacts:								
• Contaminated stormwater re: soil & groundwater.	Yes	Negative	2	4	6	2	28	Low
• Leaking vehicles re: soil & groundwater.	Yes	Negative	2	4	6	2	24	Low
• Leaking sewer system re: soil & groundwater.	Yes	Negative	2	4	6	2	24	Low
Socio-Economic impacts: Job Creation	Yes	Positive	2	5	1	3	24	Low
Socio-Economic impacts: Local Economic Growth	Yes	Positive	2	5	2	2	18	Low
Socio-Economic impacts: Rates & Tax Base Expansion	Yes	Positive	2	4	2	4	32	Medium

Visual & Aesthetic Impacts:	Yes	Positive	1	4	1	2	14	Low
Noise Impacts:	Yes	Negative	1	3	3	2	14	Low
Health & Safety Impacts:	Yes	Negative	1	4	1	2	12	Low
TOTAL SCORE/WEIGHT:							**206**	**Negative**
TOTAL SCORE/WEIGHT:							**88**	**Positive**
AVERAGE	**Yes**						**17.17**	**Low Negative**
AVERAGE	**Yes**						**22**	**Low Positive**

DECOMMISSIONING & CLOSURE PHASE

Summary of Impacts with Mitigation Measures:

Impact	Mitigation	Impact					Significance	
		Nature	E	D	M	P		
Visual & Aesthetic Impacts	Yes	Negative	2	1	6	1	9	Very low
Air Quality	Yes	Negative	1	1	1	1	1	Very low
Traffic impacts	Yes	Negative	2	1	4	2	14	Low
Waste generation	Yes	Negative	2	1	4	2	14	Low
Noise Impacts	Yes	Negative	1	1	3	2	10	Low
Health & Safety	Yes	Negative	1	1	3	2	10	Low
TOTAL SCORE/WEIGHT:							**58**	**Negative**
AVERAGE	**Yes**						**9.67**	**Low Negative**

7. SPATIAL DEVELOPMENT TOOLS

Indicate the application of any spatial development tool protocols on the proposed development and the outcome thereof.

The discussion regarding the application of the following spatial development tool protocols on the proposed development and the outcome thereof is outlined in detail underneath under Item '*9. THE NEEDS AND DESIREBILITY OF THE PROPOSED DEVELOPMENT':*

- *THE SPATIAL PLANNING AND LAND USE MANAGEMENT ACT, 2013 (ACT 16 OF 2013) – SPLUMA;*
- *NATIONAL DEVELOPMENT PLAN, 2030;*
- *GAUTENG PLANNING AND DEVELOPMENT ACT, 2003;*
- *GAUTENG SPATIAL DEVELOPMENT FRAMEWORK 2011;*
- *CITY OF JOHANNESBURG The Spatial Development Framework – 2040;*
- *CITY OF JOHANNESBURG SPATIAL DEVELOPMENT FRAMEWORK (i.e. Regional Spatial Development Framework:(RSDF 2010/2011);*
- *National Spatial Development Perspective (NSDP);*
- *Gauteng Spatial Development Perspective (GSDP).*

8. RECOMMENDATION OF THE PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the Environmental Assessment Practitioner as bound by professional ethical standards and the code of conduct of EAPASA).	**YES**	~~NO~~

If "NO", indicate the aspects that require further assessment before a decision can be made (list the aspects that require further assessment):

If "YES", please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application:

The proposed township development with all the proposed public transport and informal market facilities and activities can be viewed as a positive development in the local and broader context as this will result in the needed expansion of the local area of ZOLA-EMDENI in SOWETO's socio-economic growth and the supply of needed public transport services in that area and trans-locally – and, better environmental management of the site.
A number of mitigation measures are proposed as part of the EMPr as set out in detail in the EMPr in Appendix H. It is the opinion of the environmental practitioner that these impacts are not of a high enough significance to prevent the authorization of the proposed development.
ALL the MITIGATION MEASURES as recommended above under *SECTION E: IMPACT ASSESSMENT* and the EMPr in Appendix H should be included in any authorization that may be granted by the department in respect of the application – with the additional recommendations as set out underneath i.e: Special Consideration should be given to the following i.e:

TERRESTRIAL VEGETATION & FLORA BIODIVERSITY:

- There is no natural vegetation left on the site.
- Remove and control all alien woody plant species that may appear during construction and operational phases.

NOTE: A registered ecologist and professional landscape architect with adequate experience should be appointed to assist with, plan, design and enforce, monitor and audit the planning, design, implementation and operational phases of the conservation of the sensitive ecological areas on site.

WETLAND:

[All the recommendations of the attached WETLAND REPORT in APPENDIX G should be implemented].

- The wetland and open space area must be clearly demarcated on site, preferably with a fence. No construction activities may take place in these areas, including the temporary storage of materials, location of the construction camp and location of temporary ablution facilities.
- No vehicle movement or clearing of vegetation may take place in these areas.
- The long-term weather prediction for the site must be consulted for the site prior to the commencement of construction of the stormwater system in the wetland buffer. Do not proceed if there is a likelihood of rain.

- Include soft structures in the design of the stormwater system.
- Use permeable surfaces wherever possible.
- Securely fence the site to prevent trampling of the wetland area by persons trying to take short-cuts to the site. The only access point must be from the road.
- Compile an alien and invasive species control and monitoring plan.
- Populations of invasive species on site must be controlled, during the construction and operational phases.
- The spread of invasive and weedy species from the site must be prevented.
- Several alien and invasive species resemble indigenous species, especially as seedlings. Care must be taken not to control indigenous species during the control of invasive species.
- Construction must take place during the winter season to limit the risk of erosion on site and sedimentation in the wetland.
- Ensure that no sediment-laden stormwater enter the wetlands directly.
- Monitoring during the operation phases may take place as part of the inspection and maintenance of stormwater system.
- Implement an erosion control fence / berm along the edge of the wetland unit to prevent sedimentation entering the wetland area.
- No construction vehicles may pass the erosion fence.
- Construction must take place during the winter season to limit the risk of erosion on site and sedimentation in the wetland.
- Ensure that no sediment-laden stormwater enter the wetlands directly.
- Stabilise and revegetate all areas bare of vegetation as soon as possible.
- Monitor the entire site for signs of erosion throughout the construction and operational phases of the project. This may take place as part of the regular inspections for maintenance on site.
- All erosion features must be rehabilitated as soon as possible.
- Implement erosion control measures where necessary.
- Implement sediment fences around erosion prone areas.
- Adhere to all requirements and recommendations included in the ecological stormwater and rehabilitation plan compiled for the site by Habitat Landscape Architects.
- Storm water may not enter the watercourses directly, it must be attenuated before exiting the storm water system.

General mitigation:

- The construction camp and all associated facilities must be located outside the wetland and wetland buffer and outside all designated open space areas.

Mitigation for littering:

- Sufficient rubbish bins must be provided on site and cleared on a regular basis.
- Rubbish must be disposed of at a registered landfill.
- Rubbish may not be dumped on site or allowed to spread from the rubbish bins on site.

Mitigation for pollution by petrochemicals:

- Refuelling and maintenance must preferably take place off-site.
- Refuelling may only take place at a registered fuel depot.
- The vehicles must be inspected for oil leaks etc. regularly and any observed leaks must be repaired as soon as possible.
- Any spillages of hydrocarbon fuels must be cleaned up immediately.
- All regulations etc. included in the waste act must be adhered to.

Mitigation for temporary ablution facilities:

- The wetland and wetland buffer zone must be clearly demarcated on site and no construction activities may take place in these areas, including the temporary storage of materials and location of temporary ablution facilities.
- Sufficient temporary ablution facilities must be provided for the workers during the construction phase.
- Any portable toilets must be cleaned regularly to prevent overflow and spillages.

AQUATIC:

[All the recommendations of the attached AQUATIC REPORT in APPENDIX G should be implemented].

CONSTRUCTION PHASE:

- Limit the extent of vegetation clearing and site preparations to the authorised footprint.
- Limit the extent and movement of heavy machinery to the authorised footprint only.
- Avoid in channel construction activity and any flow diversions.
- No water abstraction or discharge of any water should occur into the drainage line during the construction phase.
- Accidental spillage should be prevented always. This will require suitable chemical storage and refuelling practices.
- Accidental spills or any contaminated water should be isolated and treated as soon as possible. An emergency spill procedure should be drafted, and the construction team should be versed in identifying and responding to accidental spill

events.

- Changing of oil, refuelling and lubricating of equipment should not be carried out near the drainage lines to minimize the potential for water pollution.
- If oil storage and workshop areas are needed on-site, they should be surrounded by a bund wall to contain spillages. In the case where soil becomes contaminated with oil, it must be removed for proper disposal or treatment.
- No dumping of any building rubble, soil, litter, organic matter or chemical substances should occur within the drainage line. Dumping and temporary storage of the above should only occur at predetermined locations.
- In the case of dewatering a construction site, water should be treated, and all suspended particles should be removed. Water removed from a construction site should not be released directly in the water course. Discharge should occur into a sump to aid settling of suspended particle or into a well vegetated area which will help trap sediment and residual contaminants.
- Contaminated or potentially contaminated water or runoff should be managed in a controlled way.
- Sediment and erosion control measures should be in place and maintained prior to, and during, construction activities.
- *In situ* water quality should be monitored at all three sites associated with the construction activity.
- Erosion and silt control mechanisms must be in place prior to the onset of construction activities. This includes the management of surface flow through the construction site.
- It is recommended that construction activities should make use of the dry seasonal construction window. This will further reduce the risk associated with erosion/siltation.
- Clearing of vegetation needs to be limited in order to limit erosion and should only take place immediately before construction commences.
- Sumps or spoil berms need to be constructed to contain excavated spoil/topsoil so that sediment-laden runoff does not enter the drainage lines.
- A team of two or three labourers should be trained in the identification and control of key invasive alien species already in the area or highly likely to occur once construction is underway.
- The team should be provided with the correct equipment (e.g. knapsack sprayers) and correct herbicides, which should be stored in a secure facility each day.
- Regular monitoring of all areas of exposed soil should take place during Construction Phases.

OPERATIONAL PHASE:

- The storm water system should be designed with sufficient attenuation capacity to compensate for the loss in permeable surfaces associated with the footprint of the development. This may be achieved through the incorporation of bio-swales or other ecological engineering structures.
- The general design should aim to maximise permeability and water retention on site. This will include measures to increase the general surface roughness of paved areas and measures to effectively dissipate runoff energy.
- Runoff from the parking area should go through a litter, sediment and oil trap prior to release into the environment.
- Use environmentally friendly solvents and paints during routine maintenance. This will aid in preventing water pollution during the operational phase.
- Design runoff control features to minimize soil erosion and avoid placement of infrastructure and sites on unstable slopes and consider conditions that can cause slope instability, such as groundwater aquifers, precipitation and slope angles.
- Areas where storm water is released should be well armoured against erosion and regularly inspected for stability.
- Areas exposed to a higher erosion risk include storm water releases. These areas should be protected against erosion and regularly inspected.
- The storm water system should be designed with sediment trapping abilities, these should regularly be inspected and manually emptied.
- The areas that have been decommissioned during the Operational Phase (such as the construction camp) should also be monitored for invasive alien species.

HYDROGEOLOGICAL:

[All the recommendations of the attached HYDROGEOLOGICAL REPORT in APPENDIX G should be implemented].

CONSTRUCTION PHASE:

- The mitigation measures would include containing the contaminated groundwater within the appropriate areas and preventing such water from entering the wetland and associated streams.
- In addition, ensure clean up protocols are in place and followed. Additionally, the municipality should be informed that up-gradient activities are affecting the groundwater quality at the site prior to construction.

OPERATIONAL PHASE:

- To mitigate the identified risks a series of ecological attenuation dams that would serve to reduce any potentially hazardous

substances present in surface run-off (a plan depicting the layout of said dams is provided in Appendix D) has been included in the facility design. In particular, the stormwater will be intercepted and routed to flow through a series of retention ponds, attenuation dams and bioswales. A 30m wetland buffer was also included in this design to reduce the probability of potentially contaminated surface run-off reaching the wetland. Included in this design is re-vegetating each section of the series through a targeted mixture of various plant species selected to aid in reducing/eliminating dissolved phase chemicals of potential concern (refer to the March 2020 report prepared by Habitat Landscape Architects for the list of proposed plant species).

- Further mitigation measures would include the implementation of the groundwater monitoring program (detailed in Section 9) for the site and surrounding area whereby the dam water and adjacent streams are monitored and sampled on a regular basis. This would allow for the early detection of water quality deterioration associated with the site. Maintenance and in-house inspections of the attenuation dam system should be undertaken regularly.
- It is recommended that the attenuation dam be sampled on a monthly basis to ensure that the system is functioning, and that no contamination is released into the associated wetland. Samples should also be collected from down- and up-gradient of the attenuation dam to assess the impact the dam has on the water quality of the nearby wetland.
- Groundwater monitoring should be conducted on a bi-annual basis for inorganic and hydrocarbon constituents and a trend analysis should be compiled to ensure the facility does not have any detrimental effect on the groundwater environment i.e. time-series data should be presented via trend analyses after each sampling event to determine if the facility has any detrimental effects on the water resources and to assess for increasing concentrations of targeted contamination compounds and relevant inorganic indicators. It is recommended that access and approval for off-site sampling be obtained from the landowner.
- The groundwater monitoring plan should commence once the site is operational.
- It is recommended that the attenuation dam and associated infrastructure are installed according to regulations stipulated in the National Water act 36 of 1998: Regulations regarding the safety of dams in terms of section 123(1) of the National Water Act, 1998 (act no. 36 of 1998).

GEOTECHNICAL:

- All the recommendations of the attached GEOTECHNICAL REPORT in APPENDIX G should be implemented.

Geotechnical Constraints

The impact of the geotechnical constraints on developments may be evaluated according to Table below, which is a summary of the general geotechnical constraints relevant to developments (Partridge, Wood and Brink, 1993). The Class column indicates the severity of the specific constraints for this site.

Recommendations:

Foundation Design

It should be borne in mind that the geotechnical boundaries are inferred. So, some variations to the reported conditions should be expected.

The site predominantly falls within NHBRC Site Soil **Class R-H1; P (Imported Fill)** (7.5-15 mm estimated total settlements) and the proposed structure should be founded on:

- **Normal Reinforced Strip Footing foundation** it is therefore recommended for the ablution block building where In-situ reconstruction or ripping is done at an average depth of **0.4m** below surface on residual material of Basaltic lava. Proper compaction should be adhered to while back filling the trenches and foundations with G5 material and should be compacted to 95% MODAASHTO at 150mm intervals.
- **Pad or Spread Footing foundation** is therefore recommended (for the steel columns that will carry the roof structure) at an average depth of **0.4m** on Residual material of Basaltic lava.
- **Pavement recommendations:** In-situ ripping should be at an average depth of at **0.4m** on residual material Basaltic lava. The estimated traffic or vehicle per day is <75 vehicles and <5 heavy vehicles per day with a total loading traffic of <0.3x106 E80s per lane (Guideline for human settlement planning and design Vol.2).
- **Surface:** Pavement bricks can be placed on the surface for walking lanes, and asphalt concrete can be used for a smooth finish along the taxi parking lanes. The binder content present with asphalt acts as a lubricant when hot and as an adhesive and water proofing when cold.
- **Base (~150mm):** G5 material should be compacted to 95% MOD AASHTO density.
- **Sub-base (~250mm):** G3 material should be compacted to 98% MOD AASHTO density at 150mm interval.

Proper compaction should be adhered to while back filling the trenches and foundations with G5 material and should be compacted to 95% MODAASHTO at 150mm interval. Damp proof membrane / course should be able to inhibit the ingress of moisture. Dewatering holes should be commissioned to relieve pore pressure at foundation level.

Table: Geotechnical Classification: Urban Development.

	Constraint	Site condition	Class
A	Collapsible soil	Collapsible grain structure absent	1
B	Seepage	Perched water at an average depth of 1.5m below surface is expected	1-2
C	Active soil	Low to medium soil heave anticipated	1-2
D	High compressibility soil	Low soil compressibility expected	1
E	Erodibility of soil	Low erodibility of soil anticipated	1
F	Difficulty of excavation to 1.5 m	Intermediate difficulty in excavation	2
G	Undermined ground	No known undermined areas	1
H	Instability in areas of soluble rock	None encountered and is 3km away from site	1
I	Steep slopes	A gentle slope exists on site	1
J	Areas of unstable natural slopes	No unstable slopes	1
K	Areas subject to seismic activity	The area has no zone of known seismic activity	1
L	Areas subject to flooding	There is a wetland next to site	1-2
Geotechnical classes: Most favourable (1); Intermediate (2); Least favourable (3) Reference: (Partridge, Wood & Brink, 1993)			

Based on the seepage encountered on site this is however recommended:
A detailed geohydrological analysis should be carried out to gain a good understanding on the transmissivity and porosity of the bedrock (aquifer testing).

- Monitoring holes on the upstream and downstream of the structure should be constructed in order to monitor ground water levels in all seasons.
- Exterior drainage and foundation wall damp-proof coatings should be installed.
- Capillary breaks at footings and at the top of the foundation wall, Insulation, air barrier and water vapor control, air barrier and thermal insulation systems should be installed to prevent groundwater water from infiltrating - such an impermeable layer can assist as a sealing layer.

Strip footing supports a load bearing wall and transfers the load of a structure directly to the underlying soil (Knappett and Craig, 2012). The two main objectives (limit states) that foundations need to satisfy are:

- The capacity or resistance of the foundation should be adequate enough to support the applied loads and;
- Foundations should prevent excessive deformation under the applied loads.

GENERAL:

Regular checks on the quality and compaction of the backfill to the terraces should be made during construction. It is assumed that the development will be serviced by the usual municipal services and no recommendations are made for on-site sanitation, waste disposal, cemetery, and storm water reticulation services.
Site drainage should be design in such a way that water is channelled from Buildings into a suitable storm water drainage system to avoid structural distress over a period of time. Conditions prevailing at the site suggest that no problems are foreseen for the development of the proposed structures, provided the recommendations outlined in the report are adhered to.

SOCIO-ECONOMIC:

- No mitigation measures are proposed, since there are no negative impacts foreseen, except if the proposed development would not proceed which will be minor in nature.
- Prerequisites that need to be considered i.e. in order for surrounding areas to capitalise optimally on the development there are certain aspects which will have certain minor positive implications on the surrounding areas**:**
    - Invest in education, i.e. expand and strengthen educational opportunities and programmes, especially relating to the CONSTRUCTION (i.e. buildings/facilities/infrastructure), TRANSPORT & INFORMAL TRADING industries;
    - Promote and implement skills development and social upliftment interventions;

- Local opportunities need to be enhanced by means of preferential procurement and local labour promotion;
- Local labour should be employed as far as possible during both construction and operations of the proposed development.

- The following steps/programmes are some aspects to consider, in ensuring the maximum benefit of the proposed development within the local economy even if it is minor in it's effect i.e:
  - **Expanding and Strengthening Educational Programmes and Opportunities**

    Education remains one of the key challenges within South Africa, which leads to skills shortages and therefore hinders jobseekers to be gainfully employed and as a result be able to contribute to economic development and growth.

    The key, and starting point in creating sustainable job opportunities, lies with investment in education and skills development. Investments in education foster opportunities for developing a skilled labour force. Education allows the youth to acquire the necessary skills to take on higher quality jobs, and those jobs in turn promote economic development and growth.
    The following paragraphs describe some programmes and initiatives that can be implemented to increase economic and employment opportunities.

- ***Local Labour Promotion***

  The unemployment rate within the immediate market catchment area is lower compared to the national average. However, job creation and skills development remain high on the national agenda. In the context of the above the proposed development will not only fulfil an important support function but will also assist in creating job opportunities along certain critical segments of the economic value chain. Skills development and training is one of the most important instruments to address structural unemployment.

- ***Skills and Education Training***

  Skills development and training is one of the more important requirements for people to get employed. Throughout South Africa the need for skills in the marketplace is one of the obstacles preventing higher economic growth. The provision of skills and training to the unemployed would assist in enabling people to apply for jobs and to be able to execute their responsibilities. national average. However, job creation and skills development remain high on the national agenda. In the context of the above the proposed development will not only fulfil an important support function but will also assist in creating job opportunities along certain critical segments of the economic value chain. Skills development and training is one of the most important instruments to address structural unemployment.

VISUAL & AESTHETICAL:

PLANNING & DESIGN PHASE:

- Planners, Architects & Landscape Architects and any other related professional, project managers and/or building contractor to plan, design and implement in the development proposal in such a sensitive manner which would be aesthetically pleasing and visually uplifting in it's current township setting e.g. sympathetic materials and colours with the surrounding environment like hues of brown, grey etc; all yards and storage areas to be enclosed by masonry walls or screens which is screened by indigenous local biodiversity vegetation; external lighting should be confined to essential areas; lights should be low-level, where possible, and fitted with reflectors to avoid light spillage; lights and signage should be fixed to buildings or walls, where possible, to avoid unnecessary masts and visual clutter; other corporate or advertising signage and flags should be avoided or restricted etc. The visual and aesthetical environment impact caused by the potential lack of adequate (i.e. sensitive, appropriate, in-context with the local surroundings and visual qualities of the site and other related visual aspects) – town planning, urban planning/design, architectural, landscape architectural design of facilities and site – and, the full implementation of the proposed mitigation measures. The applicant has appointed such specialists as indicated above and therefore employed sufficient measures (mitigation) i.e. as far as possible, to make the proposed development an attractive and visually uplifting improvement on the site and aesthetically appealing towards the directly adjacent township environment.
- The relevant professionals i.e. Architect, Civil engineers, Landscape Architect etc, should be appointed by the developer to implement the final construction and planting plans & drawings which at least complies with the above-mentioned mitigation measures.

CONSTRUCTION PHASE:

- Limit dust and screen construction from viewers along adjacent road with strips of shade cloth; the construction site, material stores, stockpiles and lay-down area should be kept tidy; measures to control wastes and litter should be included in the contract specification documents; wind-blown dust from stockpiles and construction activities, should be controlled; an environmental; management program (EMPr) should be prepared and an environmental control officer (ECO) employed for

the duration of the construction.

OPERATIONAL PHASE:

- Install landscaping and rehabilitation as soon as possible; Litter and waste should be effectively managed to avoid visual problems in the area; buildings and landscaping and rehabilitation should receive on-going maintenance to avoid visual decay; lights should be low-level, where possible, and fitted with reflectors to avoid light spillage; lights and signage should be fixed to buildings or walls, where possible, to avoid unnecessary masts and visual clutter.

DECOMMISSIONING & CLOSURE PHASE:

- The decommissioning area must be fenced, and shade cloth attached, where necessary. At the end of the life of the project, structures no longer required must be demolished and removed from the site. Roads, parking and other paved areas no longer required must be broken up and the site re-instated or redeveloped.

NOTE: the longer term visual impact of the proposed development could only be mitigated effectively and could become a positive Visual asset to its environment subject to the appointment of a professional Architect and Landscape Architect - and compliance to all of their proposed final planning, design and construction recommendations and plans - who should take into consideration all aspects of design and layout in it's current and futuristic context i.e. biophysical, ecological, visual, cultural etc

ACCES ROADS:

PLANNING & DESIGN PHASE:

- Temporary access and haulage routes must be designed prior to construction commencing to ensure that the most preferable access and haulage routes has been identified. Provision made for the erection of appropriate warning signs.
- Road safety must be taken into account when planning access to the site.
- Use should be made of existing roads as far as possible.

EROSION & SOIL DISTURBANCE:

CONSTRUCTION PHASE:

- Apply erosion controls (e.g., berms, sandbags and hessian sheets) to prevent/minimise soil erosion during construction activities.
- The topsoil layer of not less than 200mm (or as per geotechnical soil profiling result) must be removed and stockpiled in mounds no more than 2m in height in a designated area for use during progressive rehabilitation.
- Care must be taken to prevent the compaction of topsoil in any way, especially by trucks and other construction machinery.
- Apply a protective covering on disturbed soils with suitable vegetation after completion of construction activities.
- Save topsoil removed during construction and use it to reclaim disturbed areas upon completion of construction activities.
- Avoid creating excessive slopes during excavation.
- Implement a stormwater management plan to ensure compliance with regulations and prevent off-site migration of contaminated stormwater or increased soil erosion during the construction phase.
- Excavation (temporary) to comply with SANS 10400-G:2011 guidelines.

AIR QUALITY:

CONSTRUCTION PHASE:

- Dust minimisation and control measures should be implemented on the construction site at regular intervals. This could include irrigation by water tankers.
- The frequency of implementation of dust suppression measures should be increased when it is expected that high wind conditions will develop.
- Vegetation clearing should only take place immediately prior to the commencement of construction activities in an area, in order to minimise the amount of exposed soil on the site.
- Stockpiles and spoil heaps must be covered with tarpaulins or straw to prevent fugitive dust.
- All construction vehicles must be appropriately maintained to minimise exhaust emissions.

DECOMMISSIONING & CLOSURE PHASE:

- Dust suppression methods, such as wetting or laying straw, should be applied where there are large tracks of exposed surfaces.
- Stockpiles and soil heaps must be covered with tarpaulins or straw to prevent fugitive dust.
- All construction vehicles must be appropriately maintained to minimise exhaust emissions.

TRAFFIC:

CONSTRUCTION & DECOMMISSIONING & CLOSURE PHASE:

- The Contractor should ensure that traffic on the local roads is disrupted as little as possible which should include measures for the optimization of the amount of travel on the local roads, thereby reducing impacts.
- The delivery of construction equipment and material should be limited to hours outside peak traffic times (including weekends).
- Where obvious damage to the road infrastructure has occurred as a result of the project, repairs should be undertaken in accordance with the relevant authority's specifications and requirements.
- Co-ordination of movement of vehicles on and off site to reduce risks and prevent congestion on roads in the vicinity of the site.
- No vehicles or machinery should be serviced or refuelled onsite.
- Peak traffic hours should be avoided.
- Large vehicle turning must take place onsite and not in the adjacent roads.
- In cases where activities may obstruct traffic, local traffic officials must be contacted.

WASTE GENERATION:

CONSTRUCTION PHASE:

- General waste disposal bins will be made available for employees to use throughout the construction phase.
- Where possible construction waste on site should be recycled or reused.
- Waste will be temporarily stored on site (less than 90 days) before being disposed of appropriately.
- General waste should be placed in a watertight container and disposed of on a regular basis.
- Records of all waste being taken off site must be recorded and kept as evidence.
- Evidence of correct disposal must be kept.
- Construction rubble will be disposed of at an appropriate site.
- Burning of waste material will not be permitted.
- Hazardous materials will be generated if there are spillages during construction and maintenance periods. This waste should be cleaned up using absorbent material provided in spill kits on site, and must be disposed of accordingly at a hazardous waste landfill.
- Absorbent materials used to clean up spillages should be disposed of in a separate hazardous waste bin.
- The storage area for hazardous material must be concreted, bunded, covered, labeled and well ventilated.
- Provide employees with appropriate PPE for handling hazardous materials.
- All hazardous waste will be disposed of in a registered hazardous waste disposal facility.

NOISE:

CONSTRUCTION PHASE:

- Construction activities should be limited to normal working hours (08:00 – 17:00) and limited to weekdays.
- No work should occur on weekends or on public holidays.
- The contractor will adhere to local authority by-laws relating to noise control.
- Mechanical equipment with lower sound power levels must be selected to ensure that the permissible occupation noise-rating limit of 85 dBA is not exceeded.
- Equipment must be fitted with silencers as far as possible to reduce noise.
- All equipment to be adequately maintained and kept in good working order to reduce noise.
- Neighbouring landowners should be informed prior to the initiation of noisy activities e.g. high intensity drilling. A grievance procedure will be established whereby noise complaints can be received, recorded and responded to appropriately.
- All construction workers and personnel must wear hearing protection during working hours.
- Noise levels must comply with the SANS 100103 – 0994 (recommended noise levels).

OPERATIONAL PHASE:

- A grievance procedure will be established whereby noise complaints can be received, recorded and responded to appropriately.
- Equipment such as mechanical equipment, extraction fans, refrigerators that are fitted with noise reduction facilities (e.g. side flaps, silencers etc.) must be used as per operating instructions and maintained properly.
- Noise levels should comply with the SANS Code of Practice 100103 – 0994 (recommended noise levels).
- Local by-laws for noise levels must be adhered to.

DECOMMISSIONING & CLOSURE PHASE:

- The contractor will adhere to local authority by-laws relating to noise control.
- Decommissioning activities will be restricted to regular working hours, i.e. Monday to Friday (08:00 – 17:00).
- Mechanical equipment with lower sound power levels will be selected to ensure that the permissible occupation noise-rating

limit of 85 dBA is not exceeded.
- Equipment will be fitted with silencers as far as possible to reduce noise.

HEALTH & SAFETY:

CONSTRUCTION PHASE:
- The construction site must be fenced off to prohibit unauthorised access and site access must be strictly controlled.
- All employees, contractors and sub- contractors to wear appropriate PPE.
- Open excavations must be clearly marked.
- Appropriate health and safety signage must be displayed on site.
- Safety Audits must be conducted on a monthly basis and submitted to the relevant departments.

OPERATIONAL PHASE:
- Fire extinguishers and sand bags must be readily available onsite and easily accessible.
- Fire-fighting equipment must comply with SANS 1151 (Portable rechargeable fire extinguishers - Halogenated hydrocarbon type extinguishers), and must be inspected regularly.
- Appropriate health and safety signage must be displayed on site.
- An Emergency Response Plan must be in place for the site, this must clearly describe emergency procedures and include emergency contact numbers.
- Staff must be trained adequately so as to identify potential high risk situations and implement the Emergency Response Plan.
- The local municipality (i.e. the applicant) should have an ANTI-TAXI WAR POLICY and IMPLIMENTATION STRATEGY PLAN compiled and enacted, which should include at least the assistance of the SOUTH AFRICAN POLICER SERVICES, the employment of a full time SAFETY & SECURITY COMPANY SERVICES – and, the official agreement and active participation of all the TAXI ASSOCIATIONS and/or GROUPS to maintain peace and mutual respect etc.

DECOMMISSIONING & CLOSURE PHASE:
- The construction site must be fenced off to prohibit unauthorised access and site access must be strictly controlled.
- All employees, contractors and sub- contractors to wear appropriate PPE.
- Open excavations must be clearly marked.
- All employees, contractors and sub- contractors must comply with the relevant Health and Safety Policy.
- Fire safety should be considered and all vehicles should have fire extinguisher.
- Employees should be trained on fire safety.
- Local emergency fire brigade number should be known to everybody.
- Appropriate health and safety signage must be displayed on site.

FACILITIES LAYOUT AND DESIGN:

- The final, detailed design and construction drawings of the proposed facilities must comply fully with the relevant standards and guidelines e.g. SANS 10400 etc, and the relevant competent and experienced registered professionals e.g. Architects, Engineers, Landscape Architects etc - should be appointed to compile and oversee the implementation of the final detailed designs and plans of the facilities.

CONSTRUCTION PHASE MANAGEMENT:

- The EMPr (attached in Appendix H) must be implemented and complied with to ensure the minimisation, control and mitigation of construction, operational and decommissioning phase impacts.
- Compliance with the EMPr should be evaluated and audited by an independent, appropriately qualified and experienced ECO, on a monthly basis, as a minimum.
- Construction activities should be limited to normal working hours (08:00 – 17:00) and limited to weekdays. No work should occur on weekends or on public holidays.
- The Contractor must adhere to local authority by-laws relating to noise control.

OPERATION PHASE MANAGEMENT:

- A FINAL OPERATIONAL ENVIRONMENTAL MANAGEMENT PLAN needs to be developed for the facility by an experienced ENVIRONMENTAL MANAGEMENT PROFESSIONAL as soon as all the FINAL DETAILED CONSTRUCTION PLANS/DRAWINGS/DOCUMENTS have been completed by the relevant professionals e.g. Architects, Engineers, Landscape Architect etc. This must include an Emergency Response Plan which clearly describes emergency procedures and includes emergency contact numbers.

- Any significant spills or leak incidents must be reported in terms of the National Environmental Management Act, 1998 and the National Water Act, 1998.
- Any possible oil and/or fuel storage and/or septic tanks, and/or pipelines and other associated infrastructure which may contain contaminants must be inspected regularly for leaks and to ensure structural integrity.

9. THE NEEDS AND DESIRABILITY OF THE PROPOSED DEVELOPMENT

(as per notice 792 of 2012, or the updated version of this guideline)

The City of Johannesburg through the Johannesburg Development Agency has identified land parcels which are currently being utilized informally by the taxi industry, thus giving rise to the need to formalize the sites and provide infrastructure towards the proposed taxi rank development for holding, loading purposes, as well as the associated ancillary uses that complement the development.

The proposed Emdeni/Zola Public Transport facility will consist of the following;

- 40 TAXI RANKING AREA BAYS
- 4 DROP-OFF AREA BAYS
- 30 TAXI HOLDING BAYS
- 10 ADMINISTRATION PARKING BAYS
- 6 TRADING KIOSKS
- 3 ABLUTION BLOCKS
- SECURITY OFFICE
- ADMINISTRATION OFFICE BLOCK + ADMIN SQUARE
- REFUSE AREA
- RECREATIONAL AREA
- PUBLIC SQUARE & STAGE
- DRIVEWAY & 10 PUBLIC PARKING BAYS
- PAVED WALKWAYS (including covered Walkways)
- STORMWATER ATTENUATION PONDS
- SOFT LANDSCAPING AREAS
- CIVIL SERVICES INFRASTRUCTURE (i.e. stormwater channels, palisade fences, water pipes, sewer pipes, manholes, electricity cables etc).

1.0 The Spatial Development Framework – 2040:

1.1 The Spatial Development Framework 2040 (SDF) aims to address issues with the CoJMM spatial and social landscape, some of these being identified as:

- Increasing pressure on the natural environment and green infrastructure;
- Urban sprawl and fragmentation;
- Spatial inequalities and the job-housing mismatch.

1.2 The development proposal is situated within a previously marginalized area and as a result will have no negative affect on the natural environment and will ensure optimal utilisation of existing infrastructure, while promoting the notion of infill development and creating job opportunities in close proximity to residential area.

2.0 Regional Spatial Development Framework:

2.1 According to the (RSDF 2010/2011), the site is situated in Region G, Sub-area 4.
2.2 This Sub Area is identified as a Public Transport Priority Area and Marginalised and Peri Urban Areas Priority Area in terms of the Growth Management Strategy.
2.3 Key issues to be addressed include:

- Unmanaged informal trading and illegal trading;
- Absence of formal public transport facility;
- Low-income levels and unemployment;
- Absence of public transport stops (with shelter) and lay-byes;
- Need for pedestrian crossing along Golden Highway;
- Proliferation of informal settlements;
- Public sector intervention to support potential growth and development;
- Encourage investments in the nodes;
- Provide and improve public transport facilities and trading facilities;
- Restrict rights in decentralised areas and encourage infill development;

2.4 Development objectives for the area include:

- Pursue the productive use of all vacant land parcels in the Sub Area And promote infill development;

 Support clustering of services in multi-purpose development centre;
 Encourage and support partnerships.

2.5 The development proposal is in line with the RSDF 2010 / 2011.

3.0 Suitability of proposed land use:

3.1 The proposed rezoning of the properties must be considered in terms of:

3.1.1 Public Interest:

 The application will be advertised in the relevant newspapers, to the surrounding owners and on the site, ensuring sufficient public participation;
 The proposed development will occur on vacant underutilized land and will fit in well with the variety of land uses prevalent within the area, in line with policy guidelines;
 Vacant underutilised land may be developed to its full potential;
 The proposed development will contribute to the regeneration of the area in general;
 The proposed development can be seen as infill development;
 The proposed development will create job opportunities during and post construction, in close proximity to public transport opportunities.

3.1.2 Accessibility:

 Access and egress from the property will be to the satisfaction of the CoJMM, from the existing public streets.

3.3.3 Compatible land use:

 The proposed land use to "Municipal", subject to conditions is in line with the surrounding land uses and contributes to the mixed land uses prevalent in the area;
 The site falls within the Urban Development Boundary of the CoJMM and can be seen as infill development and does not contribute to urban sprawl.;
 The application will result in the maximum utilisation of the land and engineering services;
 The proposed development will add to the regeneration of the area in general, the development of vacant land within the Urban Development Boundary can be seen as good land use management practices.

4.0 THE SPATIAL PLANNING AND LAND USE MANAGEMENT ACT, 2013 (ACT 16 OF 2013) – SPLUMA:

This application must be motivated and considered in terms of:

4.1 Development principles:

4.1.1 The following development principles should be considered in terms of Chapter 2 of SPLUMA.

(a) THE PRINCIPLE OF SPATIAL JUSTICE, WHEREBY:

(i) Past spatial and other development imbalances must be redressed through improved access to and use of land:

 Balanced, shared growth and settlement restructuring will benefit the greater community.
 Employment (i.e. skilled, semi-skilled and unskilled) Opportunities will be created.

(b) THE PRINCIPLE OF SPATIAL SUSTAINABILITY, WHEREBY SPATIAL PLANNING AND LAND USE MANAGEMENT SYSTEMS MUST:

(i) Promote land development that is within the fiscal, institutional and administrative means of the Republic:

 The site is situated within the Urban Development Boundary of the City of Johannesburg Metropolitan Municipality;
 More specifically, the site is situated in Region G, Sub-Area 9 (RSDF 2010/2011);
 The proposed development as set out above complies with the fiscal, institutional and administrative means of the republic and the Council.

(ii) Ensure that special consideration is given to the protection of prime and unique agricultural land:

 The site is currently not used for agricultural purposes and falls within an established township;
 The site falls within the Urban Development Boundary (UDB) for the COJMM, Region B Sub-Area 14.

(iii) Promote land development in locations that are sustainable and limit urban sprawl;

 The site falls within the Urban Development Boundary (UDB) of the COJMM, Region B, Sub-Area 14;
 The site falls within the boundaries of an approved township and as such will not contribute to urban sprawl and can be seen as being an infill development.

(iv) Result in communities that are viable:

- The development as envisaged, being of high quality and good design will integrate into the greater area;

(c) THE PRINCIPLE OF EFFICIENCY, WHEREBY:

(i) Land development optimizes the use of existing resources and infrastructure;

- The development as envisaged does fit in well with the development pattern of the area and are in line with policy guidelines;
- The site is part of an approved township and all engineering services required are available.

(ii) Decision-making procedures are designed to minimize negative financial, social, economic or environmental impacts;

- The site being part of an approved township and as such all environmental considerations have been complied with;

(e) THE PRINCIPLE OF GOOD ADMINISTRATION, WHEREBY:

(i) All spheres of government ensure an integrated approach to land use and land development that is guided by the spatial planning and land use management systems as embodied in SPLUMA;

- The application will be circulated to various departments for comments.

(ii) The preparation and amendment of spatial plans, policies, land use schemes as well as procedures for development applications include transparent processes of public participation that afford all parties the opportunity to provide inputs on matters affecting them;

- The application will be advertised in a local newspaper and the Provincial Gazette;
- A site notice will be placed on site, ensuring optimal Public participation in line with all requirements.

The application is thus generally in line with the principles of SPLUMA.

4.2 Compliance with Spatial Development Frameworks:

In terms of Section 52 of SPLUMA any development must be considered with regard to compliance with:

4.2.1 National, Provincial and Municipal:

The Gauteng Spatial Development Framework 2011 forms the basis around which the SDF is developed, therefore the SDF of City of Johannesburg gives effect to:

- The policies and principles as laid down in the:

o National Spatial Development Perspective (NSDP), e.g.:

- Principle 1 : Rapid, inclusive economic growth and Poverty alleviation;
- Principle 2 : Provision of basic services;
- Principle 3 : Government spending to be fixed on localities of economic growth and/or economic potential;
- Principle 4: Address past and current social inequalities;
- Principle 5: Economic development should enhance activity corridors.

o Gauteng Spatial Development Perspective (GSDP);

o National Development Plan vision for 2030:

- Economic growth and employment opportunities;
- Environmental sustainability;
- Transforming Human Settlements;
- Social protection;
- Building safer communities;
- Building a capable and developmental state;
- National building and social cohesion.

10. THE PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED *(CONSIDER WHEN THE ACITIVTY IS EXPECTED TO BE CONCLUDED)*

Unlimited period (i.e. unknown) since it is not expected that the activity would end i.e. be concluded.

11. ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr) (must include post construction monitoring requirements and when these will be concluded.)

If the EAP answers "Yes" to Point 7 above then an EMP is to be attached to this report as an Appendix

EMPr attached	**X**

SECTION F: APPENDIXES

The following appendixes must be attached as appropriate (this list is inclusive, but not exhaustive):
It is required that if more than one item is enclosed that a table of contents is included in the appendix.

Appendix A: Site plan(s) – *(must include a scaled layout plan of the proposed activities overlain on the site sensitivities indicating areas to be avoided including buffers)*

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Route position information

Appendix E: Public participation information

Appendix F: Proof of Submission of General Authorisation Water Use Application to Department of Water and Sanitation, SAHRA information, service letters from municipalities, water supply information.

Appendix G: Specialist reports.

1. ***'A vegetation assessment of the site proposed for development of the Emdeni Public transport Facility in Soweto -*** *by G.J. Bredenkamp - Commissioned by Pierre Joubert Landscape Architect and Environmental Planner [Eco-Agent CC; PO Box 23355; Monument Park; 0181. Tel 012 3463180 / Fax 012 460 2525 / Cell 082 5767046]. December 2021.)'.*
2. ***'A wetland assessment of the site proposed for development of the Emdeni Public transport Facility in Soweto'*** *- by G.J. Bredenkamp & CE Venter (Commissioned by Pierre Joubert Landscape Architect and Environmental Planner [Eco-Agent CC; PO Box 23355; Monument Park; 0181. Tel 012 3463180 / Fax 012 460 2525 / Cell 082 5767046]. December 2021.)'.*
3. ***'Aquatic Ecology Specialist Study for the ZOLA-EMDENI PUBLIC TRANSPORT FACILITY SOWETO, Gauteng'.*** *Prepared By: Ecotone Freshwater Consultants Suite 342, Private Bag X1, Florida Hills, 1716 Cell: +27 84 585 7479. Tel: +27 (11) 672 1375 Fax: 088 011 673 1192. contact@ecotone-sa.co.za www.ecotone-sa.co.za Prepared For: Larchitect Pierre Joubert pierre.joubert.larchitect@gmail.com. Reference: Larchitect_ Zola-Emdeni_Public_Transport_Facility_Soweto_Aquatic_January_2022_Final Date: January 2022 Version: Final'].*
4. ***'Hydrogeological Investigation – Proposed Emdemi Public Transport Facility. Report Version – 1 22. 14 December 2021. Urban Innovate. GCS Project Number: 19-075'.*** *Prepared by GCS Water and Environment (Pty) Ltd (GCS)'.* 63 Wessel Road Rivonia 2128 PO Box 2597 Rivonia 2128 South Africa Telephone: +27 (0)11 803 5726 Facsimile: +27 (0)11 803 5745 Web: www.gcs-sa.biz].
5. ***SPECIALIST REPORT Soil and hydropedological assessment of the proposed Zola Public Transport Facility development area in Soweto, Gauteng Province'.*** *Requested By Ecotone Freshwater Consultants Compiled By Rehab Green Monitoring Consultants CC. Environmental and Rehabilitation Monitoring Consultant cc P.I. Steenekamp (Cert.Sci.Nat.). Report No: RG/2019/08/02/1. Date: 17 January 2022. Status: Edition 2. PO Box 12636, Queenswood, 0121. Pretoria. Cell: 082 560 0592. Fax: 086 678 1690. E-mail: rehabgreen@ee-sa.com'*
6. ***'DEVELOPMENT of an ECOLOGICAL STORMWATER MANAGEMENT & REHABILITATION PLAN (ESMRP) for SUBMISSION as Part of WATER USE LICENCE APPLICATION for the PROPOSED TOWNSHIP ZOLA EXTENSION 3 in order to accommodate the EMENDENI PUBLIC TRANSPORT FACILITY on a Part of the REMAINDER of the FARM SOWETO 387 IQ – GAUTENG, PROPOSED PREFERRED LAYOUT PROPOSAL. January 2022'*** *by HABITAT*

LANDSCAPE ARCHITECTS (Pty) Ltd'. Siegwalt U Küsel [Prof L Arch (SA) Reg. no. 20182 / ASAPA no. 367]. Principal Landscape Architect & Archaeologist. 101 Harvest crescent, Lynnwood, 0081. Pretoria, South Africa / Plot 237 Kameelfontein, 0035. Pretoria, South Africa. E-mail: siegwalt@habitatdesign.co.za / info@habitatdesign.co.za Mobile: +27(0)82 775 4803 Web: www.habitatlandscapearchitects.com

7. ***'Emdeni Transport Facility Outline Scheme Report - Date: 24 July 2018, Prepared for: Johannesburg Development Agency (JDA)'.*** *No. 3 Helen Joseph Street, Newtown, Johannesburg. Tel: +27 (11) 688 700 Fax: +27 (11) 688 7899. Prepared by: CSM Consulting (Pty) Ltd. Karee Building. Unit C101, Tuinhof, 265 West Avenue, Centurion. Tel: +27 (0) 861 878 252. Email: admin@csmeng.co.za. www.csmeng.co.za*
8. ***'PROJECT: JDA ZOLA [EMDENI] PUBLIC TRANSPORT FACILITY. DOCUMENT NAME: ELECTRICAL PRELIMINARY DESIGN REPORT. DOCUMENT REFERENCE: EMDENI-ELEC-S2 RPT-01-02'*** *by POLYGON PROJECT ENGINEERS.*
9. ***'SOWETO STORM WATER MASTER PLAN – NALEDI. CONCEPTUAL NETWORK DESIGN MAJOR CATCHMENT LOCALITY for JOHANNESBURG ROAD AGENCY (Pty)' Ltd.*** *By SRK CONSULTING [SRK House, 265 Oxford Road, Illovo, Johannesburg 2196. Tel: +27 (0) 11 441-1111. Fax: +27 (0) 11 880-8086] – and, TRIAKON PROFESSIONAL ENGINEERING SERVICES. [VKE Centre, 230 Albertus Street La Montagne 0184, Tel: (012) 481-3978 | Fax: (086) 516-4771].*
10. ***'GEO-TECHNICAL INVESTIGATION FOR THE FOUNDATION DESIGN OF A PROPOSED PUBLIC TRANSPORT FACILITY ON ERF RE/7/239-IQ IN EMDENI, SOWETO, GAUTENG PROVINCE. FINAL REPORT - Report No. JOB MS201714'.*** *Prepared By: Mshandukani Holdings Pty Ltd. Claudia Khangale (Pr.Nat.Sci) Pr. Reg No: 117031. Engineering Geologist (Geotechnical & Dolomite section). Tel: 012 656 0236 Cell: 078 170 9814. Email: claudia@mshandukani.co.za Address: 6794 Spinetail Street, Unit B9/12 Heuwelsig Office Park, Centurion, 0130. Prepared For: Johannesburg Development Agency Development Implementation Department. Address: 03 President Street, The Bus Factory, Newtown, Johannesburg, 2000. Attention: Humbelani Mudau Tel: 011 688 7838. Email: hmudau@jda.org.za*
11. ***'PROPOSED EMDENI PUBLIC TRANSPORT FACILITY SITE TRAFFIC ASSESSMENT DRAFT REPORT (Date: 28 February 2018) Report Number: AJA 007/R003'.*** *Prepared by: AJAYI-JANTJIES-ADAMS AND ASSOCIATES P O Box 2890 FAERIE GLEN Contact: Mongamo Jantjies Pr Tech Eng Tel: (012) 991 1993 Email: mongamo@ajacce.co.za Prepared for: JOHANNESBURG DEVELOPMENT AGENCY The Bus Factory No. 3 Helen Joseph Street Newtown Contact: Humbelani Mudau Tel : (011) 688 7800 Email : hmudau@jda.org.za*
12. ***FLOODLINE MAP*** *[i.e. by AJA CONSULTING CIVIL ENGINEERS, Mongamo Jantjies (Pr Tech Eng, MSAICE M Tech: Civil Engineering Managing Director), 282 Manitoba drive, Faerie Glen, Pretoria, 0081, Tel: 012 003 2911 | Cell: 083 497 3221 / Email: mongamo@ajacce.co.za | Website: www.ajacce.co.za] -* and, ***FLOODLINE CERTIFICATE.***

Appendix H: EMPr

Appendix I: Other information

CHECKLIST

To ensure that all information that the Department needs to be able to process this application, please check that:

- Where requested, supporting documentation has been attached;
- All relevant sections of the form have been completed.