

Application in terms of Section 15(2) of the George Municipality Land Use Planning By-Law, for the Rezoning and Subdivision of a portion of the Remainder of Erf 464, George



Motivation Report

Metro Grounds Mixed Use Development

Portion of the remainder of Erf 464 George

George Municipality

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METRO GROUNDS MIXED USE INDUSTRIAL DEVELOPMENT

1 INTRODUCTION AND BACKGROUND

1.1 Project Introduction

The George Municipality (GM) proposes a mixed-use industrial development on a portion of the Remainder of Erf 464, George. The project is referred to as the Metro Grounds Mixed-Use Industrial Development.

The subject portion of the Remainder of Erf 464, George has been identified as land to accommodate a mixed-use development. The intent of the industrial development component is to accommodate industry erven, appropriate to the site context and facilitating small and medium enterprise development. The small industrial stands will be released to users or buyers. The proposed development also includes an educational erf that is earmarked to be developed as a tertiary educational facility, such as a vocational training establishment. The proposed development gains access from PW Botha Boulevard and recent updates to the layout plan shows a connection with the future Rand Street extension for an additional access point. There is also a portion of this layout that is earmarked for the expansion of the Go-George Bus Depot site that is planned adjacent to this proposed development. The proposed development falls within the study area of the George South-East Local Spatial Development Framework, 2015, and the area is earmarked for industrial development. The site is within the urban development boundary and identified for catalytic socio-economic development in the George Spatial Development Framework, 2023. The site is flanked on two of the three sites by the Skaapkop river. The current zoning of the subject area is "Undetermined Use Zone" as per the provisions of the George Integrated Zoning Scheme Bylaw, 2023.

The application is submitted in terms of section 15(2) of the George Municipality Land Use Planning By-law, 2023, to obtain development rights for the proposed development on a Portion of the Remainder of Erf 464 George.

1.2 Purpose of Memorandum

- (i) To gather all relevant information regarding the proposed rezoning and subdivision proposal into one document;
- (ii) To analyse all relevant information regarding the site and informants to the design of the proposed development; and
- (iii) To motivate the need and desirability of the proposed **Metro Grounds Mixed Use Development**, in terms of the George Municipality Land Use Planning By-laws, 2023, in order to enable the relevant governing bodies to make an informed decision.

1.3 Application

An application is hereby submitted for the following:

- a) **Subdivision**, in terms of section 15(2)(d) of the George Municipality Land Use Planning By-laws of the Remainder of ERF 464 George, to create Portion A and the Remainder. Portion A is depicted by figure A,B,C,D,E,F,G,H,I,J,K,L,M,N,O,P,Q,R,S,T,U,V,W,X,Y,Z,A1,B1,C1,D1,E1,F1,G1 as illustrated on the attached subdivision plan and measures ± 16.54 hectares in extent.
- b) **Rezoning**, in terms of Section 15(2)(a) of the George Municipality Land Use Planning By-laws, 2023 of Portion A of the Remainder of ERF 464 George, from "Undetermined Zone" to a

“Subdivisional Area Zone” in order to allow for the proposed land uses including 8 Industrial Zone II properties, 1 Community Zone I property, 1 Transport Zone I property, 1 Open Space Zone II property and 1 Transport Zone II property. See subdivisional layout plan (Annexure F) attached for more detail.

- c) **Subdivision**, in terms of section 15(2)(d) of the George Municipality Land Use Planning By-laws of the Subdivisional Area into 12 portions consisting of the following:
- 8 Industrial Zone II properties
 - 1 Community Zone I property
 - 1 Transport Zone I property
 - 1 Open Space Zone II property
 - 1 Transport Zone II property
- in accordance with the attached subdivision plan (Annexure F) in order to give effect to the proposed land uses as illustrated in the subdivisional layout plan.

1.4 Pre-Application Consultation

In terms of **Section 37** of the George Municipality Land Use Planning By-laws, 2023:

- (1) The Municipality may require an owner who intends to submit an application or his or her agent to meet with the authorised employee and, where applicable, with employees of other relevant organs of state for a pre-application consultation before he or she submits an application to the Municipality in order to determine the information and documents that must be submitted with the application.
- (2) The Municipality may issue guidelines regarding—
 - (a) applications that require a pre-application consultation;
 - (b) the nature of the information and documents that must be submitted with an application;
 - (c) the attendance of employees from the Municipality or other organs of state at a pre-application consultation; and
 - (d) the procedures at a pre-application consultation.
- (3) The Municipality must keep minutes of the proceedings of a pre-application consultation.

In terms of this application and the development proposal contained herein, a pre-application was submitted to the George Municipality’s town planning department on the 02 December 2024, and a pre-application consultation meeting was held on 4 December 2024. The minutes of the pre-application consultation is attached as **Annexure G**.

1.5 Information Required in terms of Section 38 of the By-Law

In terms of Section 38 of George Municipality Land Use Planning By-laws, 2023, an application must be accompanied by the following information and documents:

Table 1: Information required in terms of Section 38 of the By-Law

Information Required	Location	Included in the Application	
		Yes	No
Application form, completed and signed by applicant	Annexure A	X	
Power of Attorney & Proof that the person is authorised to act on behalf of the Client (Zutari's appointment letter)	Annexure B	X	
Proof of Registered Ownership (Title Deed)	Annexure C	X	
Bondholder's Consent	Not Applicable		X
Written motivation for the application based on the criteria referred to in Section 65		X	
Copy of the Surveyor-General's diagram	Annexure D	X	
Locality Plan	Annexure E	X	
Subdivisional Layout Plan	Annexure F	X	
Proof of Payment of Application Fees	Not Applicable		X
Conveyancer's Certificate indicating that the application is not restricted by any condition contained in the title deed.	Not Applicable		X
Minutes of pre-application consultation	Annexure G	X	

In addition to the mandatory requirements listed above, this application is supported by the following additional documents:

- Traffic impact assessment report – Annexure M
- Civil Engineering Services Report – Annexure K
- Electrical Engineering Services Report – Annexure L
- Stormwater Management Plan – Annexure J
- Geotechnical Investigation – Annexure I
- Draft Environmental Basic Assessment Report – Annexure O

1.6 Applicant Detail

George Municipality is the lawful owner of the properties as stated on the registered title deed of portion of the Remainder of ERF 464 George. Attached please find a copy of the Title Deed, confirming the property ownership (**Annexure C**).

The George municipality appointed Zutari (Pty) Ltd to submit this land use planning application on their behalf. Zutari (Pty) Ltd, in their capacity as consultant for the George Municipality, was authorised by the Municipality to sign any and all relevant documentation which may be necessary for the proposed planning application on behalf of the Municipality. The appointment letter signed by the Municipality, appointed Zutari (Pty) Ltd. as the lawful agent to prepare and compile the documentation required for the change in land use rights of the Metro Grounds Mixed Use Development. Attached please find a copy of the signed appointment letter (**Annexure B**).

Table 2: Applicant details

Applicant, full name and title	Zutari (Pty) Ltd. Reg No. 1977/003711/07
Contact Person of Authorised Professional Planner	Rudolf Schröder
SACPLAN Registration number:	A/151/2009 (See registration certificate attached as Annexure H)
Street Address	Suite 201 2 nd Floor Bloemhof Building 65 York Street George 6529
Telephone Number	+27 44 805 5400 / +27 83 390 6963
Email Address	rudolf.schroder@zutari.com

See SACPLAN registration certificate attached as **Annexure H**.

2 PROPERTY PARTICULARS

2.1 Property Description, Registered Owner and Title Deed

The portion of land to be subdivided is part of the Remainder of Erf 464 George, which is a large property located across large parts of George:

Table 3: Property descriptions

	Property description	Extent	Registered owner	Title deed number
1	Remainder of Erf 464, George	The total extent of the Remainder of Erf 464 George is not available. The portion of the erf that is proposed for measures approximately 16.54 hectares.	George Municipality	GEQ15-15/1922

The Remainder of Erf 464, George consists of a larger portion of land including road reserves spread across George. Please see Title Deed attached as Annexure C for confirmation of property ownership and the extent.



Figure 1: The Remainder of Erf 464 George

2.2 Locality

The proposed Metro Grounds Mixed Use development (also known as the “site”) is located on a portion of the Remainder of Erf 464 George, in the George Industrial area east of York Street and north of the N2. The site is located at the intersection of PW Botha Boulevard and Ossi Urban Street roughly halfway between Nelson Mandela Boulevard and York Street, adjacent to an existing substation and the proposed future Go George bus depot.

Also see the Locality Plan attached as **Annexure E**.

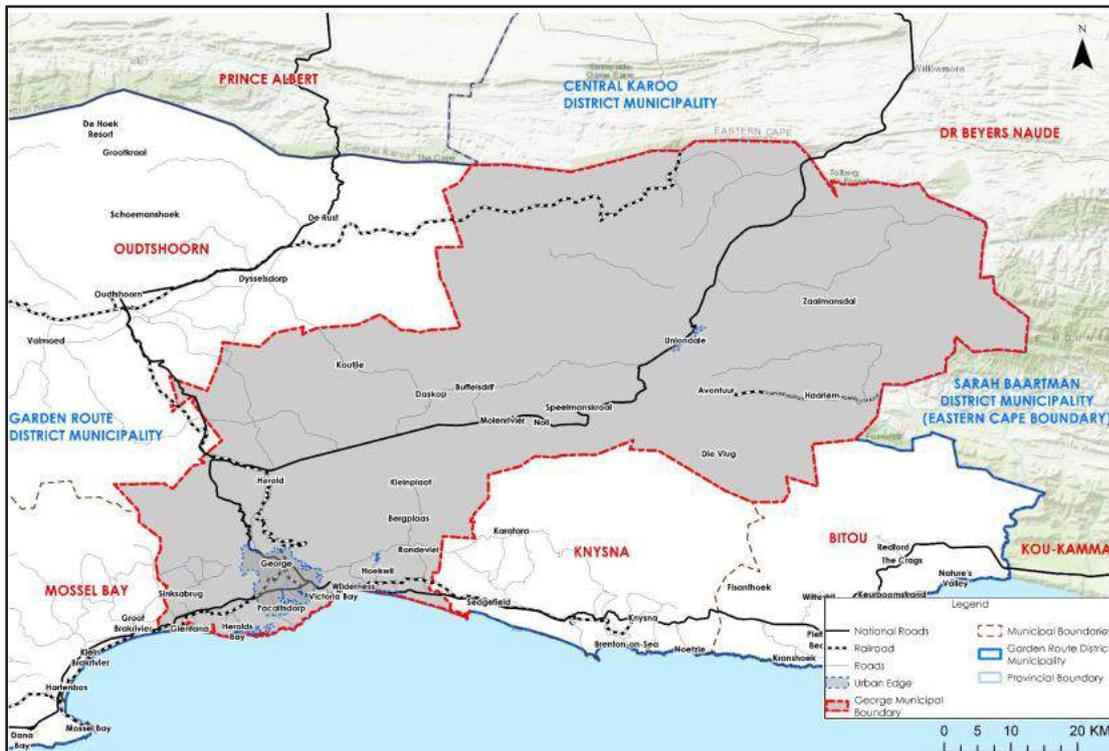


Figure 2: The Greater George Area (Source: George Municipality, 2022)



Figure 3: Project location

2.3 Extent

The total extent of the Remainder of Erf 464 George is not available. The portion of the erf that is proposed for development measures approximately 16.54 hectares.

2.4 Jurisdiction

The Site of Application is within the jurisdiction of the George Municipality, Western Cape Province, South Africa, in the Garden Route District area.

2.5 Restrictive Title Conditions

There are no conditions in the title deeds of the property that are deemed as being restrictive to the proposed development.

Please refer to the attached copy of the Title Deed for the site of application (**Annexure C**).

2.6 Surveyor General Diagrams and Servitudes

The Remainder of Erf 464 George is considered to be the commonage on which George was established. The SG diagrams of the property therefore illustrate a large property (including most of George) with a number of deduction plans as various subdivisions took place as the town developed over the years. The **Surveyor General diagrams** for the property are attached as **Annexure D**.

2.7 Mortgage Bond

There are no mortgage bonds registered against the properties.

2.8 Applicable Zoning Scheme and Current Zoning

The development site is currently zoned "Undetermined Use Zone" as per the provisions of the George Integrated Zoning Scheme Bylaw, 2023.

In terms of the George Integrated Zoning Scheme By-Law, 2023, the objective of Undetermined Use Zones is to enable the Municipality to defer a decision regarding a specific land use and development management provisions until the circumstances affecting the land unit have been properly investigated; or until the owner of the land makes an application for rezoning; or a zoning determination is made by the Municipality. The objective of this zoning is furthermore to create a zone to which land could revert back to when rights under current zonings, other than Single Residential Zone I, were not exercised, especially in cases where changes in the planning context occurred since the current zoning was granted.

In terms of the George Integrated Zoning Scheme By-Law, 2023, no primary uses, or consent uses are listed under "Undetermined Use Zone".

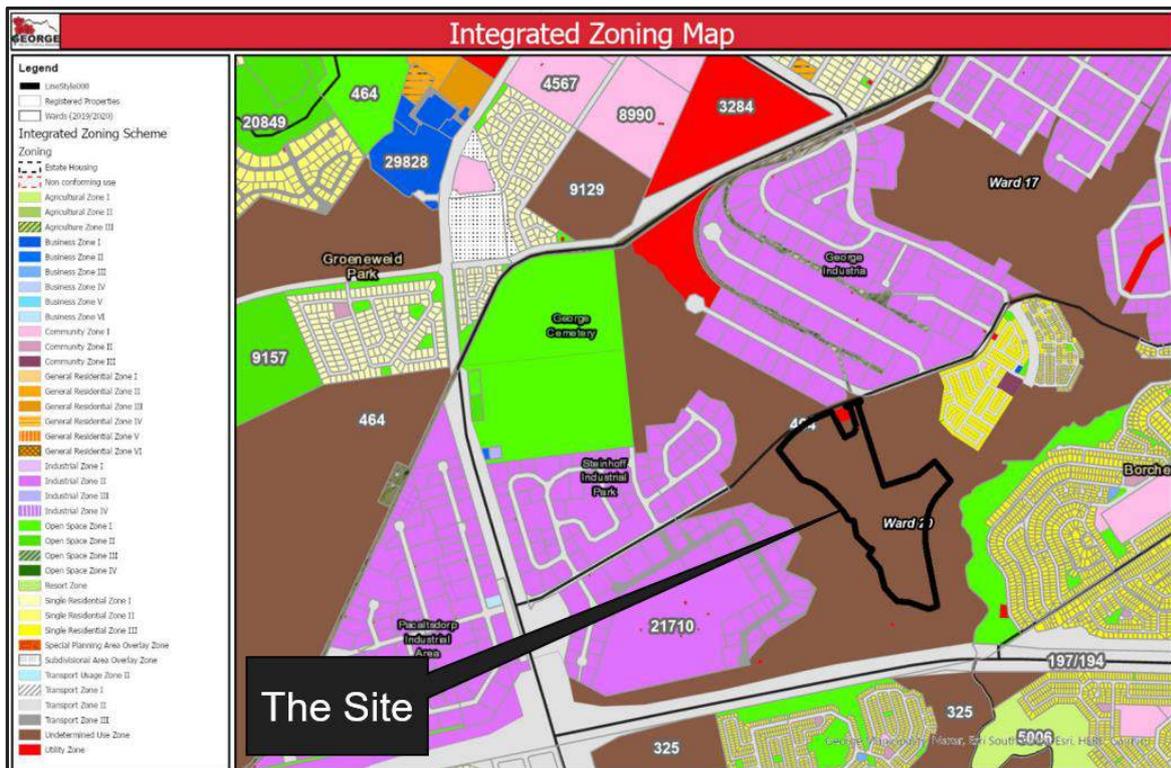


Figure 4: Current zoning - Undetermined Use Zone

The current zoning does not accommodate the proposed development. A land use planning application is therefore submitted to secure the development rights for the proposed development.

2.9 Land Use

Figure 5 below illustrates the land use of the site and its surroundings. The site is a greenfield site located between areas of industry and low-density, low-income residential.



Figure 5: Existing Land Use

2.10 Topography

The site is situated on a piece of land between two rivers. The highest point is centrally located, gradually sloping down in all directions for most of the site, until the western, eastern and southern edges where the slope suddenly increases with slopes up to 25%. The red polygon on the slope map below indicates the study area.

The topography of the site is generally characterised by a prominent ridge/spur that runs in a southeast direction from the site entrance along PW Botha Boulevard. The ridgeline was bound on the west and east by tributaries of the Schaapkop River. The terrain on site sloped gently along the crest of the ridge, increasing to moderate towards the site boundaries.

All areas with slopes greater than 25% have been excluded from the development footprint. The development footprint also became subsequently smaller as environmental sensitivities were confirmed.

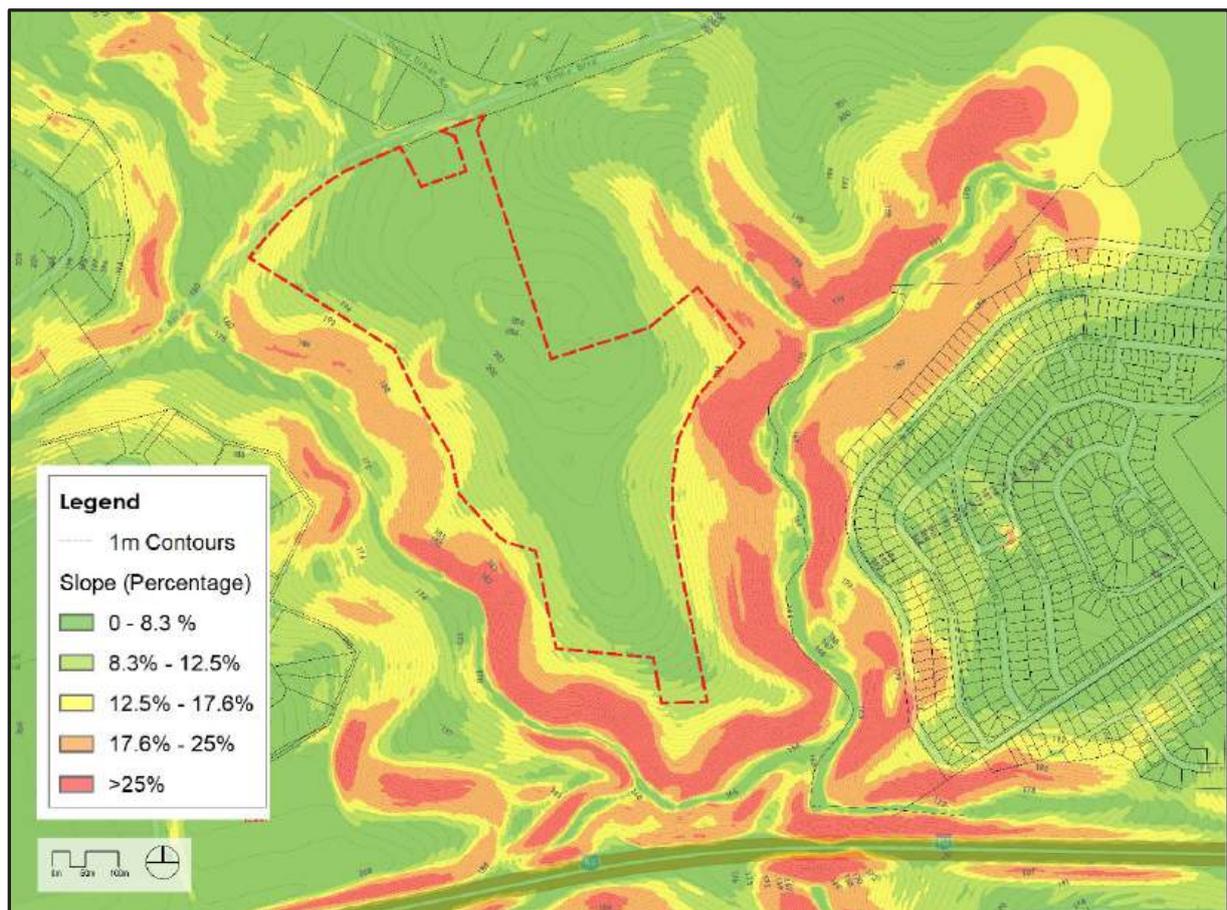


Figure 6: Site Elevation – Slope Map

3 PROPOSED DEVELOPMENT VISION AND CONCEPT

3.1 Urban Design Framework

3.1.1 Development Vision and Principles

The vision of the Metro Grounds mixed use development is to achieve a high-quality industrial development that caters for a range of users, integrating light industry and education.

Building on the principles of SPLUMA, three guiding principles have framed the design of the development framework. These are:

- **Diverse:** Providing a range of development opportunities
- **Connected:** Providing an integrated street network that provides access to internal development parcels as well as connecting to the existing and proposed street network
- **Safe and secure:** Ensure a safe and secure development through good management and safety through surveillance



DIVERSE



CONNECTED



SAFE & SECURE

3.1.2 Key Informants

The following key site informants unpacked during the analysis phase provide spatial guidance to where development can and cannot occur and the limitations to it. These include:

- Existing electrical servitude that is located along the northern and western edges of the site where no development can occur.
- Steep slopes, which have limited the developable area located along the western, southern and eastern edges of the site associated with river valleys and sensitive environmental areas.
- Existing street network within limited accessibility and a requirement to provide movement access the site from the proposed Rand Street extension and PW Botha Boulevard
- Site access is limited to one point along FW Botha Boulevard and a small area along the Rand Street extension.

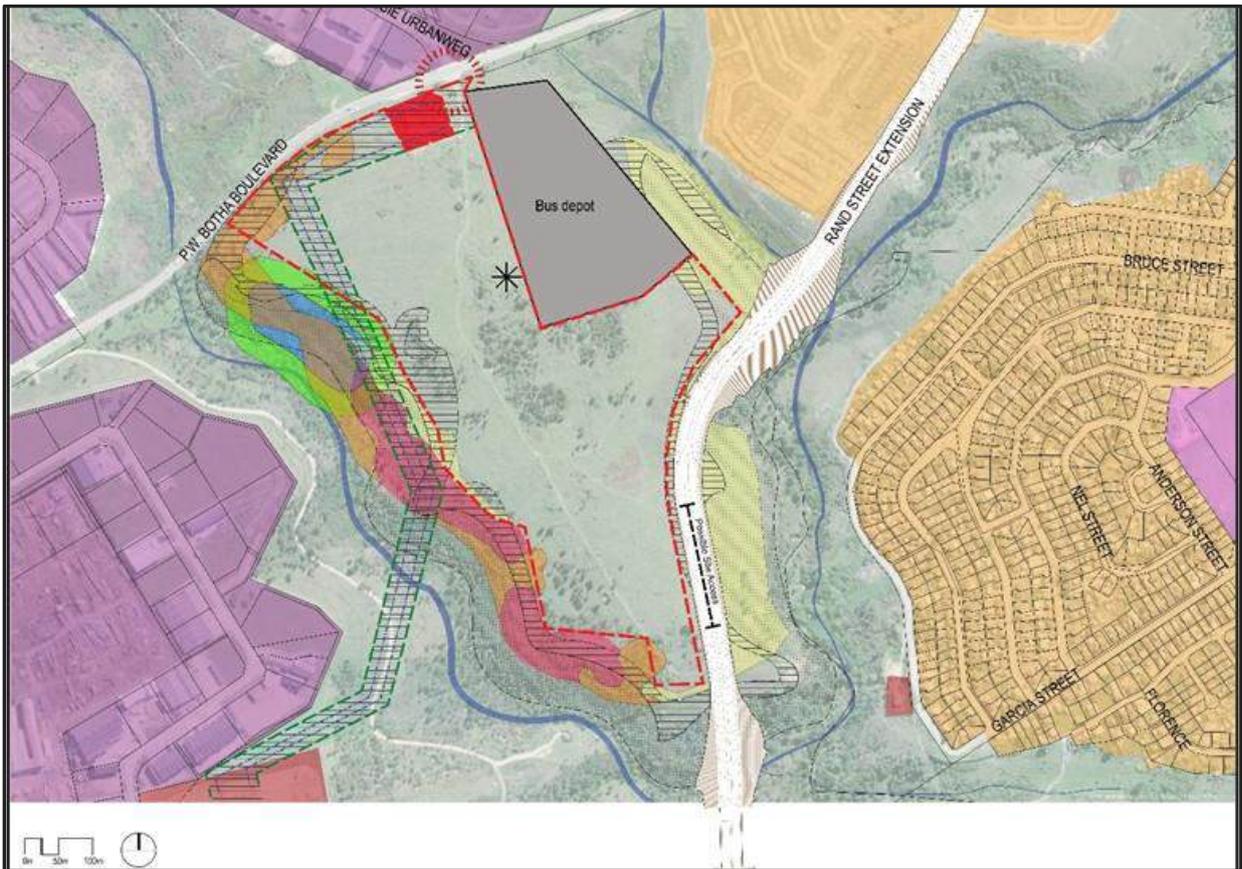


Figure 7: Key Informants

3.1.3 Development Framework

The development framework, guided by the design principles as well as the key spatial informants is illustrated in Figure 8. It is structured around a central, landscaped boulevard, which creates a connection between the proposed Rand Street Extension and PW Botha Boulevard. A range of development parcels provides industrial opportunities for a range of users. A tertiary education facility is located along PW Botha Boulevard with direct access from the central boulevard.

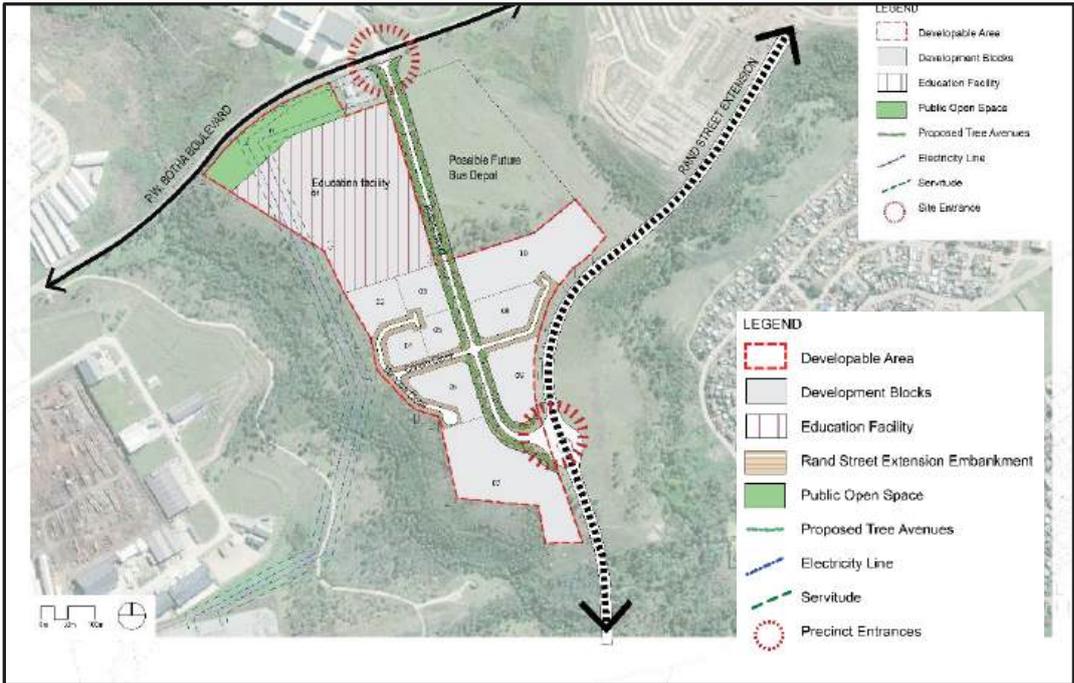


Figure 8: Development Framework

Refer to **Annexure N** for further details regarding the Metro Grounds Mixed Use Development Urban Design Guidelines.

3.1.3.1 Access and Movement

The Metro Grounds Street network is illustrated in Figure 9 below. It shows a hierarchy of streets differing in width from 30m to 22m. The site's primary access is off PW Botha in the north. Direct access from and connection to the Rand Street Extension can occur once the road has been constructed, but in the interim, this central boulevard (Bulbine Street) terminates in the south with a circle. This will not impact the development's functioning as the street network can accommodate the required movement, providing access to all development parcels without the through-route.

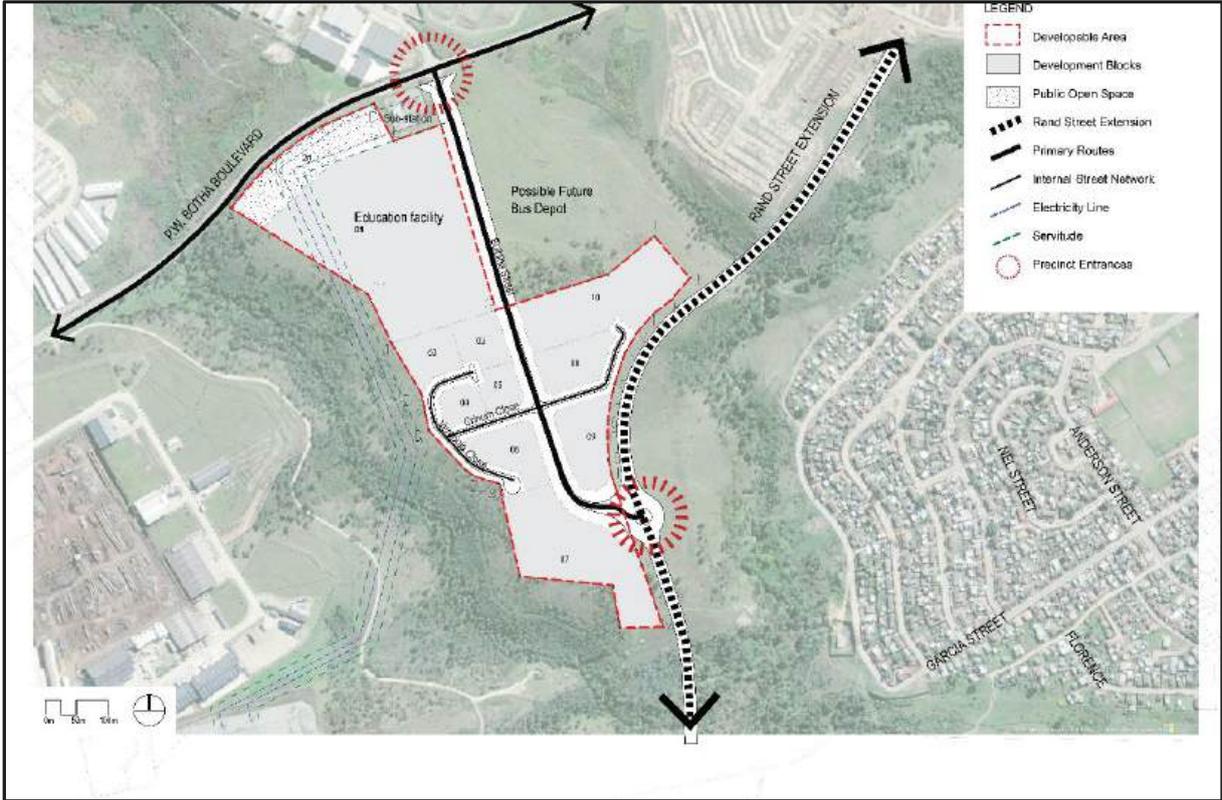


Figure 9: Access and Movement

3.2 Shaping Elements and Technical Studies

A number of environmental specialist studies have been undertaken to confirm environmental sensitivities identified on site during the feasibility stage of the project. These environmental studies further shaped and informed the layout design of the proposed development and culminated in the final layout that formed the basis of this land use planning application. A number of technical studies have also been undertaken based on the layout plan of the proposed development. These include civil engineering investigations, electrical engineering investigations, stormwater management as well as a traffic impact assessment. The main findings of these studies are summarised in the section below. For more detail, find the reports attached as annexures to this application.

3.2.1 Environmental Sensitivities

The environmental sensitivities identified on site during the feasibility stage of the project have been verified through a range of specialist investigations. The Environmental Authorisation (EA) must be sought in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA") and Environmental Impact Assessment (EIA) Regulations 2014 (as amended) via the Basic Assessment

process. The specialist reports are attached to the Draft Basic Assessment application. The Draft Basic Assessment Report is currently circulated for comments where-after it will be submitted to DEADP for consideration. See the Draft Environmental Basic Assessment Report attached to this application as **Annexure O**.

3.2.1.1 Aquatic Biodiversity Site Sensitivity Verification and Impact Assessment.

Confluent Environmental Pty (Ltd) was appointed by Zutari to conduct an aquatic specialist assessment for the proposed Metro Mixed-Use Industrial Development on Erf RE/464, George, Western Cape. The Department of Forestry, Fisheries, and the Environment (DFFE) Screening Tool identified the site as having a "Very High" aquatic biodiversity sensitivity due to the close proximity to an aquatic Critical Biodiversity Area (CBA1) and its location within the Outeniqua Strategic Water Source Area (SWSA). Despite the sensitivity of the aquatic ecosystems, the field assessments revealed that historical and ongoing impacts, including, erosion, and urban runoff, have largely modified the ecological states of these aquatic ecosystems. The site visit confirmed the presence of most of the mapped watercourses, with the addition of two wetlands and the absence of wetland features associated with HGM1.

The watercourses and wetlands have been demarcated and buffers proposed which have been incorporated into the layout design.



Figure 10 - Mapped Watercourses and Wetlands with Proposed Buffers

3.2.1.2 Terrestrial Animal Species Specialist Assessment: Site Sensitivity Verification Report and Compliance Statement

The site sensitivity verification conducted on RE/Erf 464 has confirmed that the area has been heavily degraded due to past environmental and anthropogenic disturbances, including invasive plants, illegal dumping, and historical waste disposal activities. These factors have resulted in the significant transformation of natural habitats, making the site unsuitable for the SCC identified by the DFFE Screening Tool and public platforms. Although the DFFE Screening Tool initially indicated a HIGH sensitivity rating due to potential habitat for SCC to occur, the site inspection revealed a LOW sensitivity.

A botanical assessment was undertaken by Confluent Environmental (Pty) Ltd, who identified some areas to the east along the river corridor where more sensitive vegetation has been found on the steeper slopes, and some wetlands areas. These areas are mapped below and the High Sensitivity areas excluded from the development footprint.

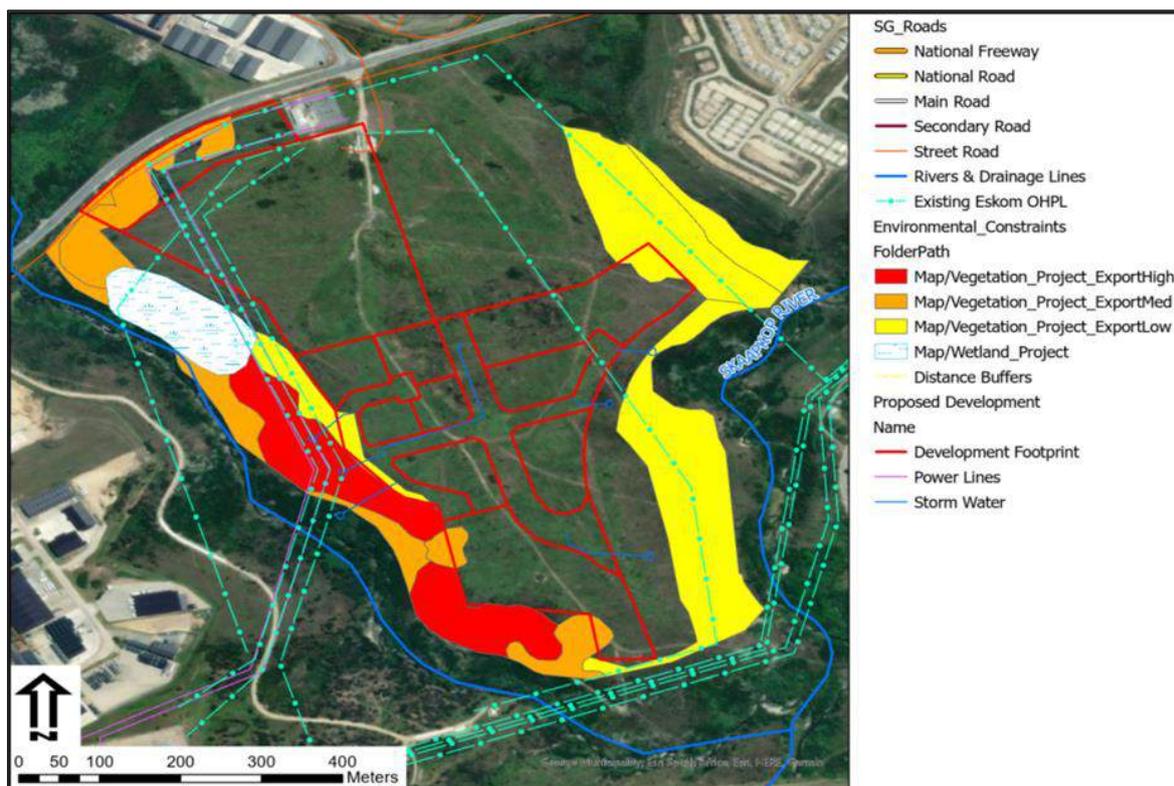


Figure 11. Vegetation Sensitivity Mapping by Confluent Environmental (Pty) Ltd.

3.2.1.3 Terrestrial Biodiversity

The site assessment confirms that the Metro Grounds development is situated within a transformed landscape, with fynbos vegetation primarily restricted to valley slopes, which is largely outside of the Metro Grounds development plan extent. A framework was developed from the site assessment which identified that majority of the vegetation on site could be classified as into transformed fields, while the remaining vegetation around the periphery was mainly classified as fynbos.

The transformed grassy fields have very little ecological value. However, the fynbos vegetation exhibits significant biodiversity and ecological importance, supporting a variety of indigenous plant species along the eastern slopes. The transformed nature of the site means fire-dependent fynbos dynamics are disrupted, reducing the ability of fire-adapted species to regenerate. This current impact is difficult to mitigate, as fire management is highly unlikely to occur in this area.

Mitigation measures have been recommended by the Terrestrial Biodiversity Specialist as listed below:

- Implement an invasive alien plant control plan along the valley edges to the valley bottom prior to the commencement of vegetation clearance or construction.
- Development here should prioritize avoiding impacts on the sensitive fynbos and riparian areas by incorporating large buffers around valley edges
- Demarcate no-go high sensitivity areas, especially around valley slopes where fynbos persists.
- Minimize soil disturbance and establish defined walking paths to prevent soil compaction during clearing.
- Implement dust suppression techniques and ensure proper waste disposal on-site.

3.2.1.4 Landscape and Visual Impact Assessment

The Visual Assessment is in support of the proposed development and included motivation for the support and some mitigating measures to be followed:

- High Positive for local planning within existing semi-industrial landscape context that has a High Visual Absorption Capacity.
- The development is suitably set back from sensitive vegetation.
- The 200m (avg.) buffer from the development to the receptors, would allow for some reduction in visual exposure to the proposed landscape change.
- Likely low sensitivity to landscape change from local residential receptors where the light-industrial area could afford employment opportunities.
- Economic benefits/ skills from the industrial/ education developments.
- Due to the risks related to potential land invasion from limited management of the property in the No-Go Option, this scenario is not preferred. The Preferred development option is the landscape and visual preference with mitigation.
- Mitigations have been provided regarding tree plantings, as well as a recommendation to review the southern erven to allow for a more positive/ linear frontage onto the N2 Highway.
- The single erven could appear to jut forward and increase visual intrusion as seen from the lower lying N2 Highway receptors. This southern erven is also directly adjacent to the existing Municipal Powerline Corridor, and it could be prudent to accommodate space for future powerlines taking into consideration that the area to the south of the corridor depict steep slopes. This possible erven re-alignment should be subject to review pending the further evaluation at the Site Development Planning stage.

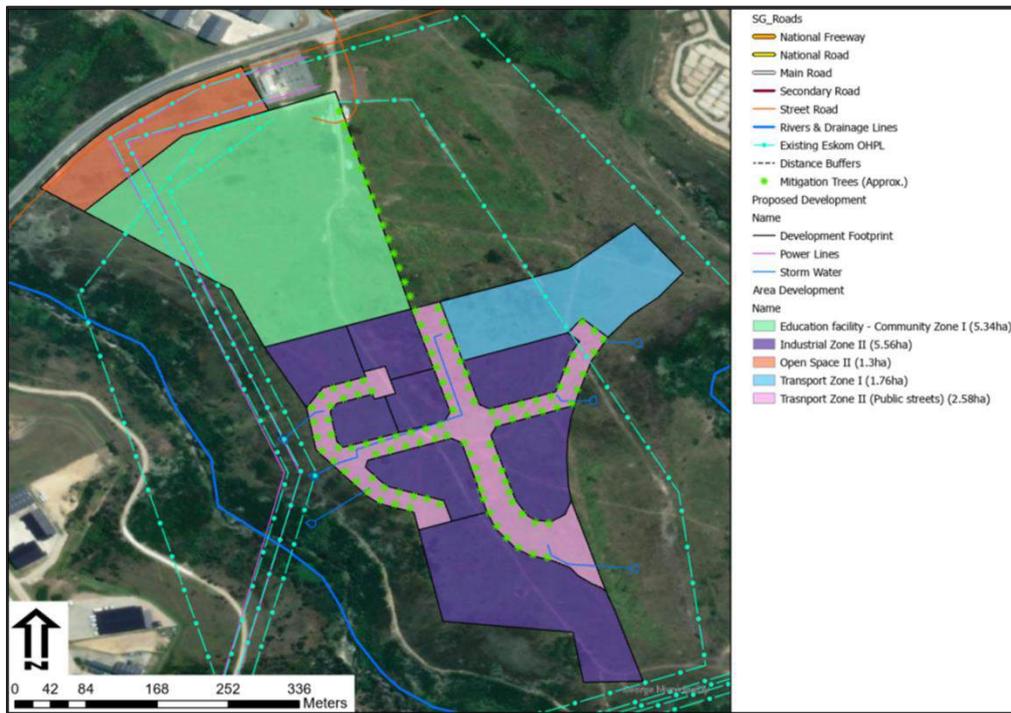


Figure 12: Tree planting mitigation map (15m spacing/ 4m from Erf as per existing George Industrial/ Fichat Street example).

3.2.1.5 Agriculture

Through the Environmental Basic assessment, it has been confirmed that the site is identified as having no current and future agricultural production potential. This is due to its location being transformed by expanding urbanisation, and that the land use planning in the spatial development framework has designated the site for non-agricultural use.

Given the above, the occupation of the proposed development is deemed to have no agricultural negative impact now and in future, therefore the site is assessed as acceptable.

3.2.1.6 Archaeological/Heritage statement

No cultural or historically significant elements have been identified. In response to the Notification of Intent to Develop, Heritage Western Cape responded that:

“You are hereby notified that, since there is no reason to believe that the proposed development of an industrial area on Erf 464 Portion Remainder, Metrogrounds Industrial Development, George will impact on heritage resources, no further action under Section 38 of the National Heritage Resources Act (Act 25 of 1999) is required. However, should any heritage resources, including evidence of graves and human burials, archaeological material and paleontological material be discovered during the execution of the activities above, all works must be stopped immediately, and Heritage Western Cape must be notified without delay”.

3.2.1.7 Civil Aviation

The very high, high and medium sensitivity ratings identified by the DFFE screening tool are a function of the project’s proximity to the following aviation installations related to the Airports Company South Africa (ACSA) George Airport:

- George ACSA Airport
- FAGG Heli-square Helistop at George Airport
- Titan Offshore Helistop

The proposed Metro Grounds development does not pose significant risks to civil aviation as the development will not introduce any obstacles taller than those already present on site and in adjoining industrial areas. As a result, no further investigations are deemed necessary.

3.2.1.8 Layout informed by environmental sensitivities

The environmentally sensitive areas identified on site have been marked out and formed an integral role in the design of the layout plan. The identified areas have been avoided as far as possible. See the image below with the environmental sensitivities mapped in relation to the proposed layout / development footprint:



Figure 13: Environmental Sensitivities

3.2.2 Geotechnical Report

A geotechnical investigation was conducted for the Metro Grounds mixed use development by Outeniqua Geotechnical services in September 2022. The methodology for the geotechnical investigations included a walk-over survey as well as a subsurface investigation which consisted of twenty test pits which were excavated in order to investigate the geology and geotechnical nature of the site, including soil types, moisture levels, consistency etc. An analysis of the information was conducted to determine geotechnical parameters and recommendations were formulated based on the available data.

The site was broadly mapped out according to the dominant geotechnical constraints that were identified during investigation, see figure below.



Figure 14: Geotechnical map

The test pits undertaken as part of this investigation indicated that the site consisted of areas underlain by natural (insitu) soil and areas underlain by deposits of uncontrolled fill (dumped soil). The natural (insitu) profile generally consisted of one or more horizons of colluvium (transported soil), which were underlain by a paedogenic horizon of ferricrete nodules (chemical deposit), which was underlain by residual granitic soil composed of clayey sand and/or sandy clay, derived from the insitu weathering of the underlying granite.

No free groundwater seepage was encountered in test pits but very moist soil conditions were noted on the lower slopes near drainage line. Seasonal seepage was also expected in the upper 1.5, in the profile during wet seasons which could potentially affect excavations and construction of foundations, requiring dewatering and some improvements.

The site of development has been generally considered suitable for the proposed development; however, some challenging geotechnical constraints were encountered, requiring special engineering solutions to mitigate excessive movements in structures. Some preliminary recommendations were provided for consideration by the designers, but all information should be verified on site and further investigations may be required. See more details of the recommendations made in the attached Geotechnical report as **Annexure I**

3.2.3 Stormwater management

A stormwater management report has been prepared with the purpose of analysing the catchment area in order to determine the 1–5-year flow rate, determine the sizes of stormwater infrastructure within the proposed development, determine the effect of external stormwater runoff, and to make recommendations regarding the runoff.

The stormwater system forms an integral part of the urban planning layout. The system rests on three legs, the minor, major and emergency systems. The minor storms are catered for in the pipe system, while major storms are routed through a linked system of roads and public open space through

attenuation techniques. The emergency system is designed to recognise failure of the minor and major systems or in the event of malfunction of the minor system by providing continuous overland flow routes to minimize flooding of residential areas.

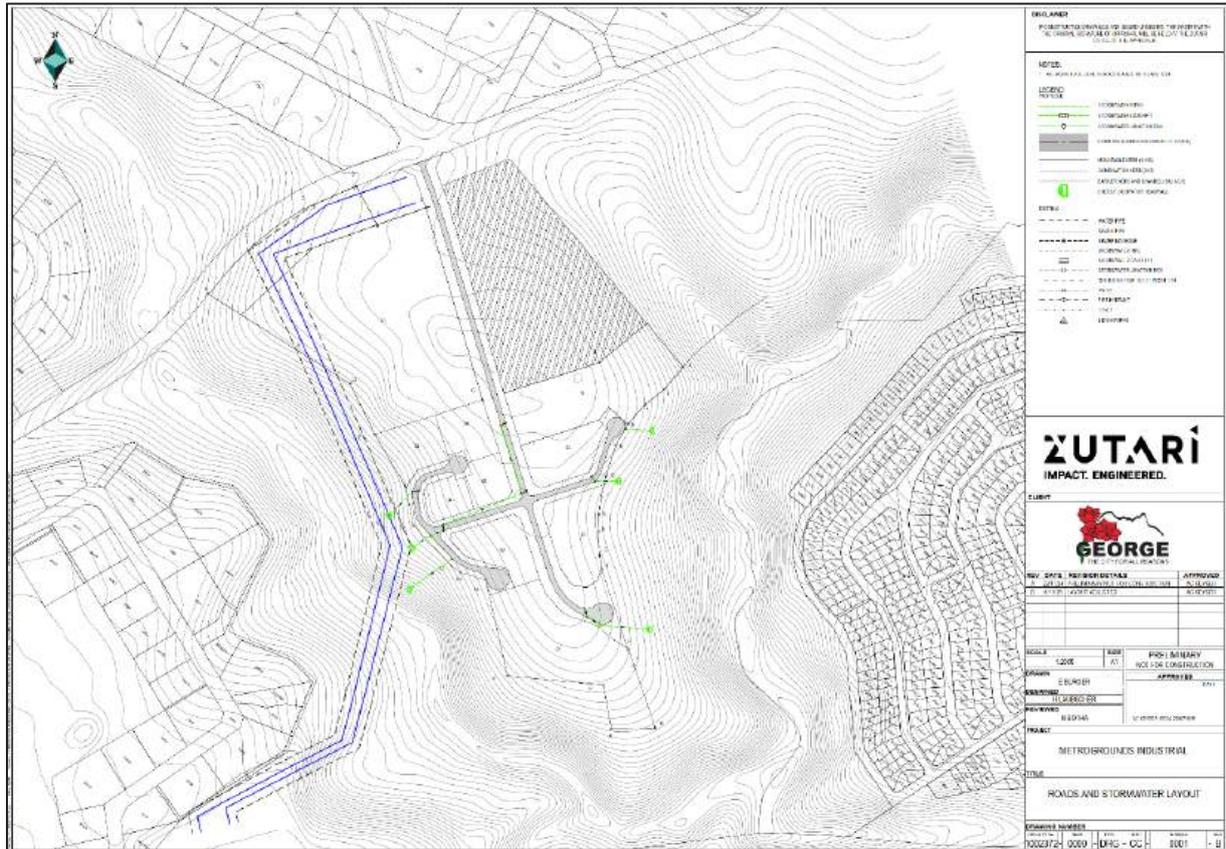


Figure 15: Proposed stormwater management at the site (green)

The watercourses are the current catchment source point of the proposed site of application. The internal stormwater will be designed in such a manner that it follows the natural topography of the site, and the outflow will be dispersed via energy dissipating outlets towards the drainage paths.

The stormwater surface run-off water will be managed through the following management techniques during construction.

- ▶ Temporary cut-off channels and berm;
- ▶ Routing of run-off towards the existing watercourse and current drainage routes;
- ▶ Erosion protection by means of gabions, Reno mattress, Geofabric and/or any combination thereof;
- ▶ Compliance with a site-specific Environmental Management Plan;
- ▶ Provison for dealing with water, in accordance with SABS 1200, will be stipulated in the Project Specification and Contract Document. Of specific importance will be the following clauses:
 - i. Clause 5.5 in SABS 1200 A;
 - ii. Clause 5.3 in SABS 1200 AA;
 - iii. Clause 5.1.3 in SABS 1200 D; and
 - iv. Clause 5.1.2 in SABS 1200 DB

The design approach to be adopted to the site of development are summaries below;

- ▶ Promotion of on-site infiltration
- ▶ Minimise concentration of stormwater
- ▶ Maintain pre-development run-off levels as far as possible
- ▶ Enforcement of management principles
- ▶ Identify major escape routes for major floods
- ▶ Responsible discharge of stormwater into downstream system; and
- ▶ Allowing for the necessary attenuation where possible.

The listed aspects will require further consideration during the detail design stage;

- ▶ Stormwater needs to be responsibly conveyed to the existing watercourse
- ▶ Stormwater collected along the watercourse needs to be able to reach the existing drainage infrastructure downstream.
- ▶ The site development plan needs to be adequately provide fore servitude to accommodate major flows;
- ▶ Maximisation of attenuation of the rainwater that most water can be caught.

The proposed site's stormwater will be managed in a responsible manner and be safely discharged into the surrounding drainage system, without any detrimental impacts to the environment or communities.

The application of the stormwater management plan will lead to minimum impact of stormwater from new development on receiving watercourses and prevention of further degradation of receiving waters by stormwater drainage from existing development, as well as in the long term the reversal of current undesirable stormwater impacts.

3.2.4 Engineering and Bulk services

An Engineering services investigations has been undertaken for the proposed development. The purpose of the investigations is to inform the application of the existing and proposed engineering services required for the proposed development as well as to address the engineering services capacity requirements.

From the information available, it appears that there is sufficient existing capacity within the infrastructure service to support the proposed development. Confirmation from the George Municipality's engineering services departments with the following have been requested, as part of due process:

- Confirmation whether the existing water and sanitation infrastructure and distribution networks will have sufficient capacity to accommodate the development.
- Confirmation on the type of fire hydrants and coupling type,
- Confirmation on the type of water meter to be allowed for,
- Confirmation on the surfacing of internal roads,
- Confirmation on the solid waste removal and land fill capacity.

Refer to the Services Report attached as **Annexure K** for more details

3.2.4.1 Water supply

Based on “The Neighbourhood Planning and Design Guide”, the proposed Metro Grounds mixed use development is classified as a Business/Commercial/Industrial type development with an expected peak demand of 8.66l/s being designed for.

According to the Water system Master Plan, dated June 2020, the existing reservoirs have enough capacity existing at the Water Treatment Plants to accommodate the proposed development without bulk supply upgrades. The available capacity will need to be verified with GLS to confirm this. A water reticulation system exists within close proximity to which the proposed development could connect. The proposed development should however have its own bulk water meter constructed to facilitate water consumption measurements.

The old and new water treatment works are currently operating under constraint; however, both treatment works are planned for capacity upgrades. Once the capacity upgrades are commissioned, the treatment works will have sufficient capacity to accommodate the proposed development. Even will only be released once capacity is available.

The demand for fire flow is to be addressed as part of the internal network design. This aspect will require assessments by the GLS in terms of the larger network capacity.

3.2.4.2 Sewage system

The proposed development is located within the existing Outeniqua Wastewater Treatment Works Main Outfall drainage area; therefore, affluent generated from the site will drain directly towards the existing infrastructure and join the Schaapkop Pumpstation.

According to the Sewer Master Plan for the Municipal area, sufficient capacity exists at the Sewage Treatment Plant within the existing system. Detailed consideration regarding expected discharge will be given once more information regarding the types of industries that will be operating within the development becomes available.

A wastewater reticulation system exists within, or adjacent, the boundaries of the proposed development. It is proposed that the development will drain to the Outeniqua Wastewater Treatment Works where it will be treated. Since the available information is slightly outdated, GLS will have to be requested to confirm that the Schaapkop Pumpstation and bulk pipelines have sufficient capacity.

3.2.4.3 Storm water

The site has a steep gradient, increasing towards natural drainage lines, however there is no existing stormwater infrastructure in place in close proximity to the proposed development. The upstream runoff and stormwater runoff from the development will have to be conveyed through an underground system and an overland flow system. Refer to Par. 3.2.4.

3.2.4.4 Solid waste

Refuse removal will be dealt with once a week as is applicable to the current residential and business/industrial areas within the George Municipal area. The volumes of solid waste generated by the proposed development will be calculated once more information becomes available.

The George Municipality Community services department will be required to confirm if the existing solid waste site will have capacity to accommodate the additional solid waste generated by the development.

3.2.4.5 Flood lines

The site of the proposed development is not directly affected by any flood lines. The civil engineering services department at the George Municipality, indicated that flood lines have been delineated for the Rand Street extension and are currently under review. The intension is that the impact of this development on the flood lines, if any, should be considered as part of the study.

3.2.5 Electrical Engineering Investigation

The electric supply Authority for the site of development is the George Municipality, and therefore their Electricity Department was consulted on matters related to the electrical services.

Based on the information currently available, the peak kVA demand of the proposed development has been estimated at 1875kVA, with an estimated capacity requirement of 1875kVA. It is in process of confirmation that this capacity is available at the identified point of connection. The proposed development is situated adjacent to the existing Tamsui 66/11kV Substation, and the firm transformer capacity at this substation is 20 000kVA. Based on the maximum demand readings taken by the Municipality at this substation the maximum load at present is approximately 15 000kVA, which indicates that some spare capacity will be available.

The identified point of connection for the development is at the existing 11kV busbars inside the Tamsui Substation Switch room. The proposed connection will include the supply and installation of two 11kV feeder circuit breakers inside the existing switching station building to supply to the development, and 185mm² Cu x 3 core 11kV underground ring cable from the abovementioned circuit breakers supplying the internal network. See detailed electrical services report attached as **Annexure L**.

3.2.6 Traffic Impact Assessment

A detailed Traffic Impact Assessment has been undertaken to examine and advise on the proposed internal road network for the Metro Grounds mixed use development. The assessment identifies any necessary road network improvements that might be needed. See detailed report attached as **Annexure M**.

Access

The site of application is located at the intersection of Ossie Urban Street and PW Botha Boulevard, this intersection will act as the main access point for the proposed development, see image below.



Figure 16: Access point intersection layout

The layout makes provision for two main intersections. The first situated at the current junction of PW Botha Boulevard and Ossie Urban Street, and the second, at the future intersection with the proposed Rand Street extension. Based on the intended function of the internal roads, they can be classified as indicated in Figure 16 below.

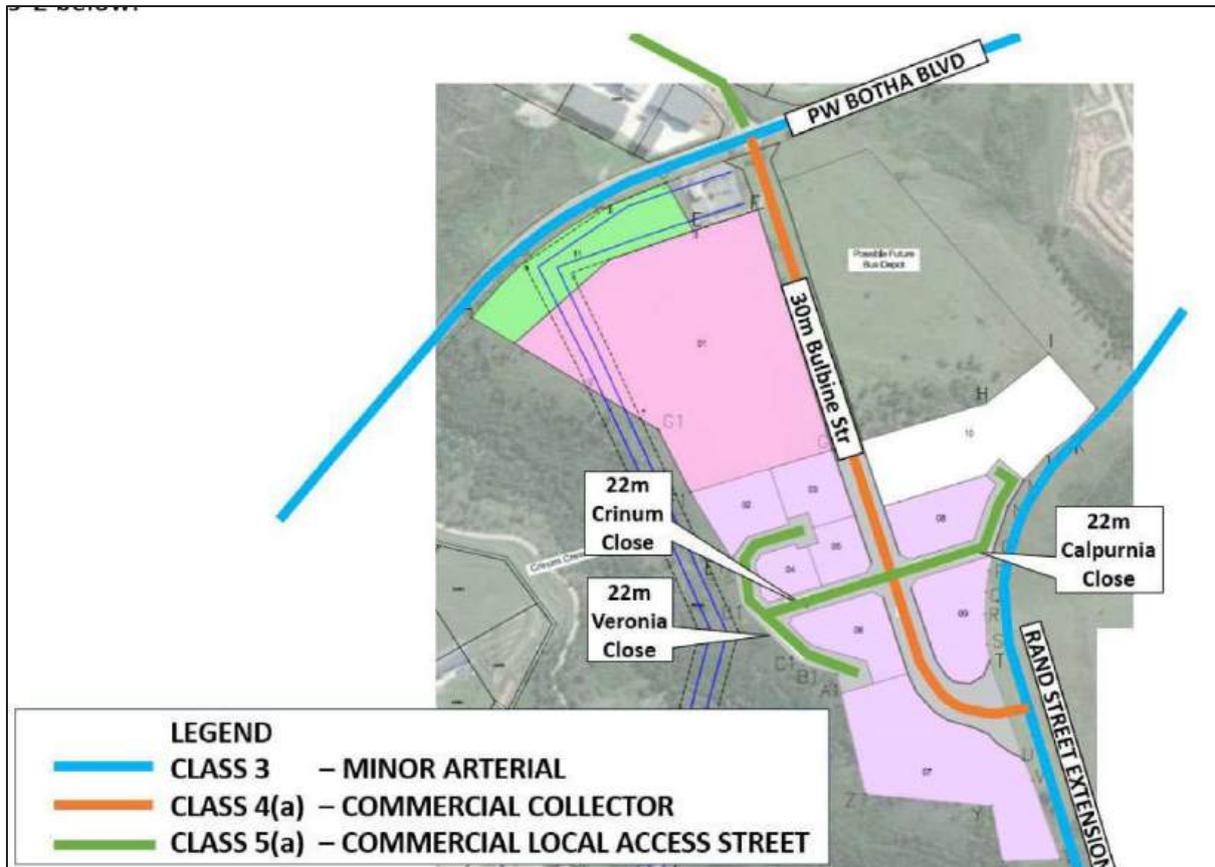


Figure 17: Proposed internal road classification

Intersection spacing

With regards to intersection spacing, the guidelines published in the WCG Road Access Guidelines 2020, have been applied. It is possible to provide the following:

1. Upgrade the existing PW Botha Boulevard/Ossie Urban Intersection into a signal controlled, full intersection.
2. Provide direct access into both the bus depot and education site via a signal controlled full intersection. This intersection must be situated 270m from the existing PW Botha Boulevard/Ossie Urban Intersection.
3. Unsignalised full Intersections on the two intersections with the minor (Class 5) roads.
4. Provide a signal-controlled intersection at the junction of Rand Road Extension and the future Metro Grounds Main Road.

This proposed layout has been indicated schematically in figure below.

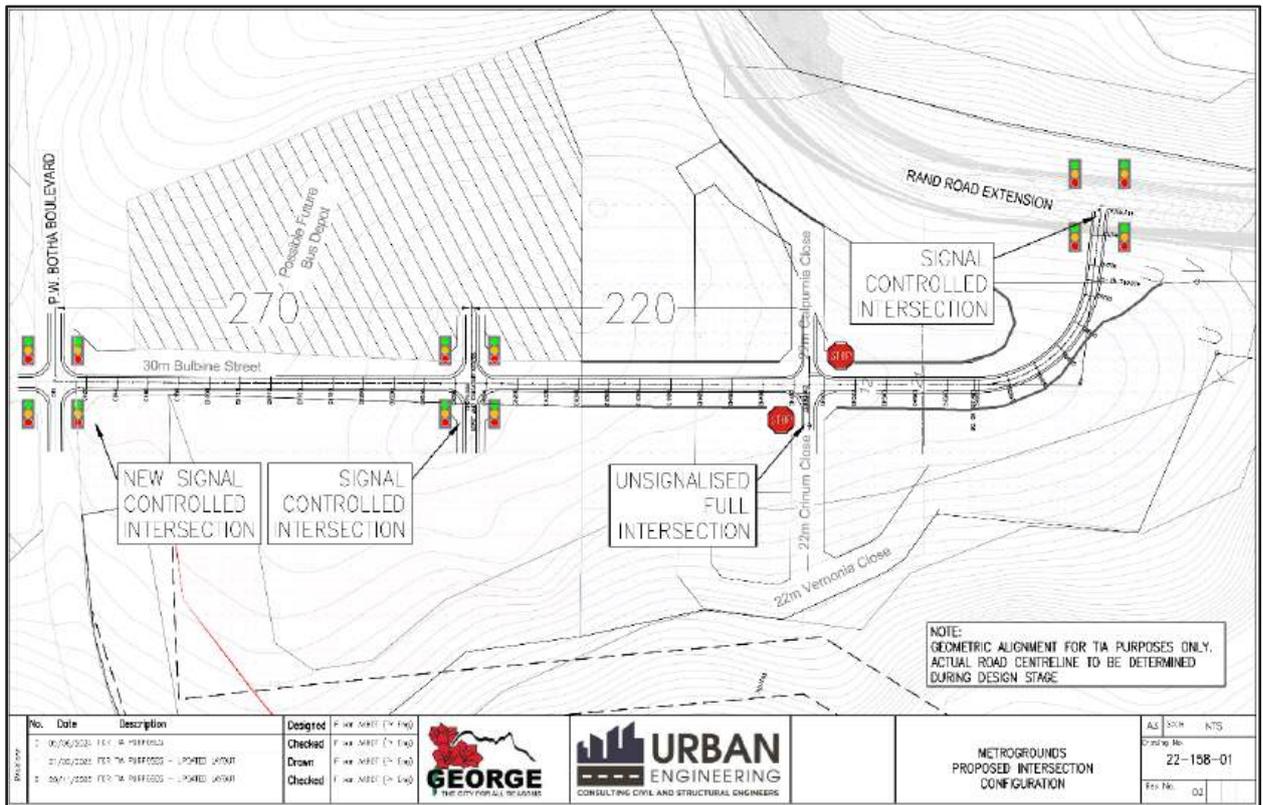


Figure 18: Proposed internal Road Intersection control

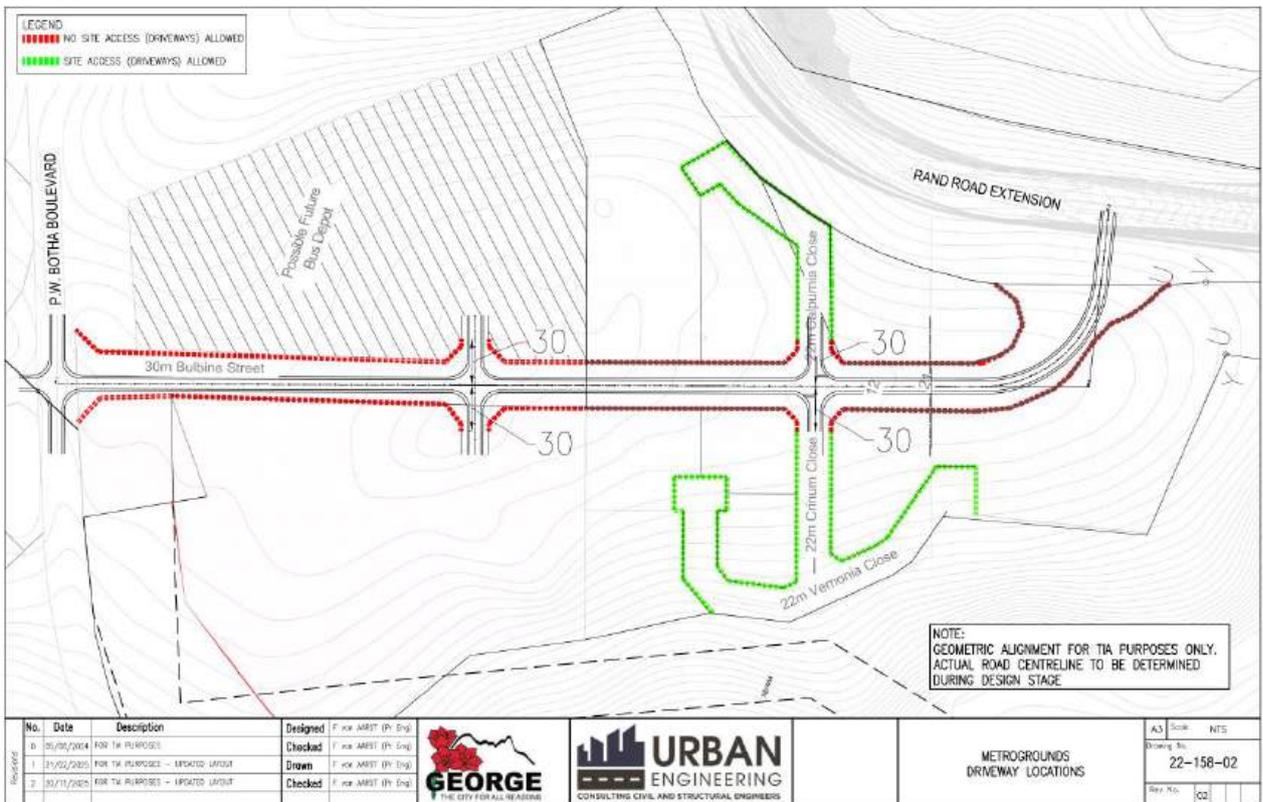


Figure 19: Proposed driveway locations

Since the proposed signal-controlled intersection at the junction of Rand Road Extension and the future Metro Grounds Main Road can only be implemented after both roads have been constructed, an interim solution is to provide a temporary turning circle at the end of Metro Grounds Main Road.

Parking

The George integrated zoning scheme By-law, 2023 should be used to determine the parking requirements for the various land uses. The current zoning scheme By-law does not make provision for on-street parking, parking should be provided on the property for which parking is required.

The following parking layout requirements apply unless otherwise stated in the George Municipal zoning scheme By-law, 2023.

- a) Parking layout configurations, minimum dimensions and ramps to a parking area must be in accordance with this zoning scheme or an approved site development plan;
- b) A standard 90-degree parking bay for a motor vehicle shall measure at least 2,5 metres in
- c) width and 5.0 metres in length with 7.5 metres manoeuvring space or otherwise determined by the Municipality;
- d) The layout of any parking area must ensure that vehicles can readily leave the site without reversing across the sidewalk, unless otherwise approved by the Municipality;
- e) A tandem bay accommodating two motor vehicles is regarded as one bay for the purposes of this zoning scheme, where a tandem bay is regarded as two bays;
- f) visitor parking bays must be clearly demarcated, readily visible and accessible to visitors, and preferably grouped together;
- g) Parking areas must be used for the parking of vehicles which are lawfully allowed on them, and any activity which causes an obstruction for vehicular traffic or pedestrian use of the sidewalk is prohibited;
- h) parking areas must be constructed and maintained in a state suitable for the parking and movement of vehicles;
- i) control of access to and reservation of parking bays and / or areas is not permitted unless written approval has been obtained from the Municipality; either through an approved site development plan or other written approval; and despite paragraphs (a) to (h), the Municipality may lay down more restrictive requirements related to parking, site access or motor vehicle carriageway crossing, if it considers this to be necessary from a pedestrian or traffic safety point of view.

Recommendations

Based on the findings of the TIA report, the following recommendations are made:

1. The intersection of PW Botha Blvd/Rand Street should remain a signalised intersection.
2. The junction of PW Botha Blvd & Ossie Urban Str should be upgraded to a signalised intersection.
3. Intersection controls for internal roads must comply to Drawing 22-158-01
4. As indicated in Drawing 22-158-02 no driveway access should be allowed from Bulbine Street onto any neighbouring property.
5. Provision should be made for UA compliant sidewalks next to all new roads. These sidewalks must include a landscaped (grassed) furniture zone between the road edge and the sidewalk.
6. Since the proposed Metro Grounds Development includes an educational facility, provision should be made for new UA compliant pedestrian sidewalks next to PW Botha Boulevard, all the way from York Street to Nelson Mandela Boulevard. These sidewalks must include a landscaped (grassed) furniture zone between the road edge and the sidewalk.
7. Provision should be made for street lighting next to all new internal Metro Grounds roads.

8. Cross sections of all new Metro Ground internal roads must make provision for clearly defined (Class 1 preferred but Class 3 as a minimum) bicycle routes/lanes. Road layouts must also include safe bicycle crossing areas at all intersections.
9. Geometric design of Metro Grounds internal roads must comply to the various guidelines and standards with regards to horizontal and vertical alignments.

4 APPLICATION PARTICULARS

The previous sections of this report provided an overview of the site context and the various components of the site analysis undertaken to date, as well as an outline of the proposed development. Furthermore, previous sections of this report detailed the results of the various technical studies undertaken in support of the proposed development and the shaping elements considered during the layout design of the proposed development. However, in order to clarify the exact details of the application, this section will reiterate specifically what is being applied for in this application to secure the development rights for the proposed Metro Grounds Mixed Use Development.

This land use planning application is submitted to apply for the **subdivision** of the Remainder of Erf 464 George to create the site planned for development and then to apply for the **rezoning** of the site to a subdivisional area and then for the **re-subdivision** of the site according to the subdivisional layout plan.

The application is submitted in terms of Section 15(2)(a) of the George Municipality Land Use Planning By-laws, 2023, for the following:

- a) **Subdivision**, in terms of section 15(2)(d) of the George Municipality Land Use Planning By-laws of the Remainder of ERF 464 George, to create Portion A and the Remainder. Portion A is depicted by figure A,B,C,D,E,F,G,H,I,J,K,L,M,N,O,P,Q,R,S,T,U,V,W,X,Y,Z,A1,B1,C1,D1,E1,F1,G1 as illustrated on the attached subdivision plan and measures ± 16.54 hectares in extent.
- b) **Rezoning**, in terms of Section 15(2)(a) of the George Municipality Land Use Planning By-laws, 2023 of Portion A of the Remainder of ERF 464 George, from “Undetermined Zone” to a “Subdivisional Area Zone” in order to allow for the proposed land uses including 8 Industrial Zone I properties, 1 Community Zone I property, 1 Transport Zone I property, 1 Open Space Zone II property and 1 Transport Zone II property, see subdivisional layout plan (Annexure F) attached for more detail.
- c) **Subdivision**, in terms of section 15(2)(d) of the George Municipality Land Use Planning By-laws of the Subdivisional Area into 12 portions consisting of the following:
 - 8 Industrial Zone II properties
 - 1 Community Zone I property
 - 1 Transport Zone I property
 - 1 Open Space Zone II property
 - 1 Transport Zone II propertyin accordance with the attached subdivision plan (Annexure F) in order to give effect to the proposed land uses as illustrated in the subdivisional layout plan.

4.1 Proposed Subdivision

An application is submitted in terms of section 15(2)(d) of the George Municipality Land Use Planning By-laws for the subdivision of the Remainder of ERF 464 George, to create Portion A and the Remainder. Portion A is depicted by figure

A,B,C,D,E,F,G,H,I,J,K,L,M,N,O,P,Q,R,S,T,U,V,W,X,Y,Z,A1,B1,C1,D1,E1,F1,G1 as illustrated on the attached subdivision plan and measures 16.54 hectares in extent.

4.2 Proposed Rezoning

An application is submitted in terms of Section 15(2)(a) of the George Municipality Land Use Planning By-laws, 2023 for the rezoning of Portion A of the Remainder of ERF 464 George, from “Undetermined Zone” to a “Subdivisional Area Zone” in order to allow for the proposed land uses including 8 Industrial Zone I properties, 1 Community Zone I property, 1 Transport Zone I property, 1 Open Space Zone II property and 1 Transport Zone II property, see subdivisional layout plan (Annexure F) attached for more detail.

4.3 Proposed Subdivision (re-subdivision)

An application is submitted in terms of section 15(2)(d) of the George Municipality Land Use Planning By-laws of the Subdivisional Area into 12 portions consisting of the following:

- 8 Industrial Zone II properties
- 1 Community Zone I property
- 1 Transport Zone I property
- 1 Open Space Zone II property
- 1 Transport Zone II property

in accordance with the attached subdivision plan (Annexure F) in order to give effect to the proposed land uses as illustrated in the subdivisional layout plan.

4.4 Proposed Land uses

The main objective is to obtain town planning (Land Use Planning Rights) and development rights for the proposed development. The proposed development of the portion of the Remainder of Erf 464 George, will consist of the following projected land uses:

NOTATION	ERF TYPE	ZONING (STB. SCHEME)	Erf NUMBER	AREA ha	% of AREA
	Education Facility	Community Zone I	01	5.34ha	30%
	Industry	Industrial Zone II	02 - 09	5.56ha	43%
	Transport	Transport Zone I	10	1.76ha	43%
	Open Space	Open Space Zone II	11	1.3ha	7%
	Public Street	Transport Zone II	12	2.58ha	20%
	Total Area			16.54ha	100%

The proposed layout plan to subdivide the Metro grounds development area into the mentioned land uses is shown on the subdivisional layout plan attached as Annexure F.

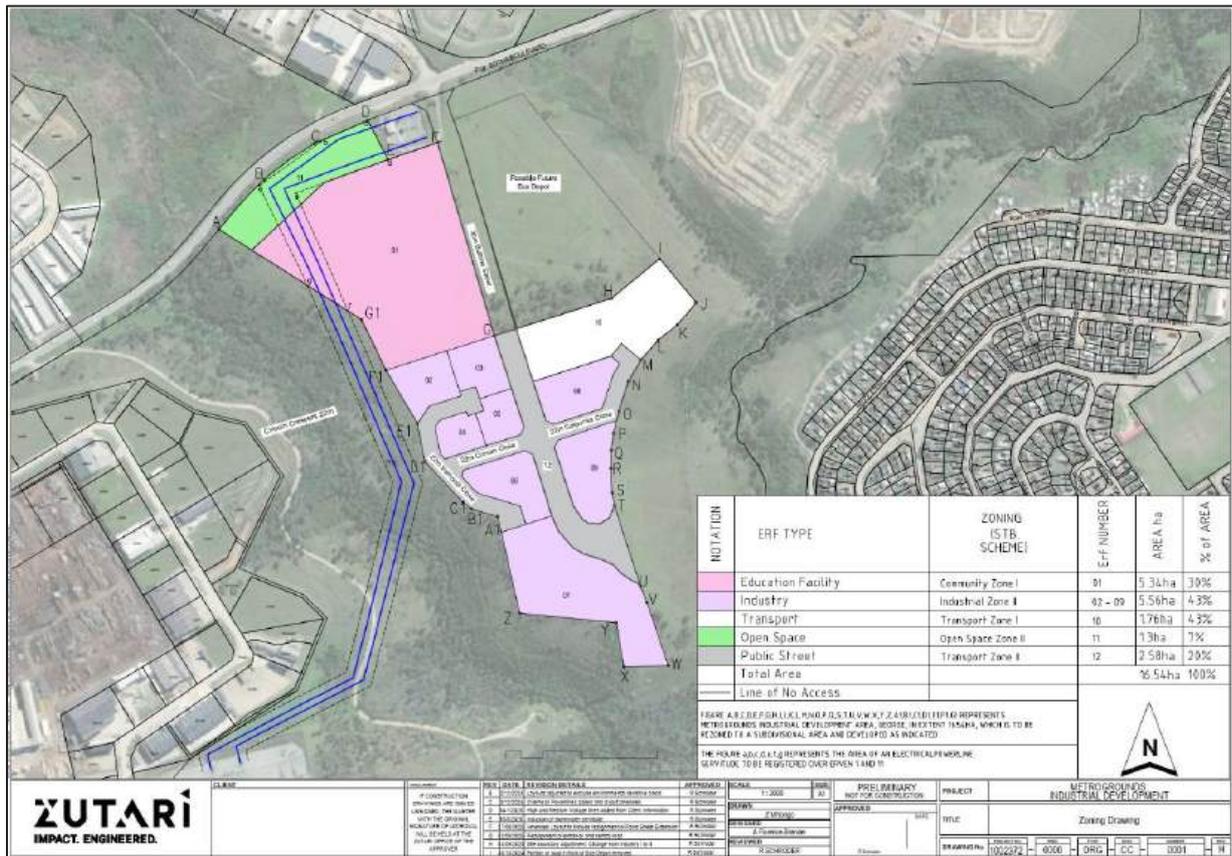


Figure 20: Proposed land uses and areas

Industry Land use description (as per George Integrated Zoning Scheme By-Law, 2023):

“industry” means a property used as a factory and in which an article or part of such article is made, manufactured, produced, built, assembled, compiled, printed, ornamented, processed, treated, adapted, repaired, renovated, rebuilt, altered, painted (including spray painting), polished, finished, cleaned, dyed, washed, broken up, disassembled, sorted, packed, chilled, frozen or stored in cold storage; including offices, caretaker’s quarters, factory shop or other uses which are subservient and ancillary to the use of the property as a factory; and—

(a) includes—

- (i) animal care centre;
- (ii) an industrial hive;
- (iii) builder’s yard;
- (iv) data centre;
- (v) funeral parlour;
- (vi) motor vehicle dealership;
- (vii) service station;
- (viii) transport usage;
- (ix) self-storage facility;
- (x) rooftop base telecommunication station;

- (xi) freestanding base telecommunication station;
 - (xii) warehouse and agricultural industry;
 - (xiii) recycling centre; and
 - (xiv) renewable energy structure;
- (b) does not include a noxious trade, scrap yard or risk activity

The Community Zone I Erf earmarked for a tertiary educational facility has the following land use description accommodated within the zoning applied for:

Place of instruction Land Use Description:

“place of instruction” means—

- (a) a place for education or training at pre-school, school or post-school levels, including—
 - (i) crèche;
 - (ii) nursery school;
 - (iii) primary school;
 - (iv) secondary school;
 - (v) college;
 - (vi) university; or
 - (vii) research institute; and
 - (viii) place of instruction in physical exercise and sport where the main objective is instruction rather than participation of the public as competitors or spectators;
- (ix) and the following ancillary uses—
 - (aa) a boarding hostel;
 - (bb) administrative offices;
 - (cc) cafeteria;
 - (dd) convenience shop limited to total floor space of 100m²
 - (ee) laboratories;
 - (ff) occasional use for religious gatherings, craft markets and events;
 - (gg) place of assembly;
 - (hh) place of worship;
 - (ii) private road;
 - (jj) private open space;
 - (kk) sports and recreation centre; and

(II) staff accommodation.

(b) a civic facility for the promotion of knowledge to the community, including-

(aa) a public library;

(bb) public art gallery; and

(cc) museum;

(c) but does not include a reformatory or a conference facility.

In the proposed development the use of the educational site will be limited to a secondary/tertiary facility, and such requirement will be included in the zoning approval conditions. An Africa Skills Artisan Development facility is situated approximately 1km west of the site. The site, located within an industrial context, is not considered suitable for primary school purposes.

The Transport Zone I erf (proposed erf 10) on the layout plan will be consolidated with the bus depot site and be implemented as part of the bus depot development.

4.5 Applicable zoning parameters

The following table provides the proposed development parameters associated with the proposed zonings for the various land uses included in the proposed development. These are standard as per the George Integrated Zoning Scheme By-Law, 2023:

Table 14 Development/Zoning parameters

Zoning	Industrial Zone II
Development parameters (Industry)	
Coverage	Coverage may not exceed 75%
Floor factor	The floor factor may not exceed 1,5
Height	The highest point of a building may not exceed 15 meters to the top of the roof.
Building lines	The street boundary building line is 0 metres, with a street centreline setback of at least 8 metres. Side and rear boundary building lines are 0 metres, provided that the Municipality may lay down side and rear building lines of up to 3 metres in the interest of public health and/or safety.
Parking and access	Parking and access must be provided in accordance with the by-law

Zoning	Community Zone I (Education Facility)
Development parameters (Place of Instruction)	
Coverage	Coverage may not exceed 60%
Floor factor	The floor factor may not exceed 1.2.
Height	The highest point of a building to the top of the roof may not exceed 12 metres, provided that there is no height limit for a bell tower, steeple, minaret or similar architectural feature designed to accentuate the significance of a building.
Building lines	The street building line is at least 5 metres. Side and rear building lines are at least 5 metres.
Parking and access	Parking and access must be provided in accordance with the by-law

Zoning	Transport Zone I (Transport Use – erf to be consolidated with Bus Depot)
Development parameters (Business Premises)	
Coverage	The maximum coverage for all buildings on a land unit is 100%
Floor factor	The maximum floor factor on the land unit is 3.
Height	The highest point of a building may not exceed 15 metres to the top of the roof.
Building lines	The street building line is 0 metres. Side and rear building lines are 0 metres up to a height of 8.5 metres and 4.5 metres for the remainder of the building provided that the Municipality may lay down more restrictive common building lines in the interest of public health and safety or in order to enforce any other law or right.
Parking and access	Parking and access must be provided in accordance with the by-law

4.6 Proposed phasing implementation phasing

It is envisioned that the development implementation (construction) will be executed in three main phases. The first Phase will entail developing the Bus depot site and associated access. The second phase will be the development of the education facility. The remainder of the development which includes the industrial uses can then be developed as a third phase:

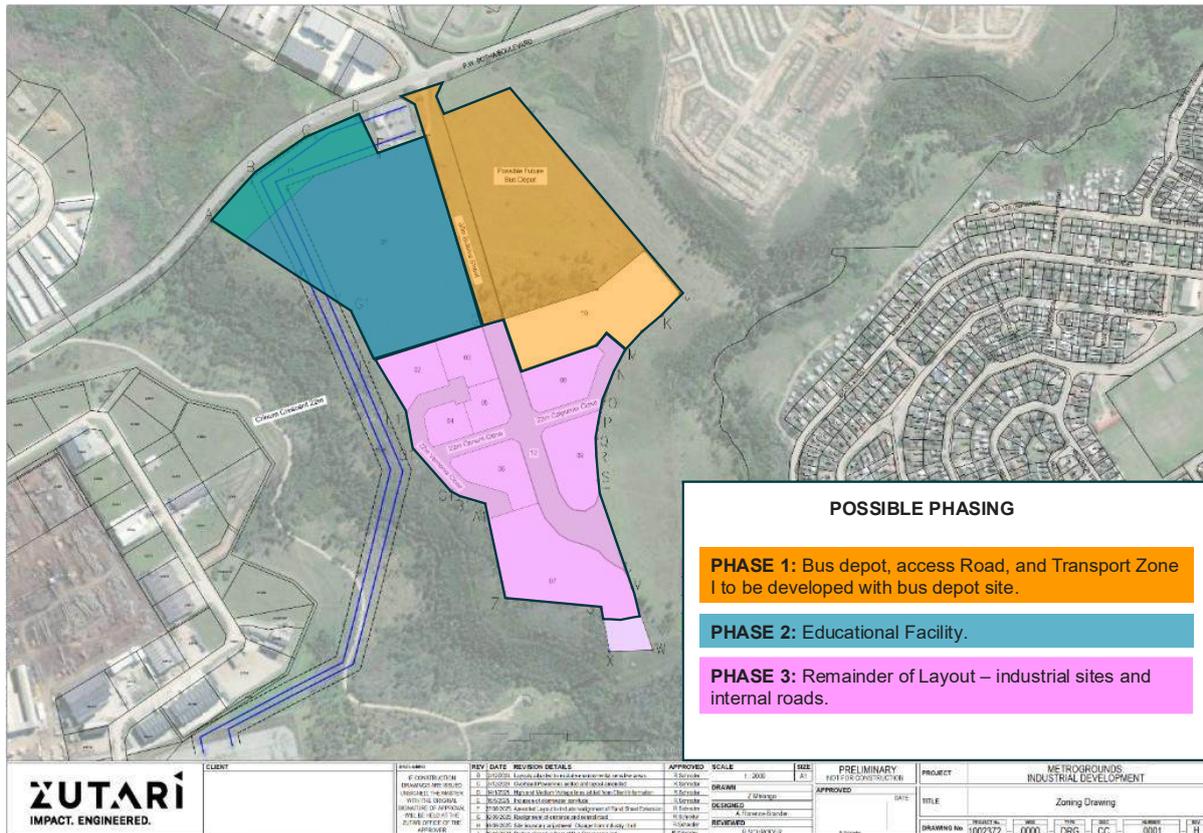


Figure 21: Metro Grounds Mixed Use Development Phases

4.7 Proposed Servitudes to be registered

The proposed layout plan to subdivide the Metro grounds development area into the mentioned land uses attached as Annexure F, includes a number of servitudes to be registered as further described below.

SERVITUDE AFFECTING ERVEN 1 & 11

There are existing 66Kv powerlines traversing Erf 1 and Erf 11. A 22 metre wide servitude (11 metre on either side of the centre line of the powerline) is to be registered along the powerlines in favour of Eskom. The total area affected by the servitude affecting Erf 1 and Erf 11 is depicted by figure a,b,c,d,e,f,g:

THE FIGURE a,b,c,d,e,f,g REPRESENTS THE AREA OF AN ELECTRICAL POWERLINE SERVITUDE TO BE REGISTERED OVER ERVEN 1 AND 11

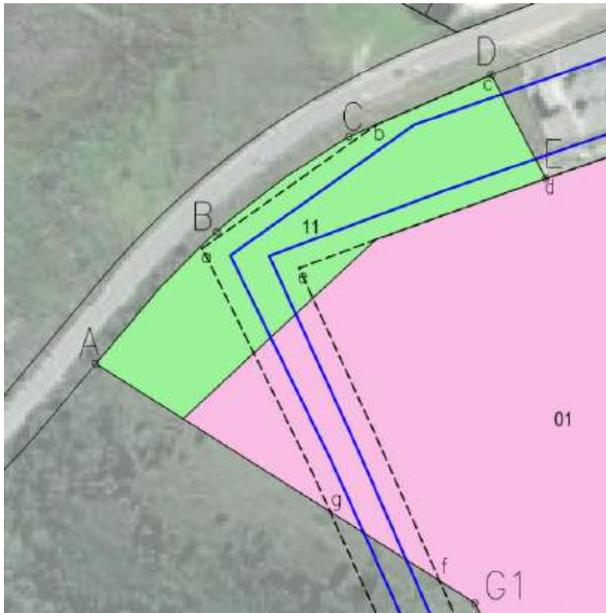


Figure 22 - Area of powerline servitude to be registered along 66kv powerlines

5 MOTIVATION

5.1 Land Development Principles

The proposal is consistent with existing Policy and Planning Frameworks and adheres to the principles of the Spatial Planning and Land Use Management Act (Act No 16 of 2013) (SPLUMA). This application complies with the following General Principles for development as stated in Chapter 2 of the Spatial Planning and Land Use Management Act, 2013 (Act No 16 of 2013):

- ▶ Section 7 (b): The principle of spatial sustainability, whereby spatial planning and land use management systems must:
 - (vi) promote land development in locations that are sustainable and limit urban sprawl; and
 - (vii) result in communities that are viable;
- ▶ Section 7 (c): The principle of efficiency whereby:

- land development optimises the use of existing resources and infrastructure.

The proposal also sets out to meet the land development principles referred to in Section 42 of the Spatial Planning and Land Use Management Act (Act 16 of 2013) (SPLUMA) and Chapter VI of the Western Cape Land Use Planning Act (Act 3 of 2014) (LUPA):

- ▶ Spatial justice
- ▶ Spatial sustainability
- ▶ Efficiency
- ▶ Spatial resilience
- ▶ Good administration

5.1.1 Spatial Justice

The principle of spatial justice relates to redressing the past development imbalances to improve access to, and use, of land. The goal of the proposed Metro Grounds mixed use development is to improve the use of land by providing access to educational facilities and employment opportunities within close proximity to existing communities and new communities under development within the industrial area. The provision of educational facilities and employment opportunities is intended to service people of different economic statuses to bring about community and social cohesion.

5.1.2 Spatial Sustainability

The principle of spatial sustainability relates to land use management systems that promote land development that is within the fiscal, institutional and administrative means of South Africa, must protect prime and unique agricultural land, and must comply with environmental laws and limit urban sprawl. The land identified for the proposed development is ideally located within the urban edge of the municipality and has been identified by the MSDF as development that that will facilitate economic development that is inclusive and foster economic growth. This contributes to both spatial sustainability and spatial resilience.

5.1.3 Efficiency

The principle of efficiency relates to the optimal use of existing resources and infrastructure. The development of the study area will capitalise on the existing infrastructure. The development will also yield the least impact on the environmental resources of the area, and the layout of the Metro Grounds mixed use development has been designed to avoid and protect environmental sensitive areas as far as possible, and open areas from being invaded and degraded.

5.1.4 Spatial Resilience

The principle of spatial resilience relates to the flexibility of spatial policies and land use management systems. The design of the Metro Grounds mixed use development is to allow for street blocks to be divided in different ways to accommodate varying approaches to land use, building typology and density. This flexible block approach creates room to accommodate changing needs over time.

5.1.5 Good Administration

The principle of good governance relates to all spheres of government ensuring an integrated approach to land use and land development. The proposed development supports the principle of good administration as it is aligned to the overall strategic spatial development of the municipal area.

5.2 Need for Industrial land

Various National, Provincial and District Frameworks and Policies support industrial development, including reference to the National Industrial Policy Action Plan, the New Growth Path (Job Drivers), the Provincial One Cape 2040 Vision and the Growth for Jobs Strategy, the Garden Route Growth and Development Strategy, the Joint District and Metro Approach.

The George Integrated Development Plan 2022-2027 and the George Municipal Spatial Development Framework (2023) (MSDF) notes that a significant uptake in industrial land has been detected in the period 2019 to 2023, which points to demand for land for such use. And that well-located (close to the workforce, accessible, within fabric context) areas available for the expansion of industrial use is limited.

The adopted MSDF refer specifically to the Metro Grounds Industrial area as being an infill development to support economic opportunity, in line with the IDP Strategic Objective to Develop and Grow George.

The need to provide industrial land is noted in the George Integrated Economic Growth Strategy, 2025 (GIEGS) and in the Integrated Development Plan, 2024. The GIEGS refer to supply-side measures involving actions by the municipality to enable economic growth by enhancing infrastructure, amongst other factors. Specific note is made of ensuring “a sustainable supply of well-positioned commercial and industrial land to develop a quality-built environment...” Although the role of developing industrial land should be a private, market-related function, the Municipality aims to facilitate such use, given the catalytic impact of industrial development and the lack of private initiative in land preparation. The release of land should attract investment and support for business growth and/or create economic opportunity.

The GIEGS highlights a very strong growth potential in the Manufacturing Sector. This outlook is supported in the Municipal Economic Review and Outlook (GRD) 2024-25 (WC DEA&DP) (MERO) stating, “at a sectoral level, the Western Cape economy is diversified, with significant contributions from manufacturing and growth-enhancing services” ...” the (George) municipal area has witnessed significant growth in sectors such as ... small-scale manufacturing, reflecting the region’s ability to adapt to changing economic conditions”.

The job-creation impact of industrial/manufacturing sector is also noted in the MERO: “

Despite the overall growth in employment, the economic recovery has faced challenges. In 2020, the downturn caused by the pandemic led to a reduction in GDP and slower economic growth in the subsequent years. Yet, certain sectors, such as finance, business services, wholesale and retail trade, and manufacturing, have been key drivers of employment growth in the years since”.

Also refer to Par. 5.5.

5.3 Need for an Educational facility

Various National, Provincial and District Frameworks and Policies support skills development, including reference in the National Development Plan (2030), the Medium-Term Strategic Framework 2019 – 2024 (MTSF), the Industrial Policy Action Plan, Provincial Growth for Jobs Strategy the Garden Route Growth and Development Strategy, the Joint District and Metro Approach, the Skills Mecca Initiative.

With respect to skills development the George Integrated Development Plan (IDP 2022-2027 (2nd Review) emphasizes the importance to facilitate the implementation of Education and Infrastructure Facilities, stating that “education and skills development play a vital role in shaping the future socioeconomic landscape of the municipal area. They empower the population and significantly impact the local economy’s development and its human resource capacity”.

The GIEGS notes that access to a well-educated, skilled and trained workforce in George to meet the technical and managerial needs of businesses is challenging. “The region struggles to provide a sufficient number of skilled professionals, which hampers the ability of companies to find qualified employees locally”. A specific focus of the GIEGS is to support education and skills development by facilitating investment in education and vocational training programmes to enhance the skills of the local workforce. Partnerships with local schools, colleges, and universities to align educational programmes with the needs of the local economy, ensuring graduates acquire the skills required by employers is proposed. The project aims to make land available for lease or sale to facilitate a skills development facility.

Also refer to Par. 5.5.

5.4 Desirability

In Chapter 5, Section 65 of the Land Use Planning By-Law for George Municipality, 2023, the desirability of the proposed utilisation of land and any guidelines issued by the Provincial Minister regarding the desirability of proposed land uses must be considered when the municipality considers an application. Assessment criteria include aspects such as socio-economic impact; compatibility with surrounding uses; impact on engineering services; impact on safety, health and wellbeing of the surrounding community; impact on heritage; impact on the biophysical environment; traffic impacts, parking, access and other transport related considerations; and whether the imposition of conditions can mitigate an adverse impact of the proposed use or development of land.

These criteria are motivated below.

5.4.1 Socio-economic impact

In the development proposed layout plan it is shown that a variety of land uses are planned for on the site with the proposal focussing on industrial and educational development that would result in much needed economic opportunities and access to educational facilities.

The proposed development embraces economic opportunities by creating an environment that is conducive to and encourages economic growth.

The socio-economic impact assessment conducted as part of the environmental authorisation process concludes that the proposed project will have several potential socioeconomic impacts, both positive and negative. According to the report, there are no major concerns or issues from a socioeconomic standpoint that would hinder the development of the Proposed Project. The net positive impacts associated with the construction of the Proposed Project are expected to outweigh the net negative effects. The Project is also envisaged to have a positive stimulus on the local economy and employment creation, leading to the economy’s diversification and a small reduction in the unemployment rate.

The Proposed Project should therefore be considered for development subject to the application of the proposed mitigation measures to minimise any potential negative impacts.

5.4.2 Compatibility with surrounding development

The proposed development is in line with the existing land uses within the George industrial area, the Metro Grounds mixed use development will compliment and add value to the area by providing

additional opportunities for economic growth. The community will as a result realize an increased sense of security and human well-being, and the development will also contribute to the character of the area.

The proposed industrial use, albeit light industry, is buffered from residential use (Metro Grounds Residential subsidy housing project and Borchers) by “green lungs” and the anticipated use of the educational erf is similar to the Africa Skills Facility along PW Botha Boulevard.

5.4.3 Traffic, parking and access impacts

A Traffic Impact Assessment (TIA) and detailed traffic modelling were conducted and formed an integral part of the layout planning and design of the proposed development. The studies conducted evaluated the proposed internal road network, highlighting planning aspects to ensure functionality, connectivity and access. The studies concluded that the proposed development is feasible with a number of access management interventions that will be required. Refer to section 5.4.6 of this report for more information in this regard.

5.4.4 Impact on engineering services

The proposed Metro Grounds mixed use development aims to achieve a feasible inclusionary development approach that provides for the integration of:

- ▶ Quality sustainable infrastructure according to municipal standards;
- ▶ Quality built environment;
- ▶ Economic opportunities;
- ▶ Provision of educational facilities;
- ▶ Delivered in one seamless development process.

The civil and electrical engineering investigations details the planned infrastructure associated with the proposed development. The proposed development is within the urban edge and will connect to existing infrastructure in the vicinity of the site. The impact on engineering services is therefore minimal. The designs of all infrastructure will be approved by the municipality prior to construction and will be certified by professional engineers after construction.

Based on the information provided in the preceding sub-sections, the desirability of the proposed Metro Grounds mixed use development is clearly demonstrated.

5.5 Strategic National, Provincial and Local Planning Frameworks and Policies

Further to the need for industrial- and educational facilities expressed in guiding policies and frameworks, noted in Par. 5.3, the following strategic context is applicable:

5.5.1 National Policy Context

5.5.1.1 The National Development Plan 2030

The National Development Plan (NDP) 2030 was developed by the National Planning Commission (NPC) in the office of the President in 2012. The objectives stated within the NDP include the need for

a strong and efficient planning system, integrated across the various spheres of government. The NDP sets out an integrated strategy for accelerating growth, eliminating poverty and reducing inequality, by 2030. It further provides a new focus for planning authorities to embrace several other policies of the government, developed since 1994. Accordingly, the NDP places spatial transformation as the key challenge and objective within South Africa and is seen as the foundation, and enabler, of economic growth and development.

Chapter 8 of the NDP 2030 deals with “Transforming Human Settlements”, where specific provision is made for spatial planning, and which includes issues of importance for the review of a Spatial Development Framework (SDF). The NDP states that “planning in South Africa will be guided by normative principles to create spaces that are liveable, equitable, sustainable, resilient and efficient, and support economic opportunities and social cohesion”. These principles for spatial development are premised on spatial justice, spatial sustainability, spatial resilience, spatial quality and spatial efficiency. These principles are regulated in Chapter 2 of the Spatial Planning and Land Use Management Act (SPLUMA): Development Principles Sections 7(a), (b), (c), (d) and (e).

Furthermore, the NDP proposes that: “These principles need to be incorporated into operational principles that provide guidance on”:

- ▶ Integrating rural and urban areas;
- ▶ Accommodating social diversity within the built environment;
- ▶ Creating more dense settlements without raising the cost of land and housing for the poor;
- ▶ Integrating transportation systems and land use;
- ▶ Broadening the economic base of towns and cities through the supply of reliable infrastructure, suitable land and property, connectivity, skills and logistics;
- ▶ Building community involvement and partnerships;
- ▶ Supporting the development of vibrant, diverse, safe, green and valued places; and
- ▶ Ensuring that governance arrangements and leadership deliver equitable and efficient decision-making.”

The spatial interventions, concepts and principles underpinning the proposed Metro Grounds mixed use development is therefore aligned with the NDP objectives to broaden the economic base of the town of George through the supply of suitable property that compliments existing land uses.

5.5.1.2 Spatial Planning and Land Use Management Act

The Spatial Planning and Land Use Management Act (2013) (SPLUMA) is a law assented to by the President of the Republic of South Africa on 5 August 2013. SPLUMA replaced the Development Facilitation Act (DFA) and the Land Use Planning Ordinance, 15 of 1986 (LUPO), and came into effect on 1 July 2015. SPLUMA is a framework act for all spatial planning and land use management legislation in South Africa. It seeks to promote consistency and uniformity in spatial planning and management related procedures and decision-making. Other objectives include addressing historical spatial imbalances and integrating the principles of sustainable development into land use and planning regulatory tools and legislative instruments. SPLUMA requires national, provincial and municipal

spheres of government to prepare SDFs that establish a clear vision that must be developed through a thorough inventory analysis based on national spatial principles and local long-term development goals and plans. SPLUMA was developed to legislate a single and integrated planning system for South Africa. Furthermore, SPLUMA provides a framework for spatial planning and land use management and, as such, it can be used as a tool to aid the spatial transformation of our rural and urban areas.

As it pertains to urban planning, SPLUMA provides for two pillars of planning, namely spatial forward planning and land use management, or land development administration. SPLUMA provides general development principles in Chapter 2, subsection 7(a)-(e) of the Act, that applies to spatial planning and land use management, including:

- ▶ **Spatial justice:** Past spatial, and other, development imbalances must be redressed through improved access to, and use of, land.
- ▶ **Spatial sustainability:** Spatial planning and land-use management systems must promote land development that is within the fiscal, institutional and administrative means of South Africa, protect prime and unique agricultural land, comply with environmental laws and limit urban sprawl.
- ▶ **Efficiency:** Land development should optimise the use of existing resources and infrastructure, and decision-making procedures must be designed to minimise negative financial, social, economic or environmental impact.
- ▶ **Spatial resilience:** Flexibility in spatial plans, policies and land-use management systems are accommodated to ensure sustainable livelihoods in communities that are most likely to suffer the impacts of economic and environmental shocks.
- ▶ **Good administration:** All spheres of government are to ensure an integrated approach to land-use and land development, that is guided by spatial planning and land-use management systems. All governmental departments are to provide sector inputs, comply with any other requirements and follow a transparent public process.



Figure 23: SLUMA principles

Sustainable principles, regulations and practices have been incorporated into the proposed development. The spatial interventions conform to these normative principles to ensure sustainable development and the promotion of natural, human, social and physical capital within the immediate area.

5.5.1.3 National Environmental Management Act

The National Environmental Management Act (Act.107 of 1998) (NEMA) provides for cooperative environmental governance by establishing principles for decision-making on matters affecting the environment. It also provides for certain aspects of administration and environmental management law enforcement to be undertaken by institutions that can promote cooperative governance and procedures for co-ordinating environmental functions exercised by organs of government.

NEMA is crucial in matters of environmental sustainability, resilience to climate change and the sustainable use of natural resources, as these are key to the current and future socio-economic well-being of residents within a municipal area. To this end, it is crucial that NEMA principles, in conjunction with the development principles set out in SPLUMA, are applied. Both NEMA and SPLUMA provide for an integrated and coordinated approach towards managing land use and development processes. This approach is based on co-operative governance and foresees the utilisation of spatial planning and environmental management instruments, such as SDFs and EMFs, to align the requirements of allowing development, while ensuring that biodiversity, as well as other sensitive natural elements, are protected.

By promoting development within the urban edge, NEMA principles are considered and a spatial strategy that is environmentally sustainable, and which creates a balance between development and the protection of natural resources are presented. The proposed layout for the Metro Grounds mixed use development has been designed to strategically protect environmentally sensitive natural elements as far as possible, this keeps in line with the NEMA principles.

5.5.1.4 Integrated Urban Development Framework

The Integrated Urban Development Framework (IUDF) is the government's policy position, coordinated by the Department of Co-operative Governance and Traditional Affairs (COGTA), to guide the future growth and management of urban areas. The IUDF responds to the post-2015 Sustainable Development Goals (SDGs), particularly Goal 11, which focuses on making cities and human settlements inclusive, safe, resilient and sustainable.

An important outcome of the IUDF is that of spatial transformation. The policy levers that have been identified are crucial for maximising the potential of urban areas, by integrating and aligning investments in a way that improves the urban form. The IUDF adopted a Transport-Oriented Development (TOD) approach to urban design, where all development policies promote higher-density urban development along mass transit corridors. This approach should promote investment in human settlements and other key economic infrastructure, further enabling mobility and accessibility to social and economic opportunities.

To reach its vision, the IUDF identifies four strategic goals (defined below) which will aid in achieving the transformative vision of restructured urban spaces, and compact, connected cities and towns:

- ▶ **Spatial integration:** To forge new spatial forms in a settlement, transport, social and economic areas.
- ▶ **Inclusion and access:** To ensure people have access to social and economic services, opportunities and choices.
- ▶ **Growth:** To harness urban dynamism for inclusive, sustainable economic growth and development.

- ▶ **Governance:** To enhance the capacity of the state and its citizens to work together to achieve spatial and social integration.

The proposed development will contribute towards inclusive and sustainable economic growth which promotes economic opportunities and choices, this keeps in line with the principle of inclusion and access as well as growth.

5.5.2 Provincial Policy Context

5.5.2.1 Western Cape Provincial Spatial Development Framework (PSDF)

The Provincial Spatial Development Framework (PSDF) provides a shared spatial development vision for both the public and private sectors and serves as the guide to all sectoral considerations concerning space and place in the Western Cape. The PSDF serves to guide the location and form of public investment and seeks to influence other investment decisions, by establishing a coherent and logical framework for spatial investment. The PSDF furthermore provides the spatial development policy framework through which the various provincial strategic goals will drive economic growth, improve natural resource management and resource use efficiencies, and develop more sustainable and integrated settlements.

The Provincial spatial agenda can be summarised as follows:

- ▶ Growing the Western Cape economy, in partnership with the private sector, non-governmental and community-based organisations;
- ▶ Using infrastructure investment as the primary lever to bring about the required urban and rural spatial transitions; and
- ▶ Improving oversight of the sustainable use of the Western Cape's spatial assets.

The PSDF includes four spatial themes, namely resources, space economy, settlement and spatial governance. The policies and strategies that flow from these themes focus on strategic investment in the space economy, settlement restructuring and the protection of the Province's natural and cultural resource base.

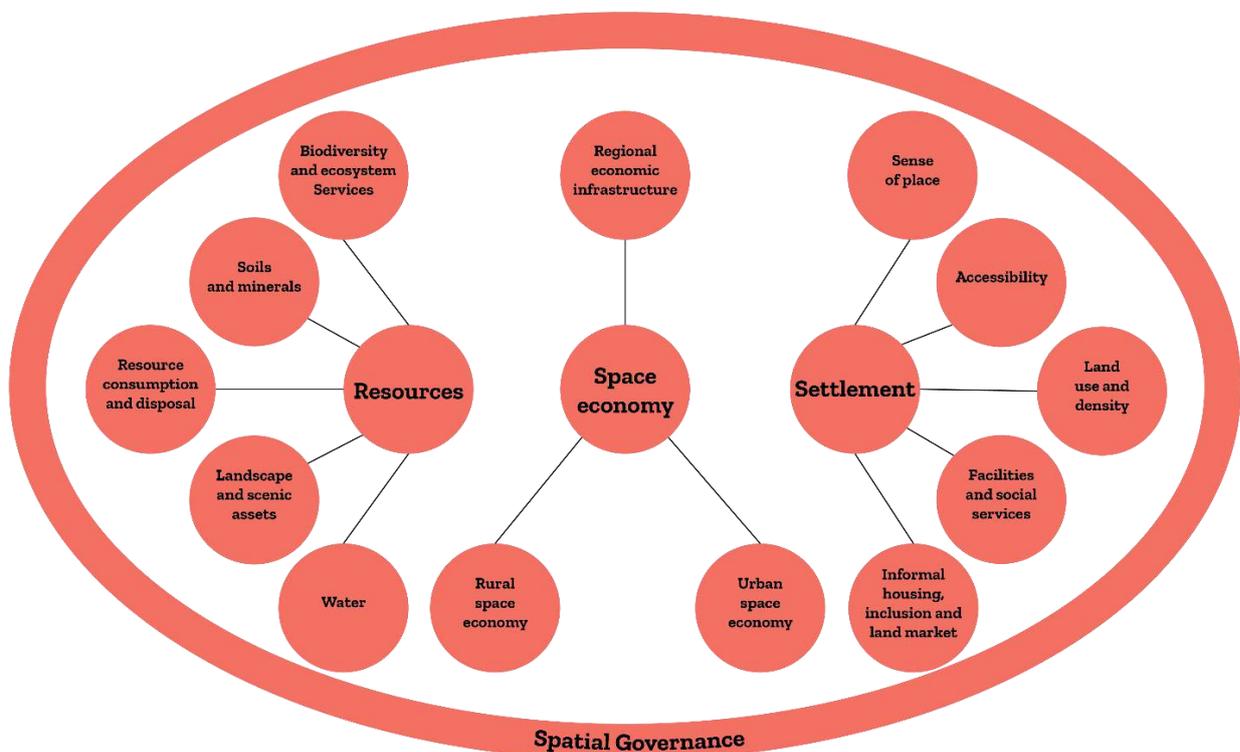


Figure 24: PSDF themes

The PSDF is an important spatial planning and land use management tool. It graphically portrays the Western Cape at a provincial level. The spatial planning principles and strategies underpinning the proposed development of the Metro Grounds mixed use development site aligns with the PSDF, contributing towards growing the Western Cape economy and using infrastructure investment as the primary lever to bring about the required urban spatial transitions.

5.5.2.2 Western Cape Land Use Planning Act

The purpose of the Western Cape Land Use Planning Act (Act 3 of 14) (LUPA) is to consolidate legislation in the Western Cape Province that relates to spatial planning and to coordinate public investment. It is strongly aligned with SPLUMA and governs spatial planning and land use management in the Western Cape.

5.5.2.3 OneCape 2040

OneCape 2040 is a vision for the Western Cape which envisages a transition towards a more inclusive, integrated and resilient economic future for the Western Cape region: “A highly-skilled, innovation-driven, resource-efficient, connected, high opportunity and collaborative society”. The spatial vision that OneCape 2040 foresees, is: “creating a resilient, inclusive and competitive Western Cape with higher rates of employment, producing growing incomes, greater equality and an improved quality of life”. This vision seeks to set a common direction to guide planning and action and to promote a common commitment to, and accountability of sustained long-term progress. To this end, the six transitions have been identified, as summarised in the table below.

Table 4: The role of local government in achieving the OneCape 2040 vision

Educated Cape	Every person will be appropriately educated for an opportunity. Recognised centres of ecological, creative, science and social innovation excellence.
Enterprising Cape	Anyone who wants to be economically active can work. The entrepreneurial destinations of choice.
Connecting Cape	Welcoming, inclusive and integrated communities. Global meeting place and connector.
Living Cape	Healthy, liveable, accessible, high opportunity neighbourhoods and towns. Ranked as one of the greatest places to live in the world.
Green Cape	Functioning ecosystems working for and with communities. Leader and innovator in Green Economy.
Leading Change	Collaboration. Innovation mechanisms. Supportive roles.

Source: Western Cape Government OneCape 2040 presentation

OneCape 2040 has a strong focus on inclusive, integration and the creation of job opportunities, as well as opportunities to appropriate education for all. The proposed Metro Grounds mixed use development is therefore aligned with the principle of provide an integrated development that will stimulate job creation and access to educational facilities.

5.5.3 District policy context

5.5.3.1 Garden Route Spatial development framework.

The Garden Route Spatial Development Framework (2017) identifies several spatial drivers of change that need to be translated into the Garden Route District policy. For the Garden Route to reach its full potential, six central issues were identified that need to be addressed based on the policy review and synthesis. These issues relate to

- ▶ Regional resource capacity constraints
- ▶ Regional competitive advantage
- ▶ Sprawling low-density settlements
- ▶ Constrained regional accessibility
- ▶ Erosion of biodiversity and cultural landscapes; and
- ▶ Sustainability of agriculture and rural settlements.

In line with the Garden Route District Vision and Mission adopted in the 2017 IDP, the SDF focused on four spatial drivers of change. These spatial drivers underpinning a development approach, are:

- ▶ The **Economy is the Environment**; A sustainable environment is an economy positioned for growth;
- ▶ **Regional Accessibility for Inclusive and Equitable Growth**;
- ▶ **Coordinated Growth Management for Financial Sustainability**; and
- ▶ **Effective, Transversal Institutional Integration**.

The spatial drivers underpinning the development approach for the proposed Metro Grounds mixed use development are aligned with the four spatial drivers of change identified in the Garden Route SDF.

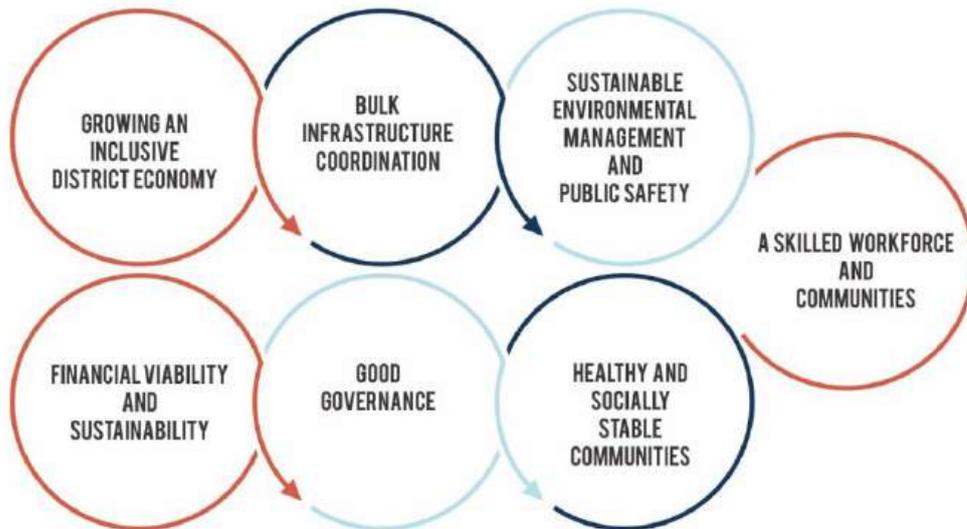
5.5.3.2 Garden Route Integrated Development Plan 2024-2025

The Garden Route District Municipality adopted its vision for the 2022-2027 term of office and highlighted key aspects that should drive the administration for effective implementation of projects and programmes adopted by Council for the term of office.

“Garden Route the leading, enabling, and inclusive district, characterised by equitable, sustainable development, high quality of life and equal opportunities for all”

The IDP is the fundamental part of the planning nucleus in the Garden Route District and it's anchored on 7 strategic objectives which define the growth path of the District over the period. These strategic objectives guide and inform all the planning activities in the municipality;

- ▶ Growing an inclusive District Economy
- ▶ Coordinate bulk infrastructure Service Delivery
- ▶ Promote Environmental Sustainability and Public Safety
- ▶ Building a Skilled Workforce and Communities
- ▶ Ensuring Financial Viability
- ▶ Good Governance
- ▶ Promoting Healthy and Socially stable Communities



The proposed Metro Grounds mixed use development is aligned with the strategic objectives of the Garden Route Integrated Development Plan 2024-2025.

5.5.3.3 Garden Route Integrated Human Settlement (HIS) Strategic Plan

The Garden Route District Municipality (GRDM) has formulated principles and guidelines that will play a more meaningful strategic programme coordination role in the Human Settlement environment that best echoes with the proposed Government’s strategic interventions related to service delivery.

The Integrated Human Settlement strategic plan advocates for the provision of efficient and equitable services in line with the principles listed below. For the long-term integration and sustainability, the following principles will be undertaken in the GRDM:

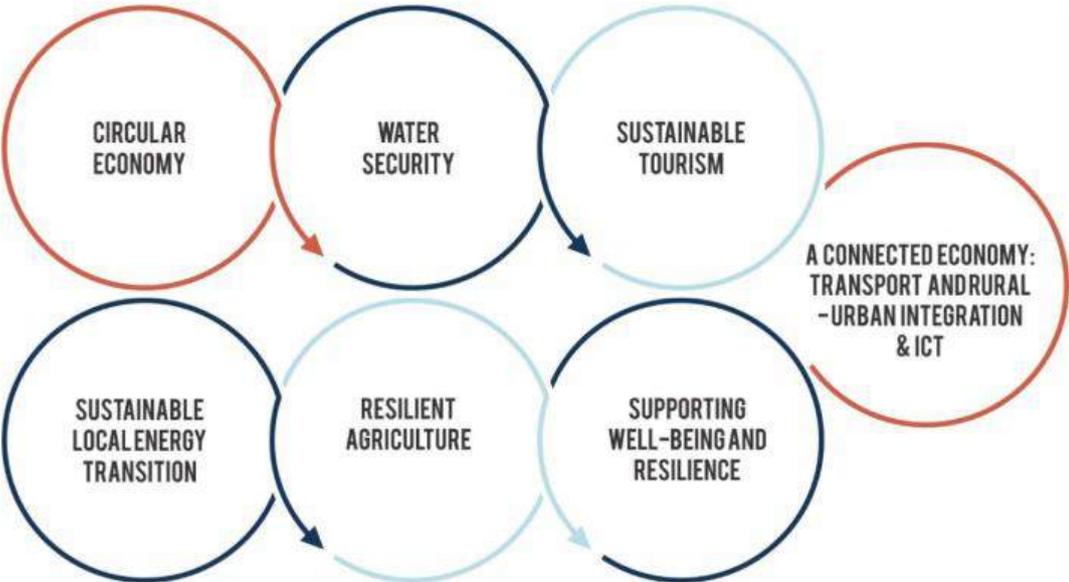
- ▶ **Equity:** All applicants applying for an affordable housing opportunity must have an equal opportunity for related services;
- ▶ **Transparency:** create necessary understanding and confidence by allowing all approved policies and procedures to be readily available to allow anyone to scrutinise them.
- ▶ **Pragmatic and functionality:** this plan as well as its related policies and procedures, will at all times be practical and less costly.
- ▶ **Social Cohesion**
- ▶ **Long Term Integration.**

5.5.3.4 Garden Route Growth and Development Strategy (GDS)

The Garden Route Growth and Development Strategy (GDS) provides a framework for growth and development planning in the Garden Route District for 2020-2040. The Garden Route Region adopted a long-term approach to the development that is sensitive to the requirements of the region and its people. Furthermore, the adopted strategic priorities for the region intend to drive local growth and development.

There are seven (7) key strategic priorities that were adopted as listed below. These priorities have been identified based on a long-term vision for the Garden Route, as well as on the existing work, strengths, and potential of the region. Each one is also aligned to existing policies and strategies. This strategy draws on the significant work that went into Southern Cape Regional Spatial Implementation Framework (RSIF)

- ▶ Circular Economy.
- ▶ Water Security.
- ▶ Sustainable tourism.
- ▶ A connected economy.
- ▶ Supporting well-being and resilience.
- ▶ Resilient agriculture.
- ▶ Sustainable local energy transition.



The proposed Metro Grounds mixed use development is aligned with the strategic divers and vision as outlined in the Garden Route Growth and Development Strategy (GDS).

5.5.4 Municipal Policy Context

5.5.4.1 Integrated Development Plan (IDP)

The IDP is an instrument of both local mobilisation and intersectoral and intergovernmental coordination and covers the extent of the local agenda. It must be viewed as the convergence of all planning, budgeting and investment in the George municipal area and must incorporate and illustrate national,

provincial and district policy directives. The plan also seeks to integrate and balance the economic, ecological and social pillars of sustainability without compromising effective service delivery. The George municipality vision is to be **“A city for a sustainable future”**.

The focus of the George Municipality’s Integrated Development Plan (IDP) for the term of council (2022) is to pave a way for socio-economic, infrastructural and institutional development for the next five years.

The 2022 IDP seeks to attain inter alia:

- ▶ Continue to elevate the IDP as the principal plan through which an integrated response to the current realities of George is coordinated.
- ▶ Enhance the quality of ward based plans (targeted development)
- ▶ Economic development strategy to serve as a key for socio-economic transformation
- ▶ Long term infrastructure planning to promote growth.



Figure 25: Vision, Mission and Values of the George Municipality (IDP)

The proposal to develop the Metro Grounds mixed use development site will support the municipality’s Strategic goal 1 to develop and grow George.

5.5.4.2 Municipal Spatial Development Framework (MSDF)

The Municipal Spatial Development Framework 2023, for the period May 2023 to May 2027, guides spatial growth and development in George. The MSDF provides clarity in respect of the manner in which land-use, development, and investment will be supported to build a spatial form which facilitates the vision and strategic objectives of the Municipality.

Building on the George Municipality's IDP vision of “**A city for a sustainable future**” the supporting Spatial Planning Vision to guide the George MSDF remains to “**Develop George as a resilient regional development anchor of excellence for prosperity, inclusive and smart growth**”.

The MSDF (or SDF) informs land development and service provision decisions made by the municipal departments and decision makers in other tiers of government but does not confer, or take away, land use rights. The purpose of the George Municipal Development Framework (MSDF), as set out in the Spatial Planning & Land Use Management Act (2013) (SPLUMA), is to:

- ▶ Interpret and represent the spatial development vision of the municipality.
- ▶ Guide planning and development decisions across all sectors of government and specifically the municipality and provincial government in its spatial planning and land use management decisions.
- ▶ Contribute to a coherent, planned approach to spatial development across the spheres of government.
- ▶ Provide clear and accessible information to the public and private sector and provide direction for investment purposes.
- ▶ Include previously disadvantaged areas, rural areas, informal settlements, slums and landholdings of state-owned enterprises and government agencies and address their inclusion and integration into the spatial, economic, social, and environmental objectives of the relevant sphere.
- ▶ Address historic spatial imbalances in development
- ▶ Identify the long-term risks of spatial patterns of growth and development and the policies and strategies necessary to mitigate those risks.
- ▶ Provide direction for strategic developments, infrastructure investment, promote efficient, sustainable, and planned investments by all sectors and indicate priority areas for investment inland development.
- ▶ Promote a rational and predictable land development environment to create trust and stimulate investment.
- ▶ Assist in integrating, coordinating, aligning, and expressing development policies and plans emanating from the various sectors of the spheres of government as they apply within the municipal area, specifically as it relates to environmental management, and
- ▶ Outline specific arrangements for prioritising, mobilising, sequencing, and implementing public and private infrastructural and land development investment in the priority spatial structuring areas identified. (SPLUMA, 2013).

The land development and service provision of the Metro Grounds mixed use development is informed by the Municipal Spatial Development Framework.

5.5.4.3 George South East Local Spatial Development Framework, 2015

The proposed development falls within the study area of the George South-East Local Spatial Development Framework, 2015, and the area is earmarked for industrial development, as illustrated below:

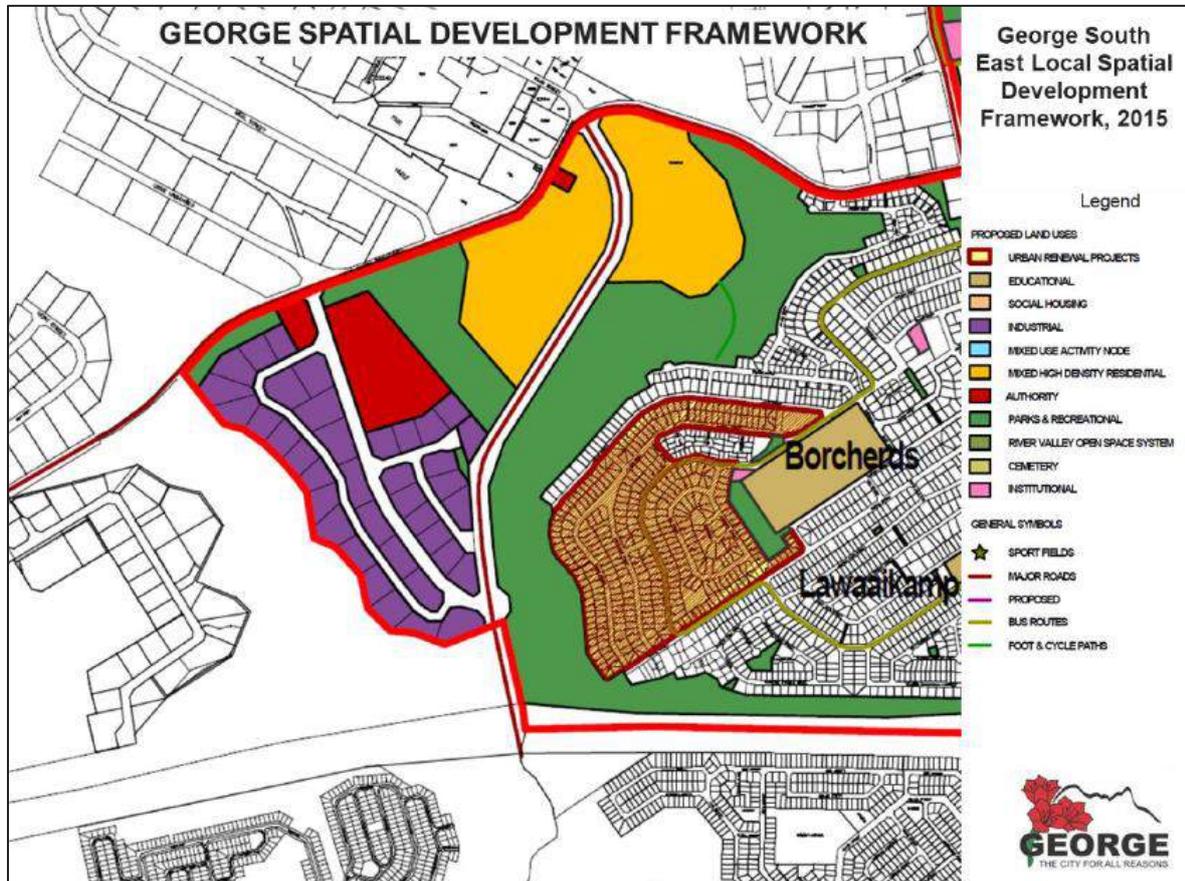


Figure 26: Extract of the George Southeast Local Development Framework.

The proposed Metro Grounds mixed use development is fully aligned with the developmental objectives of the area as outlined in the George South-East Local Spatial Development Framework, 2015.

5.5.4.4 Local Economic Development strategy

In the context of the George Municipality Economic Development Strategy released April 2012, the purpose of the municipality is to deliver an enabling environment that is as conducive and business friendly as is possible within the law and national regulations and to make every effort to eliminate structural barriers to investment, business retention and growth.

In the context of economic growth and development and given South Africa's history it is not viable option to leave business development and investment decisions to the market alone. For this reason, it is imperative that the George Municipality intervenes strategically in the development arena.

- ▶ Improve functionality or markets;
- ▶ Facilitating catalytic projects, that level the playing field for entrepreneurial activity,

- ▶ Facilitating growth in sectors of strategic priority,
- ▶ Manage mechanisms that organise buying and selling, channel the flow of information but all the same time do not distort the market by creating unfair competition.

The proposed Metro Grounds mixed use development is one of the strategic interventions pursued by the George municipality to intervene in the development arena by providing economic opportunities through the expansion of the existing George industrial area. This intervention keeps in line with the Local Economic Development strategy.

5.5.4.5 George Integrated Zoning Scheme By-Law

The George integrated Zoning Scheme By-Law, 2023 was adopted by the Municipal Council in terms of Section 12 of the local Government Municipal Systems Act, 2000 (Act 32 of 2000) on 28 September 2023 and promulgated in terms of Section 13 of said Act on 6 October 2023. The integrated Zoning scheme By-Law provides detailed land-use planning information, indicating for which purpose properties may be used as well as the regulatory process(es) to follow for development applications.

The proposed development is planned in strict accordance with the prescripts of the George integrated Municipal Zoning Scheme By-Law, 2023

6 PUBLIC PARTICIPATION

The public participation process to be followed for the application will be in accordance with the George Municipality Land Use Planning By-law, 2023.

The prescribed period which must be allowed for the submission of inputs and comments on an application is 30 days for interested and affected parties, and 60 days for any organ of state.

A comprehensive comments and response report will be compiled and submitted to the Municipality following the conclusion of the public participation process.

7 CONCLUSION AND RECOMMENDATIONS

The development proposal for the Metro Grounds Mixed Use Development is consistent with the Municipality's policies and promotes considered infill development. The Urban Design Framework and development concept remains broad and flexible with regards to the anticipated and permitted land uses, to allow for maximum flexibility in the future development of the site. The Metro Grounds Mixed Use Development Subdivisional Layout Plan is informed by the specialist investigations and studies conducted during the planning of the project and will facilitate the future development of the site.

The proposal promotes the development principles prescribed in national, provincial and municipal planning legislation. The proposed development is desirable and will further promote the Municipality's developmental objectives regarding economic growth.

The following should be taken into account when considering the proposed rezoning and subdivision of the Metro Grounds mixed use development for approval:

- ▶ The site of application is located within the urban edge of the municipality, and therefore will be able to utilise existing infrastructure with minimal negative impact
- ▶ The proposed land uses will compliment and add value to the existing adjacent land uses, which will create a positive impact on the surrounding area.
- ▶ The proposed development will yield significant benefits in terms of economic growth, and provision of educational facilities and will thus contribute to the sustainable development model of the municipality.
- ▶ The proposed development is planned and in line with the required specialist input and accompanying reports.

It is therefore recommended that this application be approved.

We thank you for your consideration of the proposed application and look forward to your response.

Rudolf Schröder Pr. PIn A/151/2009
Professional Planner
PP Zutari (Pty) Ltd

**Rudolf
Schroder**  Digitally signed by Rudolf Schroder
DN: cn=Rudolf Schroder, ou=South
Africa,
email=Rudolf.Schroder@zutari.com
Date: 2026.02.05 15:32:47 +02'00'

Signature

5 February 2026

Date

ANNEXURES

ANNEXURE A	- APPLICATION FORM
ANNEXURE B	- SPECIAL POWER OF ATTORNEY - ZUTARI APPOINTMENT LETTER & COUNCIL RESOLUTION
ANNEXURE C	- TITLE DEED
ANNEXURE D	- SG DIAGRAM
ANNEXURE E	- LOCALITY PLAN
ANNEXURE F	- SUBDIVISIONAL LAYOUT PLAN
ANNEXURE G	- MINUTES OF PRE-APPLICATION MEETING
ANNEXURE H	- SACPLAN REGISTRATION CERTIFICATE
ANNEXURE I	- GEOTECHNICAL REPORT
ANNEXURE J	- STORMWATER MANAGEMENT REPORT
ANNEXURE K	- CIVIL ENGINEERING SERVICES REPORT
ANNEXURE L	- ELECTRICAL ENGINEERING SERVICES REPORT
ANNEXURE M	- TRAFFIC IMPACT ASSESSMENT REPORT
ANNEXURE N	- METRO GROUNDS URBAN DESIGN FRAMEWORK
ANNEXURE O	- DRAFT ENVIRONMENTAL BASIC ASSESSMENT REPORT

In diversity there is beauty
and there is strength.

MAYA ANGELOU

Document prepared by:

Zutari (Pty) Ltd

Reg No 1977/003711/07

Suite 201

2nd Floor

Bloemhof Building

65 York Street

George

South Africa

PO Box 509

George

6530

Docex: DX42

T +27 44 805 5400

E Rudolf.schroder@zutari.com



ZUTARI
IMPACT. ENGINEERED.

GEORGE MUNICIPALITY



APPLICATION FORM FOR APPLICATION SUBMITTED IN TERMS OF THE LAND-USE PLANNING BY-LAW FOR GEORGE MUNICIPALITY

NOTE: Please complete this form using **BLOCK** capitals and ticking the appropriate boxes.

PART A: APPLICANT DETAILS

First name(s)	Rudolf		
Surname	Schröder		
SACPLAN Reg No. (if applicable)	A/151/2009		
Company name (if applicable)	Zutari		
Postal Address	PO Box 509		
	George	Postal Code	6530
Email	rudolf.schroder@zutari.com		
Tel	0448055400	Fax	Cell 0833906963

PART B: REGISTERED OWNER(S) DETAILS (if different from applicant)

Registered owner	George Municipality		
Address	71 York Street, George CBD		
		Postal code	6530
E-mail	hlourens@george.gov.za		
Tel	044 8019436	Fax	Cell 0606805082

PART C: PROPERTY DETAILS (in accordance with Title Deed)

Property Description [Erf / Erven / Portion(s) and	Portion of the Remainder of Erf 464, George
---	---

Farm number(s), allotment area.]						
Physical Address	PW Botha, George industrial area, George.					
GPS Coordinates	22.458 -33.990		Town/City	George		
Current Zoning	Undetermined Use Zone	Extent	The total extent of the Remainder of Erf 464 George is not available. The portion of the erf that is proposed for measures approximately 16.54 hectares.	Are there existing buildings?	Y	N
Current Land Use	Vacant					
Title Deed number & date	GEQ15-15/1922					
Any restrictive conditions prohibiting application?	Y	N	If Yes, list condition number(s).			
Are the restrictive conditions in favour of a third party(ies)?	Y	N	If Yes, list the party(ies).			
Is the property encumbered by a bond?	Y	N	If Yes, list Bondholder(s)?			
Has the Municipality already decided on the application(s)?	Y	N	If yes, list reference number(s)?			
Any existing unauthorized buildings and/or land use on the subject property(ies)?	Y	N	If yes, is this application to legalize the building / land use?	Y	N	
Are there any pending court case / order relating to the subject property(ies)?	Y	N	Are there any land claim(s) registered on the subject property(ies)?	Y	N	
PART D: PRE-APPLICATION CONSULTATION						
Has there been any pre-application consultation?	Y	N	If Yes, please complete the information below and attach the minutes.			
Official's name	Naudica Swanepoel	Reference number	3505358	Date of consultation	04 December 2024	

PART E: LAND USE APPLICATIONS IN TERMS OF SECTION 15 OF THE LAND USE PLANNING BY-LAW FOR GEORGE MUNICIPALITY & APPLICATION FEES PAYABLE

***Application fees that are paid to the Municipality are non-refundable and proof of payment of the application fees must accompany the application.**

BANKING DETAILS

Name: **George Municipality**
 Bank: **ABSA**
 Branch no.: **632005**
 Account no.: **01022220981**
 Type: **Cheque**
 Swift Code: **ABSAZAJCPE-SORTCODE 632005**
 VAT Registration Nr: **4630193664**
 E-MAIL: **ronel@george.org.za**
***Payment reference: Erven, George**

PART F: DETAILS OF PROPOSAL

Brief description of proposed development / intent of application:

The application for the rezoning and subdivision entails the following:

The intent of the industrial development component is to accommodate industry erven, appropriate to the site context and facilitating small and medium enterprise development. The industrial stands will be released to users or buyers. The proposed development also includes an educational erf that is earmarked to be developed as a tertiary educational facility, such as a vocational training establishment.

PART G: ATTACHMENTS & SUPPORTING INFORMATION FOR LAND USE PLANNING APPLICATIONS

Please complete the following checklist and attach all the information relevant to the proposal. Failure to submit all information required will result in the application being deemed incomplete.

Is the following compulsory information attached?

Y	N	Completed application form	Y	N	Pre-application Checklist (where applicable)
Y	N	Power of Attorney / Owner's consent if applicant is not owner	Y	N	Bondholder's consent
Y	N	Motivation report / letter	Y	N	Proof of payment of fees
Y	N	Full copy of the Title Deed	Y	N	S.G. noting sheet extract / Erf diagram / General Plan
Y	N	Locality Plan	Y	N	Site layout plan

Minimum and additional requirements:

Y	N	N/A	Conveyancer's Certificate	Y	N	N/A	Land Use Plan / Zoning plan
Y	N	N/A	Proposed Subdivision Plan (including street names and numbers)	Y	N	N/A	Phasing Plan

Y	N	N/A	Consolidation Plan	Y	N	N/A	Copy of original approval letter (if applicable)
Y	N	N/A	Site Development Plan	Y	N	N/A	Landscaping / Tree Plan
Y	N	N/A	Abutting owner's consent	Y	N	N/A	Home Owners' Association consent
Y	N	N/A	Copy of Environmental Impact Assessment (EIA) / Heritage Impact Assessment (HIA) / Traffic Impact Assessment (TIA) / Traffic Impact Statement (TIS) / Major Hazard Impact Assessment (MHIA) / Environmental Authorisation (EA) / Record of Decision (ROD) <i>(strikethrough irrelevant)</i>	Y	N	N/A	1 : 50 / 1:100 Flood line determination (plan / report)
Y	N	N/A	Services Report or indication of all municipal services / registered servitudes	Y	N	N/A	Required number of documentation copies 2 copies
Y	N	N/A	Any additional documents or information required as listed in the pre-application consultation form / minutes	Y	N	N/A	Other (specify)

PART H: AUTHORISATION(S) IN TERMS OF OTHER LEGISLATION

Y	N/A	National Heritage Resources Act, 1999 (Act 25 of 1999)	Y	N/A	Specific Environmental Management Act(s) (SEMA) (e.g. Environmental Conservation Act, 1989 (Act 73 of 1989), National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004), National Environmental Integrated Coastal Management Act, 2008 (Act 24 of 2008), National Environmental Management: Waste Act, 2008 (Act 59 of 2008), National Water Act, 1998 (Act 36 of 1998) <i>(strikethrough irrelevant)</i>
Y	N/A	National Environmental Management Act, 1998 (Act 107 of 1998)			
Y	N/A	Subdivision of Agricultural Land Act, 1970 (Act 70 of 1970)			
Y	N/A	Spatial Planning and Land Use Management Act, 2013 (Act 16 of 2013)(SPLUMA)			
Y	N/A	Occupational Health and Safety Act, 1993 (Act 85 of 1993): Major Hazard Installations Regulations			
Y	N/A	Land Use Planning Act, 2014 (Act 3 of 2014) (LUPA)			
Y	N	If required, has application for EIA / HIA / TIA / TIS / MHIA approval been made? If yes, attach documents / plans / proof of submission etc. N/A			
Y	N	If required, do you want to follow an integrated application procedure in terms of section 44(1) of the Land-Use Planning By-law for George Municipality?			

SECTION I: DECLARATION

I hereby wish to confirm the following:

1. That the information contained in this application form and accompanying documentation is complete and correct.
2. The Municipality has not already decided on the application.
3. I'm aware that it is an offense in terms of section 86(1)(d) to supply particulars, information or answers in an application, knowing it to be false, incorrect or misleading or not believing them to be correct.
4. I am properly authorized to make this application on behalf of the owner and (where applicable) copies of such full relevant Powers of Attorney/Consent are attached hereto.
5. I have been appointed to submit this application on behalf of the owner and it is accepted that correspondence from and notifications by the Municipality in terms of the by-law will be sent only to me as the authorised agent and the owner will regularly consult with the agent in this regard (where applicable).
6. That this submission includes all necessary land use planning applications required to enable the development proposed herein.
7. I confirm that the relevant title deed(s) have been read and that there are no restrictive title deed restrictions, which impact on this application, or alternatively an application for removal/amendment/suspension forms part of this submission.
8. I am aware of the status of the existing bulk services and infrastructure in the subject area and that I am liable for any possible development charges which may be payable as a result of the proposed development.

Applicant's signature:

CR Schröder

Date:

5 February 2026

Full name:

Rudolf Schröder

Professional capacity:

Professional Planner

SACPLAN Reg. Nr:

A/151/2009

FOR OFFICE USE ONLY

Date received:

--

Received by:

--

Receipt number:

--

Date application complete

--

ANNEXURES

Please do not submit these Annexure exemplars with the application form.

Annexure A: Exemplar of locality plan (consult guidelines for precise requirements)

Annexure B: Application submission checklist

Annexure C: Exemplar of typical layout plan (consult guidelines for precise requirements)

Annexure D: Examples of required documents

DIRECTORATE: PLANNING & DEVELOPMENT

Reference/Verw: : Collab Ref: 1847989
Aan/To: : Director: Planning & Development
Navrae/Enquiries : D.M. Gelderbloem
Tel : 044- 801 9370
Datum/Date : 31 August 2021

Insake/Regarding : **AMENDMENT OF THE ADOPTED SUBDIVISION PLAN FOR THE DEVELOPMENT OF THE METRO GROUNDS INDUSTRIAL ERVEN AND AUTHORIZATION TO PROCEED WITH THE REZONING OF THE LAND**

The Town Planning staff must kindly take note of the resolution below taken by Council at the Ordinary Council Meeting held on 25 August 2021:

"RESOLVED

- (a) that the Municipal Manager **BE MANDATED** to amend the subdivision plan that was adopted at the Council meeting held on 29 August 2012 and to proceed with appointment of consultants to finalise the required environmental and land development processes with regards to the portion of the Remainder of Erf 464, George also known as the Metro Grounds industrial erven;
- (b) that the registration of the electrical servitude line as required by the Electrotechnical Department be taken into consideration before the final layout of the erven is done and that budgetary provision be made for the relocation of the 11kV overhead lines;
- (c) that a further report regarding the lease or alienation of the Metro Grounds industrial erven **BE SUBMITTED** to Council once the planning and ennoblement processes have been concluded.



DM. GELDERBLOEM
MANAGER: PROPERTY MANAGEMENT

GEORGE MUNICIPALITY

DIRECTORATE: HUMAN SETTLEMENTS, PLANNING AND DEVELOPMENT

CONTRACT NUMBER : T/ING/010/2020

CONTRACT NUMBER: T/ING/010/2020 - TENDER FOR THE APPOINTMENT OF CONSULTING ENGINEERS FOR PROFESSIONAL ENGINEERING SERVICES FOR VARIOUS PROJECTS IN THE 2021/2022 YEAR MULTI YEAR BUDGET- REQUEST FOR QUOTATION: PROJECT 17 WORK PACKAGE 08 (LEGISLATIVE COMPLIANCE)

DEVELOPMENT OF A PART OF THE REMAINDER OF ERF 464 GEORGE, (HEREIN REFERRED TO AS THE METRO MIXED USE SITE) FOR PURPOSES OF A MIXED-USE DEVELOPMENT, INCLUDING LAND USE MANAGEMENT-, AND ENVIRONMENTAL ASSESSMENT APPLICATIONS, LAND SURVEY, ENGINEERING COSTING AND THE COORDINATION OF INPUTS TOWARDS PROJECT IMPLEMENTATION

Form of Offer and Acceptance (Part C1.1)

(AGREEMENT)

OFFER

The Employer, identified in the Acceptance signature block, has solicited offers to enter into a contract for the procurement of:

PROJECT 17 WORK PACKAGE 08 (LEGISLATIVE COMPLIANCE): DEVELOPMENT OF A PART OF THE REMAINDER OF ERF 464 GEORGE, (HEREIN REFERRED TO AS THE METRO MIXED USE SITE) FOR PURPOSES OF A MIXED-USE DEVELOPMENT, INCLUDING LAND USE MANAGEMENT-, AND ENVIRONMENTAL ASSESSMENT APPLICATIONS, LAND SURVEY, ENGINEERING COSTING AND THE COORDINATION OF INPUTS TOWARDS PROJECT IMPLEMENTATION

The Tenderer, identified in the Offer signature block below, has examined the documents listed in the Tender Data and addenda thereto as listed in the Tender schedules, and by submitting this Offer has accepted the Conditions of Tender.

By the representative of the Tenderer, deemed to be duly authorised, signing this apart of this Form of Offer and Acceptance, the Tenderer offers to perform all of the obligations and liabilities of the Service Provider under the Contract including compliance with all its terms and conditions according to their true intent and meaning for an amount to be determined in accordance with the Conditions of Contract identified in the Contract Data.

THE OFFERED TOTAL OF THE PRICES INCLUSIVE OF VALUE ADDED TAX IS

ONE MILLION SEVEN HUNDRED AND SIXTY SEVEN THOUSAND FIVE HUNDRED AND FIFTY FIVE RAND RAND AND FIFTY-TWO CENTS

(in words);

R 1,767,555.52 (in figures),

This Offer may be accepted by the Employer by signing the Acceptance part of this Form of Offer and Acceptance and returning one copy of this document to the Tenderer before the end of the period of validity of the Tender stated in the Tender Data, whereupon the Tenderer becomes the party named as the Service Provider in the Conditions of Contract identified in the Contract Data.

Signature(s)

Name(s)


A. C. KEYSER

Capacity

OFFICE MANAGER
ZUTARI (PTY) LTD
BLOEMHOF BUILDING, 2ND FLOOR,
65 YORK STREET
GEORGE, 6530

(Name and address of organisation)

ACCEPTANCE

By signing this part of this Form of Offer and Acceptance, the Employer identified below accepts the Tenderer's Offer. In consideration thereof, the Employer shall pay the Service Provider the amount due in accordance with the Conditions of Contract identified in the Contract Data. Acceptance of the Tenderer's Offer shall form an agreement, between the Employer and the Tenderer upon the terms and conditions contained in this Agreement and in the Contract that is the subject of this Agreement.

The terms of the contract are contained in

- Part C1 Agreements and Contract Data, (which includes this Form of Offer and Acceptance)
- Part C2 Pricing Data
- Part C3 Scope of Work

and drawings and documents or parts thereof, which may be incorporated by reference into Parts C1 to C3 above.

The Tenderer shall within two weeks after receiving a completed copy of this Agreement, contact the Employer's representative (whose details are given in the Contract Data) to arrange the delivery of any bonds, guarantees, proof of insurance and any other documentation to be provided in terms of the, Conditions of Contract identified in the Contract Data. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation of this Agreement.

Notwithstanding anything contained herein, this Agreement comes into effect on the date when the Tenderer receives one fully completed original copy of this document, including the Schedule of Deviations (if any). Unless the Tenderer (now Contractor) within five working days of the date of such receipt notifies the Employer in writing of any reason why he cannot accept the contents of this Agreement, this Agreement shall constitute a binding contract between the parties.

It is expressly agreed that no other matter whether in writing, oral communication or implied during the period between the issue of the Tender documents and the receipt by the Tenderer of a completed signed copy of this Agreement shall have any meaning or effect in the contract between the parties arising from this Agreement.

FOR THE TENDERER:

Signature(s)



Date: 20 SEPTEMBER 2024

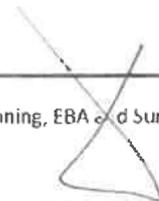
Name(s)

A. C. KEISER

Capacity

OFFICE MANAGER
ZUIARI (PTY) LTD
2104HOF BUILDING, 2ND FLOOR,
65 YORK STREET, GEORGETOWN, 6530

(Name and address of organisation)



FOR THE EMPLOYER:

Signature(s) KJ Haarhoff Date: 20 Sep 2024
Name(s) Dr KJ Haarhoff
Capacity Acting Director Human Settlements,
Planning and Development
(Name and address of organisation)

5135 15-9-14 MR

Certified a true copy of the duplicate original
Certificate in view of the fact that the duplicate
file of records in this case, issued to refer to
occurrences like the foregoing, shall be liable to
loss of the original thereof if for the purpose of
satisfactorily appearing in favour of the claimant
of Deeds Registry Registration Co. C.
The original shall be preserved in the Deeds Registry
at Durban and shall be available for inspection
Deeds Registry, Durban, Natal, S. Africa.
Cape Town, Kaapstad.

14 SEP 1964

R. van Rensdal

For deductions see Gen. New 937 Gues, Gue

*Right of redemption waived in respect of
Lot HAF (576309 (1949)) as per Formprint A and
Formprint B (copy) on Formprint B (copy) in
terms of Ex. Co. min 41 dt. 28 Jan 1930 which
Formprint A & B are filed D8/1930.*

*19/2/1942
for Register*

*Right of redemption waived in respect of
Lot HAF (576309 (1949)) as per Formprint A and
Formprint B (copy) on Formprint B (copy) in
terms of Ex. Co. min 281 dt. 11 Mar 1930 filed D8/1930.*

*19/2/1942
for Register*

*Ex. Co. min 3136 of 20. 9. 1938 amended as to Item 2
by the addition thereto of the correct extent of 11 morgen
9583 sq. ft. in place of approximately 6 morgen.
Vide Ex. Co. min 637 dt. 24. 3. 1941 and copy of diagram
attached filed D8/1930
for Register of Deeds.*

COPY ISSUED 29-11-1948



CROWN GRANT

Grant under Section 10,
Act No. 15, 1887.

IN THE NAME AND ON BEHALF OF HIS MAJESTY
GEORGE THE FIFTH, BY THE GRACE OF GOD OF
THE UNITED KINGDOM OF GREAT BRITAIN AND
IRELAND, AND OF THE BRITISH DOMINIONS BE-
YOND THE SEAS KING, DEFENDER OF THE FAITH,
EMPEROR OF INDIA:

WHEREAS under and by virtue of the provisions contained in
Section 10 of the Act No. 15 of 1887 of the Cape
of Good Hope, entitled an "Act for regulating the
manner in which the Crown Lands of the Colony shall
be disposed of", grants or reserves of Crown Lands
within the limits of a Municipality may be made by
the Governor-General for the benefit of the inhabi-
tants of the Municipality:

AND WHEREAS the grant in favour of the COUNCIL OF THE
MUNICIPALITY OF GEORGE of a certain piece of land
situate in the DIVISION OF GEORGE, Province of the
Cape of Good Hope, has been duly authorised:

NOW, THEREFORE, THESE PRESENTS WITNESS that there is here-

For further endorsements see page 4.

connection with the establishment and maintenance of a rifle range, including the right of building and maintaining the necessary butts, fire points, excavations, shelters, sheds, huts, and other structures, of effecting and maintaining the necessary clearings upon the said range, and of fencing such parts of range as may be necessary, provided that the whole area to be fenced shall not exceed 100 by 150 yards:

- (5) In the event of the Municipality undertaking planting operations on the Commonage, a clear space of ground, in no part less than 50 yards in width must always be left between the boundary of any Government Forests or Plantations and the external rows of trees of the Municipal Plantations in order that such clearing and burning of vegetation may be carried out as may be considered necessary for the protection of the Government Forests or Plantations and the Government shall have the right, free of compensation, to carry out such clearing and burning operations as may be considered necessary:

The Government shall further have the right, free of compensation, to make such roads on the commonage as may be reasonably necessary for the working of any Crown Forests or Railway Plantations as adjoin the commonage, provided that the location of such roads shall be determined by full agreement between both parties and failing such agreement by arbitration in manner as provided for in Clause 1 of the conditions annexed to this Deed of Grant. All such roads to be maintained by the Government, and the public of George to have the right to the reasonable use of such roads:

THUS DONE and signed by the Secretary for Lands at CAPE TOWN on the 15th day of June 1922, duly authorized thereto in that behalf by the Governor-General, in terms of the Crown Land Disposal (Execution of Deeds) Act, 1911.

scribed Heron
George
Geo. Somerville
 Chief Registration Officer

J. Somerville
 SECRETARY FOR LANDS.

IN TERMS of the Executive Council Minute No. 77 of the 11th January 1939, and filed as No. 3/1939 the Condition lettered (1) appearing herein, has been cancelled and the following

" That the Governor-General shall have the right at all times of resuming for public purposes (which shall not include land required for Forestry purposes), such portion or portions of the land hereby granted as may not have been alienated by the Town Council.

In the event of resumption as aforesaid no compensation shall be payable by the Government except in respect of substantial improvements of a permanent nature erected or made on the land resumed whether by the Town Council or by any other person or body acting under the express authority of the said Council"

substituted therefor.

Deeds Registry
CAPE TOWN
9 MAR 1939

W.R. Bezuidenhout
for REGISTRAR OF DEEDS.

id of Resumption: waived in regard to East Extension and N.W. Extension on Amundahle rd 27 Lower at annex Newton Co min No 2892 dtd. 30.10.1928. Ints. filed n.v.k. lands n.v.i. 136787 dtd. 5-11-1928. & refer to inter deducted under General Plan 1928. ? 8/11/1928

20 sq. rds. Transferred 17/5/1923 (No 2656) to Union Government. (Railways & Harbours)

5 Mar. 225 sq rds 59 ft } Transferred 22.4.1928
3 " 5 " 108 " }
11 " 269 " 192 " }
e. Dist. of George.

8 sq. rds. 262 sq rds 85 sq ft.
e. 5. 4. 1925. No 1999.
General Trust Properties.

1390 sq rds. 30 sq ft.
e. 18. 6. 1925. No 5744.
Stander.

further endorsements see *Pages*

to Mrs. Katherine
328 59. ad. 5. 594. Transf. r. 176. 1925 No 5713
to C. E. van Nieuwe

all of reservation vacated in respect of
5 portions of Town Commuange viz.
pieces at Rosewood - approximately 1/2 Morgan
of land called the George Street Extension
of land south west of adjoining the
Dept. Saw Mill Site, South-east of
Town. Approximately 1/4 No. 790.
Ex. Co. minute No C 5987/2 ad. 27. 9. 25. (D.S.)
1925. 3/10/25

min. 3136 of 20. 9. 25. amplified by a decision
in alia. - two of such portions being described
D.R.C. plan of part E of the George Town
map in extent 1 Morgan, and the Roman
Church Mission School site plus of the
George Town Commuange in extent 1 Mon. 1354/4
Ex. Co. min. 2918 ad. 28. 9. 25. (D.S.)

of Reservation vacated in respect of
D.S. situate North and South of the
line and adjoining Neepothina Co.,
the Commuange. Vide Copy. to Co.
No. 1061 ad. 7. 4. 1925 forwarded by Lands Dept.
% C. 5957/3 dated 2 May 1925. (D.S.)
(Ex) 18/25
19/25

For further endorsements see page 6

of land measuring 5 Morgan approx., plus of the George
Lower Commuange. Vide Ex. Co. min. ad. 20. 20. 1925.
Lands. min. C 5957/2 ad. 10. 1. 1927 (D.S.)

Lot 88 = 5 Morgan 362 9 ad 85 594.
TRANSFERRED 5. 3. 1925. (No 1999)
to the Governor General's Land Department

Lot 90 = 276 5/100 15 5/100
TRANSFERRED 24. 10. 1927 No 10594
to J.A. MacL.

Lot 91 = 420 5/100 40 5/100
TRANSFERRED 24. 10. 1927 No 10595
to A. G. Davis.

Lot 92 = 315 5/100 109 5/100
TRANSFERRED 24. 10. 1927. No 10596
to J.W.C. Brewer.

Lot 93 = 244 5/100 120 5/100
TRANSFERRED 24. 10. 1927. No 10597.
to A. Coote, Windsor

Lot 94 = 414 5/100 521 5/100 105 5/100
TRANSFERRED 5. 12. 1927. No 12208
to J.J. Stander

Lot 95 = 574 5/100 100 5/100 133 5/100
TRANSFERRED 13. 8. 1929. No 5026
to the Govt. of the Union of South Africa in
its Railway & Harbours Administration.

of (a) Ex. Co. Min. 275/1932
 No. 1 herein has been waived in so far as an
 approximately 6 margin adjoining the Roman
 church. Interim order of the Ex. Co. Min. as
 from sketch with Ex. Co. Min. 275 ad. 9. 2. 1932.
 Ex. Co. Min. No. 276/1932 as before, in so
 Morgan adjoining Railway Property as appears
 sketch with Ex. Co. Min. No. 276 ad. 9. 2. 1932
 D.S. 1932.
 Resumption waived in respect of Lot 18.
 Note Ex. Co. Min. 3355 ad. 9. 1930
 Min. filed D.S. 1930.

Resumption waived in respect of a certain
 of the land hereby granted (approximately
 Ex. Co. Min. 2709 ad. 16. 10. 1931 with same
 a sketch. filed D.S. 1931
 Reg. of deeds

Residence, Side
 1932 filed 9. 5. 14
TERMINED No. 3679
 of 5. 5. 1930 to Government of Union of
 Land Office.
 Min. of Land D.
 1635-29. Feb. 3. 10. 1930 to Mr. Francis, Widow.
TERMINED No. 5207.

18 59. Feb. 115. 59. pl.
TERMINED No. 5398 to J. J. M. Andersen.
 5-10-1930 to J. J. M. Andersen.
 5-12-1930 to Govt. of Union of
 Land Office. Resumption.

Lot B of Part D = 14753. 59. pl.
TRANSFERRED 16. 7. 1931 to Govt. of the Union of
 Land Office. Resumption
 No. 5200. Railway & Harbours Com.
 Lot 1E of Part E
 = 1 Morgan. 42360 59. pl.
TRANSFERRED 7. 8. 1931 to R. M. 14. ad.
 No. 5752
 Lot 1B of Part A
 = 43493 59. pl.
TRANSFERRED 18. 4. 1932 to J. T. Bolger.
 No. 2220.

Lot. P. H. No. 2 of Part E
 = 1. 0271 Morgan.
TRANSFERRED 18. 6. 1931 to the Land Office
 No. 5000. S. Rodgers Resumption No. 1.

A Certificate of Registered Title. This has,
 in accordance with Section..... Act of 19
 been submitted for this Deed in respect of.....
 George Industrial Promoters.
 = 24. 2785 59. pl. 2077/1932. No. 6246
 Section R 12 of Str. E.
 = 5. 8810 59. pl.

TRANSFERRED
 GETTING QUANTITIES
 No. 58 = 1.0701 59. pl.
 to the Government of the Union
 of Land Office in its
 Railway & Harbours Com.
 25. 8. 1948 to G. Mc Gowan M.O.C.P.
 No. 19400.

Council 2/2/1949 of and A.C. North
1417. to Joint Est. (by A.C. North)

Lease of Part E
57 feet
26.9.1924 to R.A. St. Ledger.
FILED No 8459.

Who for whom: Title has:
Sections, of Act. of 19.
in this Deed in respect of.....
FILED
LEED

G 7 FR Folio 111
Lpd. ?
where in charge

is of Part E
Precept for title of Central
for 15 years by notarial
Act 9 May 1933.
Apr. 1933/1933
The 21st day of July 1933
Signed J. J. Registrar.

1935
Lot 7 = 14745-1944
FILED 29/12/1933 (No 13615) R.A. ST. LEDGER To

LEASED TO George James Council of
Europeans and Afritans.
FOR 15 years by deed of lease
dated 6-3-1946 filed as
Lease No 61946 Registered
this 26th day of July 1946
Needs Registry (1946) RAYLMAN
Cape Town in ASST REGISTRAR

Partion 62 of Part E 45/11 83/1
LEASED TO the Managers of the
Dutch Reformed Mission Church
FOR 15 years BY DEED OF
LEASE DATED 5/11/1948
FILED AS Lease 45/11/48
REGISTERED THIS 26th DAY OF
September 1948. RAYM LOUBSER
Needs Registry (1948) RAYLMAN
Cape Town in ASST REGISTRAR

Administered

LOT D.M.B. = 1.6650 Morgan
TRANSFERRED 28.7.1933 (No 7839) to R.M. Breasler married

Jewish Cemetery site = 43617 sq. ft.
TRANSFERRED 28/10/1925 to Trustees of George Hebrew Congregation
(No 11096)

Presbyterian Cemetery site = 42950 sq. ft.
TRANSFERRED 20.1.1939 (No 712) to Presbytery of Fort Elizabeth of
the Presbyterian Church of S.A.

Lot 7 = 1.0073 Morgan
TRANSFERRED 21/3/1940 to SEM. ST. LEDGER
(No 2612)

Lot 8 Extension N. of Part F = 1.2748 Morgan
TRANSFERRED 19.4.1937 to H.G.
(No 3776) (Cape Town)

Roman Catholic Church
Mission School Site No 2 = 1.0256 Morgan
TRANSFERRED 4.5.1937
(No 442-1)
to the Cape of Good Hope
Central District of

DECLARATION OF SERVITUDE.

No 13615 Dated 29.12.1936 the owner shows in title of the property hereby conveyed carry on any trade or business Saw Mill, Brick Mill and other connected and a timber factory

shall jointly appear on references to deed of transfer

(Sgd) H BEZUIDENHOUT

resumption waived in respect of title Ex. Co. Min. 2519 dt. 1/6/1937. No 17/1937. (Sgd) J.A. BECKER Registrar of Deeds

resumption waived in respect of portion of the land hereby granted in 14745 spted title to 13 min. dt. 20.10.1938. filed with Comptroller 938. (Sgd) Registrar of Deeds

FERRED No 57810 spt. Exprop. dt. 29/5/1946 to Govt of Union

No 55 part F = 53055 spt. H

TRANSFERRED GETRANSPOORTEER No 55 part F = 53055 spt. H

Portainsb. of part E = 1.9303 spt. H 1579/1949 No 15301.

TRANSFERRED GETRANSPOORTEER to Near Apostles of the Neacade of Quads in m

Portain 619 of part F = 610097 spt. H LEASED TO George Gelf (last for 25 years by agreement made date 3.9.1949 spted. dt. 1.10.1949 Registrar dt. 11-11-1949. Office 599 H 20085 dt. Cape Town in own register.

No 65 of part E = 4.1927 spt. H Educational Trusts for The Hope School

TRANSFERRED GETRANSPOORTEER No 65 of part E = 4.1927 spt. H

Conf. dt. 44 = 1.0718 spt. H

TRANSFERRED GETRANSPOORTEER No 65 of part E = 4.1927 spt. H

James & P.T.D. part F = 2.3166 spt. H

TRANSFERRED GETRANSPOORTEER No 579/1952 spt. H

Part 69 of part F = 2842 spt. H 11/2/1951 spt. H

TRANSFERRED GETRANSPOORTEER No 579/1952 spt. H

Buy 3206 = 1.7204 mgw.

GETRANSPORTTEER 21. 5. 1963, *Vermaand van de N.G.*
 TRANSPORTTEER NO. 1151
 Restant: *To G. van der Meer*
 Remainder: A. C. G. HUTCHINGS
 Ass. Registrar: A. C. G. HUTCHINGS

Buy 3428 = 524.400 mgw.

TRANSPORTTEER 21/5/1963, *Vermaand van de N.G.*
 TRANSPORTTEER NO. 1153
 Restant: *To G. van der Meer*
 Remainder: A. C. G. HUTCHINGS
 Ass. Registrar: A. C. G. HUTCHINGS

Buy 71 (Mortgage) = 314.7101 mgw.

TRANSPORTTEER 12. 8. 1953, *Vermaand van de N.G.*
 TRANSPORTTEER NO. 8556
 Restant: *To G. van der Meer*
 Remainder: (Mort) F. BRUNT
 Ass. Registrar: A. C. G. HUTCHINGS

Buy 3187 = 1.0794 mgw.

TRANSPORTTEER 2. 9. 1955, *Vermaand van de N.G.*
 TRANSPORTTEER NO. 15026
 Restant: *To G. van der Meer*
 Remainder: (Mort) E. I. SMITH
 Ass. Registrar: A. C. G. HUTCHINGS

TRANSPORTTEER 11-1959, *Vermaand van de N.G.*
 TRANSPORTTEER NO. 11639
 Restant: *To G. van der Meer*
 Remainder: A. C. G. HUTCHINGS

Buy 3206 = 1.7204 mgw.

GETRANSPORTTEER 13/12/1959, *Vermaand van de N.G.*
 TRANSPORTTEER NO. 15026
 Restant: *To G. van der Meer*
 Remainder: A. C. G. HUTCHINGS
 Ass. Registrar: A. C. G. HUTCHINGS

Buy 3428 = 524.400 mgw.

TRANSPORTTEER 21/5/1963, *Vermaand van de N.G.*
 TRANSPORTTEER NO. 1153
 Restant: *To G. van der Meer*
 Remainder: (Mort) F. BRUNT
 Ass. Registrar: A. C. G. HUTCHINGS

Buy 3512 = 465700 mgw.

TRANSPORTTEER 7/6/1961, *Vermaand van de N.G.*
 TRANSPORTTEER NO. 15026
 Restant: *To G. van der Meer*
 Remainder: (Mort) F. BRUNT
 Ass. Registrar: A. C. G. HUTCHINGS

Buy 3336 = 3.6238 mgw.

TRANSPORTTEER 18/15/1960, *Vermaand van de N.G.*
 TRANSPORTTEER NO. 15026
 Restant: *To G. van der Meer*
 Remainder: (Mort) F. BRUNT
 Ass. Registrar: A. C. G. HUTCHINGS

Buy 3341 = 36894 mgw.

TRANSPORTTEER 19/12/1962, *Vermaand van de N.G.*
 TRANSPORTTEER NO. 15026
 Restant: *To G. van der Meer*
 Remainder: A. C. G. HUTCHINGS

Buy 18 mgw.

LEASED TO *Vermaand van de N.G.*
 by 25 years from 1st January 31 Dec 1955 by 1st Dec 31st Dec 1959
 Lease No 111
 Requirements 10 6/8
 Kappa Registry, 100
 Cape Town

Registered by 1st Dec 1955
 Lease No 111
 Requirements 10 6/8
 Kappa Registry, 100
 Cape Town

VERHUUR aan *Vermaand van de N.G.*
 LEASED TO
 for 25 years from 1st Dec 1955
 by 1st Dec 31st Dec 1959
 Lease No 111
 Requirements 10 6/8
 Kappa Registry, 100
 Cape Town

1-17-1902
 10-10-1964 ... Charles ...
 Thoni

(Proprietary) Limited

= 1.1200 mag
 10-10-1964 ... H. B. Kamil (by Gerber)
 Thoni (moep)

= 69626 sq feet
 4.3.1965 ... Est. late H. J. A. van der Merwe

Registration
 Asst. Registrar

= 7.964 mag
 30-11-1965 ... Republiek van Suid Afrika

Registrar
 Asst. Registrar

Certificate of Registered Title No. 30205/ issued in terms of
 Sertifikaat van Geregistreerde Titel No. 30205/ uitgereik kragtens
 Sect. 43 Act No. 47/1937 In respect of the
 Art. 43 Wet No. 47/1937 ten opsigte van
 ERF 3748 GR001-24-2237/1938
 Remainder
 Restant
 DEEDS OFFICE
 KANTOOR
 CAPE TOWN/KAAPSTAD.
 30-11-1965
 REGISTRAR
 ASST. REGISTRAR

ERF 3748 = 65.2006MGN

VERHUUR aan GEORGE GOLFCLOU
 LEASED to GEORGE GOLFCLOU
 vir 25 YEARS FROM 1.7.1957
 deur Huurkontrak gedateer
 by Deed of Lease dated 12.1.1964
 waggelê as 12.1.1964
 Gerregistreer hierdie 30-11-1965 van
 Registered this 30-11-1965 day of
 in the Land Lease Register
 vol 1 del. 116
 AMERIKANICOR
 DEEDS REGISTRY
 KAAPSTAD.
 CAPE TOWN.
 REGISTRAR
 ASST. REGISTRAR

ERF 4160 - 1.2886MGN

OPTRANSPORTEER... 12-2-1968
 TRANSFERRED
 No. 2416
 Restant
 Remainder
 A.M.A. D. MEUNIER
 BARN DOLLER
 Registrer

VERHUUR aan
 LEASED to
 vir
 for
 deur Huurkontrak gedateer
 by Deed of Lease dated 19
 waggelê
 filed as
 Gerregistreer
 Registered
 van
 day of
 19
 ASST. REGISTRAR
 ASST. REGISTRAR

FOR FURTHER ENDORSEMENTS SEE VAN WET NR. 37 VAN 1955

ENDORSEMENT IN TERMS OF SECTION 11 (1) (b) OF ACT NO. 37 OF 1955

ENDOSSEMENT KRAGTENS ARTIKEL 11 (1) (b) VAN WET NR. 37 VAN 1955

The herein-mentioned property *17-2-1968* has been expropriated by the Railway Administration in terms of section 3 (1) of Act No. 37 of 1955.

Wide Notice of Expropriation No. *17-2-1968* Application d.d. *17-2-1968* and plans filed. Heer *W. J. van der Merwe* en planne gelasseer *W. J. van der Merwe* aansoek en DEEDS OFFICE, AKTEKANTOOR, CAPE TOWN, KAAPSTAD.

THE ABOVE ENDORSEMENT IS DUBPLICATE HEREOF.

Deeds Registrar Cape Town
12-2-1968
[Signature]

Ent 4168 no. 70,959-00 Sq (1)

GETRANSPORTEER *16990* Aan *Pacall si gip*
 TRANSPORTERED To *Lengit getreval* Werk
 No. *16990* Restant
 Remander *[Signature]*
 Assl.-Registrar/Assl. Registrar *[Signature]*

ENDORSEMENT IN TERMS OF SECTION 11 (1) (b) OF ACT NO. 37 OF 1955

ENDOSSEMENT KRAGTENS ARTIKEL 11 (1) (b) VAN WET NR. 37 VAN 1955

The herein-mentioned property *17-2-1968* has been expropriated by the Railway Administration in terms of section 3 (1) of Act No. 37 of 1955.

Wide Notice of Expropriation No. *17-2-1968* Application d.d. *17-2-1968* and plans filed. Heer *W. J. van der Merwe* en planne gelasseer *W. J. van der Merwe* aansoek en DEEDS OFFICE, AKTEKANTOOR, CAPE TOWN, KAAPSTAD.

THE ABOVE ENDORSEMENT IS DUBPLICATE HEREOF.

Deeds Registrar Cape Town
12-2-1968
[Signature]

Ent 4168 no. 70,959-00 Sq (1)

GETRANSPORTEER *14111* Aan *T. G. Meyer*
 TRANSPORTERED To *[Signature]* Werk
 No. *14111* Restant
 Remander *[Signature]*
 Assl.-Registrar/Assl. Registrar *[Signature]*

Annexure to Crown Grant George Outencks.

(10)

Vol. 15 No. 15

26229/69

By reason of the transfer this day No. 1911
As gevolg van transport hede gedateer Nr 1911

of *lot 4350*
van *7322*
in extent *50 ft*
groot *aan*
to *Asst. Reg. of Deeds*
aan *1715166*
the endorsement dated *1715166*
is endorsement geëteer
has been superseded.
uitgewis.

Deeds Office,
Aktekantoor,
Cape Town,
Kaapstad,

5-9-1969

Eng 4141 = 8353 B GH

GETRANSPORTEER 14 -1- 1970 Aan *J. N. R. Steyn*
TRANSFERR 14 -1- 1970 Oo *J. N. R. Steyn*
No. *558* Restant
Remainder *558*
Asst.-Registrar/Asst. Registrar.

Eng 4250 = 10000 Mtg

GETRANSPORTEER ~~14~~ *34422* Restant
TRANSFERR ~~14~~ *34422* Remainder *34422*
No. *34422* Restant
Remainder *34422*
Asst.-Registrar/Asst. Registrar.

*To be used for the Council
To be used for the Council
To be used for the Council*

VIR VERDERE ENDOSSERENTE DIER
FOR FURTHER ENDORSEMENTS SEE *Overleaf*

8353
Restant
Remainder
Asst. Registrar

2183 SWARZ FERT
10-4-1969
Asst. Registrar
P. J. KOEN

12 = 50970 water
Restant
Remainder
50970
Asst. Registrar

17 = 7322 water
Restant
Remainder
7322
Asst. Registrar

ANNEXURE "A" TO GEORGE QUITRENTS
VOL 15, No. 15

(12)

1. ERF 4936 means 4122 Sq. Metres
2. ERF 4937 " 4104 " " "
GET TRANSPORTER TRANSFERRED
No. 32286
C.A. ROBERTSON
ASSISTANT REGISTRAR

ERF 4935 means 4122 Sq. Metres
GET TRANSPORTER TRANSFERRED
No. 32787
GILBOURGE (PROPRIETARY) LIMITED
ASSISTANT REGISTRAR

1. ERF 4942 means 4104 Sq. Metres
2. ERF 4943 " 4122 " " "

GET TRANSPORTER TRANSFERRED
No. 32386
THE REPUBLIC OF SOUTH AFRICA
ASSISTANT REGISTRAR

ERF 4938 means 4104 Sq. Metres

GET TRANSPORTER TRANSFERRED
No. 327288
YORK MOTORS (PROPRIETARY) LIMITED
ASSISTANT REGISTRAR

1. 5139 means 4400 Sq. Metres
GET TRANSPORTER TRANSFERRED
No. 784
A.H. MORRIS (P.P.) (PROPRIETARY) LIMITED
ASSISTANT REGISTRAR

ERF 4925 means 4275 Sq. Metres
GET TRANSPORTER TRANSFERRED
No. 32799
E.M. BUXMANN
ASSISTANT REGISTRAR

ERF 4928 means 4122 Sq. Metres

GET TRANSPORTER TRANSFERRED
No. 32786
P.S. LIVINGSTON
ASSISTANT REGISTRAR

ERF 4922 means 4292 Sq. Metres
ERF 4923 " 4075 " " "

GET TRANSPORTER TRANSFERRED
No. 32385
KORLINK (PROPRIETARY) LIMITED
ASSISTANT REGISTRAR

4946 meers 4104 sq. meters

TRANSPORTER TRANSFERRED
 III 6387
 UNITED DAIRIES CO-OPERATIVE LIMITED.
 Asst. Registrar/Asst. Registrar.

ERF 5314 meers 8217 sq. meters

TRANSPORTER TRANSFERRED
 X 32787
 EVERITE LIMITED.
 Asst. Registrar/Asst. Registrar.

ERF 4947 meers 4122 sq. meters

TRANSPORTER TRANSFERRED
 XI 32790
 C.V. G. BEUKES
 Asst. Registrar/Asst. Registrar.

ERF 5310 meers 8024 sq. meters
 " 5311 " 8010 sq. meters
 " 5312 " 7885 " "

TRANSPORTER TRANSFERRED
 X 132791
 PLATE G-LANDS PROPERTIES (GEDEGE) (PR. PROPRIETARY) LIMITED
 Asst. Registrar

ERF 5318 meers 8388 sq. meters

TRANSPORTER TRANSFERRED
 XII 32792
 E 7-12-1972
 WILL DAY AND TAKE (GEDEGE) (PR. PROPRIETARY) LIMITED
 Asst. Registrar

Leased area = 8251 sq. meters

Private lease 4-6-71 / 72
 12-5-1972 3 1/2 / 72
 20 YEARS from 13-10-1968

TRANSPORTER TRANSFERRED
 ERF 5316 meers 3,2777 Hectars
 Asst. Registrar

TRANSPORTER TRANSFERRED
 P 888
 -3-1972
 THE STRONG BUSH FARMERS' WINERY LIMITED
 Asst. Registrar

TRANSPORTER TRANSFERRED
 XI 32791
 Asst. Registrar

13

8 MARS 7003 Sg. MEERS
 Asst. Registrar/Asst. Registrar.
 Restant
 Remainder

14 MARS 1457 Sg. MEERS.
 31-07-1973 R. Eg. VAN S. A.
 Restant
 Remainder
 Asst. - Registrateur/Asst. Registrar.

9 MARS 4122 Sg. MEERS.
 31-07-1973
 Restant
 Remainder
 Asst. - Registrateur/Asst. Registrar.

E.F.F. 5796 = 4559 Sg. MEERS
 GETRANSPORTIEER
 (TRANSFERRE) 19-04-1974
 No. 10679
 Restant
 Remainder
 Asst. - Registrateur/Asst. Registrar.

E.F.F. 5564 = 2638 Sg. MEERS.
 GETRANSPORTIEER
 (TRANSFERRE) 19-04-1974
 No. 10679
 Restant
 Remainder
 Asst. - Registrateur/Asst. Registrar.

E.F.F. 4948 = 4237 M. Z.
 GETRANSPORTIEER
 (TRANSFERRE) 19-04-1973
 No. 3957
 Restant
 Remainder
 Asst. - Registrateur/Asst. Registrar.

15

ERF 5306 meas 1,2779 HECTARES
GETRAANSPORTSEER 10-3-1972 SHELL SOUTH AFRICA
TRANSFERRED (P.A. MILITARY) LIMITED
V5389
[Signature]

ERF 5306 meas
GETRAANSPORTSEER 10-3-1
TRANSFERRED
[Signature]

ERF 4934 meas 4104 Sq meters
GETRAANSPORTSEER 10-3-1972 V.F. KONSTRUKSIE
TRANSFERRED (...EENDOMS) BEZORGE
V15390
[Signature]

ERF 5137 mea
GETRAANSPORTSEER 12-5-
706257
[Signature]

ERF 4945 meas 4254 Sq meters
GETRAANSPORTSEER 1972 B. SAUERMANN
TRANSFERRED AND ANOTHER
5391
[Signature]

ERF 5140 m
GETRAANSPORTSEER 12-5-
TRANSFERRED 10626
[Signature]

OF PURCHASER ENCLOSED
TO VENDOR ENCLOSED

ERF 5135 mens. 4442 Sq. Metres
 12-5-1972 D E FRUST (GERKE
 ASSOCIATED (INCORPORATED)
 LIMITED
 No. 106274

ERF 4924 mens. 4292 Sq. Metres
 12-5-1972 J. C. SKRYM WERKERS
 (EIGENDOMMIS BEVEERK)
 No. 10628

ERF 4428 mens. 1592 Sq. Metres
 6-6-1972 THE TRUSTEES OF THE CALVARY
 CULTURED ASSEMBLY OF
 THE REPENTANT CATHOLIC
 RESISTANT CHURCH
 No. 12774

ERF 5340 =
 GET TRANSPORTER
 TRANSFERED 20-0-7
 No. 14935 Postant...
 Romande

ERF 4924 =
 GET TRANSPORTER
 TRANSFERED 22917 Postant...
 Romande

ERF 5546
 GET TRANSPORTER
 TRANSFERED 22918 Postant...
 Romande

ERF 5319 = 83
 GET TRANSPORTER
 TRANSFERED 380515 Postant...
 Romande

7A

Ref 6586 = 128484 Actuar

CORPORATION
 11-18-1974
 DIE HO SPINAAL TRUSTEES.
 1974
 0107
 [Signature]
 [Signature]

EMPOWERMENT IN TERMS OF SEC 6580 OF ACT 47/1937 78(1)

By reason of expiration of time, Lease No. 4/1948 DATED 5 JUNE 1948 and REGISTERED ON 3 SEPTEMBER 1948 HEREIN, HAS ~~Expired~~ terminated Application Files WITH MISC. 196/174

Deeds Registry Cape Town

REGISTRAR OF DEEDS [Signature]

ER 5309 = 7673 wr. motor

GETTRANSFERRE
 TRANSFERRED
 3-04-1974 aan T. J. Watson
 9191
 Registrar
 [Signature]

DEEDS REGISTER

REGISTERED

REGISTRAR OF DEEDS

Certificate of Registered Title
 Sertifikat van Geregistreerde Titel

Act No. 43 of 1937
 Wet No. 43 van 1937

4351 made 61,0684 HLR

in respect of the
 ten opsigte van

DEEDS OFFICE
 AKTESKANTOOR
 CAPE TOWN/KAPSTAD

1924

ASSISTANT REGISTRAR
 ASST. REGISTRAR

Applies to 4351 made 61,0684 HLR

In terms of the Deeds Act, 1937, of Act
 Kragsiens die Akte Wet No. 43 van 1937
 No. 4351 made 61,0684 HLR

have ceased to apply in respect of
 nie meer van toepassing is op die gebied van

Minister's order of 1937
 Minister se bevel van 1937

DEEDS REGISTER
 AKTESKANTOOR

8-10-74

DELETE WHAT IS NOT NECESSARY
 HAAL DIESE WAT NIE NOOIG IS NIE

Handwritten initials

Handwritten signature

No. 7 174
 Asst. Registrar
 Asst. Registrar

EP 5317 Book 17657: HM.

GETRANSPORTERES -08- 1974 Aan Oud-Tengker (Bitter)
 TRANSFERRED TO (Secretary) Komitee.
 No. 15965) 174. Remainder
 Registrar
 Asst. Registrar/Asst. Registrar
[Signature]

EP 5541 mees 7448 s.m.

GETRANSPORTERES 0-08-1974 Aan 185a - Post (18) HM.
 TRANSFERRED TO
 No. 29181
 Registrar
 Remainder
 Asst. Registrar/Asst. Registrar
[Signature]

EP 5313 mees 8432: N2

GETRANSPORTERES 8-11-1974 Aan Blue-Tingker
 TRANSFERRED TO
 No. 140174 / 174. Remainder
 Registrar
 Asst. Registrar/Asst. Registrar
[Signature]

Vide oortewingskenningsnommer 169/24
 filed as exprom. caveat
 registered as onteigening caveat
 Inseeur. *Van der Merwe*
 DEEDS OFFICE
 AKTEKANTOOR,
 CAPE TOWN.
 KAAPSTAD.
 8-10-1974
 REGISTRAR OF DEEDS,
 REGISTRAR VAN AKTES.

43765 =

Certificate of Registered Title No. T
 Sertifikat van Geëgisteerde Titel No.
 Sect. 43 Act No. 47/37 In terms of the
 Wet No. 47/37 In respect of the
 17,2970 H.P.
 Remainder
 Restant.
 DEEDS OFFICE,
 AKTEKANTOOR,
 CAPE TOWN/KAAPSTAD.
 REGISTRAR OF DEEDS,
 REGISTRAR VAN AKTES.

Added to 2/64 73 memo 17, 2970 H.P.

In terms of the provisions of section
 Krattens die bepalinge van Artikel 2(1)(a) of Act
 No. 48/64 restrictions contained in condition(s)
 is die restriksies vervat in voorwaarde(s) 175
 have ceased to apply to the property herein described,
 nie inoor van toepassing op die eiendom hierin genoem alse.
 Minister's consent filed with
 Minister se toestemming gelyksaam by *MISC*
 DEEDS OFFICE,
 AKTEKANTOOR,
 27-12-1974
 REGISTRAR OF DEEDS,
 REGISTRAR VAN AKTES.
 DELSTE WHAT IS NOT NECESSARY,
 HAAL DEUR WAT NIS NODIG IS NIE.

No. *38771* Remainder
 Assst. Registrar
 Assst. Registrar

38771

Certificate of Registered Title No. Issued in terms of
 Skrifligkaart van Geregistreerde Titel No. uittreksel kragtens
 Sect. 43 Act No. 47/37 in respect of the
 Art. 43 Wet No. 47/37, ten opsigte van
 Erf 5845 met 48, 4961 H.A.
 Remainder
 Registrant
 DEEDS OFFICE,
 AKTESKANTOOR,
 CAPE TOWN, KAAPSTAD.
 9-12-1975

ERF 6474 groot 5987 m² w

GEWINSPORTEER 19-11-75 Aan die Owerhoofde
 TEAN ENRED. Tj. Swartelle se
 No. 735905/75 Registrant
 Registrant
 Assst. Registrar/Assist. Registrar

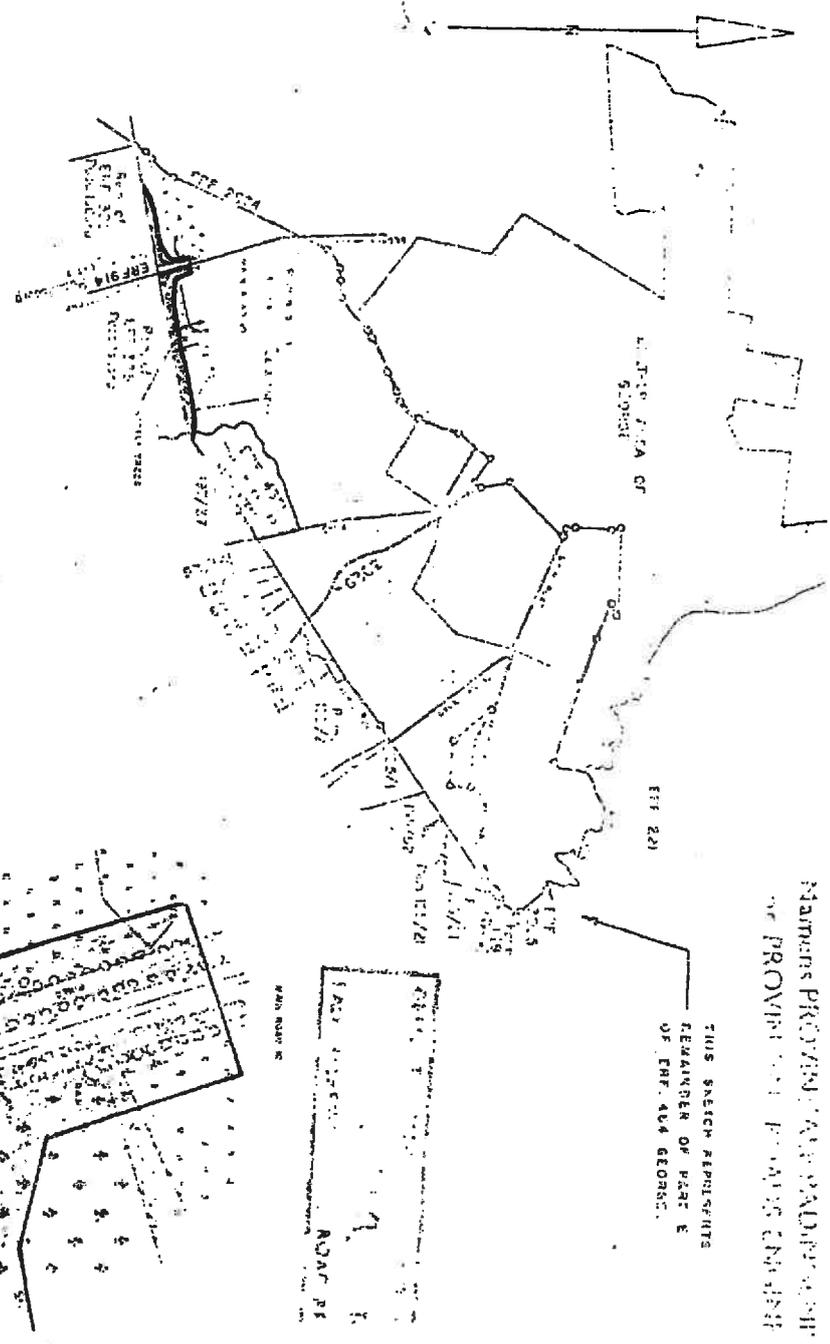
616090

2154 v M.

GETRANSPORTEER 19-3-1976 Aan HC Brand
 TRANSFERRED
 No. 16095/76 Registrant
 Registrant
 Assst. Registrar/Assist. Registrar

NAIAMS PROVINCE, CAMBODIA
 OF PROVINCE OF PHNOM PENH

THIS SKETCH REPRESENTS
 REMAINDER OF PART B
 OF ERF 464 GEORGE.

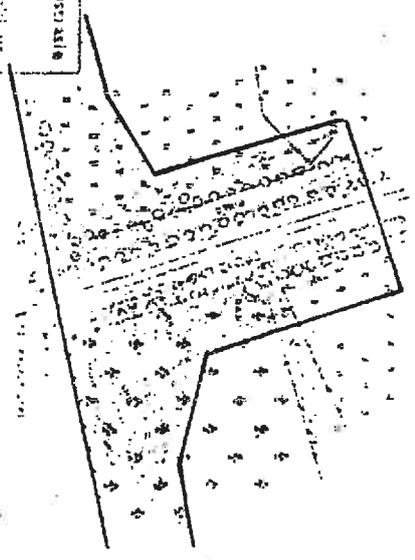


SKAAL / SCALE 1 : 70 000

Handwritten: 4/12/73.

SERTIFIKAT Vertoone Register 57 van die Registrasie
 van Afdelings Wêreld no. 47 van 1927.
 Hierby sertifiseer ek dat die voorgesêde Plan korrek is
 van eieners naam te wete, dat die Afdelings Wêreld
 die Kaarte Provisie, Administrasie van die Kaarte
 Kamein is.
 Datum 31 JUL 1974
Handwritten signature: Jean
 Klerk van die Registrasie

SKAAL / SCALE 1 : 7 000
 INSET



No. 48/61
 Date: 9-12-1975
 MISC. 1108
 1975
 M. B. Bratton
 ASSISTANT ATTORNEY GENERAL
 MISSOURI DEPARTMENT OF REVENUE
 POST OFFICE BOX 1000, JEFFERSON, MISSOURI 64603

EG 7362 growth 1506 wkm
 TRANSPORTED TO - 02-1977
 No. 3441
 2443
 Registrar
 M. B. Bratton
 Asst. Registrar / Asst. Rec. Staff

FOR FURTHER ENDORSEMENTS SEE Page 25
 VIA VENDERS ENDORSEMENT SIGN

115014 as 11 allots E11 7419 George, have
been cancelled.

Consent filed as BC 10680. 11977

Deeds Registry
Gape Town

Assistant-Registrar of
Deeds

The following endorsement dates 7-6-77
applies on the do copy for copy.

Registration of Servitude/Registrasie van Bepaalde
Die Innegeemede grondsonderwyskan in a servitude with regard to
appartement of water in terms of an Order of the Water Court
(Water Court District No. W10/Kaapstad, 5-6-77) as will mark
Water Court District No. W10/Kaapstad, 5-6-77 as will mark
fully appear on reference to the copy of said Order appended hereto.
Liesje F. de Vries, Aktuaris, Gape Town, 1977

18 for REGISTRAR/namens REGISTRATEUR

VIR ENDOSSEMENTE KYN BLADSY 26
FOR ENDORSEMENTS SEE PAGE 26
FT 598

Certificate of Registered Title No. 15917
 Sertifikaat van Geregistreerde Titel No. 15917

Issued in terms of Act No. 43 of 1955
 Uitgereik kragtens Wet No. 43 van 1955

In respect of the property of the Applicant
 In opsigte van die eiendom van die aansoekster

Act No. 43 of 1955
 Wet No. 43 van 1955

ten opsigte van die eiendom van die aansoekster

554 L Hill
 554 L Hill

Deeds Office
 Akteskantoor

Cape Town/Kaapstad

1977

Asst. Registrar
 Assi.-registrator

Certificate of Registered Title No. 15917
 Sertifikaat van Geregistreerde Titel No. 15917

Issued in terms of Act No. 43 of 1955
 Uitgereik kragtens Wet No. 43 van 1955

In respect of the property of the Applicant
 In opsigte van die eiendom van die aansoekster

Act No. 43 of 1955
 Wet No. 43 van 1955

ten opsigte van die eiendom van die aansoekster

554 L Hill
 554 L Hill

Deeds Office
 Akteskantoor

Cape Town/Kaapstad

1977

Asst. Registrar
 Assi.-registrator

VIR ENDOSSEMENTE KYK DIADSY
 FOR ENDORSEMENTS SEE PAGE 27 ET SEQ.

Consolidated.
Consent Given on R.C. 12245 1977

AKTEKANTOOR,
KAAPSTAD,
DEEDS REGISTRAR,
CAPE TOWN.
20-06-1977
ASST. REGISTRAR OF DEEDS

Certificate of Registered Title No. 116673/1977
Sertifikaat van Geregisterde Titel No. 116673/1977
S. O. 43 Act No. 47/1937 in respect of the
Afd. 1419 mees 56,9850 ha
in respect of the
ten opsigte van
F. 116673/1977
DEEDS OFFICE
AKTEKANTOOR
CAPE TOWN/KAAPSTAD
-2-07-1977
ASST. REGISTRAR
ASST. REGISTRAR

Certificate of Registered Title
Sertifikaat van Geregisterde Titel T
Issued in terms of sect.
uitgeleek Kringsens art. 43
in respect of the
ten opsigte van
116673 1977
Act 47/1937
Wet 47/1937
56,9850 mees 56,9850 ha
Remainder
Resident.
DEEDS OFFICE
AKTEKANTOOR
CAPE TOWN/KAAPSTAD
-07-1977
Asst. Registrar
Asst. Registrar

VIR ENDOSSEMENTE MYN BLADY
FOR ENDORSEMENTS SEE PAGE ET SEQ.

... word to apply to the property herein described.
 die mees van toepassing op die elandien hierin genoem nie.
 Minister's consent filed with
 Minister to toestemming gesaaisec by **B16634**
DEED REGISTER,
AKTEKAMIDON,
8105-18-08-1977
REGISTERED ON DEEDS,
REGISTRATEUR VAN AKTES.
 DELETE WHAT IS NOT NECESSARY,
 HAAL DEEL WAT NIE NOODIG IS NIE.

EF 7479 mees 1657 of mees
 GET TRANSPORTED **18-08-1977** Ann. George + Wynona, Harold
 TRANSFERRED **18-08-1977** To (Partnership) Limited
 No. **20862** Resident Registrar
 A. E. P. M. de la Tour
 A. E. P. M. de la Tour
 A. E. P. M. de la Tour

EF 6231 GROT : 9112 nr.
 GET TRANSPORTED
 TRANSFERRED
 No. **1** Resident Registrar
 77. Remainder
 Assi. Registrateur/Asst. Registrar
 Ann Die HOSPITAL KUSSTERS.

FOR FURTHER E. DORSEMENTS SEE **Page 21**
 VIR VERDERE EMDJ. SENSIE SIEN

ALL EN ENDORSEMENTS SEE
THE ENDOSEMENT SHEET

Page 30

Agreement L. O. 2002 (B) (B) 1st 48 of 1911

Key virtues of the comment by the
Minister of Agriculture L. O. 1912/17
in terms of the said provision
of the Act and the said provision
competition (and 5 in at least one
they affect by 1919 (caption of 1914)
Ministry of George have been
recollected.

Insert filed on B. 1 1917

Needs Register Part-Register of Needs.
L. O. 1911.

Meneer

43/3/1/1/0411

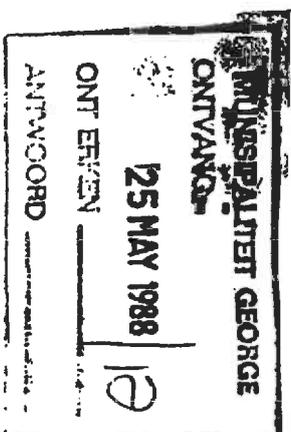
OPHEFFING VAN DIE STAAT SE HERNEMINGSREG TEN OPSIGTE VAN DIE
RESTANT VAN DIE MEENTGROND (ERF 464) GEORGE : U 10/6/4

Die ontvangs van u skrywe van 20 April 1988 tesame met u tjek vir die bedrag van Rj'6 245,00 word hiermee erken. Ingevolge sertifikaat van restant 14/1988 wat sedertdien vanaf die Landmeter-generaal van is, is die grootte van die restant van die meentgrond (Erf 464) 1803,1227 hektaar soos op 11 Maart 1988 waarby Erf 13387, gedeelte van Erf 464, groot 10,2000 hektaar, wat vir die doeleindes van die Outeniqua proefplaas herneem is maar nog in naam van die Staat geregistreer staan te word, ingesluit is. Die restant van die meentgrond ten opsigte waarvan die Staat se hernemingsreg gevolglik rofjeer moet word beloop dus 1792,9227 hektaar en bereken teen R5,00 per hektaar of gedeelte daarvan is die vergoedingsbedrag slegs R8965,00. 'n Skatkisorder vir R7280,00 te veel betaal gaan derhalwe hiermee saam.

Die nodige toestemming vir die ophffing van die Staat se hernemingsreg oor die restant van die meentgrond is ook aangeheg.

Die uwe

M. D. ...
DIREKTUR-GENERAAL
OPENBARE WERKE EN GRONDSAKE



1. Stem hiermee toe kragtens artikel 2A(1) van die Wet op die Beskikking oor Staatsgrond, 1961 (Wet 48 van 1961), tot die rojering van voorwaardes 1 en 5 soos vervat in grondbrief gedateer 15 Junie 1922 (George Erfpagte volume 15 no 15) ten opsigte van:

Die restant van Erf 464 George, geleë in die munisipaliteit en administratiewe distrik George, groot as sodanig 1803,1227 hektaar met die uitsluiting van Erf 13387 gedeelte van Erf 464 George geleë in die munisipaliteit en administratiewe distrik van George, groot 10,2000 hektaar soos voorgestel en omskryf op kaart L G 516/87 wat nog geregistreer staan te word.

2. Magtig hierby die Registrateur van Aktes, Kaapstad kragtens artikel 2A(2) van voornoemde Wet om die rojering op die titelbewys aan te teken.

ALDUS GEDOEN en GETEKEN te PRETORIA op hierdie 10^{de} dag van Mei 1988.

P.P. MINISTER VAN MANNEKRAG EN VAN
OPENBARE WERKE EN GRONDSAAK
(Volmag : Item C.4(1) van Bylae 2)

REGISTRATEUR VAN AKTES
KAAPSTAD



Geagte Meneer

MUNISIPALE TITELAKTES

Jare gelede is reëlings met die Akteskantoor getref om 'n toonbank lêer Nr.662 oop te maak ten opsigte van sekere van die Munisipaliteit se titelaktes.

Die doel van 'n toonbank lêer is dat dit nie nodig is om die Munisipaliteit se titelakte met elke transport van 'n stuk grond daaruit met daardie transport in te dien nie maar daar word net verwys na die toonbank lêer. Op dié manier word transporte van die Munisipale titelakte bespoedig.

Die Akteskantoor het egter nou besluit om alle toonbank lêers te sluit en ons stuur u hiermee die betrokke toonbank lê Nr 662 wat die volgende inhoud het:-

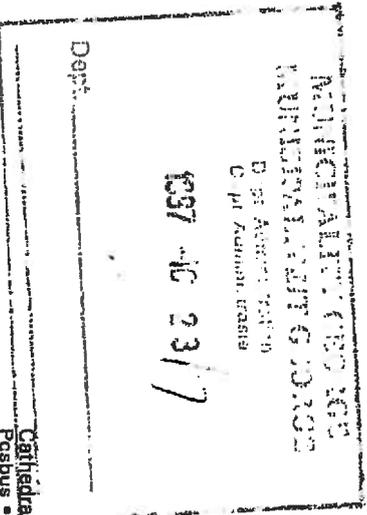
1. Gesertifiseerde afskrif van George Erfpagte Nr 15; — (1)
2. Transportakte Nr 6712/1941;
3. Transportakte Nr T1005/1938.

Geliewe veilige ontvangs te erken op die aangehegte afskrif van hierdie skrywe.

Die uwe
RAUBENHEIMERS ING

Per:

TIM BYRNE



Gestig • Established 1907
Raubenheimers Ing / Inc • Reg No 93/01742/21

Direkteure / Directors T S Byrne • T J Nel BA B hr • W M Luttig B Comm LLB •
C G Plenaar B hr LLB LLM • R Engelbrecht BA LLB
Konsultant / Consultant J N Raubenheimer BA LLB

Cathedralstraat 60 Cathedral Street
Postbus • PO Box 21 George 6530
Dooex 1 George
Suid-Afrika / South Africa
☎ (044) 873 2043
FAX (044) 874 4516
Na ure • After hours 082 490 2966/7
Internet <http://www.george.co.za/rb>
e-Mail raubenheimers@pixie.co.za



Data

Co-ordinates Angles Sides			Co-ordinates Angles Sides			Co-ordinates Angles Sides										
PART A			PART E (cont)			PART F (cont)										
11	47928.72	36.86 76	144.26 10	10.00	219.15	101	49071.07	45.00 03	161.40	1259.70	177	100391.97	4.90 17	143.14	10.00	302.5
12	47721.71	36.83 70	76.02 10	10.00	162.11	102	49071.07	45.00 03	161.40	1259.70	178	100391.97	4.90 17	143.14	10.00	302.5
13	48049.42	37.00 20	24.5 10	10.00	144.27	103	49071.07	45.00 03	161.40	1259.70	179	100391.97	4.90 17	143.14	10.00	302.5
14	48271.57	37.15 07	208.89 20	10.00	619.28	104	49071.07	45.00 03	161.40	1259.70	180	100391.97	4.90 17	143.14	10.00	302.5
15	48049.42	37.00 20	24.5 10	10.00	144.27	105	49071.07	45.00 03	161.40	1259.70	181	100391.97	4.90 17	143.14	10.00	302.5
16	47928.72	36.86 76	144.26 10	10.00	219.15	106	49071.07	45.00 03	161.40	1259.70	182	100391.97	4.90 17	143.14	10.00	302.5

Recd Area: 3 Mgn 104 Sq Rds 27 Sq Ft
Curve A-B runs at 4336 CT from centreline of Railway

PART B

17	48049.42	37.00 20	24.5 10	10.00	144.27
18	48271.57	37.15 07	208.89 20	10.00	619.28
19	48049.42	37.00 20	24.5 10	10.00	144.27
20	47928.72	36.86 76	144.26 10	10.00	219.15

Recd Area: 5 Mgn 230 Sq Rds 35 Sq Ft
Curve B-C runs at 4336 CT from centreline of Railway

PART C

21	48049.42	37.00 20	24.5 10	10.00	144.27
22	48271.57	37.15 07	208.89 20	10.00	619.28
23	48049.42	37.00 20	24.5 10	10.00	144.27
24	47928.72	36.86 76	144.26 10	10.00	219.15

Recd Area: 1 Mgn 346 Sq Rds 107 Sq Ft
Curve C-D runs at 4336 CT from centreline of Railway

PART D

25	48049.42	37.00 20	24.5 10	10.00	144.27
26	48271.57	37.15 07	208.89 20	10.00	619.28
27	48049.42	37.00 20	24.5 10	10.00	144.27
28	47928.72	36.86 76	144.26 10	10.00	219.15

Recd Area: 1 Mgn 346 Sq Rds 107 Sq Ft
Curve D-E runs at 4336 CT from centreline of Railway

PART E

29	48049.42	37.00 20	24.5 10	10.00	144.27
30	48271.57	37.15 07	208.89 20	10.00	619.28
31	48049.42	37.00 20	24.5 10	10.00	144.27
32	47928.72	36.86 76	144.26 10	10.00	219.15

Recd Area: 1777 Mgn 146 Sq Rds 101 Sq Ft
Curve E-F runs at 25.4 CT curve E-G at 26.2 CT curve F-G at 22.2 CT curve G-H at 27.1 CT from centreline of Railway

PART F

33	48049.42	37.00 20	24.5 10	10.00	144.27
34	48271.57	37.15 07	208.89 20	10.00	619.28
35	48049.42	37.00 20	24.5 10	10.00	144.27
36	47928.72	36.86 76	144.26 10	10.00	219.15

Recd Area: 2 Mgn 400 Sq Rds 150 Sq Ft
Curve F-G runs at 25.4 CT curve G-H at 26.2 CT curve H-I at 22.2 CT curve I-J at 27.1 CT from centreline of Railway

PART G

37	48049.42	37.00 20	24.5 10	10.00	144.27
38	48271.57	37.15 07	208.89 20	10.00	619.28
39	48049.42	37.00 20	24.5 10	10.00	144.27
40	47928.72	36.86 76	144.26 10	10.00	219.15

Recd Area: 2 Mgn 400 Sq Rds 150 Sq Ft
Curve G-H runs at 25.4 CT curve H-I at 26.2 CT curve I-J at 22.2 CT curve J-K at 27.1 CT from centreline of Railway

The above figure A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z, AA, AB, AC, AD, AE, AF, AG, AH, AI, AJ, AK, AL, AM, AN, AO, AP, AQ, AR, AS, AT, AU, AV, AW, AX, AY, AZ, BA, BB, BC, BD, BE, BF, BG, BH, BI, BJ, BK, BL, BM, BN, BO, BP, BQ, BR, BS, BT, BU, BV, BW, BX, BY, BZ, CA, CB, CC, CD, CE, CF, CG, CH, CI, CJ, CK, CL, CM, CN, CO, CP, CQ, CR, CS, CT, CU, CV, CW, CX, CY, CZ, DA, DB, DC, DD, DE, DF, DG, DH, DI, DJ, DK, DL, DM, DN, DO, DP, DQ, DR, DS, DT, DU, DV, DW, DX, DY, DZ, EA, EB, EC, ED, EE, EF, EG, EH, EI, EJ, EK, EL, EM, EN, EO, EP, EQ, ER, ES, ET, EU, EV, EW, EX, EY, EZ, FA, FB, FC, FD, FE, FF, FG, FH, FI, FJ, FK, FL, FM, FN, FO, FP, FQ, FR, FS, FT, FU, FV, FW, FX, FY, FZ, GA, GB, GC, GD, GE, GF, GG, GH, GI, GJ, GK, GL, GM, GN, GO, GP, GQ, GR, GS, GT, GU, GV, GW, GX, GY, GZ, HA, HB, HC, HD, HE, HF, HG, HH, HI, HJ, HK, HL, HM, HN, HO, HP, HQ, HR, HS, HT, HU, HV, HW, HX, HY, HZ, IA, IB, IC, ID, IE, IF, IG, IH, II, IJ, IK, IL, IM, IN, IO, IP, IQ, IR, IS, IT, IU, IV, IW, IX, IY, IZ, JA, JB, JC, JD, JE, JF, JG, JH, JI, JJ, JK, JL, JM, JN, JO, JP, JQ, JR, JS, JT, JU, JV, JW, JX, JY, JZ, KA, KB, KC, KD, KE, KF, KG, KH, KI, KJ, KK, KL, KM, KN, KO, KP, KQ, KR, KS, KT, KU, KV, KW, KX, KY, KZ, LA, LB, LC, LD, LE, LF, LG, LH, LI, LJ, LK, LL, LM, LN, LO, LP, LQ, LR, LS, LT, LU, LV, LW, LX, LY, LZ, MA, MB, MC, MD, ME, MF, MG, MH, MI, MJ, MK, ML, MM, MN, MO, MP, MQ, MR, MS, MT, MU, MV, MW, MX, MY, MZ, NA, NB, NC, ND, NE, NF, NG, NH, NI, NJ, NK, NL, NM, NN, NO, NP, NQ, NR, NS, NT, NU, NV, NW, NX, NY, NZ, OA, OB, OC, OD, OE, OF, OG, OH, OI, OJ, OK, OL, OM, ON, OO, OP, OQ, OR, OS, OT, OU, OV, OW, OX, OY, OZ, PA, PB, PC, PD, PE, PF, PG, PH, PI, PJ, PK, PL, PM, PN, PO, PP, PQ, PR, PS, PT, PU, PV, PW, PX, PY, PZ, QA, QB, QC, QD, QE, QF, QG, QH, QI, QJ, QK, QL, QM, QN, QO, QP, QQ, QR, QS, QT, QU, QV, QW, QX, QY, QZ, RA, RB, RC, RD, RE, RF, RG, RH, RI, RJ, RK, RL, RM, RN, RO, RP, RQ, RR, RS, RT, RU, RV, RW, RX, RY, RZ, SA, SB, SC, SD, SE, SF, SG, SH, SI, SJ, SK, SL, SM, SN, SO, SP, SQ, SR, SS, ST, SU, SV, SW, SX, SY, SZ, TA, TB, TC, TD, TE, TF, TG, TH, TI, TJ, TK, TL, TM, TN, TO, TP, TQ, TR, TS, TT, TU, TV, TW, TX, TY, TZ, UA, UB, UC, UD, UE, UF, UG, UH, UI, UJ, UK, UL, UM, UN, UO, UP, UQ, UR, US, UT, UY, UV, UW, UX, UY, UZ, VA, VB, VC, VD, VE, VF, VG, VH, VI, VJ, VK, VL, VM, VN, VO, VP, VQ, VR, VS, VT, VU, VW, VX, VY, VZ, WA, WB, WC, WD, WE, WF, WG, WH, WI, WJ, WK, WL, WM, WN, WO, WP, WQ, WR, WS, WT, WU, WV, WW, WX, WY, WZ, XA, XB, XC, XD, XE, XF, XG, XH, XI, XJ, XK, XL, XM, XN, XO, XP, XQ, XR, XS, XT, XU, XV, XW, XX, XY, XZ, YA, YB, YC, YD, YE, YF, YG, YH, YI, YJ, YK, YL, YM, YN, YO, YP, YQ, YR, YS, YT, YU, YV, YW, YX, YY, YZ, ZA, ZB, ZC, ZD, ZE, ZF, ZG, ZH, ZI, ZJ, ZK, ZL, ZM, ZN, ZO, ZP, ZQ, ZR, ZS, ZT, ZU, ZV, ZW, ZX, ZY, ZZ.

Portfolio - 98
Deduction Plan 2281
Plan G.37

Scale: 1000 Cape Feet = 1 inch
1:12500

Geo Q 15-16
15.6.1922
Municipality of George

Surveyed and beaconed by me according to regulations
R. G. Munnell
August, 1919.
Government Land Surveyor

3CC

Coordinates of Trig Stations

Crab	100391.97	4.90 17	143.14	10.00	302.5
Blue River	100391.97	4.90 17	143.14	10.00	302.5
Geelbont Boom	100391.97	4.90 17	143.14	10.00	302.5
Brakfontein	100391.97	4.90 17	143.14	10.00	302.5
D.R. Church Steeple	100391.97	4.90 17	143.14	10.00	302.5

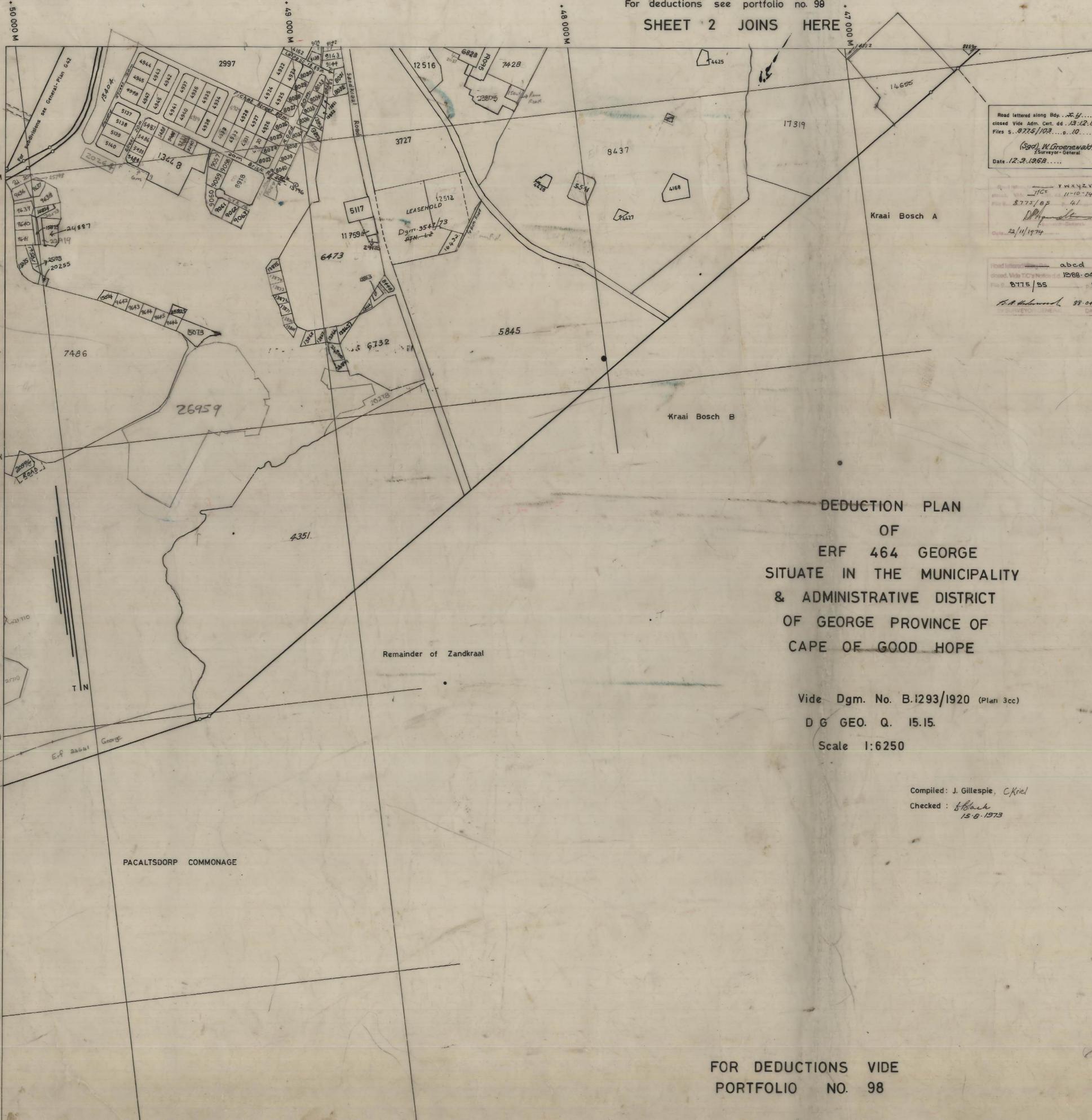
G.37

OF ERF 464 GEORGE

THIS PLAN CONSISTS OF 4 SHEETS

For deductions see portfolio no. 99

SHEET 2 JOINS HERE



Road lettered along Bdy. X-Y.....
 closed Vide Adm. Cert. dt. 13-12-1966.
 Files S. 8775/103.....p.10.....
 (Sgt) M. Groenewald.....
 Surveyor-General
 Date: 12.2.1968.....

Y W X Z V
 T.C.'s 11-10-74
 2775/85 41
 22/11/74

abcd
 closed Vide T.C.'s No. 1988-04-15
 8775/55 825
 P.A. Malmood 88-04-18
 SURVEYOR-GENERAL DATE

SERVITUDE/LEASEHOLD AREAS				
SURVEY RECORD	DIAGRAM NO.	DESCRIPTION	DEED	INITIALED
E1125/44	3204/45	PORTION L5	D/L 6-1946	
E2288/56	7346/1948	PORTION 64	D/L 1-1958	
E1828/1957	10055/56	PORTION L8	D/L 24-1958	
E2287/1972	8854/1972	LEASE AREA		
E1314/1973	4300/1973	LEASE AREA		
E1947/1983	8353/1983	The lines ab, bc represent the western boundaries of servitude roads 6.30m wide		
E1750/80	5508/80	Withdrawn		
E1244/2003	3371/2003	The line Fa represents the south western boundary of a Right of Way 6m wide		
E1919/03	6244/2003	The lines Si, S2, S3, S4, S5, S6, S7 is the northern and the line S8, S9, S10 the western boundary of a 3m wide water pipe line servitude		
499/2009	1426/2009	The line a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z represents the centre line of an electric power transmission servitude		
1786/22	3015/22	The figure L10 withdrawn represents a lease area		
723/24	1321/24	Withdrawn		

DEDUCTION PLAN
 OF
 ERF 464 GEORGE
 SITUATE IN THE MUNICIPALITY
 & ADMINISTRATIVE DISTRICT
 OF GEORGE PROVINCE OF
 CAPE OF GOOD HOPE

Vide Dgm. No. B.1293/1920 (Plan 3cc)

D G GEO. Q. 15.15.

Scale 1:6250

Compiled: J. Gillespie, C.Kriel
 Checked: J. Bark
 15.8.1973

NO.	DESCRIPTION	ERF NO.	T.C.'S	DATE	INITIALS
1	Closure of ptn of street	ERF 18796	T.C.'s notice dt. 1980-08-22	1980-08-22	RA
2	Closure of ptn of street	1990-07-04	T.C.'s notice dt. 1990-07-04	1990-07-04	RA
3	Closure of ptn of street	1980-10-12	T.C.'s notice dt. 1980-10-12	1980-10-12	RA
4	Closure of ptn of Road	ptn of Erf 18085	T.C.'s notice dt. 1980-03-08	1980-03-08	RA
5	Closure of ptn of STREET	Erf 16804	T.C.'s notice dt. 1980-03-08	1980-03-08	RA
6	Closure of ptn of street	Erf 18298	T.C.'s notice dt. 1980-03-08	1980-03-08	RA

ENTRIES IN THESE ENDORSEMENT COLUMNS IS NOT NECESSARY

THE FOLLOWING DEDUCTIONS HAVE BEEN MADE FROM THIS DIAGRAM

SURVEY RECORD	DIAGRAM NO.	SUBD.	AREA HA/SQ.M.	TRANSFER NO.	INITIALED	REMR.
E1544/2003	3389/2003	ERF 20255				
E849/2002	1900/2002	ERF 20255	798m ²	88079/2003	RA	
E132/2002	258/2002	ERF 20256	4204 m ²	88079/2003	RA	
E79/2003	181/2003	ERF 20258	141 m ²			

Use portfolio 98

FOR DEDUCTIONS VIDE
 PORTFOLIO NO. 98

SHEET 3 JOINS HERE

50 000 M
 3 761 000 M
 3 762 000 M
 3 763 000 M
 3 764 000 M

PACALTSDORP COMMONAGE

G.37

OF ERF 464 GEORGE

THIS PLAN CONSISTS OF 4 SHEETS

For deductions see portfolio no. 98

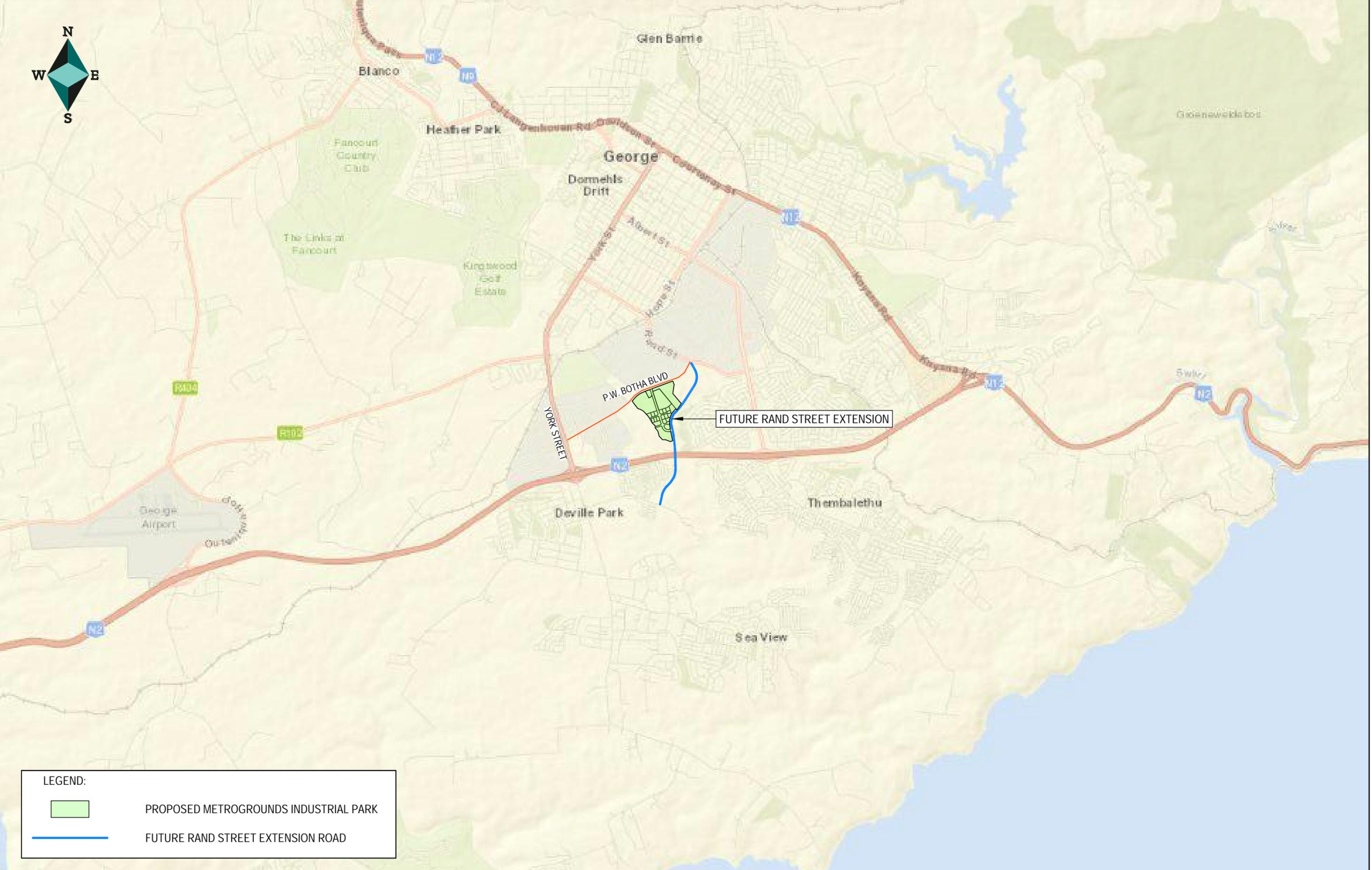


SHEET 2 JOINS HERE

PRESCRIPTIVE CLAIM
 ERF 20894
 2002-07-28 790
 s/18775/62 v3
 P.W.H.

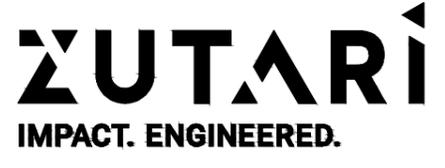
SHEET 3 JOINS HERE

Plot Date: 27/5/2024 10:31:40 am Office: ZAGRU Filename: C:\USERS\MORWAY\RICHARDS\ZUTARI\1002372 - METROGROUNDS INDUSTRIAL - DOCUMENT\505 DELIVER\306 DRAWINGS\CIVIL\2 DISCUSSION\1002372-0000-DRG-CC-0100-REVA_LOCALITY MAP.DWG



LEGEND:

- PROPOSED METROGROUNDS INDUSTRIAL PARK
- FUTURE RAND STREET EXTENSION ROAD



DISCLAIMER
IF CONSTRUCTION
DRAWINGS ARE
ISSUED UNSIGNED,
THE MASTER WITH
THE ORIGINAL
SIGNATURE OF
APPROVAL WILL BE
HELD AT THE ZUTARI
OFFICE OF THE
APPROVER

REV	DATE	REVISION DETAILS	APPROVED
A	27/5/2024	FOR INFORMATION PURPOSES ONLY	AC KEYSER

SCALE	1 : 50 000
SIZE	A3
DRAWN	M RICHARDS
DESIGNED	M RICHARDS
REVIEWED	W LOFTUS

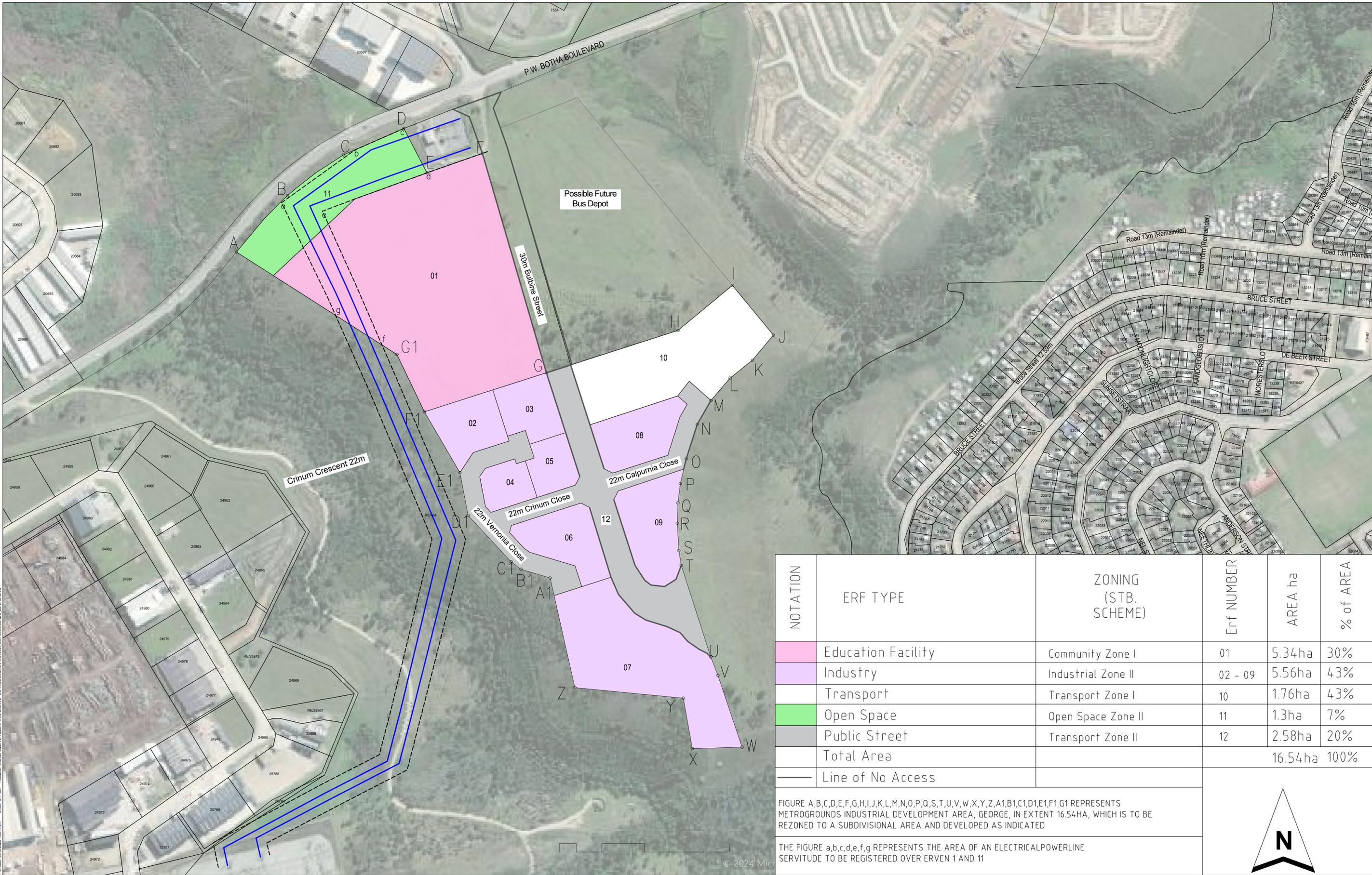
PRELIMINARY
NOT FOR CONSTRUCTION

APPROVED

DATE

AC KEYSER ECSA-200670188

PROJECT	METROGROUNDS INDUSTRIAL PARK				
TITLE	LOCALITY MAP				
DRAWING No.	PROJECT No.	WBS	TYPE	DISC	NUMBER
1002372	1002372	0000	DRG	CC	0100



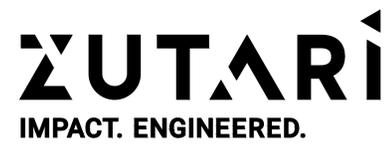
NOTATION	ERF TYPE	ZONING (STB. SCHEME)	Erf NUMBER	AREA ha	% of AREA
	Education Facility	Community Zone I	01	5.34ha	30%
	Industry	Industrial Zone II	02 - 09	5.56ha	43%
	Transport	Transport Zone I	10	1.76ha	43%
	Open Space	Open Space Zone II	11	1.3ha	7%
	Public Street	Transport Zone II	12	2.58ha	20%
Total Area				16.54ha	100%
	Line of No Access				

FIGURE A,B,C,D,E,F,G,H,I,J,K,L,M,N,O,P,Q,R,S,T,U,V,W,X,Y,Z,A1,B1,C1,D1,E1,F1,G1 REPRESENTS METROGROUNDS INDUSTRIAL DEVELOPMENT AREA, GEORGE, IN EXTENT 16.54HA, WHICH IS TO BE REZONED TO A SUBDIVISIONAL AREA AND DEVELOPED AS INDICATED

THE FIGURE a,b,c,d,e,f,g REPRESENTS THE AREA OF AN ELECTRICALPOWERLINE SERVITUDE TO BE REGISTERED OVER ERVEN 1 AND 11



File Name: C:\Users\LEANA\OneDrive - ZUTARI\Documents\250909_METROGROUNDS_ZONING.DWG Plot Date: 30/10/2025 10:14 pm



CLIENT

DISCLAIMER
IF CONSTRUCTION DRAWINGS ARE ISSUED UNSIGNED, THE MASTER SIGNATURE OF APPROVAL WILL BE HELD AT THE ZUTARI OFFICE OF THE APPROVER

REV	DATE	REVISION DETAILS	APPROVED
B	2/12/2024	Layouts adjusted to exclude environmental sensitive areas	R Schroder
C	3/12/2024	Overhead Powerlines added and layout amended	R Schroder
D	14/1/2025	High and Medium Voltage lines added from Client Information	R Schroder
E	15/5/2025	Inclusion of stormwater servitude	R Schroder
F	27/08/2025	Amended Layout to include realignment of Rand Street Extension	R Schroder
G	02/09/2025	Realignment of entrance and central road	R Schroder
H	03/09/2025	Site boundary adjustment. Change from Industry I to II	R Schroder
I	30/10/2024	Portion of road in front of Bus Depot removed	R Schroder

SCALE	SIZE
1 : 2000	A1
DRAWN	
Z Mhlongo	
DESIGNED	
A Florence-Brander	
REVIEWED	
R SCHRODER	

PRELIMINARY NOT FOR CONSTRUCTION

APPROVED

DATE

R Schroder

PROJECT	METROGROUNDS: INDUSTRIAL DEVELOPMENT					
TITLE	Zoning Drawing					
DRAWING No.	PROJECT No.	WBS	TYPE	DISC	NUMBER	REV
	1002372	0000	DRG	CC	0001	H

LAND USE PLANNING PRE-APPLICATION CONSULTATION FORM

PLEASE NOTE:

Pre-application consultation is an advisory session and is required prior to submission of an application for rezoning, consent use, temporary departure and subdivision. It does not in any way pre-empt the outcome of any future application which may be submitted to the Municipality.

PART A: PARTICULARS

Reference number: **Collab Ref. No.: 3505358**

Purpose of consultation: **Preapplication consultation for the proposed Metro Grounds development at the intersection of PW Botha Boulevard and Ossie Urban Street roughly halfway between Nelson Mandela Boulevard and York Street in the George Industrial area, George.**

Brief proposal: **_To create a industrial development's intent is to accommodate light industry erven, appropriate to the site context and facilitating small- and medium enterprise development.**

Property(ies) description: **Remainder of Erf 464, George**

Date: **04 December 2024**

Attendees:

	Name & Surname	Organisation	Contact Number	E-mail
Official	Naudica Swanepoel	George Municipality	044 801 9477	kjmukhovha@george.gov.za
Pre-applicant	Rudolf Schröder	Zutari	083 390 6963	Rudolf.Schroder@zutari.com

Documentation provided for discussion:

(Include document reference, document/plan dates and plan numbers where possible and attach to this form)

Pre-planning motivation report, Subdivisional layout plan, SG diagrams, Title deed, and locality map.

Has pre-application been undertaken for a Land Development application with the Department of Environmental Affairs & Development Planning (DEA&DP)?

(If so, please provide a copy of the minutes)

<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
---	-----------------------------

Comprehensive overview of proposal:

The subject portion of the Remainder of Erf 464, George has been identified as land to accommodate an industrial development. The industrial development’s intent is to accommodate light industry erven, appropriate to the site context and facilitating small- and medium enterprise development. The small industrial stands will be released to users or buyers. The proposed development also includes an educational erf that is earmarked to be developed as a tertiary educational facility. The proposed development does not require the future Rand Street extension for access or to make it functional. The proposed development falls within the study area of the George South-East Local Spatial Development Framework, 2015, and the area is earmarked for industrial development. The site is flanked on two of the three sites by the Skaapkop river. The current zoning of the subject area is “Undetermined Use Zone” as per the provisions of the George Integrated Zoning Scheme Bylaw,2023. The main objective of the project is to build on the previous work and studies already conducted and to finalise and submit the required development rights applications (town planning application, environmental authorisation, General Plan approval). The intension is to submit an application in terms of section(15)(2) of the George Municipal Land Use Planning By Law, 2023 for the rezoning and subdivision of the Remainder of Erf 464, George in order to allow for the proposed Metro Grounds development as per the attached Subdivisional layout plan. See attached pre-application motivation report for more detail.



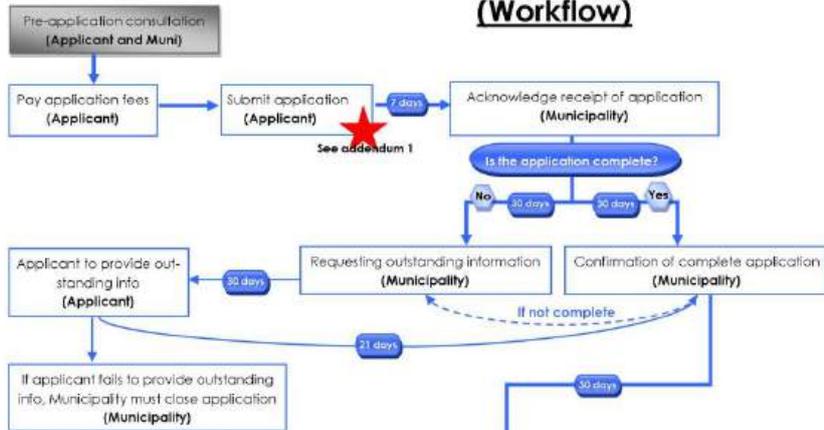
PART B: APPLICATION PROCESS

(WILL FULLY APPLY ONLY ONCE LUPA REGULATIONS ARE IN FORCE)

Draft By-Law on Municipal Land Use Planning

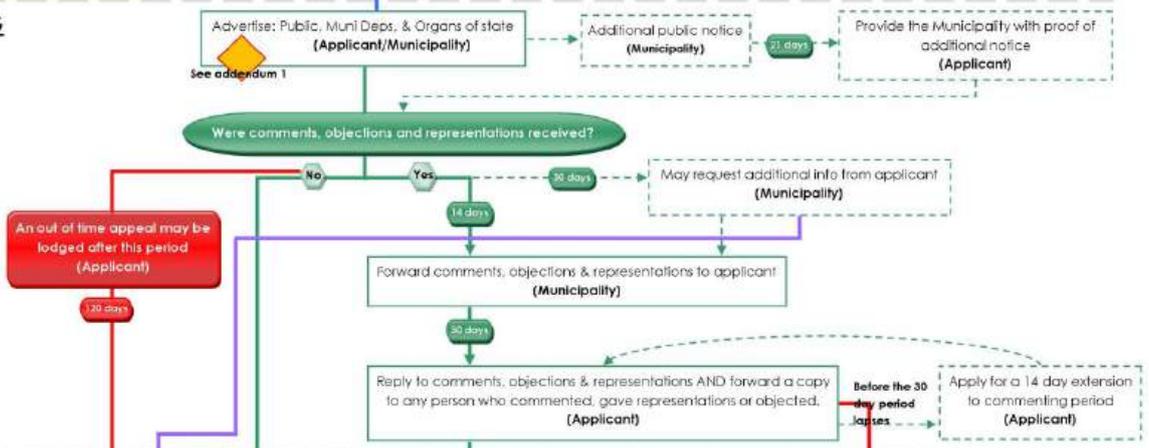
(Workflow)

SUBMISSION



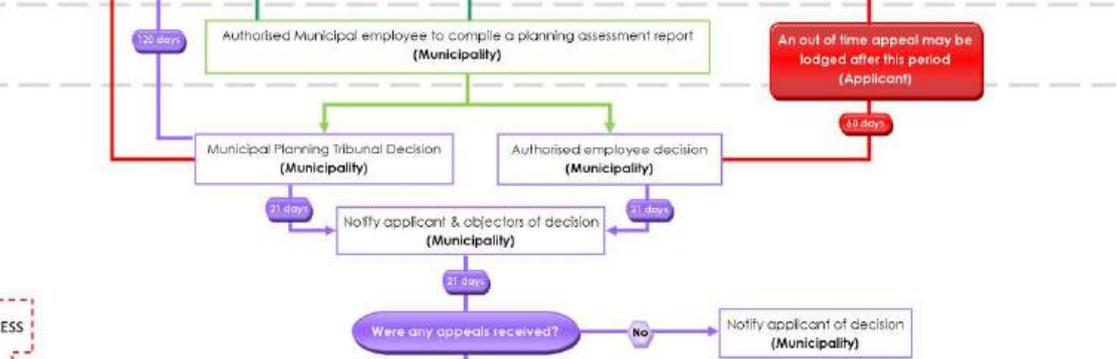
- Types of applications that can be submitted in terms of Section 15 (2)**
- (a) Rezoning of land
 - (b) Permanent departure
 - (c) Temporary departure
 - (d) Subdivision of land
 - (e) Consolidation of land
 - (f) Amendment, suspension or removal of restrictive conditions
 - (g) Permission required in terms of the zoning scheme
 - (h) Amendment, deletion or imposition of condition in respect of an approval
 - (i) Extension of validity period of an approval
 - (j) Approval of an overlay zone
 - (k) Phasing, amendment or cancellation of a subdivision plan or part thereof
 - (l) Permission required in terms of condition of approval
 - (m) Determination of zoning
 - (n) Closure of public place or part thereof
 - (o) Consent use
 - (p) Occasional use

ADVERTISING



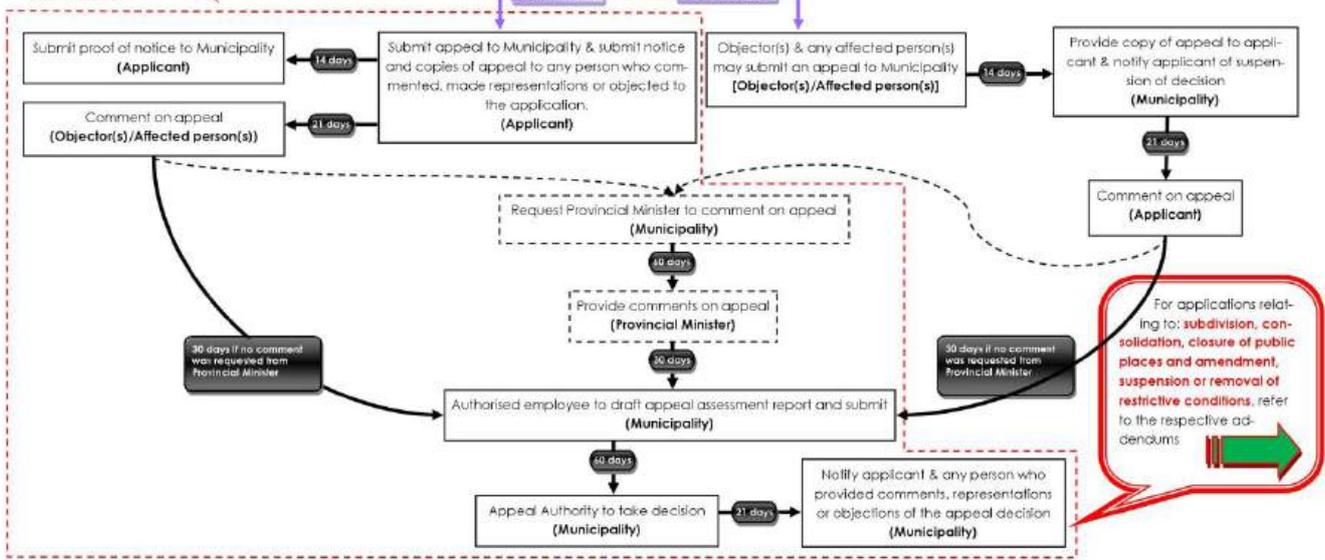
ASSESSMENT

DECISION



APPEAL PROCESS

APPEAL



PART C: QUESTIONNAIRES

**SECTION A:
DETERMINATION OF APPLICATION TYPES, PRESCRIBED NOTICE AND ADVERTISEMENT PROCEDURES**

Tick if relevant		What land use planning applications are required?	Application fees payable
X	2(a)	a rezoning of land;	R
	2(b)	a permanent departure from the development parameters of the zoning scheme;	R
	2(c)	a departure granted on a temporary basis to utilise land for a purpose not permitted in terms of the primary rights of the zoning applicable to the land;	R
X	2(d)	a subdivision of land that is not exempted in terms of section 24, including the registration of a servitude or lease agreement;	R
	2(e)	a consolidation of land that is not exempted in terms of section 24;	R
	2(f)	a removal, suspension or amendment of restrictive conditions in respect of a land unit;	R
	2(g)	a permission required in terms of the zoning scheme;	R
	2(h)	an amendment, deletion or imposition of conditions in respect of an existing approval;	R
	2(i)	an extension of the validity period of an approval;	R
	2(j)	an approval of an overlay zone as contemplated in the zoning scheme;	R
	2(k)	an amendment or cancellation of an approved subdivision plan or part thereof, including a general plan or diagram;	R
	2(l)	a permission required in terms of a condition of approval;	R
	2(m)	A determination of a zoning;	R
	2(n)	A closure of a public place or part thereof;	R
	2(o)	a consent use contemplated in the zoning scheme;	R
	2(p)	an occasional use of land;	R
	2(q)	to disestablish a home owner's association;	R
	2(r)	to rectify a failure by a home owner's association to meet its obligations in respect of the control over or maintenance of services;	R
	2(s)	a permission required for the reconstruction of an existing building that constitutes a non-conforming use that is destroyed or damaged to the extent that it is necessary to demolish a substantial part of the building	R
Tick if relevant		What prescribed notice and advertisement procedures will be required?	Advertising fees payable
Y	N	Serving of notices (i.e. registered letters etc.)	R
Y	N	Publication of notices (i.e. Provincial Gazette, Local Newspaper(s) etc.)	R
Y	N	Additional publication of notices (i.e. Site notice, public meeting, local radio,	R

		website, letters of consent etc.)	
Y	N	Placing of final notice (i.e. Provincial Gazette etc.)	R
TOTAL APPLICATION FEE* (VAT excluded):			R

PLEASE NOTE: * Application fees are estimated on the information discussed and are subject to change with submission of the formal application and/or yearly application fee increase.

SECTION B:

PROVISIONS IN TERMS OF THE RELEVANT PLANNING LEGISLATION / POLICIES / GUIDELINES

QUESTIONS REGARDING PLANNING POLICY CONTEXT	YES	NO	TO BE DETERMINED	COMMENT
Is any Municipal Integrated Development Plan (IDP)/Spatial Development Framework (SDF) and/or any other Municipal policies/guidelines applicable? If yes, is the proposal in line with the aforementioned documentation/plans?			X	Motivate George Municipal Spatial Development Framework and LSDF
Any applicable restrictive condition(s) prohibiting the proposal? If yes, is/are the condition(s) in favour of a third party(ies)? [List condition numbers and third party(ies)]			X	Conveyancer certificate required to confirm
Any other Municipal by-law that may be relevant to application? (If yes, specify)		X		
Zoning Scheme Regulation considerations: Which zoning scheme regulations apply to this site? <u>George Integrated Zoning Scheme Bylaw, 2023</u> What is the current zoning of the property? <u>Undetermined Use Zone</u> What is the proposed zoning of the property? <u>Subdivisional area zone</u> Does the proposal fall within the provisions/parameters of the zoning scheme? <u>TBD</u> – Are additional applications required to deviate from the zoning scheme? (if yes, specify) <u>No</u>				

QUESTIONS REGARDING OTHER PLANNING CONSIDERATIONS	YES	NO	TO BE DETERMINED	COMMENT
Is the proposal in line with the Provincial Spatial Development Framework (PSDF) and/or any other Provincial bylaws/policies/guidelines/documents?			X	Motivate PSDF
Are any regional/district spatial plans relevant? If yes, is the proposal in line with the document/plans?		X		

SECTION C:

CONSENT / COMMENT REQUIRED FROM OTHER ORGANS OF STATE

QUESTIONS REGARDING CONSENT / COMMENT REQUIRED	YES	NO	TO BE DETERMINED	OBTAIN APPROVAL / CONSENT / COMMENT FROM:
Is/was the property(ies) utilised for agricultural purposes?		X		Western Cape Provincial Department of Agriculture
Will the proposal require approval in terms of Subdivision of Agricultural Land Act, 1970 (Act 70 of 1970)?		X		National Department of Agriculture
Will the proposal trigger a listed activity in terms of National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA)?			X	Western Cape Provincial Department of Environmental Affairs & Development Planning (DEA&DP)
Will the proposal require authorisation in terms of Specific Environmental Management Act(s) (SEMA)? (National Environmental Management: Protected Areas Act, 2003 (Act 57 of 2003) (NEM:PAA) / National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004) (NEM:BA) / National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004) (NEM:AQA) / National Environmental Management: Integrated Coastal Management Act, 2008 (Act 24 of 2008) (NEM:ICM) / National Environmental Management: Waste Act, 2008 (Act 59 of 2008) (NEM:WA) (strikethrough irrelevant)			X	
Will the proposal require authorisation in terms of the National Water Act, 1998 (Act 36 of 1998)?			X	National Department of Water & Sanitation (DWS)
Will the proposal trigger a listed activity in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?			X	South African Heritage Resources Agency (SAHRA) & Heritage Western

QUESTIONS REGARDING CONSENT / COMMENT REQUIRED	YES	NO	TO BE DETERMINED	OBTAIN APPROVAL / CONSENT / COMMENT FROM:
				Cape (HWC)
Will the proposal have an impact on any National or Provincial roads?		X		National Department of Transport / South Africa National Roads Agency Ltd. (SANRAL) & Western Cape Provincial Department of Transport and Public Works (DTPW)
Will the proposal trigger a listed activity in terms of the Occupational Health and Safety Act, 1993 (Act 85 of 1993): Major Hazard Installations Regulations		X		National Department of Labour (DL)
Will the proposal affect any Eskom owned land and/or servitudes?		X		Eskom
Will the proposal affect any Telkom owned land and/or servitudes?		X		Telkom
Will the proposal affect any Transnet owned land and/or servitudes?		X		Transnet
Is the property subject to a land / restitution claims?		X		National Department of Rural Development & Land Reform
Will the proposal require comments from SANParks and/or CapeNature?		X		SANParks / CapeNature
Will the proposal require comments from DEFF?		X		Department of Environment, Forestry and Fishery
Is the property subject to any existing mineral rights?		X		National Department of Mineral Resources
Does the proposal lead to densification to such an extent that the number of schools, healthcare facilities, libraries, safety services, etc. In the area may be impacted on? (strikethrough irrelevant)		X		Western Cape Provincial Departments of Cultural Affairs & Sport (DCAS), Education, Social Development, Health and Community Safety

SECTION D:

SERVICE REQUIREMENTS

DOES THE PROPOSAL REQUIRE THE FOLLOWING ADDITIONAL INFRASTRUCTURE / SERVICES?	YES	NO	TO BE DETERMINED	OBTAIN COMMENT FROM: (list internal department)

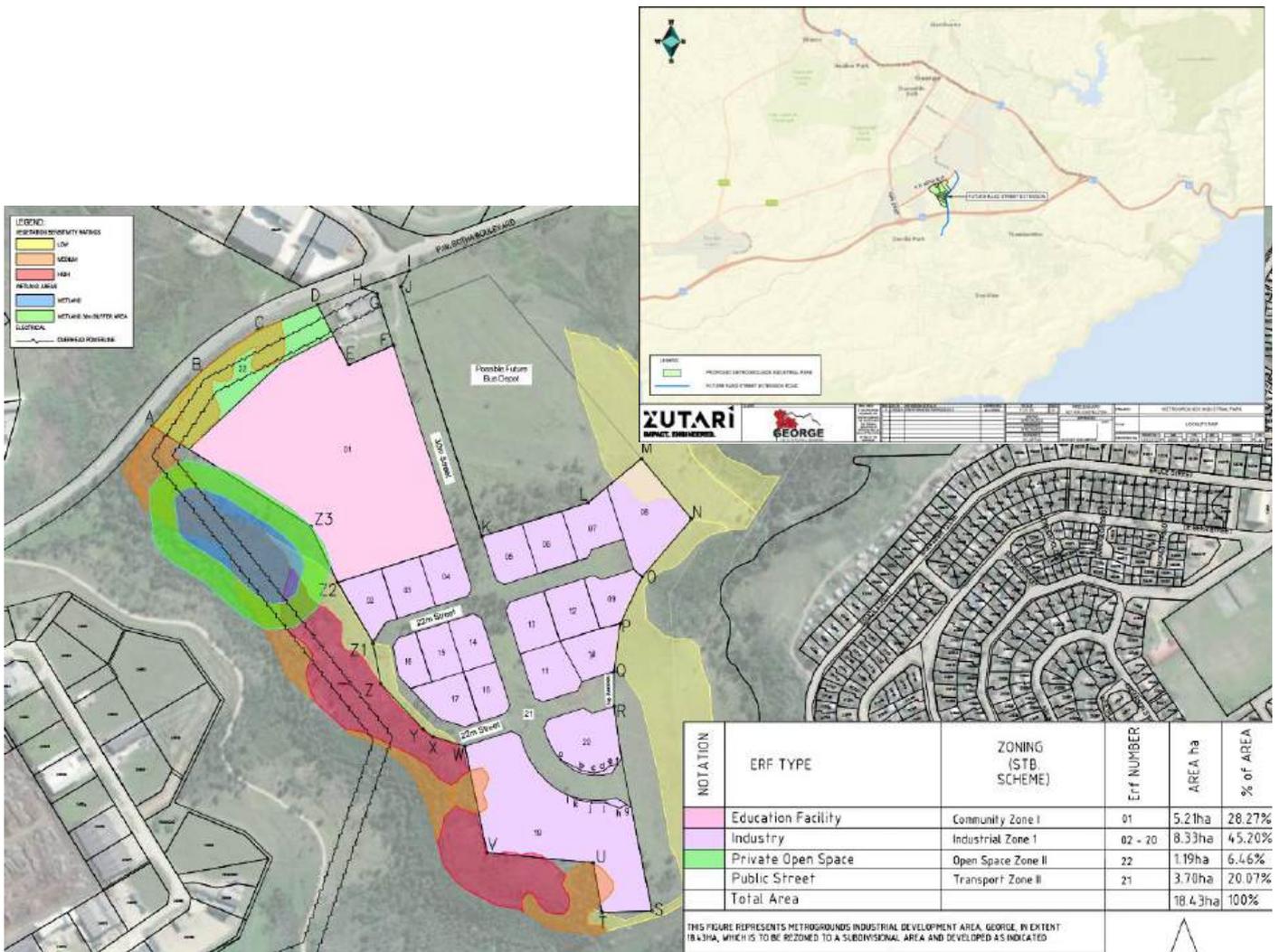
Electricity supply:			X	Directorate: Electro-technical Services
Water supply:			X	Directorate: Civil Engineering Services
Sewerage and waste water:			X	Directorate: Civil Engineering Services
Stormwater:			X	Directorate: Civil Engineering Services
Road network:			X	Directorate: Civil Engineering Services
Telecommunication services:			X	
Other services required? Please specify.			X	
Development charges:			X	

PART D: COPIES OF PLANS / DOCUMENTS TO BE SUBMITTED AS PART OF THE APPLICATION

COMPULSORY INFORMATION REQUIRED:						
Y	N	Power of Attorney / Owner's consent if applicant is not owner (if applicable)		Y	N	S.G. noting sheet extract / Erf diagram / General Plan
Y	N	Motivation report / letter		Y	N	Full copy of the Title Deed
Y	N	Locality Plan		Y	N	Site Layout Plan
Y	N	Proof of payment of fees		Y	N	Bondholder's consent
MINIMUM AND ADDITIONAL REQUIREMENTS:						
Y	N	Site Development Plan		Y	N	Conveyancer's Certificate
Y	N	Land Use Plan		Y	N	Proposed Zoning plan
Y	N	Phasing Plan		Y	N	Consolidation Plan
Y	N	Abutting owner's consent		Y	N	Landscaping / Tree Plan
Y	N	Proposed Subdivision Plan (including street names and numbers)		Y	N	Copy of original approval letter
Y	N	Services Report or indication of all municipal services / registered servitudes		Y	N	Home Owners' Association consent
Y	N	Copy of Environmental Impact Assessment (EIA) / Heritage Impact Assessment (HIA) / Traffic Impact Assessment (TIA) / Traffic Impact Statement (TIS) / Major Hazard Impact Assessment (MHIA) / Environmental Authorisation (EA) / Record of Decision (ROD) (strikethrough irrelevant)		Y	N	1 : 50 / 1:100 Flood line determination (plan / report)
Y	N	Other (specify)		Y	N	Required number of documentation copies

PART E: DISCUSSION

- The proposal was submitted with proposed locality plan and subdivision plan as indicated below and discussed at the pre-application meeting held on 4 December 2024.



Town Planning

- The motivation to include indication of how the proposal is in line with the spatial policies and objective of the area. Please include motivation in terms of SPLUMA, LUPA, MSDF and LSDF.
- It is acknowledged that the applicant has already commenced with relevant studies, which should form part of the application.

Note

- The Directorates: CES and ETS did not attend the meeting, please consult with relevant officials from the two directorates for their formal comments prior to submitting the application.

PART F: SUMMARY / WAY FORWARD

You may proceed to submit the application that addresses the above issues.

OFFICIAL: KHULISO MUKHOVHA (TOWN PLANNER / CASE OFFICER)

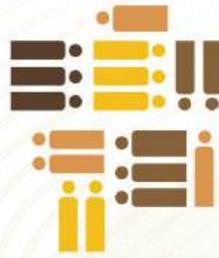
OFFICIAL: NAUDICA SWANEPOEL

PRE-APPLICANT: RUDOLF SCHRÖDER

SIGNED: 
DATE: 11 DECEMBER 2024

SIGNED: 
DATE: 4 DECEMBER 202

** Please note that the above comments are subject to the documents and information available to us at the time of the pre-application meeting and we reserve our rights to elaborate on this matter further and/or request more information/documents should it be deemed necessary.*



The South African
Council *for* Planners
S A C P L A N

REGISTRATION CERTIFICATE

Issued in terms of Section 13(4) of the Planning Profession Act, 2002
(Act 36 of 2002)

This is to Certify that

Cornelis Rudolf Schroder

ID number: 7805315089081

is registered as a

Professional Planner

in terms of the Planning Profession Act, 2002 and is authorised to act as such
in accordance with the said Act and the Rules prescribed thereunder.

Issued under the Seal of the Council



REGISTRATION NUMBER:
A/151/2009


CHAIRPERSON
REGISTRAR

Date of Issue: 23-06-2025

The registered person remains in good standing with SACPLAN for the
period ending as stipulated herein.

This certificate is valid until: **30-06-2026**

GEOTECHNICAL REPORT

PROPOSED MIXED-USE DEVELOPMENT (INDUSTRIAL,
BUSINESS & RESIDENTIAL) ON A PORTION OF
REMAINDER OF ERF 464, GEORGE (METROGROUNDS)

22 September 2022 (Rev 0)



Prepared by:

**OUTENIQUA GEOTECHNICAL SERVICES
18 CLYDE ST
KNYSNA
6570**



Consulting Engineer:

**CLINKSCALES MAUGHAN-BROWN
39 VICTORIA STREET
GEORGE
6529**



Client:

**GEORGE MUNICIPALITY
71 YORK STREET
GEORGE
6529**



Report review history:

Revision No	Date	Prepared by:	Reviewed by:	Approved by:
0	22.9.2022	I Paton Pr Sci Nat Pr Tech Eng	S Ngema BSc Geol	I Paton Pr Sci Nat Pr Tech Eng
				

Authors qualifications and affiliations:

Iain Paton has post graduate degrees in Geology and Geotechnical Engineering and over 25 years' experience in the mining, energy and construction industries. Iain Paton is a registered geotechnical professional with the Engineering Council of South Africa (ECSA) and the South African Council for Natural and Scientific Professions (SACNSP). Iain Paton is a member of the Geotechnical Division of the South African Institute of Civil Engineering (SAICE), South African Institute of Engineering and Environmental Geologists (SAIEG), the and the Institute of Municipal Engineering of South Africa (IMESA).

Declaration of independence:

The authors of this report are independent professional consultant with no vested interest in the project, other than remuneration for work associated with the compilation of this report.

General limitations:

1. The investigation has been conducted in accordance with generally accepted engineering practice, and the opinions and conclusions expressed in the report are made in good faith based on the information at hand at the time of the investigation.
2. The contents of this report are valid as of the date of preparation. However, changes in the condition of the site can occur over time as a result of either natural processes or human activity. In addition, advancements in the practice of geotechnical engineering and changes in applicable practice codes may affect the validity of this report. Consequently, this report should not be relied upon after an elapsed period of one year without a review by this firm for verification of validity. This warranty is in lieu of all other warranties, either expressed or implied.
3. Unless otherwise stated, the investigation did not include any specialist studies, including but not limited to the evaluation or assessment of any potential environmental hazards or groundwater contamination that may be present.
4. The investigation is conducted within the constraints of the budget and time and therefore limited information was available. Although the confidence in the information is reasonably high, some variation in the geotechnical conditions should be expected during and after construction. The nature and extent of variations across the site may not become evident until construction. If variations then become apparent this could affect the proposed project, and it may be necessary to re-evaluate recommendations in this report. Therefore, it is recommended that Outeniqua Geotechnical Services is retained to provide specialist geotechnical engineering services during construction in order to observe compliance with the design concepts, specifications and recommendations and to allow design changes in the event that subsurface conditions differ from those anticipated prior to the start of construction. Any significant deviation from the expected geotechnical conditions should be brought to the author's attention for further investigation.
5. The assessment and interpretation of the geotechnical information and the design of structures and services and the management of risk is the responsibility of the appointed engineer.

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List of Appendices

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Appendix 3 – Lab test results

Appendix 4 – Insitu test results

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1. Introduction

1.1 Background information

A new mixed-use development (industrial, business & residential) has been proposed on a portion of Remainder of Erf 464 George in the Western Cape, known as the “Metrogrounds” (see **Figures 1, 2 & 3**).

The site was investigated in order to determine the geology and geotechnical properties of the site for the design of new structures and civil engineering services.

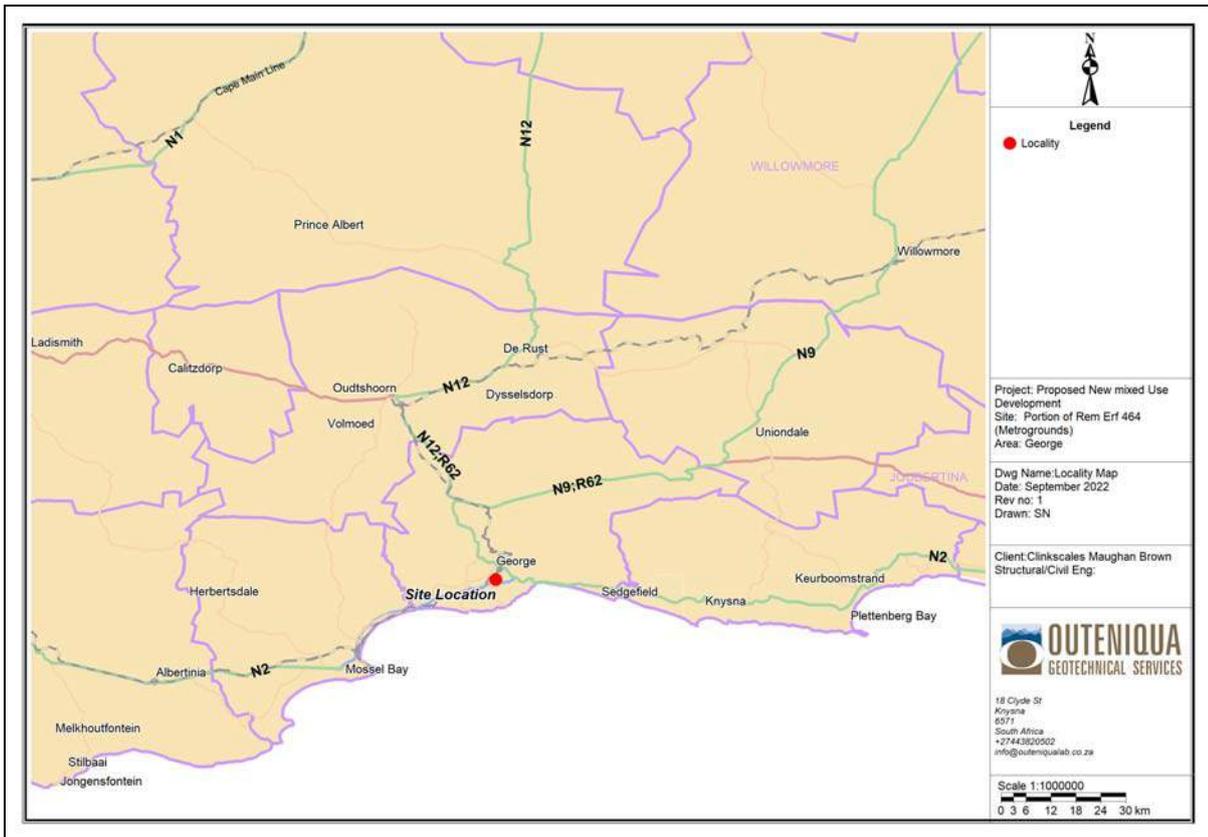


Figure 1: Site locality map

1.2 Scope of work

The scope of work was to conduct a broad-scope geotechnical survey and the following methods were proposed and accepted by the client:

- Review all available geotechnical information on the area.
- Conduct a walk-over survey of the site to assess the terrain, surface processes and apparent geotechnical risks.
- Conduct subsurface investigations to determine soil/rock profile and groundwater conditions, consisting of:
 - 20x test pits, excavated across the site with TLB/backhoe to max depth of 3m or refusal on rock/boulders.
- Log all test pits in accordance with South African standard methods (SAICE Guidelines for Soil and Rock logging in South Africa, 2002).
- Collect soil samples for testing at SANAS-accredited civil engineering laboratory in accordance with South African and/or American Standard methods (SANS or ASTM).

- Conduct insitu tests as per South African and/or American Standard methods (SANS or ASTM).
- Prepare a detailed factual and interpretive report, written by a registered Engineering Geologist/Geotechnical Engineer (SACNASP/ECSA), containing all information from the investigation and including soil classifications and recommendations for the design of foundations for structures and civil services, as required in the scope of works.
- Discuss geotechnical data and recommendations with civil and structural designers as and when required.

1.3 Available information

The following information was available for consultation:

- 1:50 000 & 1:250 000 geological maps of the area, obtained from the Council for Geoscience;
- Topo-cadastral data for the area, obtained from the National Geospatial Institute (NGI).
- Aerial photos of the area, obtained from the NGI and Google Earth.
- Site development plan provided by the town planners.
- In-house geotechnical database.

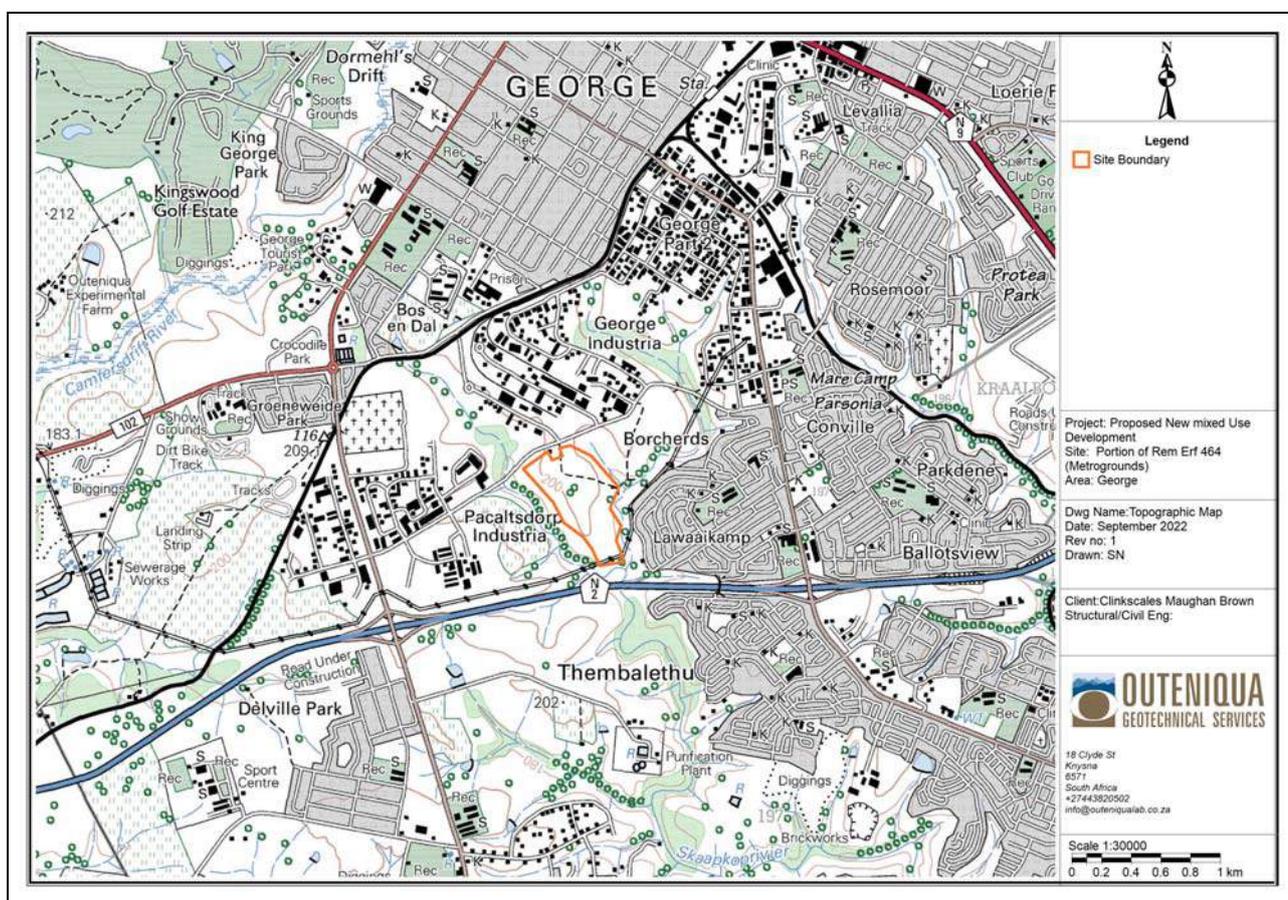


Figure 2: Topographical map of the site



Figure 3: Aerial photo map of the site

2. Site description

The proposed site covered an area of ~31.Ha and was located within the Tamsui Industrial area, to the east of Steinhoff Industrial Park. At time of the investigation, the site was vacant and was used for informal cattle grazing. There was evidence on site (and from aerial photography) of significant disturbance/alteration to the natural ground levels due to historical earthworks, diggings and dumping of fill material. There were also some overhead electrical lines noted crossing the site.

The climate of the region was classified as temperate, with cool winters and warm summers, and most rainfall occurring during the winter months. The Weinert Climatic-N No. for the area was 1-2, indicating a wet climate. Coastal cut-off low pressure systems and associated heavy rains have occurred in spring and autumn months with occasional very heavy rainfall events of 100mm or more in a 24hour period. In the summer months, moist air brought to the coastal region by the Indian Ocean anticyclone has generally been the source of rainfall. Winter rains are derived from the passage of polar cyclonic systems (cold fronts) with a predominant westerly wind along the southern coast. The average monthly minimum winter temperatures was 9°C and average maximum summer temperatures was 25°C.

The topography of the site was generally characterised by a prominent ridge/spur that runs in a southeast direction from the site entrance along PW Botha Boulevard. The ridgeline was bound on the west and east by tributaries of the Schaapkop River. The terrain on site sloped gently along the crest of the ridge, increasing to moderate towards the site boundaries. The vegetation consisted of long grass, small shrubs, medium to large bushes and clumps of large trees, but the vegetation on and around the sites was largely transformed from historical human activity on the site (See **Figures 4-7**). The surface conditions were generally dry at the time of the

investigation but very moist near drainage lines. Access with vehicles onto the site varied from relatively easy along existing tracks (**Figure 6**) to difficult due to dense bush and existing heaps of fill material (**Figure 6-7**).



Figure 4: Typical gentle terrain and grassland vegetation on large parts of the site

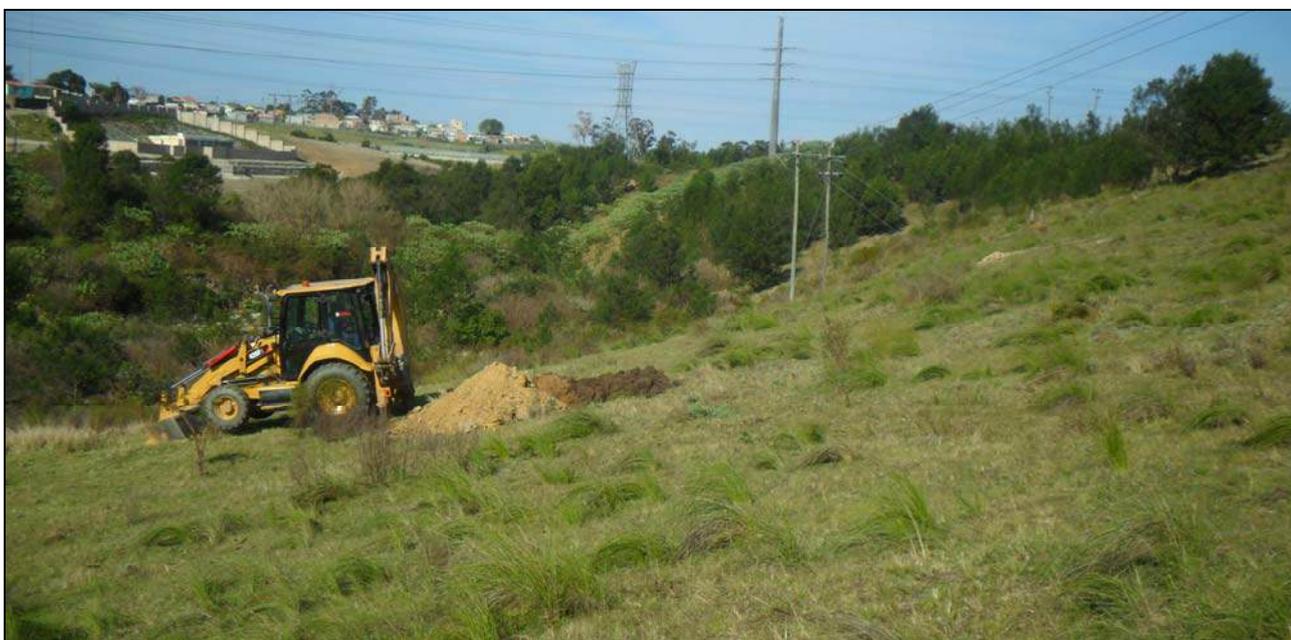


Figure 5: Moderate slopes along the eastern side of the site



Figure 6: Jeep track access roads on the site



Figure 7: Heaps of fill encountered on parts of the site

3. Methods of investigation

A walk-over survey of the site was conducted prior to a subsurface investigation. The subsurface investigation consisted of twenty (20) test pits (See **Appendix 1** for a plan of the test positions). The test pits were excavated to a maximum depth of ~3m with a TLB/backhoe. This exercise was conducted in order to investigate the geology and geotechnical nature of the site, including soil types, moisture levels, consistency, etc. The soil profiles and photographs of the test pits were included in **Appendix 2** of this report.

Samples of insitu soils were collected from test pits for Foundation Indicator (grading, Atterberg limits and moisture content), Modified AASHTO maximum dry density, optimum moisture content, CBR and soil chemistry. The tests were conducted at SANAS-accredited civil engineering laboratories in accordance with standard South African test methods. See **Appendix 3** for details.

In situ dynamic cone penetrometer (DCP) tests were conducted at each of the test pit positions. The tests were done in accordance with TMH6 ST6. The probes were driven from GL to a depth of ~2m or refusal. Details of the tests were included in **Appendix 4** of this report.

An analysis of the information was then conducted to determine geotechnical parameters and recommendations were then formulated based on the available data.

4. Results of the site investigation

4.1 Regional geology

The site was indicated on the regional geological maps to be underlain by granite of the Maalgaten Suite of the George pluton (**Figure 8**). The George pluton consists of several granitic bodies that were intruded into older country rocks of the Kaaimans Group of meta-sediments during the Cambrian era (~525 million years ago). Younger meta-sedimentary rocks of the Peninsula Formation (Table Mountain group) were indicated to the north of the George area.

The George pluton has been subjected to intense deformation, similar to that of the older

country rocks of the Kaaimans Formation and typically exhibit strong penetrative planar and linear fabrics (structural features). In some places the granite has been intensely sheared, mainly along its margins. The Kango fault, a large dormant fault system, was mapped to the north of Outdshoorn, but there were no major geological faults in the immediate vicinity of the site and there was a low risk of seismic activity in the area (max peak horizontal ground acceleration 0.05g).

The Maalgaten granite is the most voluminous lithological unit of the George pluton which underlies most of the George area. The granite rock is poorly exposed in the George area and is typically covered by a thick soil overburden including colluvium, alluvium and residual saprolite.

The geology of the George area has been widely considered macro stable for urban development purposes with due consideration given to potential geotechnical constraints on a site-level.

4.2 Local soil and rock types

The test pits undertaken as part of this investigation indicated that the site consisted of areas underlain by natural (insitu) soil and areas underlain by deposits of uncontrolled fill (dumped soil). The natural (insitu) profile generally consisted of one or more horizons of colluvium (transported soil), which were underlain by a pedogenic horizon of ferricrete nodules (chemical deposit), which was underlain by residual granitic soil composed of clayey sand and/or sandy clay, derived from the insitu weathering of the underlying granite. See **Figure 9**.

Visual and tactile observations in test pits indicated that the insitu soil moisture contents were generally moist with localised very moist horizons.

The soil profile for the natural (insitu) soil was broadly defined into the following horizons:

- Moist, light red brown, loose, intact, SILTY FINE SAND, transported, colluvium.
- Slightly moist to moist, dark brown, medium dense, honeycombed/voided, SILTY SANDY ferricrete GRAVEL, pedogenic (not always present).
- Moist, yellow orange & red orange, firm-stiff, shattered, SAND & SILTY CLAY with fine, angular quartz GRAVEL, residual granite.
- Slightly moist to moist, yellow orange & light grey/brown, dense to very dense, intact, CLAYEY & SILTY SAND with fine, angular quartz and feldspar GRAVEL, completely weathered granite (saprolite).

The uncontrolled fill material that was encountered in some test pits consisted of a wide range of materials, but largely dominated by a mixture of soil, rubbish and rubble, which had been dumped on parts of the site over a long period of time. A significantly thick (but apparently localised) deposit was encountered in test pit TP3. See **Figure 10**.

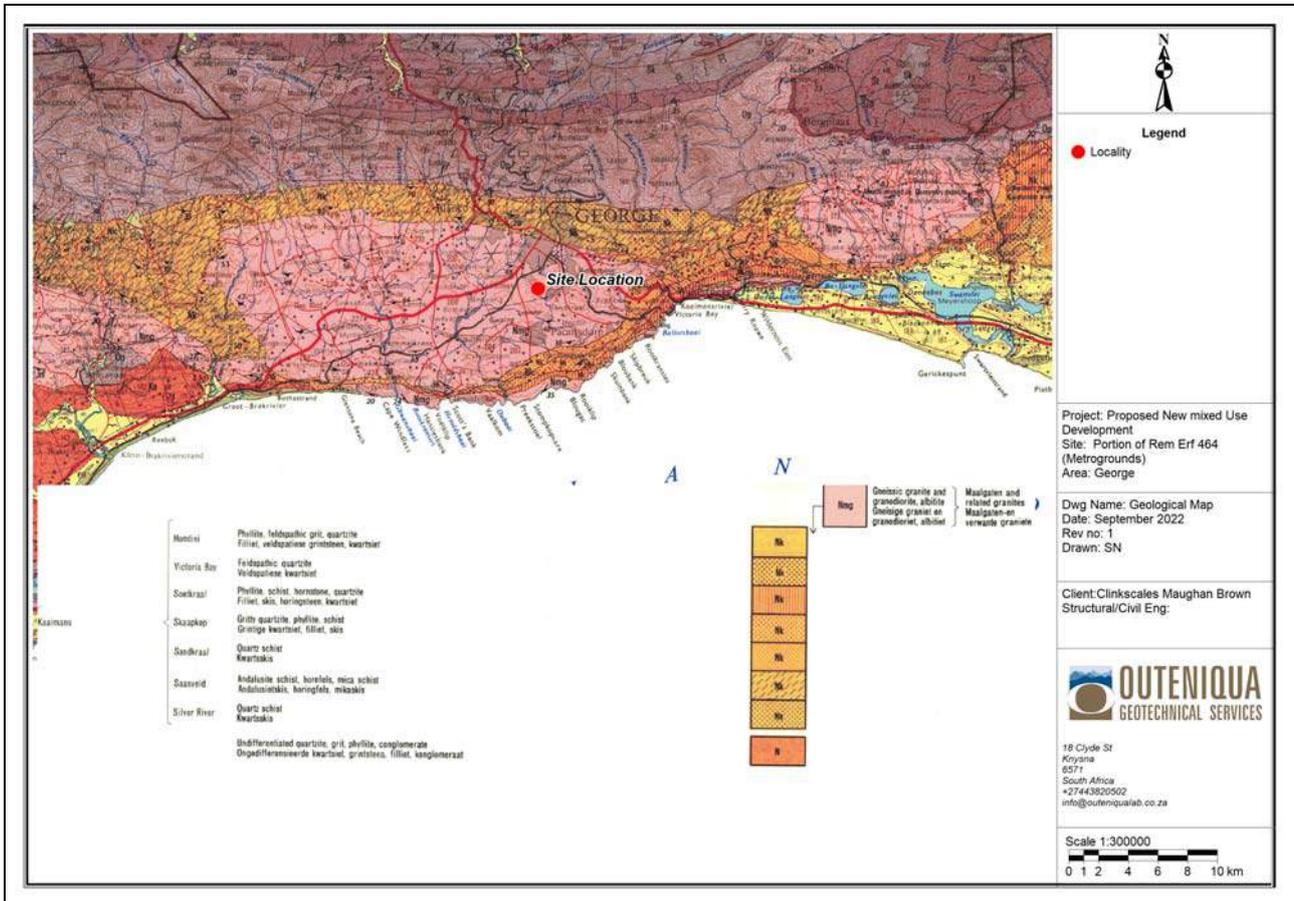


Figure 8: Geological map of site

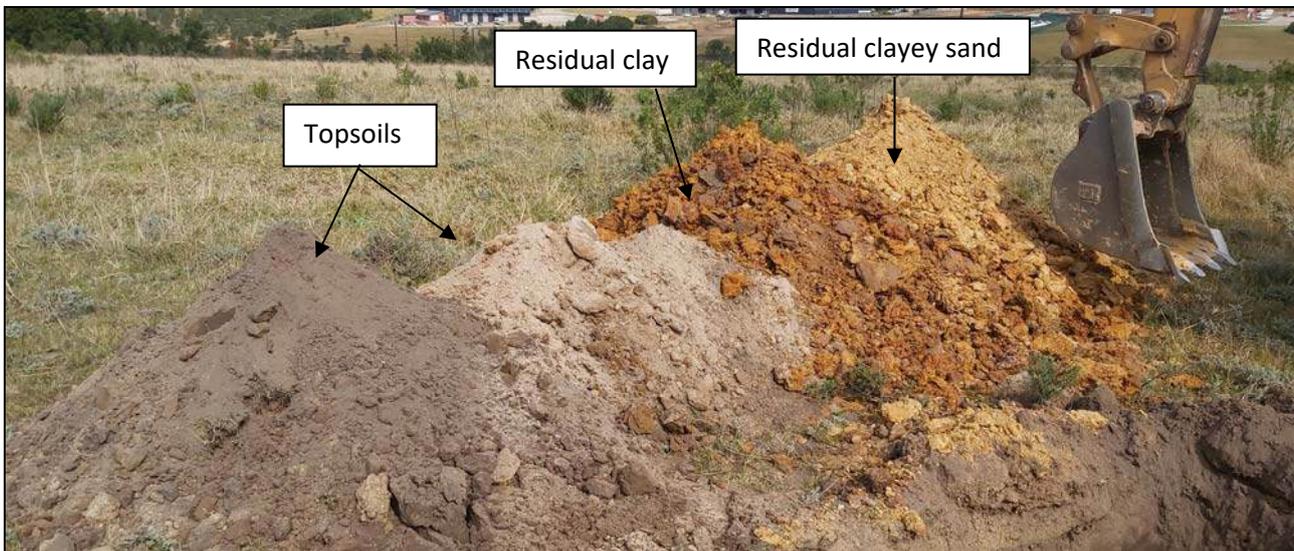


Figure 9: Typical insitu soil types extracted from test pits



Figure 10: Fill material encountered at TP3

A summary of soil horizons recorded in test pits has been provided in **Table 1** and **Figure 11**.

Table 1: Summary of soil horizons recorded in test pits (in mm)

<i>Test pos. No.</i>	<i>Imported (fill) soil</i>	<i>Transported</i>	<i>Pedogenic soil</i>	<i>Residual soil</i>	<i>Rock</i>	<i>Total depth</i>	<i>Refusal?</i>
TP1	-	0-700	700-1300	1300-2500	-	2500	No
TP2	-	0-1600	1600-2200	2200-3000	-	3000	No
TP3	0-3000	-	-	3000-3200	-	3200	No
TP4	0-200	200-1000	1000-1200	1200-3000	-	3000	No
TP5	0-300	300-1000	1000-1100	1100-3600	-	3600	No
TP6	-	0-700	700-900	900-3000	-	3000	No
TP7	0-200	200-700	700-1000	1000-2800	-	2800	No
TP8	-	0-500	-	500-3000	-	3000	No
TP9	0-200	200-700	700-900	900-3200	-	3200	No
TP10	-	0-800	800-1000	1000-3000	-	3000	No
TP11	0-300	300-1000	1000-1100	1100-3000	-	3000	No
TP12	0-500	500-1600	-	1600-3000	-	3000	No
TP13	-	0-300	300-500	500-2500	-	2500	No
TP14	0-400	400-900	900-1100	1100-3000	-	3000	No
TP15	-	0-400	-	400-2800	-	2800	No
TP16	0-200	200-800	800-1100	1100-3000	-	3000	No
TP17	-	0-500	-	500-3000	-	3000	No
TP18	-	0-1300	1300-1500	1500-3000	-	3000	No
TP19	-	0-600	-	600-3000	-	3000	No
TP20	-	0-600	600-700	700-3000	-	3000	No

4.3 Insitu tests

DCP tests indicated typically loose consistency in the upper 0.8m of the profile but generally improving to medium dense/firm to dense/stiff below this depth. Loose horizons broadly

correlated to the transported colluvium, with a sharp improvement in bearing capacity at the base of this horizon, marking the top of the pedogenic gravel, which was relatively dense. Below the pedogenic ferricrete, tests indicated sporadic softening into firm (softer) clay horizons, but generally then transitioning downward into more stiff residual clays. In areas where a layer of uncontrolled fill covered the insitu soil, the DCPs indicated a thicker layer of loose soil with higher penetration rates (e.g. TP12). At some test positions (e.g. TP18) very moist – wet soil also resulted in high penetration rates, indicating lower bearing capacity of this soil. In summary, the tests generally indicated low bearing capacity for shallow foundations in the upper portion of the profile, requiring some consideration.

4.4 Lab tests

Representative samples of the insitu soil types were collected for Foundation Indicator tests to determine the particle size distribution (grading) and Atterberg limits. The results of the Foundation Indicator tests were summarised in **Table 2**.

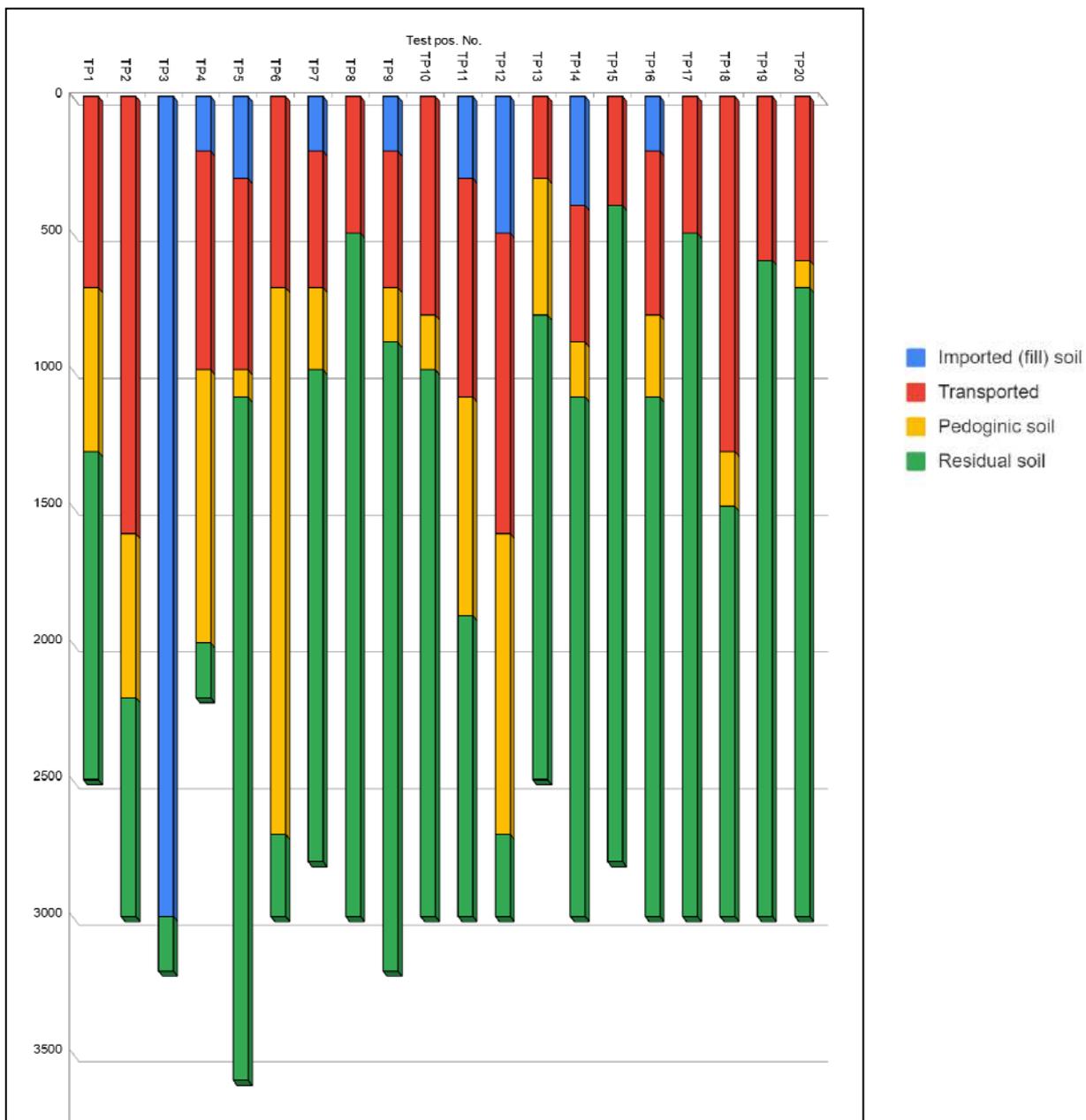


Figure 11: Summary of soil profiles (depth in mm)

Table 2: Summary of Foundation Indicator test results

Test Pit No	Sample Depth (mm)	Atterberg Limits			Particle Analysis (%)				MC*	PE**	USC***
		PI	LL	LS	Clay	Silt	Sand	Gravel			
TP1	200-700	5	15	3	25	34	41	0	20.5	Low	CL-ML
TP1	700-1300	19	51	10	48	40	36	6	22.9	Low-Med	MH
TP7	700-1000	3	15	2	7	15	17	61	24	Low	GM
TP7	1000-2000	19	47	10	4	18	33	1	43	Low-Med	ML
TP7	2000-2800	18	44	9	32	16	50	2	36	Low-Med	SC
TP13	500-800	7	20	4	11	19	38	32	9.6	Low	SM-SC
TP13	800-1300	13	31	7	10	20	34	36	8.5	Low	SC
TP14	1100-2100	21	55	11	39	12	32	17	19.1	Low-Med	MH
TP18	600-1300	2	14	1	17	25	52	6	13.6	Low	SM
TP19	600-1600	15	42	8	29	25	41	5	22.1	Low-Med	ML

* Insitu Moisture Content ** Potential Expansiveness *** Unified Soil Classification

Foundation Indicator tests of residual soils indicated generally well-graded fine soils with a mixture of clay, silt and sand-sized particles (See **Figure 12**).

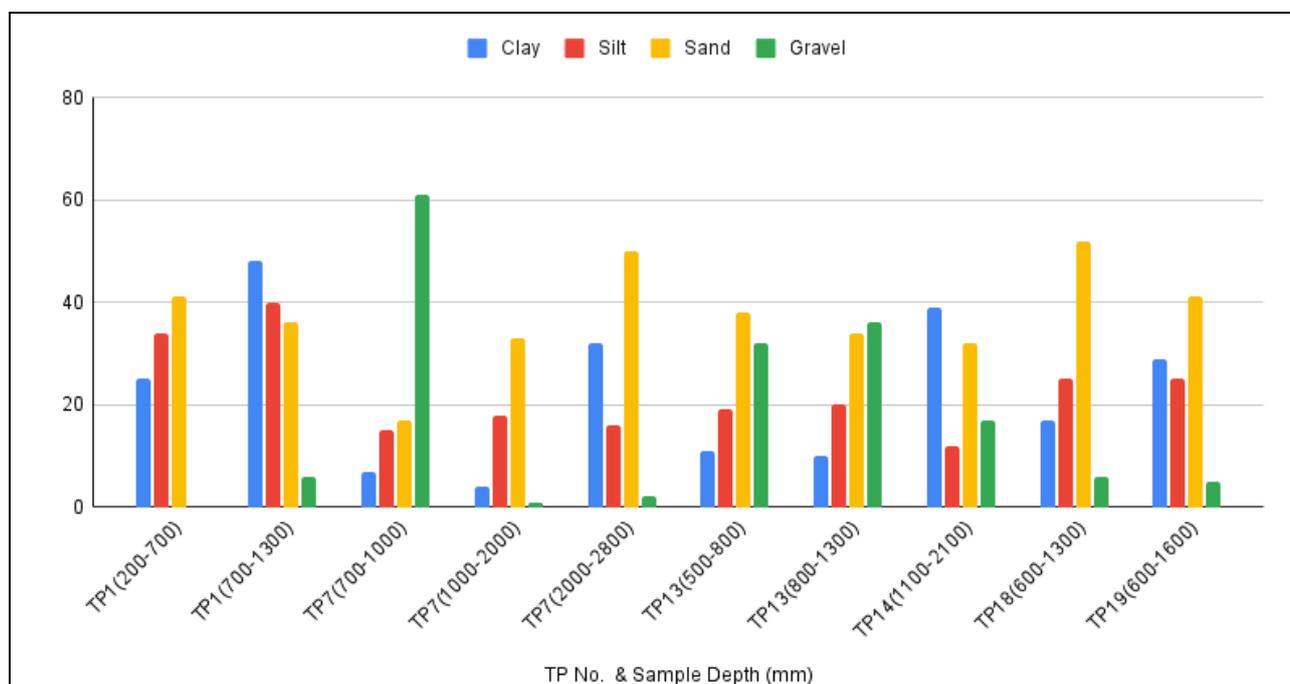


Figure 12: Particle size analysis distributions

Plasticity index (PI) was generally low to medium (<25 – see **Figure 13**). A borderline low-medium potential expansivity was expected from the residual soils which concurred with experience in the area. The soils tested were classified into the following groups under the Unified Soil Classification (USC) system:

- CL– Inorganic clays of low to medium plasticity
- ML – Inorganic silts of low to medium plasticity.
- GM – Silty gravels, gravel-sand-silt mixtures.
- MH – Inorganic silts of high plasticity.
- SC – Clayey sand, sand-clay mixtures.
- SM – Silty sand, sand-silt mixtures.

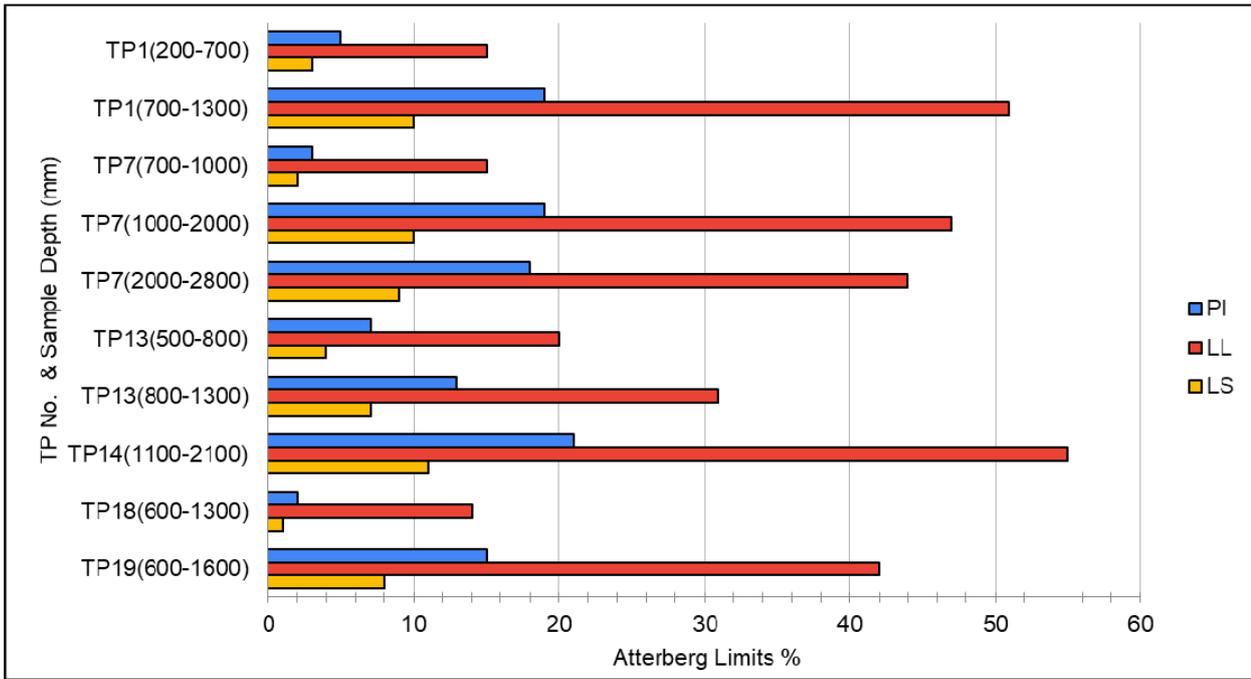


Figure 13: Atterberg Limits results

Representative samples were collected for Modified AASHTO density (Mod), CBR & Road Indicator tests to determine the potential of the material for structural fill purposes and/or for subgrade fill in road pavement design. The results of the tests were summarised in **Table 3** and **Figure 14**.

With one exception (the ferricrete gravel from TP14), the test results generally indicated low grading moduli (fine-grained), high swell/dilation properties, and generally low CBR values, indicating poor-quality road-building materials. Further recommendations were provided in **Chapter 6**.

Table 3: Summary of Mod/CBR/Indicator test results

Test Pit No	Sample Depth (mm)	CBR at					Swell (%)	PI (%)	GM	MDD/ OMC	MDD/ OMC
		100%	98%	95%	93%	90%					
TP1	700-1300	3	3	2	2	2	1.8	19	0.84	1662/21.9	Not Classified
TP13	800-2500	15	13	10	9	7	0.6	16	1.68	2072/7.8	Not Classified
TP14	400-1100	43	35	27	22	17	0	NP	1.24	2223/7.6	G6
TP19	600-1600	2	2	2	2	1	2.3	15	0.91	1810/16.2	Not Classified

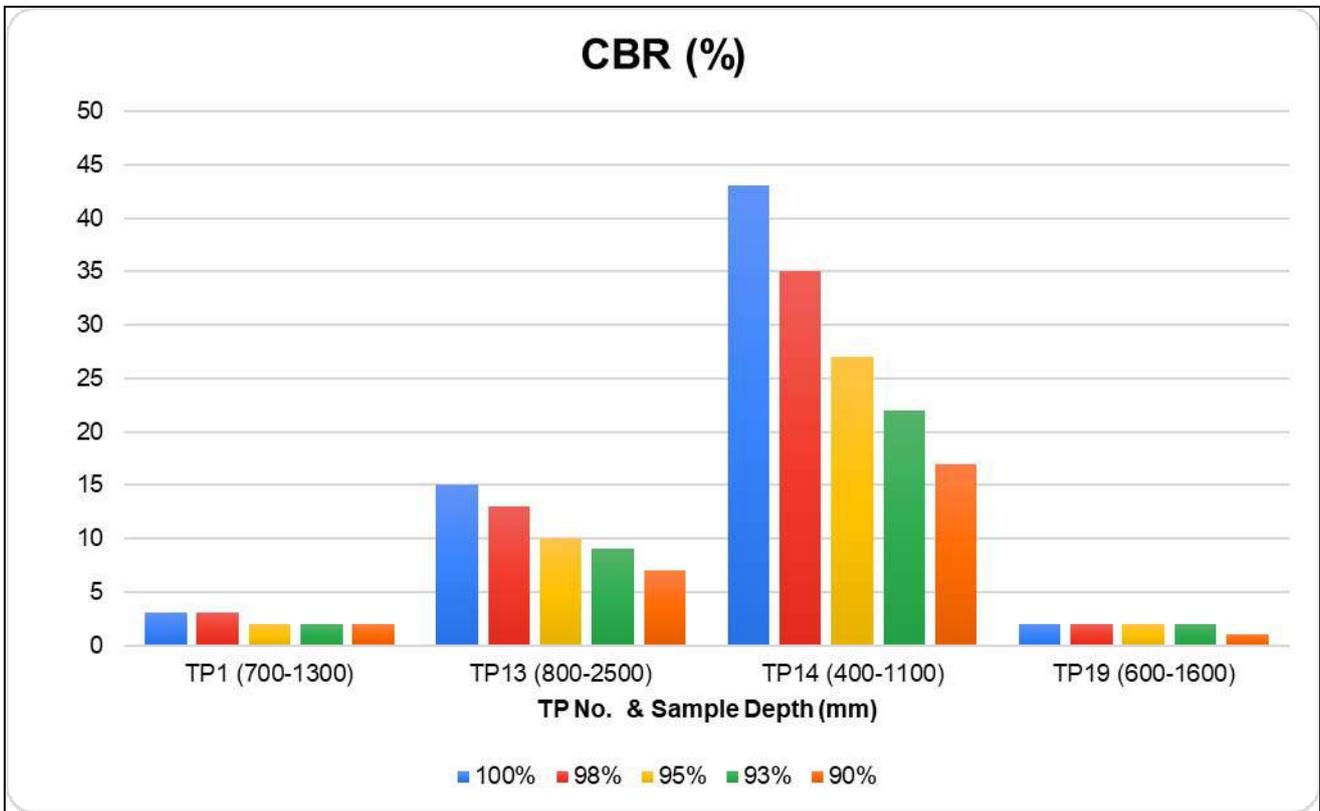


Figure 14: CBR test results

Samples of *in situ* soils were collected for soil chemistry tests (pH & Conductivity) in order to determine the aggressiveness of the soil which can affect buried services and concrete foundations. A summary of the results of the pH and conductivity tests were provided in **Table 4**.

Table 4: pH and conductivity test results summary

Test Position	pH	Conductivity (S/m)
TP1	7.8	0.0765
TP13	7.2	0.0437
TP14	6.7	0.0336
TP18	6.8	0.0192

Corrosion of metallic pipe fittings and concrete reinforcement may be negatively influenced by low or high pH, and high conductivity (indicating high concentration of dissolved salts in the soils). An indication of the influence of pH and conductivity on the corrosiveness of soil is given in **Table 5**.

Table 5: Influence of pH and conductivity on the corrosiveness of soil

pH	Conductivity (S/m)	Potential Corrosiveness
7-8	<0.01	Non-corrosive
5-6 or 9-10	0.01-0.05	Mildly corrosive
3-4 or 11-12	0.05-0.1	Corrosive
<3 or >12	>0.1	Highly corrosive

The lab results indicate mild to corrosive soil conditions due to dissolved salts in the soils, which is common in clayey soils and can cause corrosion (rusting) of buried metallic structures.

Undisturbed samples were also collected for oedometer tests to determine the compressibility and swell characteristics of the soil. The results were not available at the time of going to press and would be released in a revised report as they become available.

5. Geotechnical assessment

5.1 Geotechnical mapping

The site was broadly mapped according to the dominant geotechnical constraints that were identified during the investigation (See **Figure 15**). The constraints identified were discussed in the following chapters.

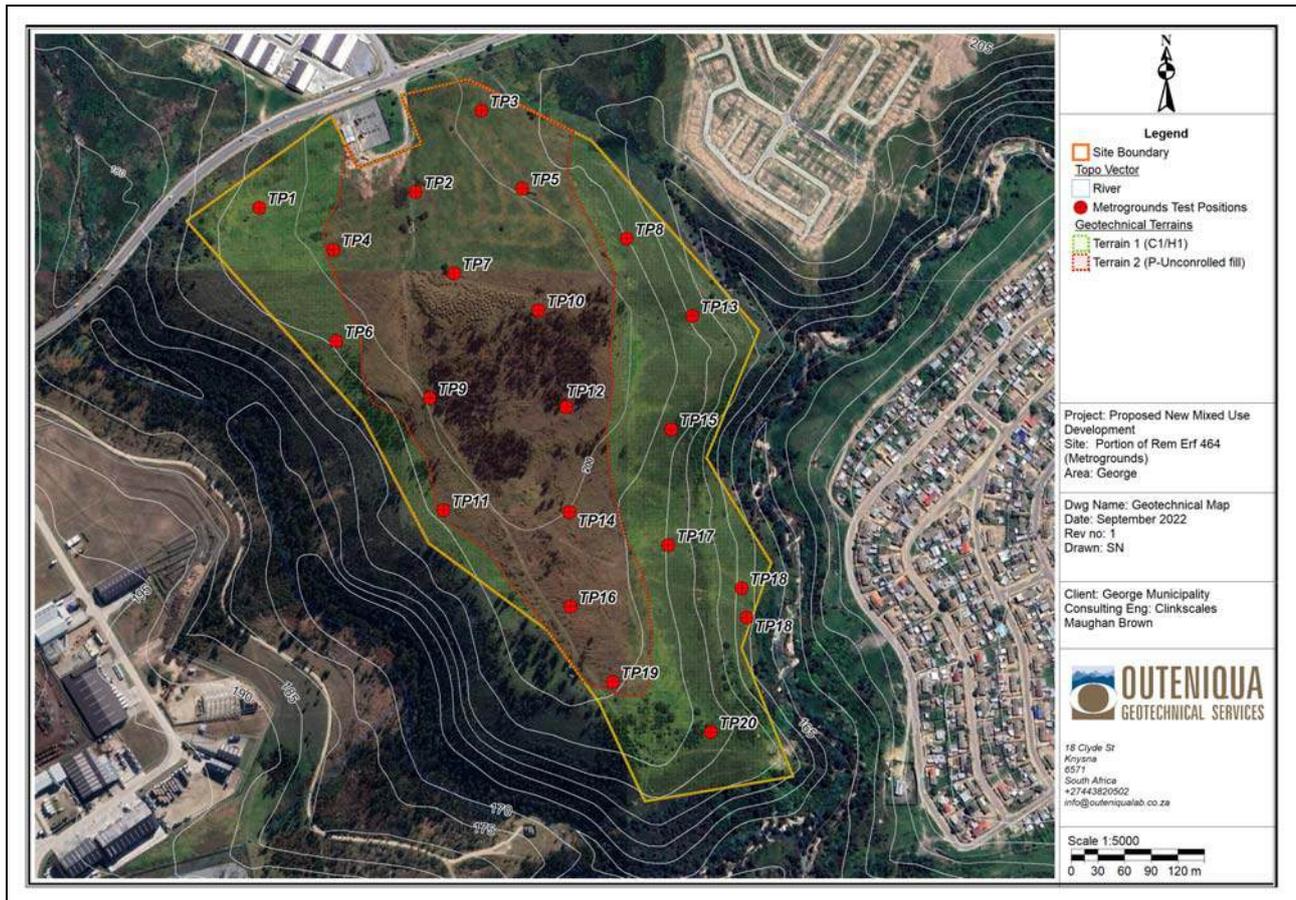


Figure 15: Geotechnical Map

5.2 Bearing capacity and settlement

Observations made in test pits and analysis of DCP tests indicated low bearing capacity of the insitu soils in the upper 1.0-1.5m below natural ground level, possibly extending slightly deeper in some areas. A conservative safe bearing capacity of 67kPa was calculated at a nominal founding depth of 0.7m below NGL on firm insitu soil (See Appendix 5) with less than 10mm expected settlement (classified as Terrain 1 - C1 category in terms of SANS10400-H). The underlying residual clays (weathered granite) generally presented a better founding medium with higher bearing capacity.

A significant portion of the site was underlain by thick deposits of rubbish/soil mix with no safe bearing capacity and thus classified as “uncontrolled fill” (Terrain 2 - Site Class P in terms of SANS10400-H). The fill highly sporadic and variable and was deemed unsuitable for recompaction and load bearing due to the presence of deleterious materials such as highly compressible organic material and rubbish (general waste). It was difficult to accurately assess

the lateral and vertical extent of the fill. It appeared as if the site had had several old trenches excavated and backfilled, in addition to the several obvious heaps of fill on surface. The presence of significant fill would have to be taken into account in the design of foundations and earthworks.

5.3 Heave

The investigations indicate potentially active clays with medium potential expansiveness, which concurs with previous experience in the area. The range of potential heave was conservatively estimated, based on empirical calculations, for the entire site at 10-15mm (H1 category in terms of SANS10400-H).

5.4 Groundwater

No free groundwater seepage was encountered in test pits but very moist soil conditions were noted in test pits on the lower slopes on the site, near drainage lines. Seasonal groundwater seepage was also expected in the uncontrolled fill material as this material contained significant voids. Seasonal seepage was also expected in the upper 1.5m in the profile during wet seasons which could potentially affect excavations and construction of foundations, requiring dewatering and some improvements.

5.5 Surface drainage and soil permeability

The central ridgeline/crest of the site had a fairly low slope gradient (increasing west and east towards natural drainage lines), and the insitu soils had a low permeability (estimated at 10^{-6} m/s). Surface water was encountered in some small existing localised depressions across the site (small ponds) where rainwater had accumulated on surface.

5.6 Slope stability

No natural slope stability issues were identified or expected from the areas proposed for development. Areas where uncontrolled filling has occurred on slopes, or where the natural ground has been significantly modified (excavations/diggings) could present some localised stability problems.

5.7 Excavations

All excavations to 3m were classified as "Soft" in terms of SABS1200D. Sidewalls of test pits were highly unstable at angles greater than 45° for any length of time mainly due to the unstable topsoil material.

6. Recommendations

The design of structures and civil services is the responsibility of the appointed civil and structural engineers. The recommendations contained herein do not supersede any applicable standards, codes or project specifications.

The following recommendations are based on limited information gained from the site investigation, and although the confidence in the information is high, variation in ground conditions may occur between information points. All geotechnical information should be confirmed during construction and if necessary, additional investigations may have to be commissioned. Any significant variations are to be brought to the attention of the authors for

comment or further recommendations. It is recommended that the structural engineer discuss his/her conceptual design with the geotechnical specialist to ensure that any calculations and recommendations are in line with current information.

6.1 General town planning and site development

The presence of existing infrastructure (overhead electrical lines) may have an impact on the proposed town planning layout. The natural topography will also play a significant role. The presence of deposits of uncontrolled fill could also present a hazard and obstacle to development, requiring earthworks to treat/remove this unsuitable material. The site topography and soil conditions therefore lends itself to the development of a series of engineered platforms.

6.2 Earthworks and civils

Civil works should be designed and constructed in accordance with SABS 1200, COLTO and/or any site-specific specifications provided by the civil engineer.

Some bush clearing, including the removal of medium sized trees would be required to clear site in preparation for construction. It is recommended that at least 150mm of organic-rich topsoil is stripped from the development areas (roads, platforms, etc) and stockpiled separately on site for landscaping purposes. Tree roots should also be grubbed from these areas. Any existing ponds or depressions that may contain surface water, that are not to be retained as part of the development, should be pumped dry and backfilled with suitable compacted fill to reinstate ground levels. Environmental input may be required for development near watercourses.

It is recommended that the site is developed with a series of engineered platforms using a combination of cut-to-fill terraces on sloping ground and ripped and recompacted soil on flatter ground.

In situ soil obtained from excavations for platforms, road box cuts and services trenches is likely to be fine-grained and problematic for use as a compactable load-bearing fill material, and should therefore be used only for non-structural fill applications or general fill over pipe cradles.

Recommendations for road design include the cutting of the roadbed to the required line and level, followed by compaction to 90% MDD to identify soft spots, which should be removed and replaced with suitable imported compactable fill, such as G7 or G9. Side drainage is important to achieve compaction of the roadbed. Subsoil drains on upslope side or both sides (in the case of flat terrain) are also recommended. The recommended road layerworks include 150mm of G7 SSG (compacted to 93%MDD), followed by 150mm G5 subbase (compacted to 95%MDD), followed by 150mm G1/2 base course and asphalt, or alternatively 80mm concrete pavers. Stabilisation of the subbase can be considered due to the poor subgrade conditions.

Good site landscaping and a piped underground stormwater management system is recommended to collect, divert and control the discharge of stormwater from properties and roads to prevent flooding and ingress into subsoils, which could affect the stability of the soils, causing settlement of structures or erosion problems.

6.3 Foundations

Foundations should be designed and constructed in accordance with SANS 10400-H or any site-specific specification issued by the structural engineers.

Site testing indicates the presence of moderately problematic insitu soils, including active and/or compressible soils. However, the tests also indicated the presence of significant deposits of variable but widespread uncontrolled fill material which could be highly compressible and problematic under structures. The impact of this and other constraints is the requirement for improved foundation systems to mitigate settlement of structures. The recommended improvements include removal and replacement of unsuitable soil below foundations, stiffening of foundation reinforcement, and/or improved site drainage measures. Further investigations may be required during construction to develop solutions. Additional systems such as brick-force reinforcement and articulation joints in walls are also recommended where appropriate.

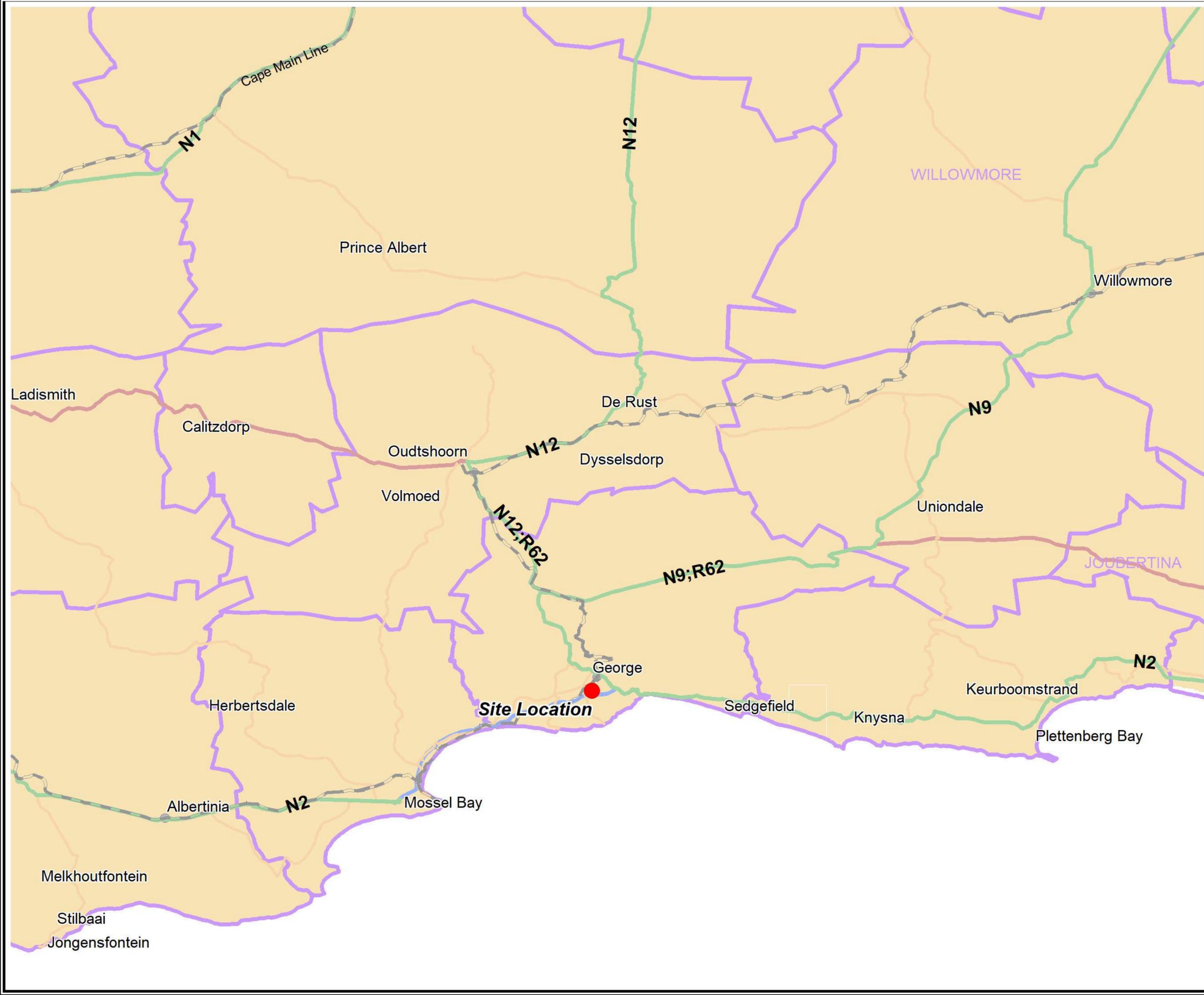
The recommended foundation systems for single/double storey structures include reinforced concrete strip foundations or rafts, supported on dense/stiff insitu soil or engineered fill. On sloping ground, where potentially loose overburden can be removed to a minimum depth of say 1m, structures can be well founded in cut on stiff insitu soil. In areas with flatter ground, potentially loose overburden (assume minimum 0.7m) should be ripped and recompacted with several passes of a pad-foot roller to achieve minimum density of 93%MDD. Additional improvements, such as a layer of selected granular fill such as G5, G6 or G7 gravel/crushed rock, can be considered as a final fill layer on such compacted platforms below the raft, compacted to 95%MDD. If localised thicker deposits of highly unsuitable soil are encountered during earthworks, decisions can be made on site to remove and replace more material as dictated by the on-site conditions.

7. Conclusions

The site was generally considered suitable for the proposed urban development, but some challenging geotechnical constraints were encountered, requiring special engineering solutions to mitigate excessive movements in structures. Some preliminary recommendations were provided for consideration by the designers, but all information should be verified on site and further investigations may be required.

Appendix 1

Maps



Legend

● Locality

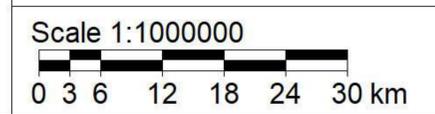
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 Area: George

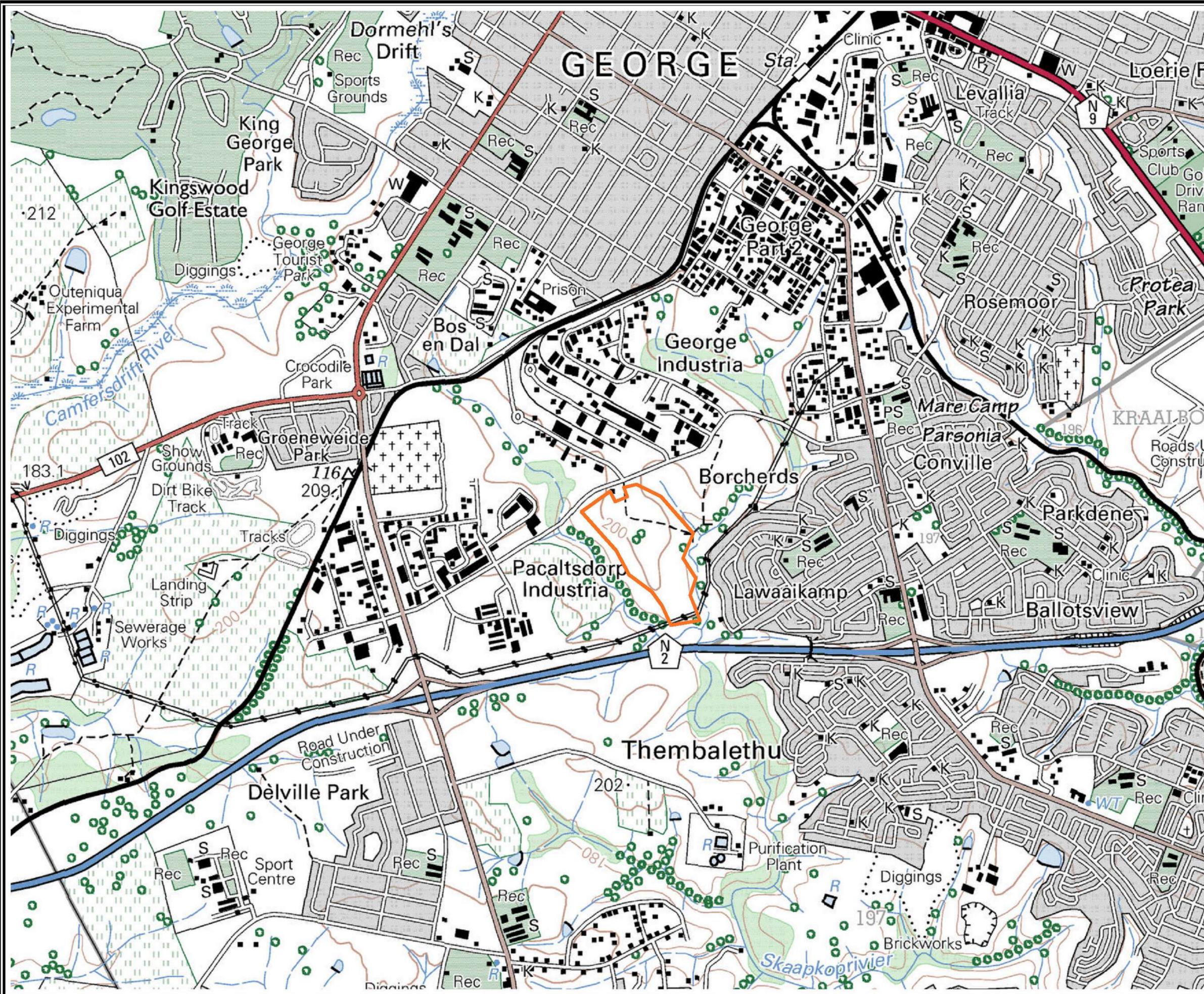
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 Date: September 2022
 Rev no: 1
 Drawn: SN

Client: Clinkscales Maughan Brown
 Structural/Civil Eng:



18 Clyde St
 Knysna
 6571
 South Africa
 +27443820502
 info@outeniqua.co.za





Legend

 Site Boundary

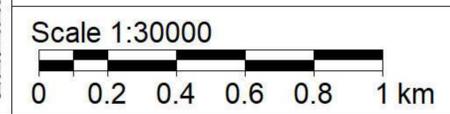
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 Area: George

Dwg Name: Topographic Map
 Date: September 2022
 Rev no: 1
 Drawn: SN

Client: Clinkscales Maughan Brown
 Structural/Civil Eng:



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Legend

 Site Boundary

Project: Proposed New mixed Use Development
Site: Portion of Rem Erf 464 (Metrogrounds)
Area: George

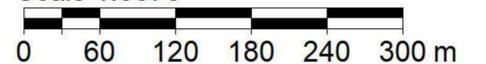
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Date: September 2022
Rev no: 1
Drawn: SN

Client: Clinkscales Maughan Brown Structural/Civil Eng:



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6571
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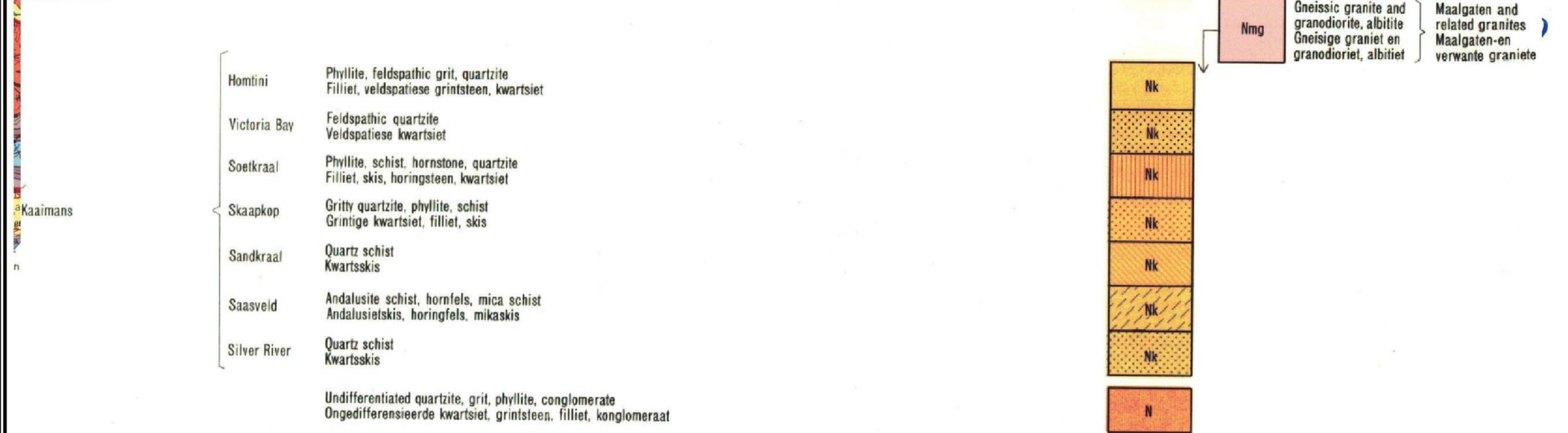
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Legend

● Locality



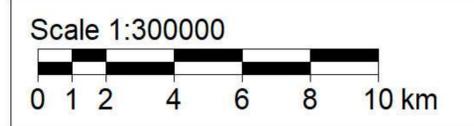
Project: Proposed New mixed Use Development
 Site: Portion of Rem Erf 464 (Metrogrounds)
 Area: George

Dwg Name: Geological Map
 Date: September 2022
 Rev no: 1
 Drawn: SN

Client: Clinkscales Maughan Brown
 Structural/Civil Eng:



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Legend

- Site Boundary
- Topo Vector
- River
- Metrogrounds Test Positions
- Geotechnical Terrains**
- Terrain 1 (C1/H1)
- Terrain 2 (P-Uncontrolled fill)

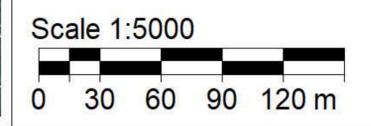
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 Site: Portion of Rem Erf 464 (Metrogrounds)
 Area: George

Dwg Name: Geotechnical Map
 Date: September 2022
 Rev no: 1
 Drawn: SN

Client: George Municipality
 Consulting Eng: Clinkscales Maughan Brown



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 Knysna
 6571
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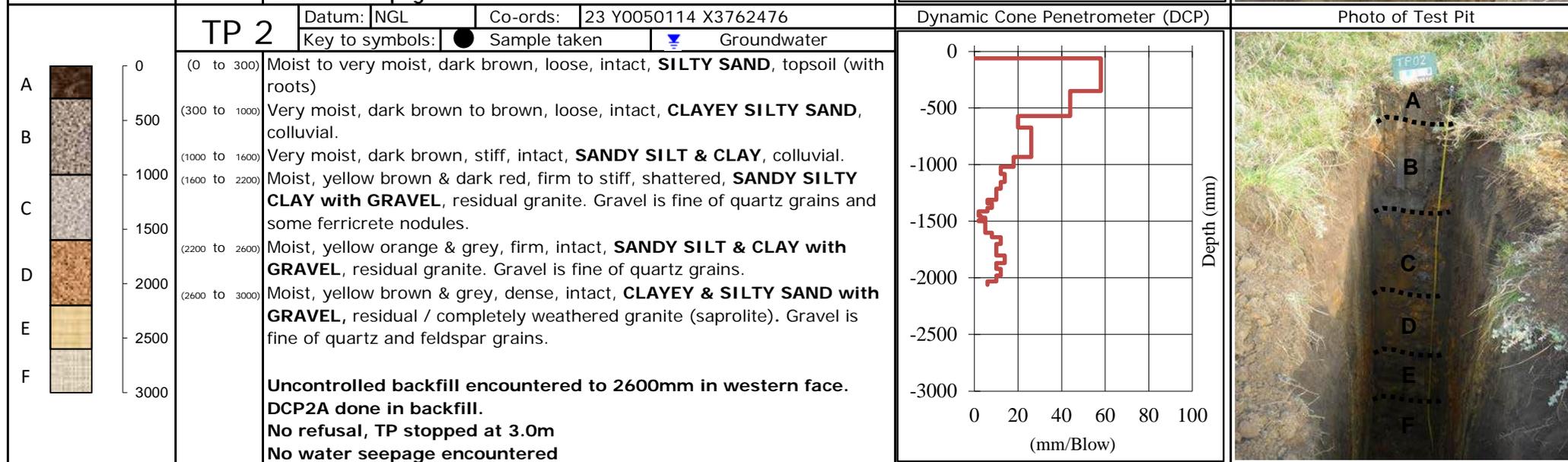
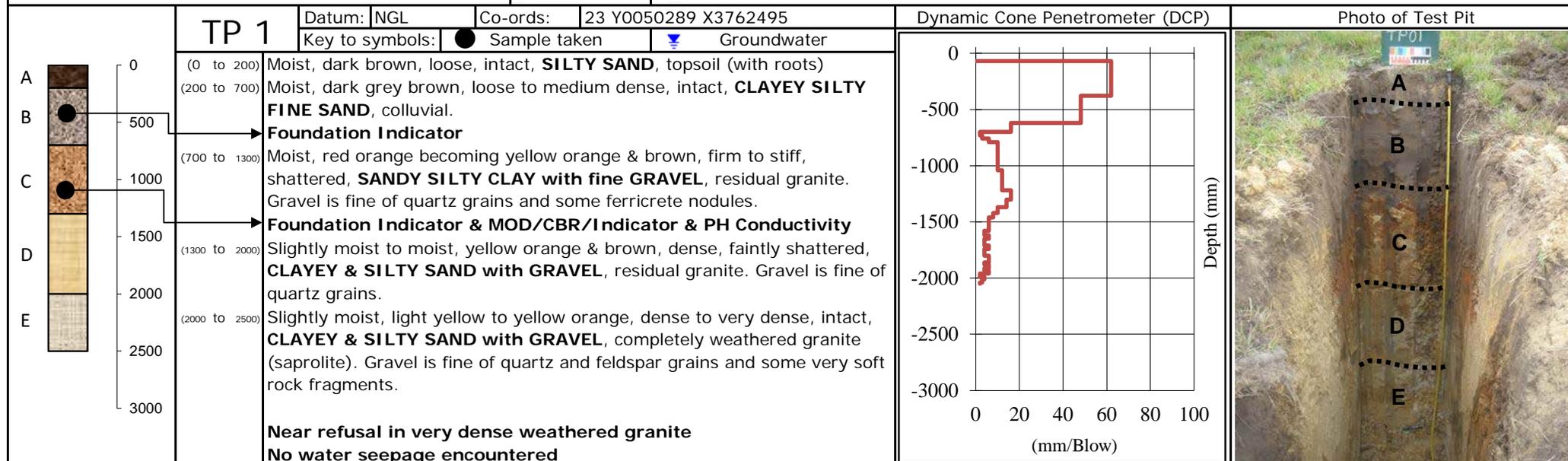


Appendix 2

Test pit profiles

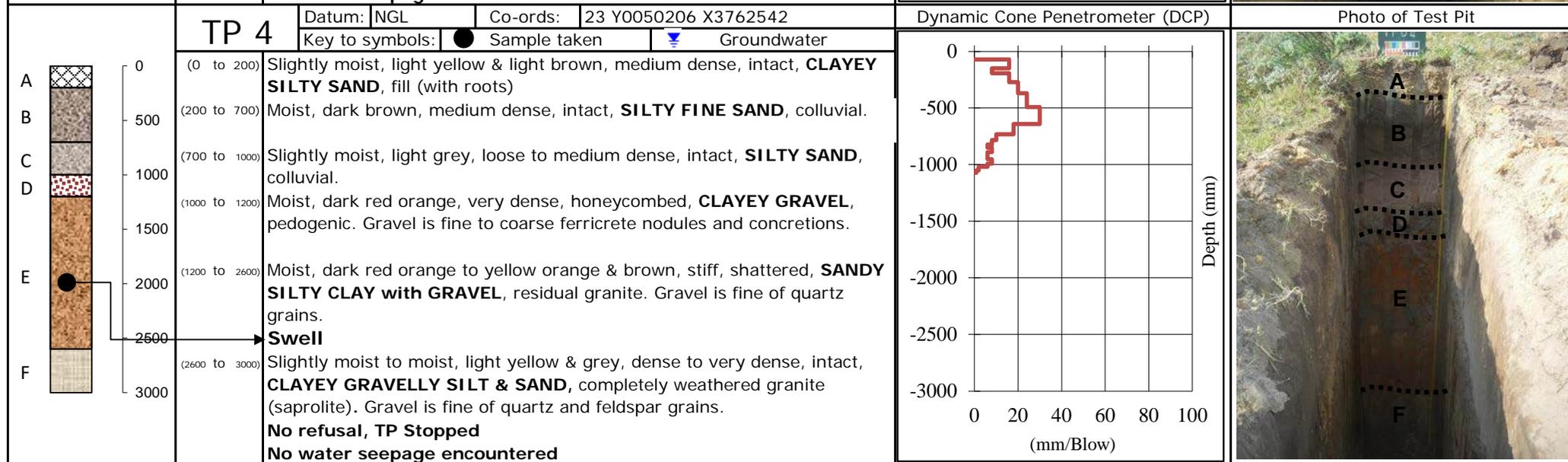
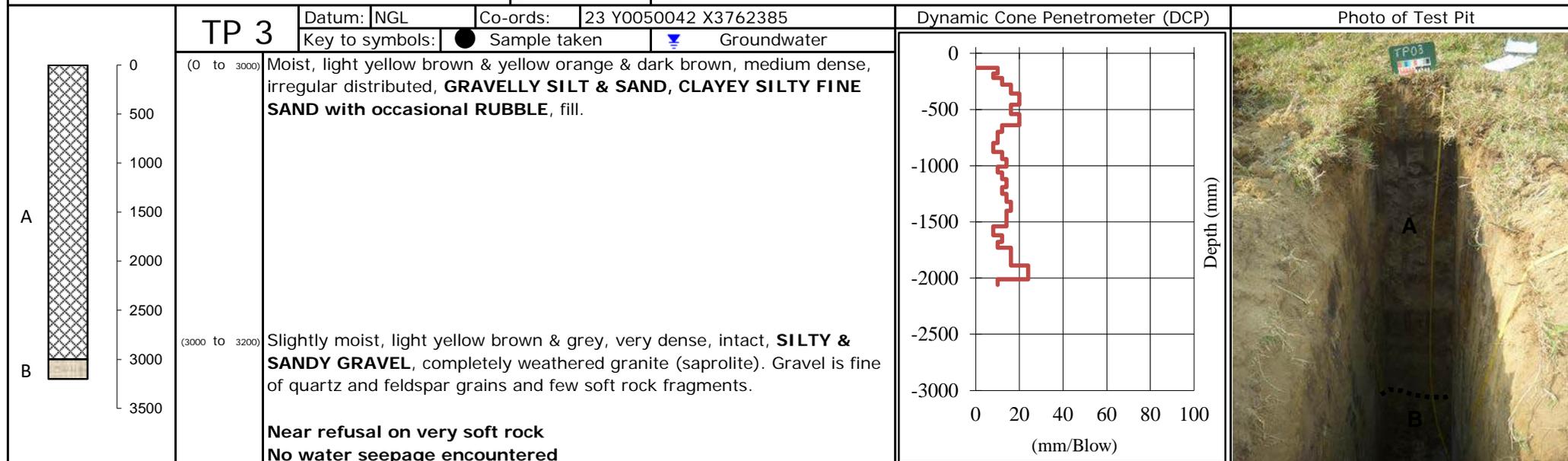
Geotechnical Soil Profile

Client:	Clinkscales Maughan-Brown (Pty)Ltd
Project:	Portion of Rem Erf 464 (Metrogrounds)
Area:	George
Date:	03.08.2022
Excavator:	TLB



Geotechnical Soil Profile

Client:	Clinkscales Maughan-Brown (Pty)Ltd
Project:	Portion of Rem Erf 464 (Metrogrounds)
Area:	George
Date:	03.08.2022
Excavator:	TLB





OUTENIQUA GEOTECHNICAL SERVICES

Geotechnical Soil Profile

Client:	Clinkscales Maughan-Brown (Pty)Ltd
Project:	Portion of Rem Erf 464 (Metrogrounds)
Area:	George
Date:	03.08.2022
Excavator:	TLB

		Datum: NGL	Co-ords: 23 Y0049996 X3762472	Dynamic Cone Penetrometer (DCP)	Photo of Test Pit
	TP 5	Key to symbols: ● Sample taken	▼ Groundwater		
	(0 to 300) Moist, light yellow brown & dark brown, loose to medium dense, intact, GRAVELLY SILTY SAND , fill (with roots) (300 to 1000) Moist, dark brown, loose to medium dense, intact, CLAYEY SILTY FINE SAND , colluvial. (1000 to 1100) Moist, dark red orange, dense, intact, CLAY & SANDY GRAVEL , pedogenic. Gravel is fine to medium ferricrete nodules. (1100 to 1800) Moist, dark red orange & dark yellow orange, stiff, shattered, SANDY SILT & CLAY with GRAVEL , residual granite. Gravel is fine of quartz grains. (1800 to 2600) Slightly moist to moist, dark yellow orange to light grey, medium dense to dense, intact, CLAY & SILTY SAND with GRAVEL , residual granite. Gravel is fine of quartz grains. (2600 to 3600) Slightly moist, light grey, dense to very dense, intact, SILTY SAND & GRAVEL , completely weathered granite (saprolite). Gravel is fine quartz and feldspar grains. Near refusal in very dense completely weathered granite No water seepage encountered Partially intersecting 600mm wide x 3.5m deep backfilled trench				
	TP 6	Key to symbols: ● Sample taken	▼ Groundwater		
	(0 to 200) Moist, dark brown, loose, intact, CLAYEY SILT & SAND , topsoil (with roots) (200 to 700) Moist, dark brown, loose to medium dense, intact, CLAYEY SILTY FINE SAND , colluvial. (700 to 900) Very moist, dark brown, dense, honeycombed/voided, CLAYEY SANDY GRAVEL , pedogenic. Gravel is ferricrete nodules and traces of quartz pebbles. (900 to 2000) Moist, dark red orange & yellow orange, stiff, shattered, SANDY SILTY CLAY with GRAVEL , residual granite. Gravel is fine, angular of quartz grains. (2000 to 3000) Moist, light yellow & grey, dense, intact, CLAY & GRAVELLY SILT & SAND , completely weathered granite (saprolite). Gravel is fine, angular, of quartz and feldspar grains. No refusal, TP stopped No water seepage encountered				



OUTENIQUA GEOTECHNICAL SERVICES

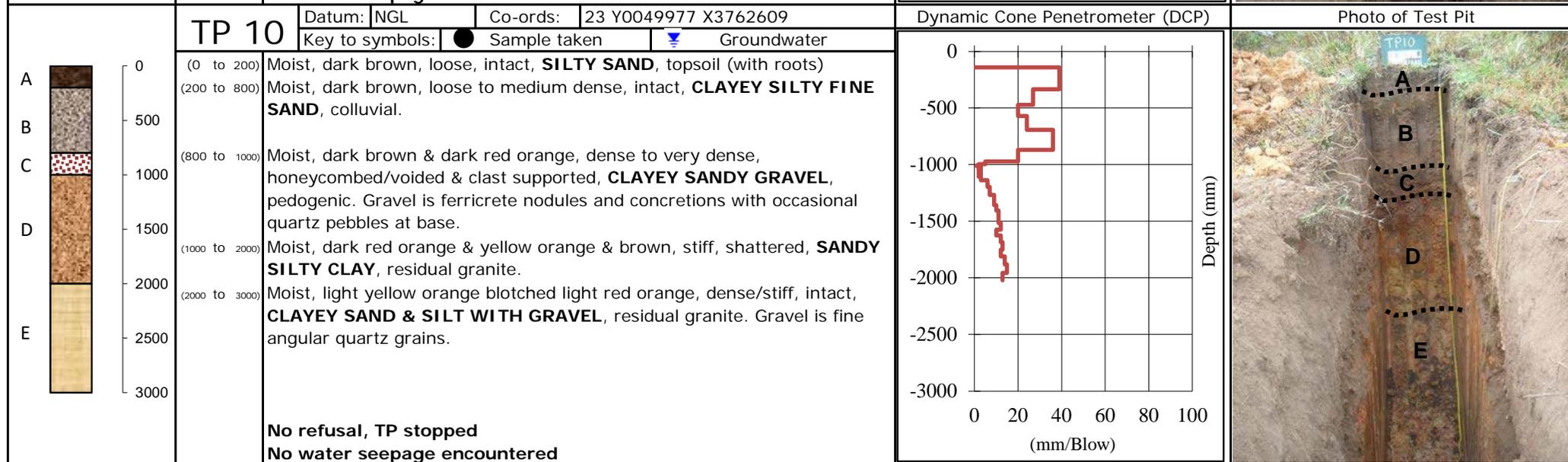
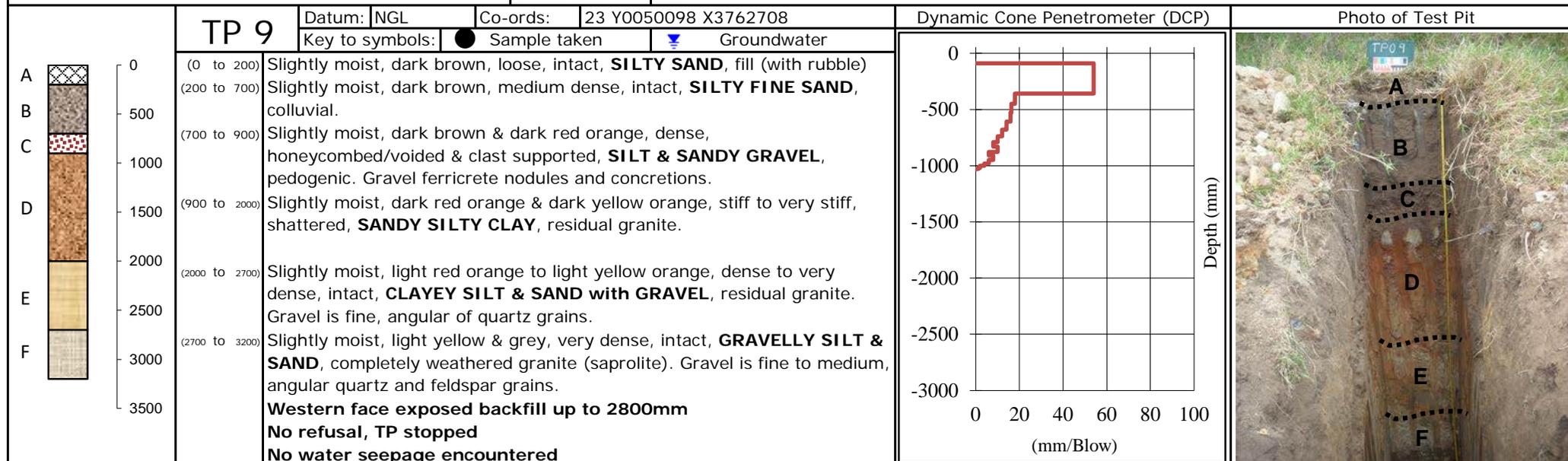
Geotechnical Soil Profile

Client:	Clinkscales Maughan-Brown (Pty)Ltd
Project:	Portion of Rem Erf 464 (Metrogrounds)
Area:	George
Date:	03.08.2022
Excavator:	TLB

		Datum:	Co-ords:	Dynamic Cone Penetrometer (DCP)		Photo of Test Pit
	TP 7	NGL	23 Y0050071 X3762568	Dynamic Cone Penetrometer (DCP)		
		Key to symbols: ● Sample taken ▽ Groundwater				
	(0 to 200)	Moist, light yellow & dark brown, medium dense, intact, CLAY & SILTY SAND , fill (with roots)		0		
	(200 to 700)	Moist, dark brown, loose to medium dense, intact, CLAYEY & SILTY FINE SAND , colluvial.		-500		
	(700 to 1000)	Slightly moist to moist, dark brown, medium dense, honeycombed/voided, SILTY SANDY GRAVEL , pedogenic. Gravel is ferricrete nodules.		-1000		
	→ Foundation Indicator			-1500		
	(1000 to 2000)	Moist, yellow orange & red orange, stiff, shattered, SAND & SILTY CLAY with GRAVEL , residual granite. Gravel is fine, angular of quartz grains.		-2000		
	→ Foundation Indicator			-2500		
	(2000 to 2800)	Slightly moist to moist, yellow orange & light grey brown, dense to very dense, intact, CLAYEY & SILTY SAND with GRAVEL , completely weathered granite (saprolite). Gravel is fine, angular quartz and feldspar grains.		-3000		
		Near refusal in very dense weathered granite				
		No water seepage encountered				
	TP 8	NGL	23 Y0049879 X3762528	Dynamic Cone Penetrometer (DCP)		
		Key to symbols: ● Sample taken ▽ Groundwater				
	(0 to 200)	Moist, dark brown, loose, intact, CLAYEY SILTY FINE SAND , topsoil (with roots)		0		
	(200 to 500)	Moist, dark brown, dense, voided/clast supported, CLAYEY SILTY GRAVEL & COBBLES , colluvial/pedogenic. Gravel is ferricrete nodules. Cobbles are angular to sub-rounded quartzite.		-500		
	(500 to 700)	Moist, dark brown to light brown, dense, pinholed, CLAYEY SANDY FINE GRAVEL , residual granite. Gravel is fine quartz grains.		-1000		
	(700 to 1500)	Moist, dark yellow orange & dark red orange & dark brown, stiff shattered, SANDY SILTY CLAY , residual granite.		-1500		
	(1500 to 3000)	Slightly moist, dark yellow orange & dark red & grey, very dense, intact, GRAVELLY SILT & SAND , completely weathered granite (saprolite). Gravel is quartz and feldspar grains with some soft rock fragments.		-2000		
		No refusal, TP stopped				
		No water seepage encountered				

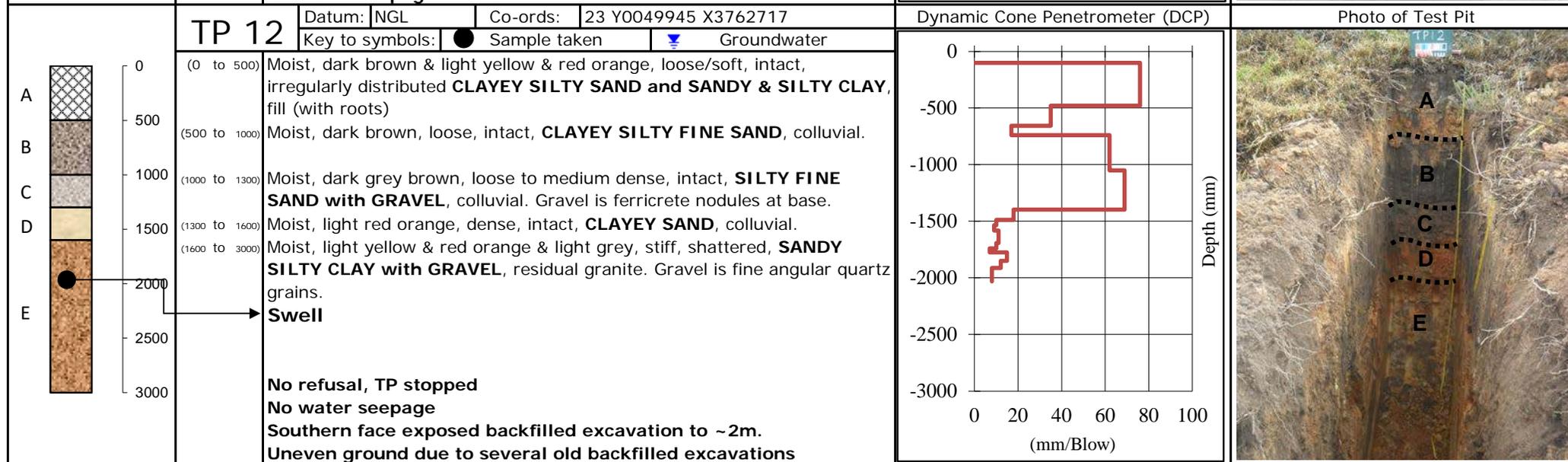
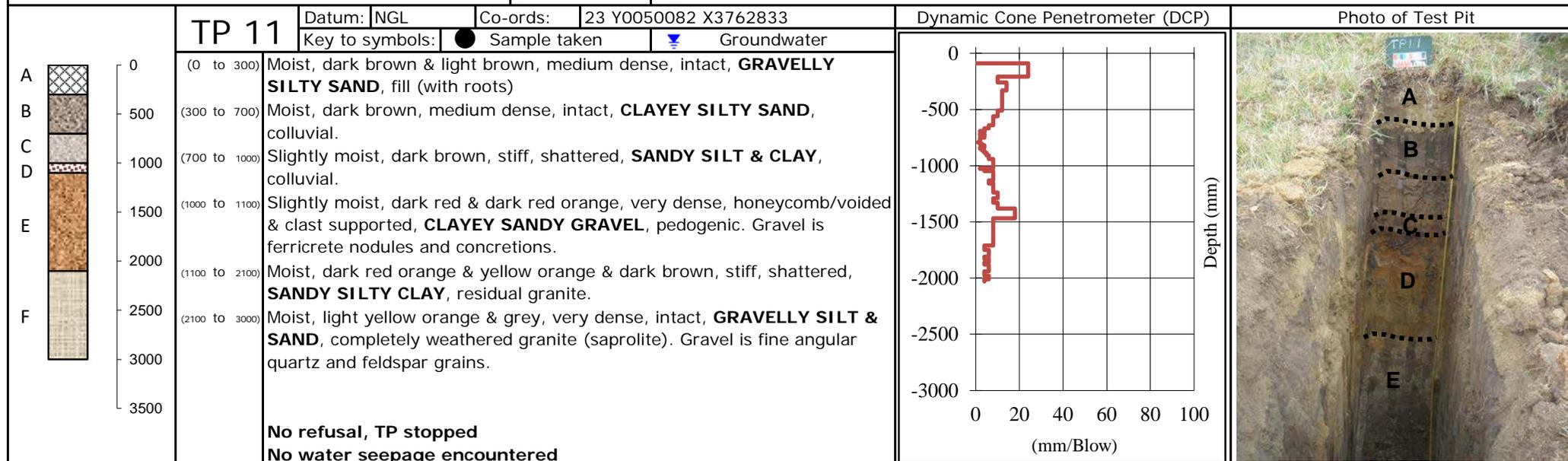
Geotechnical Soil Profile

Client:	Clinkscales Maughan-Brown (Pty)Ltd
Project:	Portion of Rem Erf 464 (Metrogrounds)
Area:	George
Date:	03.08.2022
Excavator:	TLB



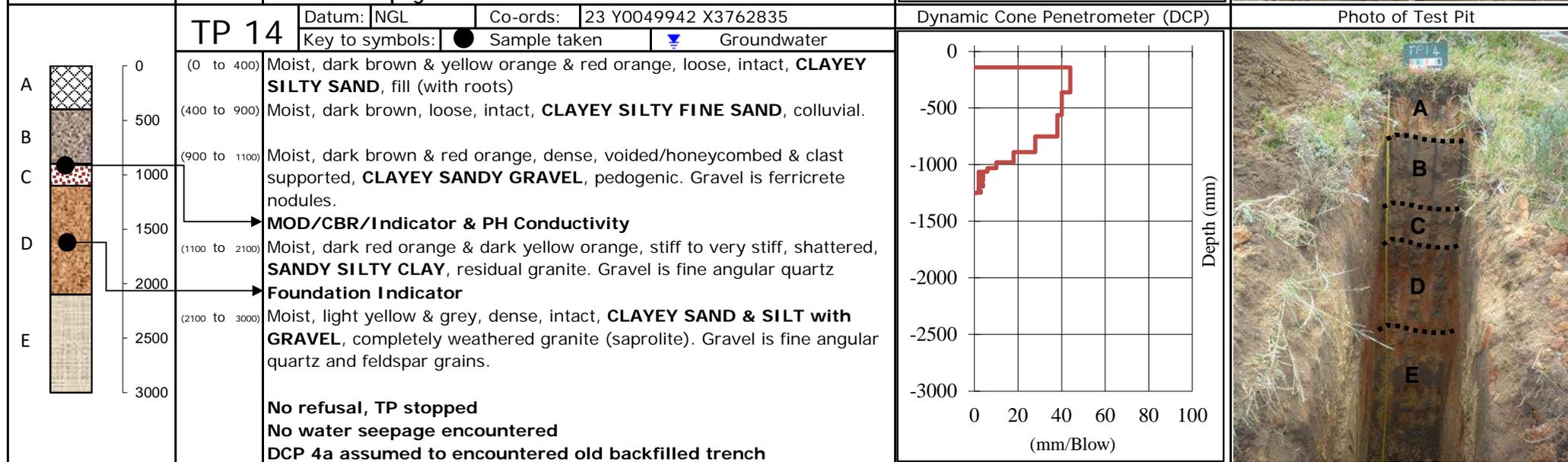
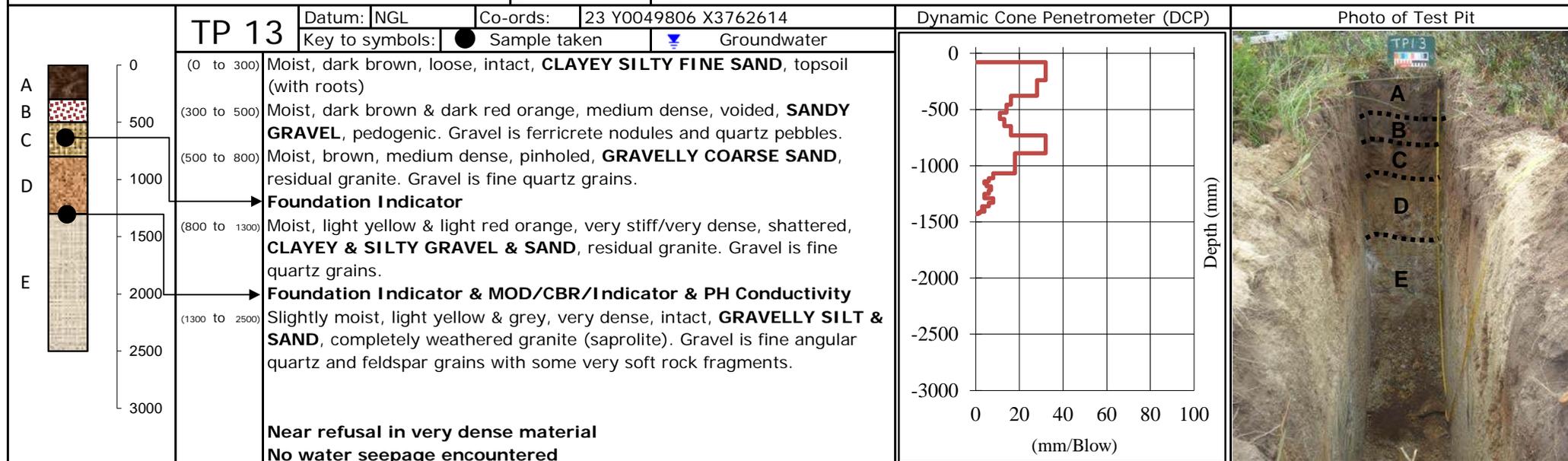
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Project:	Portion of Rem Erf 464 (Metrogrounds)
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Date:	03.08.2022
Excavator:	TLB



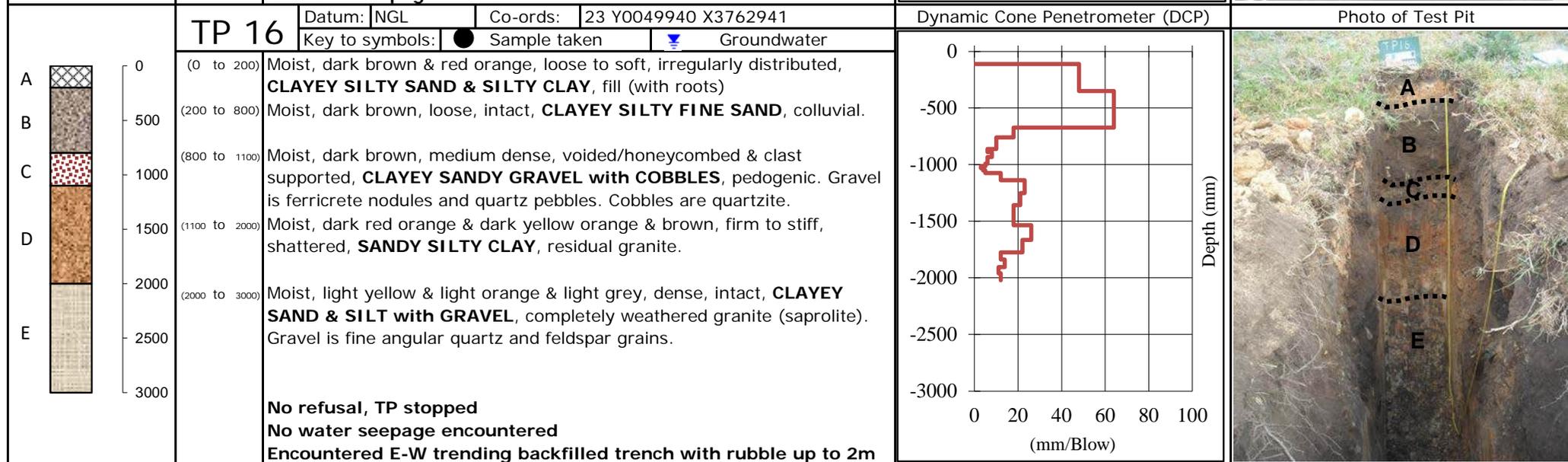
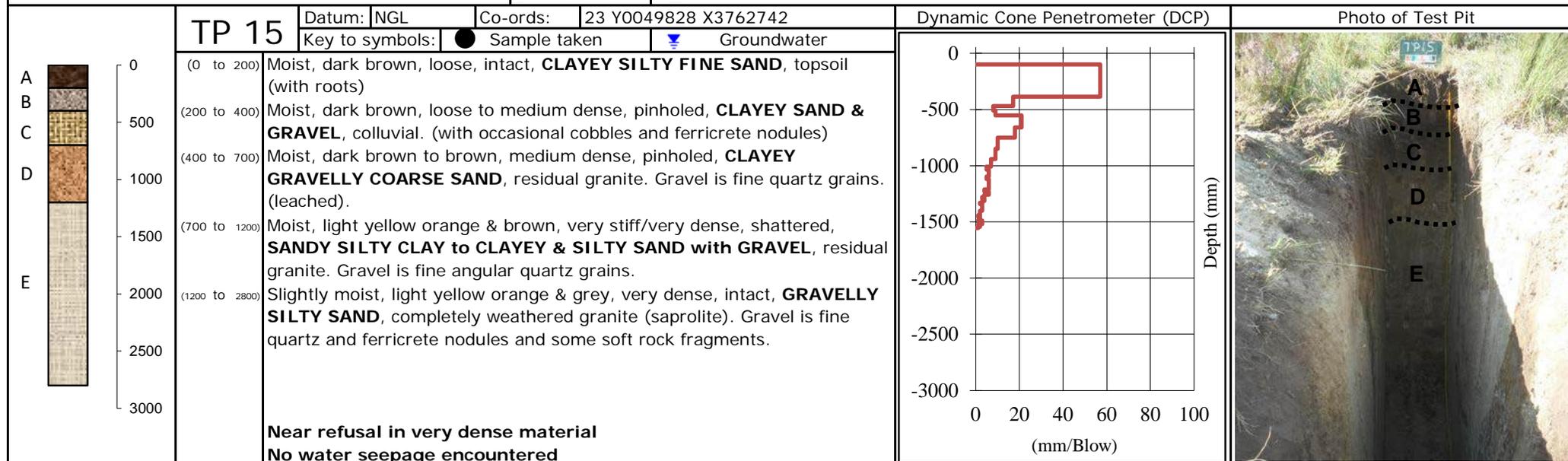
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Project:	Portion of Rem Erf 464 (Metrogrounds)
Area:	George
Date:	03.08.2022
Excavator:	TLB



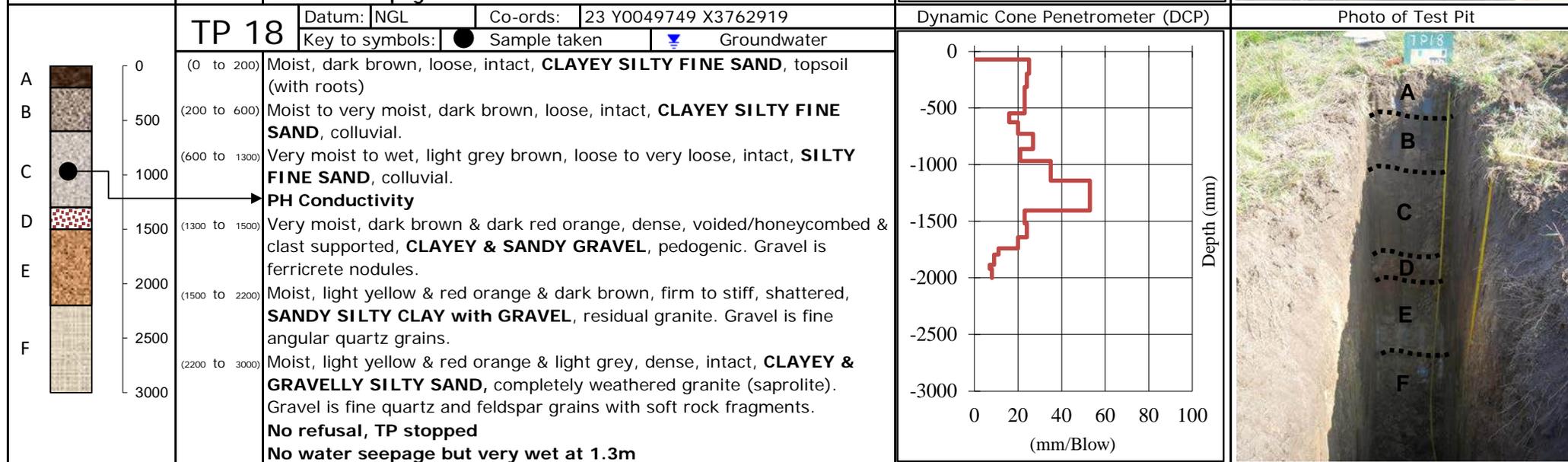
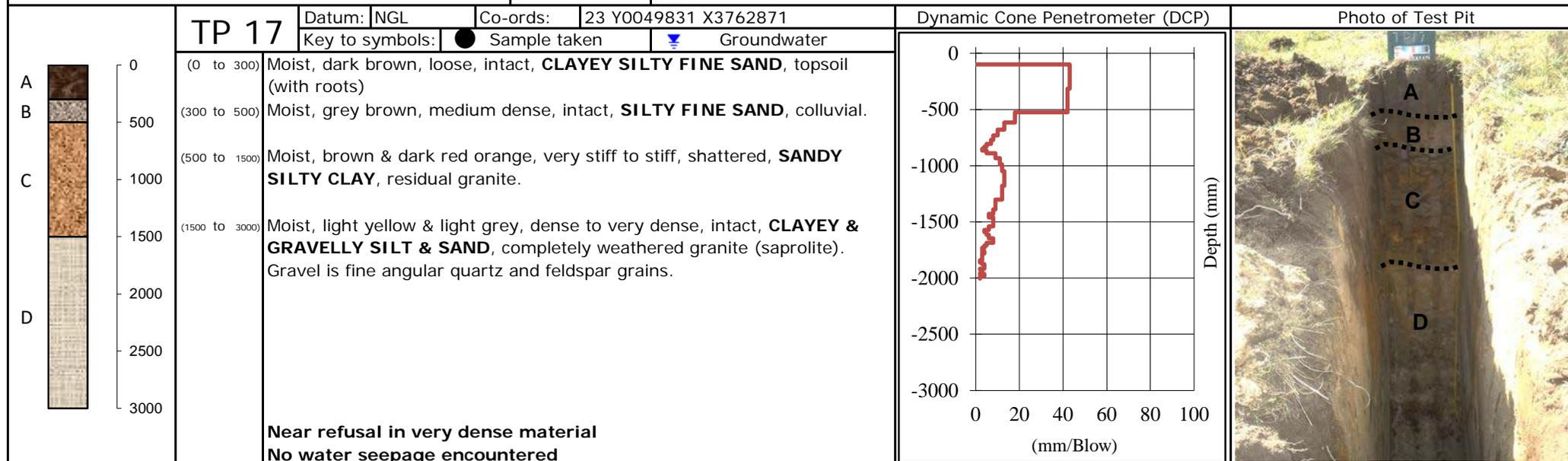
Geotechnical Soil Profile

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Project:	Portion of Rem Erf 464 (Metrogrounds)
Area:	George
Date:	03.08.2022
Excavator:	TLB



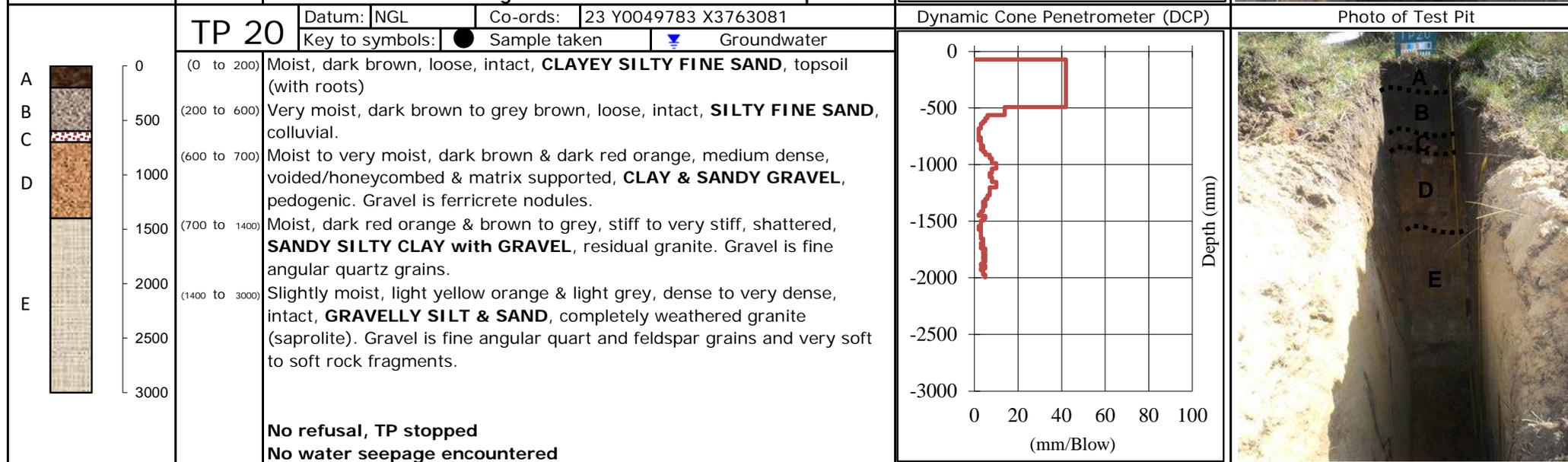
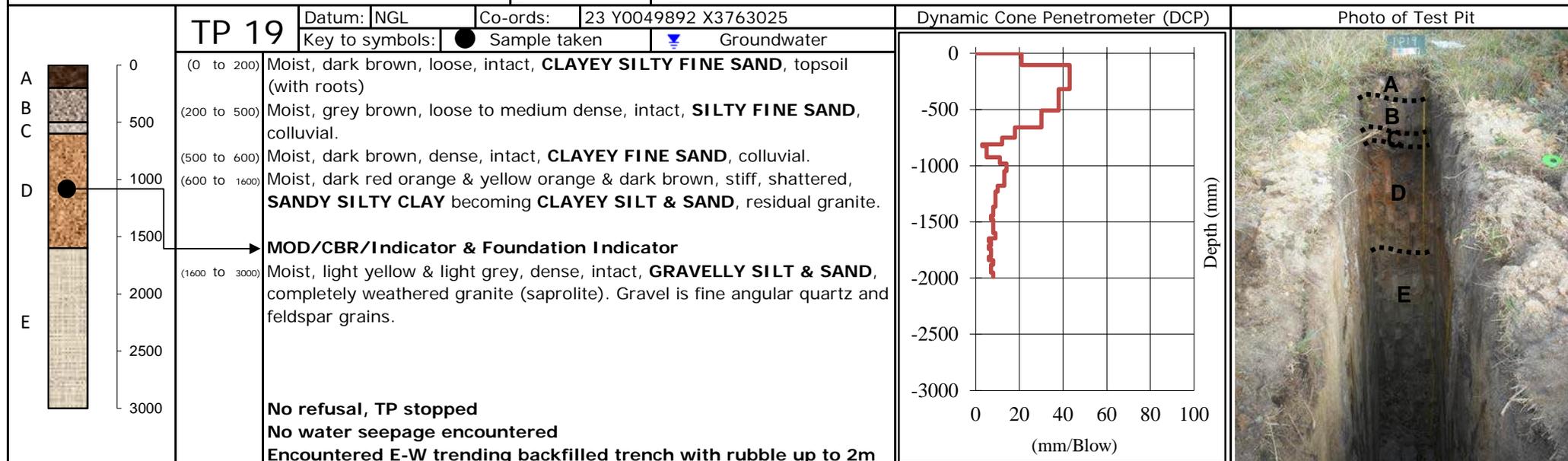
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Date:	03.08.2022
Excavator:	TLB



Geotechnical Soil Profile

Client:	Clinkscales Maughan-Brown (Pty)Ltd
Project:	Portion of Rem Erf 464 (Metrogrounds)
Area:	George
Date:	03.08.2022
Excavator:	TLB



Appendix 3

Lab test data



Customer :	Outeniqua Geotechnical Services	Project :	Metro Grounds - George
	P O Box 964	Date Received :	04/08/2022
	Knysna	Date Reported :	15/08/2022
	6570	Req. Number :	2778/22
Attention :	Iain Paton	No. of Pages :	1/4

TEST REPORT CALIFORNIA BEARING RATIO

Sample Position (SV)		TP1 - Layer 3	COLTO:			
Depth (mm)		700-1300	Not			
Sample No		84507	Classified			
Materials Description	Source	In-situ				
	Colour	Reddish Orange to Yellowish Orange				
	Soil Type	Sandy Elastic Silt				
	Classification	Existing				
Material Indicators - (SANS 3001 Method GR1)						
Percentage Passing	75 mm	100				
	63 mm	100				
	50 mm	100				
	37.5 mm	100				
	28 mm	100				
	20 mm	100				
	14 mm	100				
	5 mm	99				
	2 mm	92				
	0.425 mm	73				
0.075 mm	51.7					
Material Indicators - (SANS 3001 Method PR5)						
Grading Modulus		0.84				
Coarse Sand Soil-Mortar (%)		21				
Atterberg Limits - (SANS 3001 Method GR10)						
Liquid Limit (%)		54				
Plasticity Index (%)		19				
Linear Shrinkage (%)		9.5				
Material Strength - (SANS 3001 Method GR30,GR40 - SCALPED)						
MDD	Max Dry Density (kg/m ³)	1662				
	Optimum Moisture Content (%)	21.9				
	Mould Moisture Content (%)	21.8				
A	Relative Compaction (%)	100.0				
	Swell (%)	1.8				
B	Relative Compaction (%)	94.6				
	Swell (%)	2.0				
C	Relative Compaction (%)	91.4				
	Swell (%)	2.1				
CBR	@100% Max Dry Density	3				
	@98% Max Dry Density	3				
	@95% Max Dry Density	2				
	@93% Max Dry Density	2				
	@90% Max Dry Density	2				
Material Condition						
Insitu Moisture Content (%)						
Soil Classification Achieved By The Material						
COLTO:		Not Classified				
AASHTO System		A-7-5				
Unified System		MH				

• Specimens delivered to Outeniqua Lab in good order.

Ruaan Lesch

Technical Signatory
For Outeniqua Lab (Pty) Ltd.

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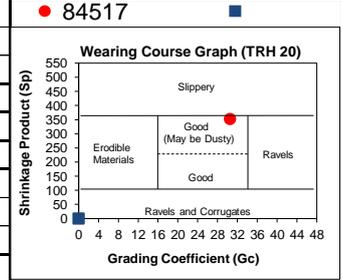
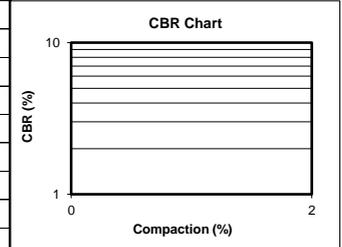
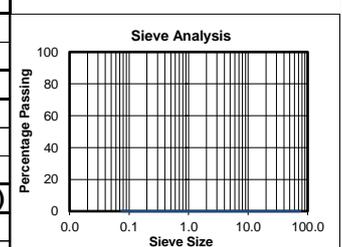
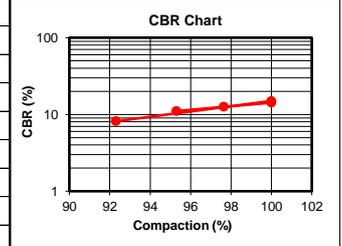
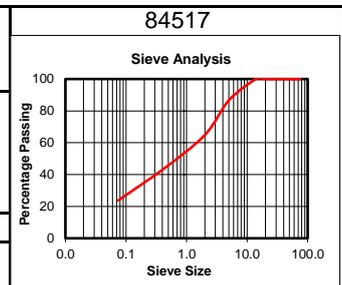
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Customer :	Outeniqua Geotechnical Services	Project :	Metro Grounds - George
	P O Box 964	Date Received :	04/08/2022
	Knysna	Date Reported :	15/08/2022
	6570	Req. Number :	2778/22
Attention :	Iain Paton	No. of Pages :	2/4

TEST REPORT CALIFORNIA BEARING RATIO

Sample Position (SV)		TP13 - Layer 4 & 5	COLTO:	
Depth (mm)		800-2500	Not	
Sample No		84517	Classified	
Materials Description	Source	In-situ		
	Colour	Reddish Orange to Yellowish Orange		
	Soil Type	Gravelly Sandy Silty Clay		
	Classification	Existing		
Material Indicators - (SANS 3001 Method GR1)				
Percentage Passing	75 mm	100	Opinion	
	63 mm	100		
	50 mm	100		
	37.5 mm	100		
	28 mm	100		
	20 mm	100		
	14 mm	100		
	5 mm	87		
	2 mm	65		
	0.425 mm	44		
0.075 mm	23.9			
Material Indicators - (SANS 3001 Method PR5)				
Grading Modulus		1.68		
Coarse Sand Soil-Mortar (%)		32		
Atterberg Limits - (SANS 3001 Method GR10)				
Liquid Limit (%)		36		
Plasticity Index (%)		16		
Linear Shrinkage (%)		8.0		
Material Strength - (SANS 3001 Method GR30,GR40 - SCALPED)				
MDD	Max Dry Density (kg/m ³)	2072		
	Optimum Moisture Content (%)	7.8		
	Mould Moisture Content (%)	7.8		
A	Relative Compaction (%)	100.0		
	Swell (%)	0.6		
B	Relative Compaction (%)	95.3		
	Swell (%)	0.7		
C	Relative Compaction (%)	92.3		
	Swell (%)	0.8		
CBR	@100% Max Dry Density	15		
	@98% Max Dry Density	13		
	@95% Max Dry Density	10		
	@93% Max Dry Density	9		
	@90% Max Dry Density	7		
Material Condition				
Insitu Moisture Content (%)				
Soil Classification Achieved By The Material				
COLTO:		Not Classified		
AASHTO System		A-2-6		
Unified System		SC		



Specimens delivered to Outeniqua Lab in good order.

Ruaan Lesch
Technical Signatory
For Outeniqua Lab (Pty) Ltd.

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Customer :	Outeniqua Geotechnical Services	Project :	Metro Grounds - George
	P O Box 964	Date Received :	04/08/2022
	Knysna	Date Reported :	15/08/2022
	6570	Req. Number :	2778/22
Attention :	Iain Paton	No. of Pages :	3/4

TEST REPORT CALIFORNIA BEARING RATIO

Sample Position (SV)		TP14 - Layer 2 & 3	COLTO:			
Depth (mm)		400-1100	G6 Subbase			
Sample No		84519				
Materials Description	Source	In-situ				
	Colour	Reddish Orange to Yellowish Orange				
	Soil Type	Gravelly Sandy Silty Clay				
	Classification	Existing				
Material Indicators - (SANS 3001 Method GR1)						
Percentage Passing	75 mm	100		Opinion		
	63 mm	100				
	50 mm	100				
	37.5 mm	100				
	28 mm	100				
	20 mm	100				
	14 mm	100				
	5 mm	88				
	2 mm	76				
	0.425 mm	68				
0.075 mm	32.0					
Material Indicators - (SANS 3001 Method PR5)						
Grading Modulus		1.24	1.20 - 2.60	✓		
Coarse Sand Soil-Mortar (%)		11				
Atterberg Limits - (SANS 3001 Method GR10)						
Liquid Limit (%)		Undetermined				
Plasticity Index (%)		NP	≤ 12	✓		
Linear Shrinkage (%)		NP	≤ 5	✓		
Material Strength - (SANS 3001 Method GR30,GR40 - SCALPED)						
MDD	Max Dry Density (kg/m ³)	2223				
	Optimum Moisture Content (%)	7.6				
	Mould Moisture Content (%)	7.7				
A	Relative Compaction (%)	100.0				
	Swell (%)	0.0	≤ 1.0	✓		
B	Relative Compaction (%)	96.0				
	Swell (%)	0.0				
C	Relative Compaction (%)	91.8				
	Swell (%)	0.0				
CBR	@100% Max Dry Density	43				
	@98% Max Dry Density	35				
	@95% Max Dry Density	27	≥ 25	*		
	@93% Max Dry Density	22				
	@90% Max Dry Density	17				
Material Condition						
Insitu Moisture Content (%)						
Soil Classification Achieved By The Material						
COLTO:		G6 Subbase				
AASHTO System		A-2-4				
Unified System		SM				

• Specimens delivered to Outeniqua Lab in good order.

Ruaan Lesch

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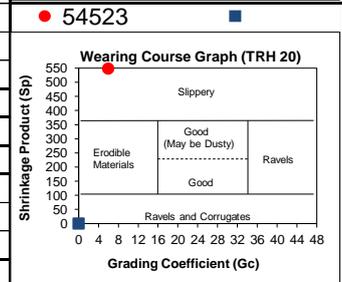
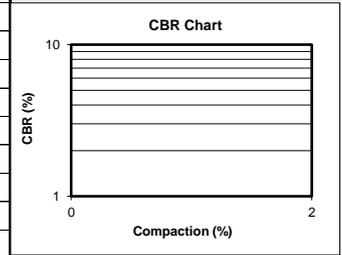
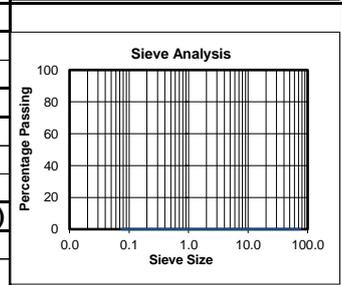
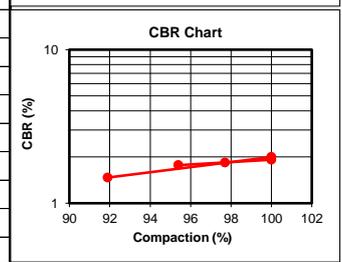
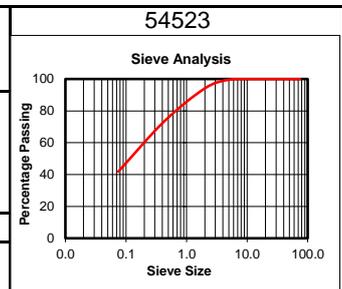
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Customer :	Outeniqua Geotechnical Services	Project :	Metro Grounds - George
	P O Box 964	Date Received :	04/08/2022
	Knysna	Date Reported :	15/08/2022
	6570	Req. Number :	2778/22
Attention :	Iain Paton	No. of Pages :	4/4

TEST REPORT CALIFORNIA BEARING RATIO

Sample Position (SV)		TP19 - Layer 4	COLTO:	
Depth (mm)		600-1600	Not	
Sample No		54523	Classified	
Materials Description	Source	In-situ		
	Colour	Reddish Orange to Yellowish Orange		
	Soil Type	Sandy Silty		
	Classification	Existing		
Material Indicators - (SANS 3001 Method GR1)				
Percentage Passing	75 mm	100	Opinion	
	63 mm	100		
	50 mm	100		
	37.5 mm	100		
	28 mm	100		
	20 mm	100		
	14 mm	100		
	5 mm	100		
	2 mm	94		
	0.425 mm	73		
0.075 mm	41.9			
Material Indicators - (SANS 3001 Method PR5)				
Grading Modulus		0.91		
Coarse Sand Soil-Mortar (%)		22		
Atterberg Limits - (SANS 3001 Method GR10)				
Liquid Limit (%)		42		
Plasticity Index (%)		15		
Linear Shrinkage (%)		7.5		
Material Strength - (SANS 3001 Method GR30,GR40 - SCALPED)				
MDD	Max Dry Density (kg/m ³)	1810		
	Optimum Moisture Content (%)	16.2		
	Mould Moisture Content (%)	16.2		
A	Relative Compaction (%)	100.0		
	Swell (%)	2.3		
B	Relative Compaction (%)	95.4		
	Swell (%)	2.5		
C	Relative Compaction (%)	91.9		
	Swell (%)	2.7		
CBR	@100% Max Dry Density	2		
	@98% Max Dry Density	2		
	@95% Max Dry Density	2		
	@93% Max Dry Density	2		
	@90% Max Dry Density	1		
Material Condition				
Insitu Moisture Content (%)				
Soil Classification Achieved By The Material				
COLTO:		Not Classified		
AASHTO System		A-7-6		
Unified System		SM		



• Specimens delivered to Outeniqua Lab in good order.

Ruaan Lesch

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Registration No. 95/07742/07

Materials Testing Laboratory

6 Mirrorball Street, George : PO Box 3186, George Industria, 6536

Tel: 044 8743274 : Fax: 044 8745779 : e-mail: llewelyn@outeniqualab.co.za

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Jan-22



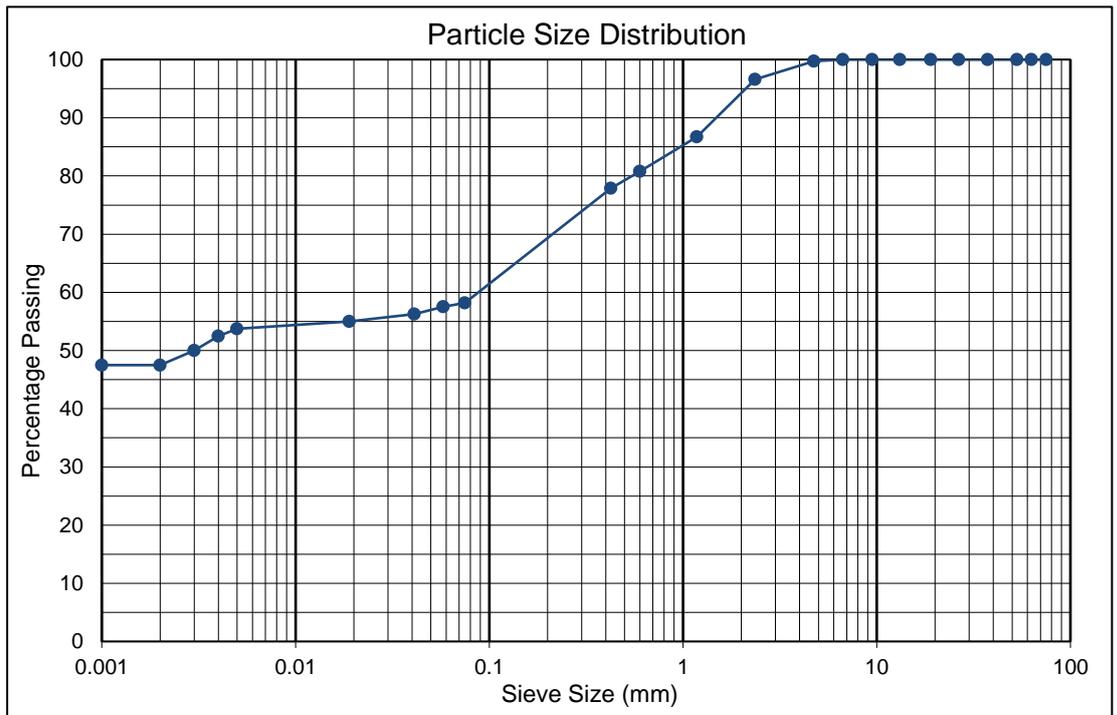
T0347

Customer :	Outeniqua Geotechnical Services	Project :	Metro Grounds - George
	P O Box 964	Date Received :	04/08/2022
Attention :	Knysna	Date Reported :	23/08/2022
	6570	Req. Number :	2778/22
	Iain Paton	No. of Pages :	2/10

TEST REPORT FOUNDATION INDICATOR - (ASTM Method D422)

Sample Position (SV)	TP1 - Layer 3
Depth (mm):	700-1300
Sample No.:	84505
Materials Description	In-situ
	Reddish Orange to Yellowish Orange
	Sandy Elastic Silt
	Trial Pit

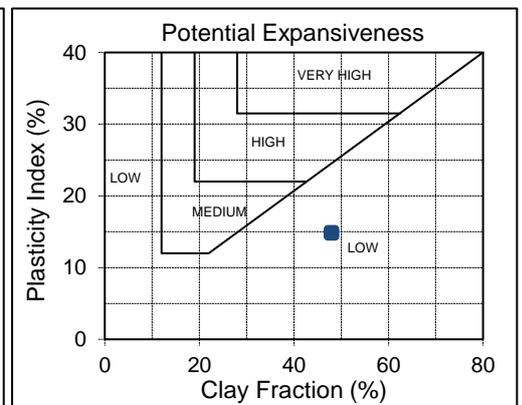
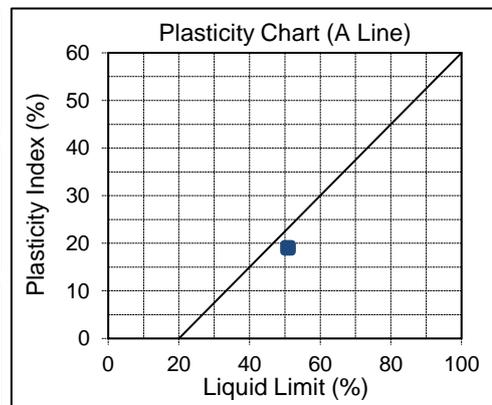
75.0mm	100
63.0mm	100
53.0mm	100
37.5mm	100
26.5mm	100
19mm	100
13.2mm	100
9.5mm	100
6.7mm	100
4.75mm	100
2.36mm	97
1.18mm	87
0.6mm	81
0.425mm	78
0.075mm	58
0.058mm	58
0.041mm	56
0.019mm	55
0.005mm	54
0.004mm	53
0.003mm	50
0.002mm	48
0.001mm	48



Liquid Limit (%)	51
Plasticity Index (%)	19
Linear Shrinkage (%)	10
Moisture Content (%)	22.9

% Clay	48
% Silt	10
% Sand	36
% Gravel	6

Unified Soil Classification	MH
AASHTO Soil Classification	A-7-5



• Specimen delivered to Outeniqua Lab in good order.

Ruan Lesch
Technical Signatory
For Outeniqua Lab (Pty) Ltd.

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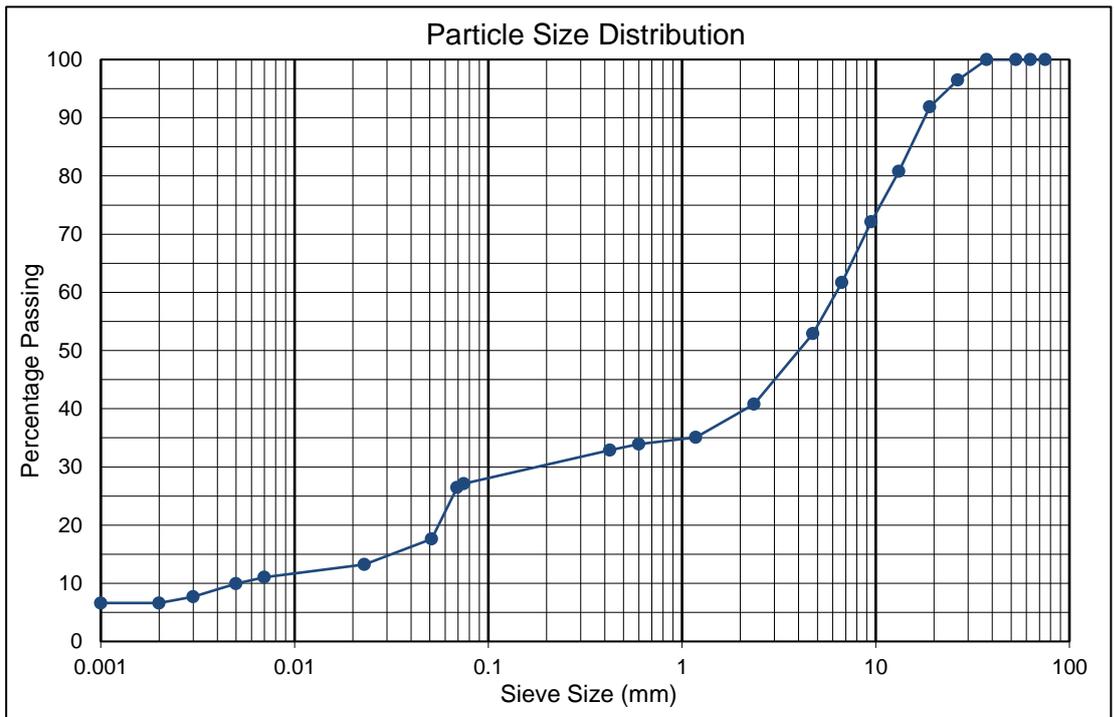
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Customer :	Outeniqua Geotechnical Services	Project :	Metro Grounds - George
	P O Box 964	Date Received :	04/08/2022
Attention :	Knysna	Date Reported :	23/08/2022
	6570	Req. Number :	2778/22
	Iain Paton	No. of Pages :	3/10

TEST REPORT FOUNDATION INDICATOR - (ASTM Method D422)

Sample Position (SV)	TP7 - Layer 3
Depth (mm):	700-1000
Sample No.:	84510
Materials Description	Source
	Colour
	Soil Type
	Classification
	In-situ
	Dark Brown
	Silty Gravel with Sand
	Trial Pit

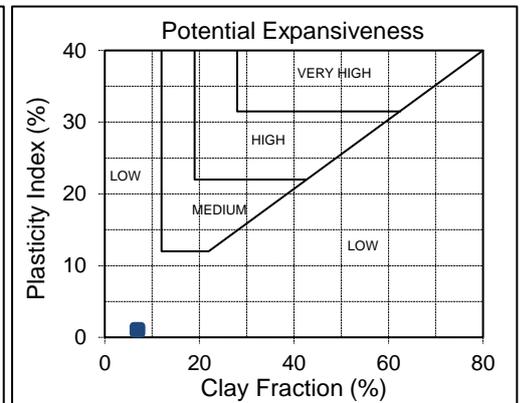
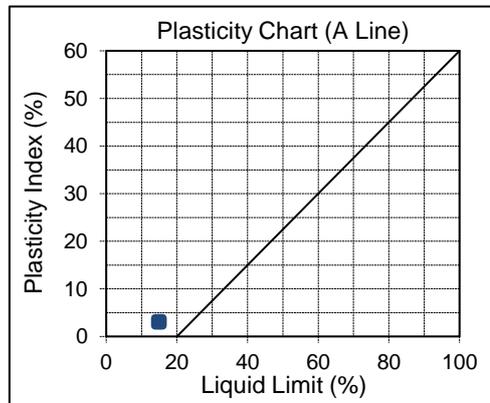
75.0mm	100
63.0mm	100
53.0mm	100
37.5mm	100
26.5mm	97
19mm	92
13.2mm	81
9.5mm	72
6.7mm	62
4.75mm	53
2.36mm	41
1.18mm	35
0.6mm	34
0.425mm	33
0.075mm	27
0.069mm	26
0.051mm	18
0.023mm	13
0.007mm	11
0.005mm	10
0.003mm	8
0.002mm	7
0.001mm	7



Liquid Limit (%)	15
Plasticity Index (%)	3
Linear Shrinkage (%)	2
Moisture Content (%)	24.0

% Clay	7
% Silt	15
% Sand	17
% Gravel	61

Unified Soil Classification	GM
AASHTO Soil Classification	A-2-4



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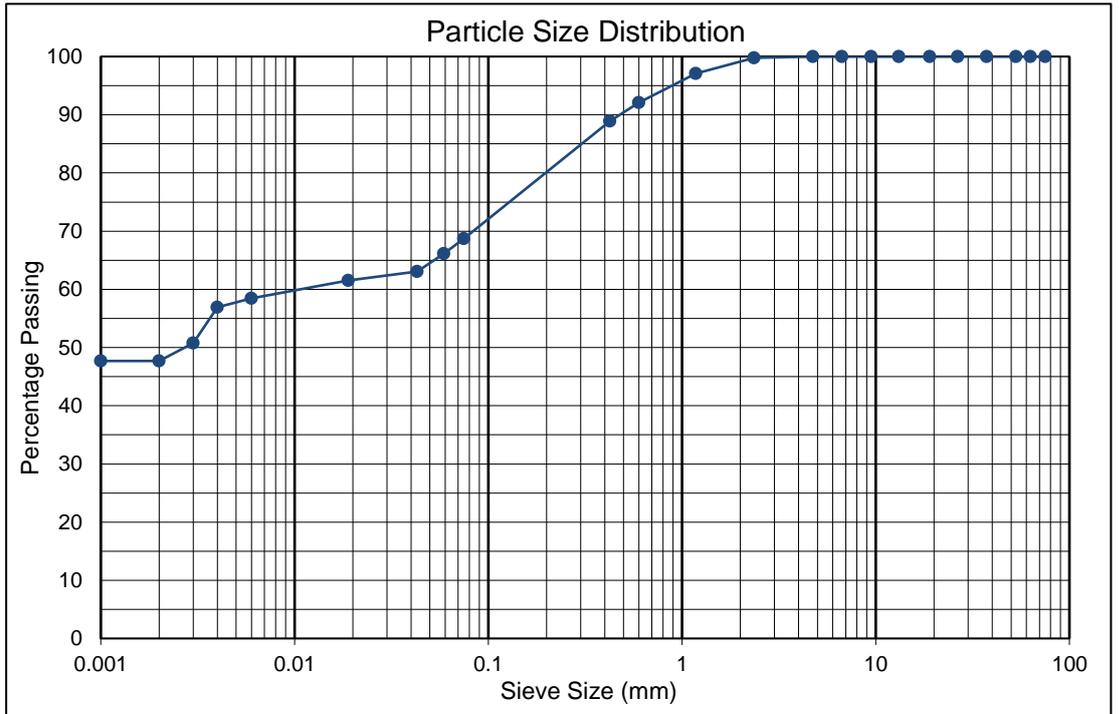
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Customer :	Outeniqua Geotechnical Services	Project :	Metro Grounds - George
	P O Box 964	Date Received :	04/08/2022
Attention :	Knysna	Date Reported :	23/08/2022
	6570	Req. Number :	2778/22
	Iain Paton	No. of Pages :	4/10

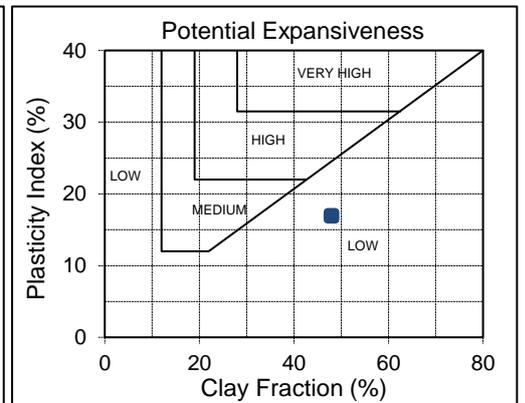
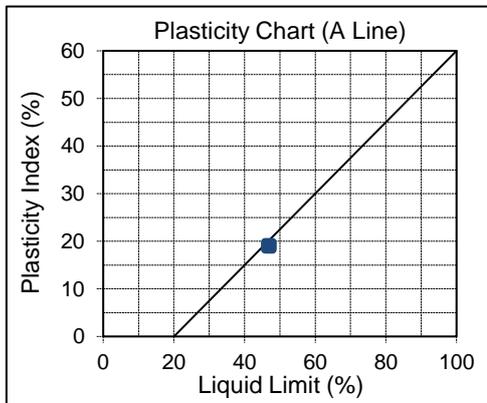
TEST REPORT FOUNDATION INDICATOR - (ASTM Method D422)

Sample Position (SV)	TP7 - Layer 4
Depth (mm):	1000-2000
Sample No.:	84511
Materials Description	In-situ Reddish Orange to Yellowish Orange Sandy Silt Trial Pit

75.0mm	100
63.0mm	100
53.0mm	100
37.5mm	100
26.5mm	100
19mm	100
13.2mm	100
9.5mm	100
6.7mm	100
4.75mm	100
2.36mm	100
1.18mm	97
0.6mm	92
0.425mm	89
0.075mm	69
0.059mm	66
0.043mm	63
0.019mm	62
0.006mm	58
0.004mm	57
0.003mm	51
0.002mm	48
0.001mm	48



Liquid Limit (%)	47
Plasticity Index (%)	19
Linear Shrinkage (%)	10
Moisture Content (%)	43.0



% Clay	48
% Silt	18
% Sand	33
% Gravel	1

Unified Soil Classification	ML
AASHTO Soil Classification	A-7-6

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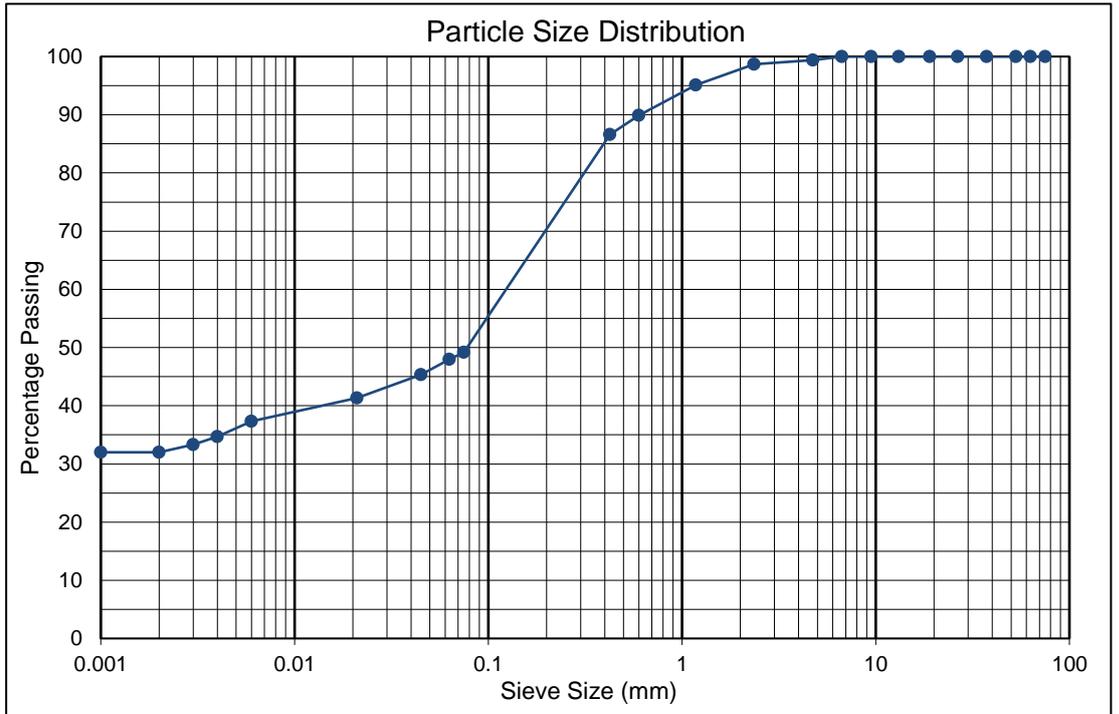
Customer :	Outeniqua Geotechnical Services	Project :	Metro Grounds - George
	P O Box 964	Date Received :	04/08/2022
Attention :	Knysna	Date Reported :	23/08/2022
	6570	Req. Number :	2778/22
	Iain Paton	No. of Pages :	5/10

TEST REPORT

FOUNDATION INDICATOR - (ASTM Method D422)

Sample Position (SV)	TP7 - Layer 5
Depth (mm):	2000-2800
Sample No.:	84512
Materials Description	In-situ
	Reddish Orange to Yellowish Orange
	Clayey Sand
	Trial Pit

75.0mm	100
63.0mm	100
53.0mm	100
37.5mm	100
26.5mm	100
19mm	100
13.2mm	100
9.5mm	100
6.7mm	100
4.75mm	99
2.36mm	99
1.18mm	95
0.6mm	90
0.425mm	87
0.075mm	49
0.063mm	48
0.045mm	45
0.021mm	41
0.006mm	37
0.004mm	35
0.003mm	33
0.002mm	32
0.001mm	32





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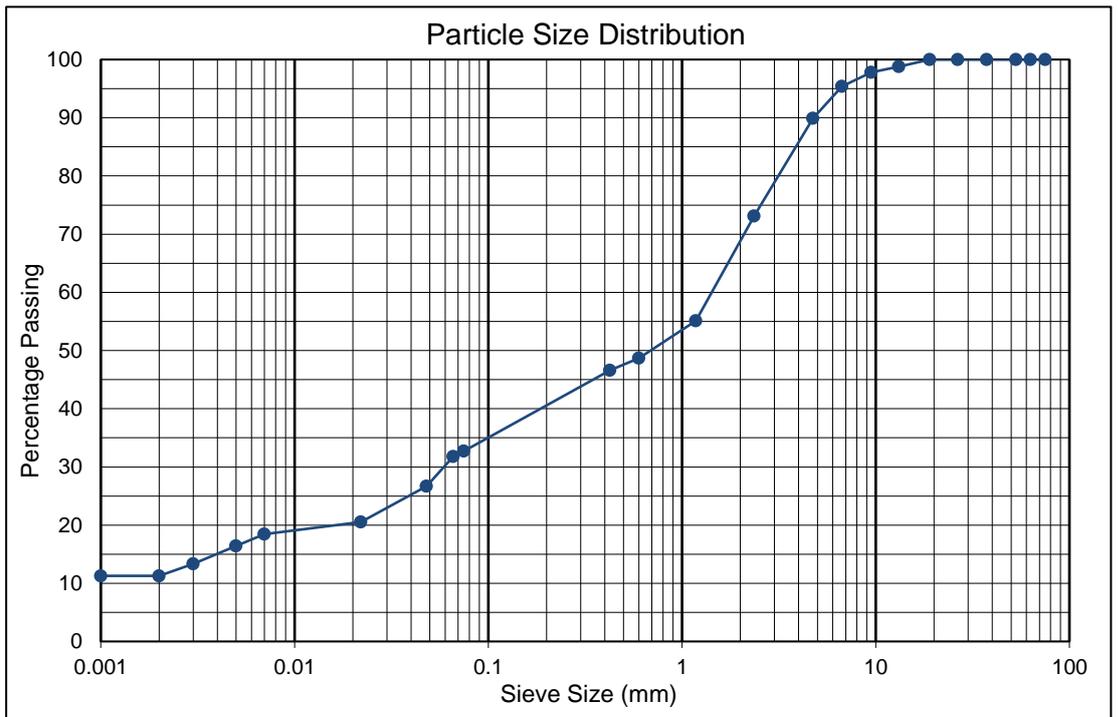
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Customer :	Outeniqua Geotechnical Services	Project :	Metro Grounds - George
	P O Box 964	Date Received :	04/08/2022
Attention :	Knysna	Date Reported :	23/08/2022
	6570	Req. Number :	2778/22
	Iain Paton	No. of Pages :	6/10

TEST REPORT FOUNDATION INDICATOR - (ASTM Method D422)

Sample Position (SV)	TP13 - Layer 3
Depth (mm):	500-800
Sample No.:	84514
Materials Description	Source
	Colour
	Soil Type
	Classification
	In-situ
	Dark Brown
	Silty/Clayey Sand
	Trial Pit

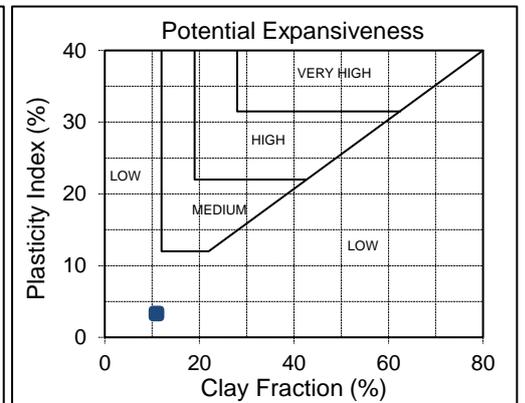
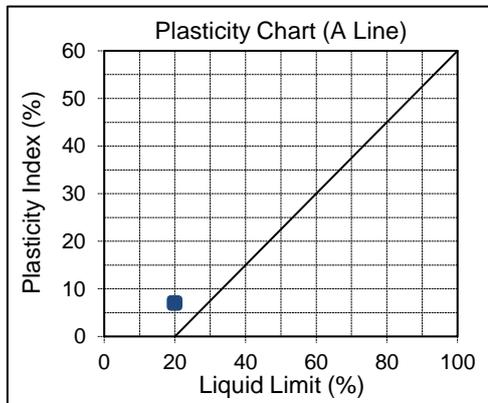
75.0mm	100
63.0mm	100
53.0mm	100
37.5mm	100
26.5mm	100
19mm	100
13.2mm	99
9.5mm	98
6.7mm	95
4.75mm	90
2.36mm	73
1.18mm	55
0.6mm	49
0.425mm	47
0.075mm	33
0.066mm	32
0.048mm	27
0.022mm	21
0.007mm	18
0.005mm	16
0.003mm	13
0.002mm	11
0.001mm	11



Liquid Limit (%)	20
Plasticity Index (%)	7
Linear Shrinkage (%)	4
Moisture Content (%)	9.5

% Clay	11
% Silt	19
% Sand	38
% Gravel	32

Unified Soil Classification	SM-SC
AASHTO Soil Classification	A-2-4



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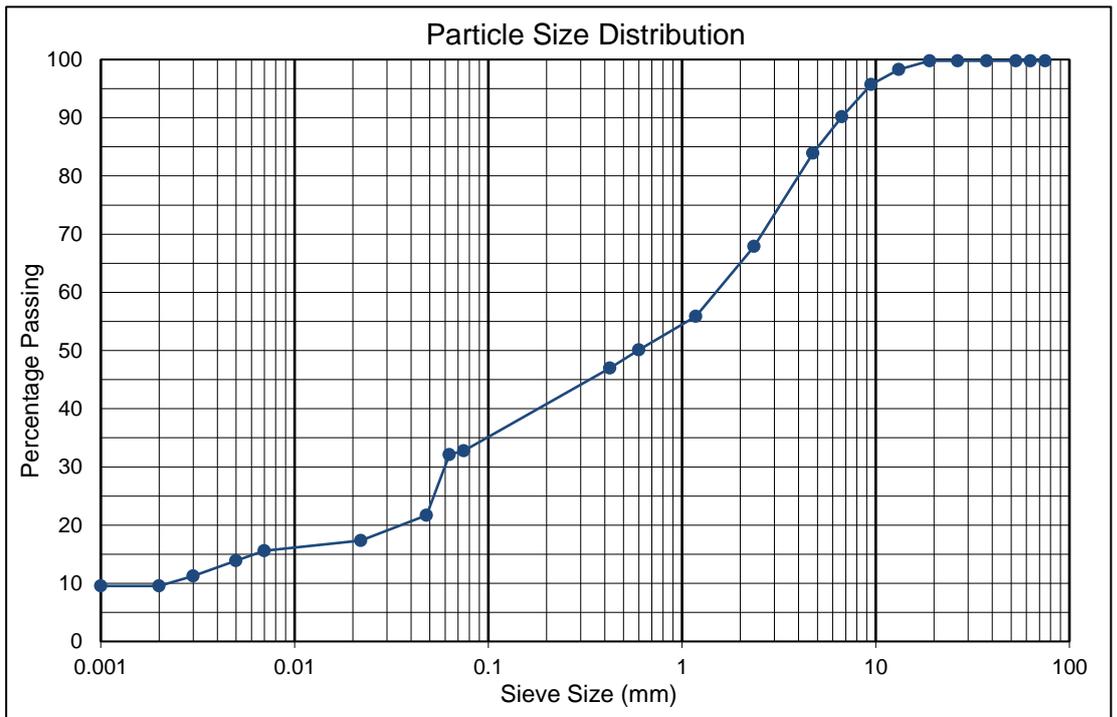
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Customer :	Outeniqua Geotechnical Services	Project :	Metro Grounds - George
	P O Box 964	Date Received :	04/08/2022
Attention :	Knysna	Date Reported :	23/08/2022
	6570	Req. Number :	2778/22
	Iain Paton	No. of Pages :	7/10

TEST REPORT FOUNDATION INDICATOR - (ASTM Method D422)

Sample Position (SV)	TP13 - Layer 4
Depth (mm):	800-1300
Sample No.:	84515
Materials Description	In-situ Reddish Orange to Yellowish Orange Clayey Sand with Gravel Trial Pit

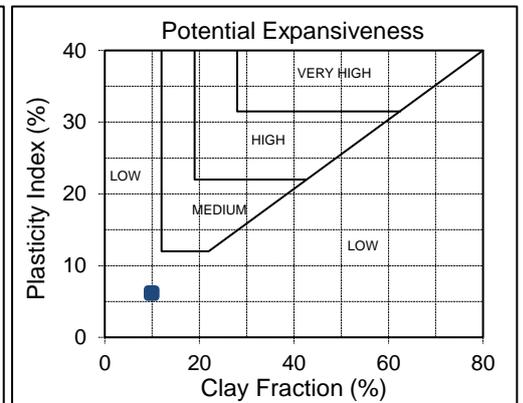
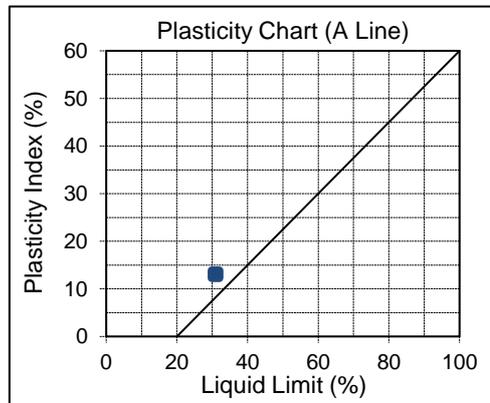
75.0mm	100
63.0mm	100
53.0mm	100
37.5mm	100
26.5mm	100
19mm	100
13.2mm	98
9.5mm	96
6.7mm	90
4.75mm	84
2.36mm	68
1.18mm	56
0.6mm	50
0.425mm	47
0.075mm	33
0.063mm	32
0.048mm	22
0.022mm	17
0.007mm	16
0.005mm	14
0.003mm	11
0.002mm	10
0.001mm	10



Liquid Limit (%)	31
Plasticity Index (%)	13
Linear Shrinkage (%)	7
Moisture Content (%)	8.5

% Clay	10
% Silt	20
% Sand	34
% Gravel	36

Unified Soil Classification	SC
AASHTO Soil Classification	A-2-6



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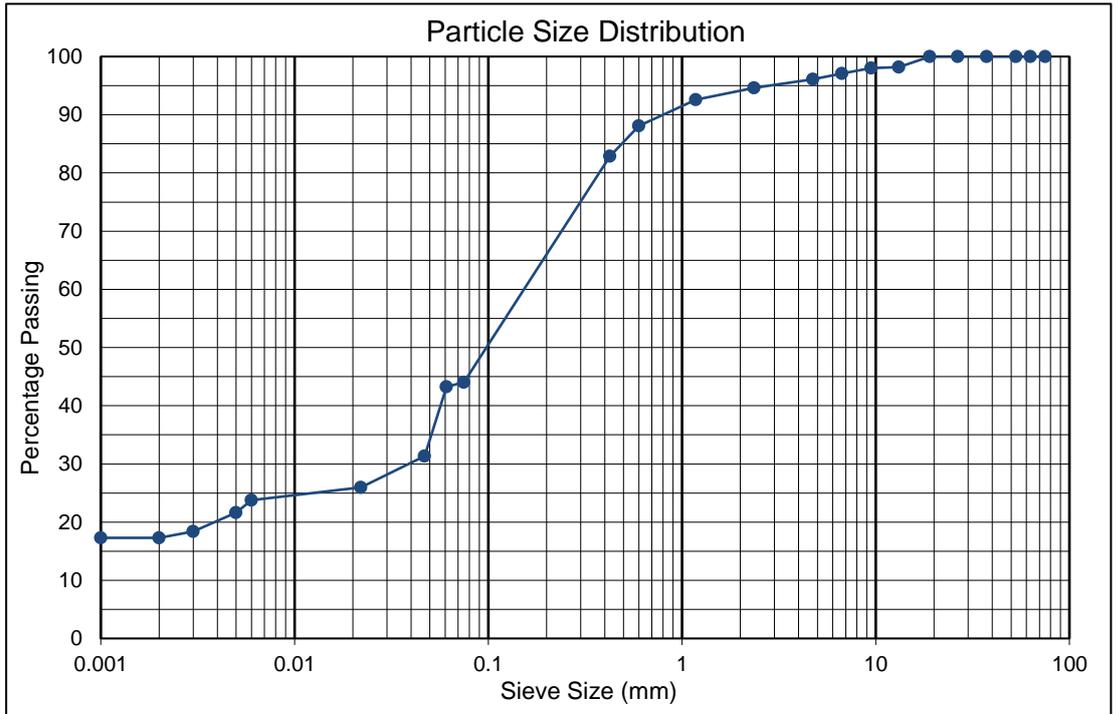
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	6570	Req. Number :	2778/22
	Iain Paton	No. of Pages :	9/10

TEST REPORT FOUNDATION INDICATOR - (ASTM Method D422)

Sample Position (SV)	TP18 - Layer 3	
Depth (mm):	600-1300	
Sample No.:	84521	
Materials Description	Source	In-situ
	Colour	Greyey Brown
	Soil Type	Silty Sand
	Classification	Trial Pit

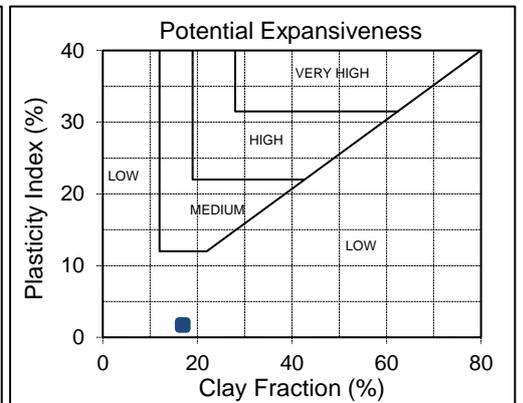
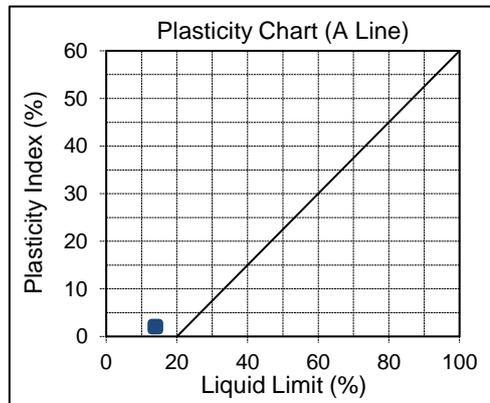
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63.0mm	100
53.0mm	100
37.5mm	100
26.5mm	100
19mm	100
13.2mm	98
9.5mm	98
6.7mm	97
4.75mm	96
2.36mm	95
1.18mm	93
0.6mm	88
0.425mm	83
0.075mm	44
0.061mm	43
0.047mm	31
0.022mm	26
0.006mm	24
0.005mm	22
0.003mm	18
0.002mm	17
0.001mm	17



Liquid Limit (%)	14
Plasticity Index (%)	2
Linear Shrinkage (%)	1
Moisture Content (%)	13.6

% Clay	17
% Silt	25
% Sand	52
% Gravel	6

Unified Soil Classification	SM
AASHTO Soil Classification	A-4



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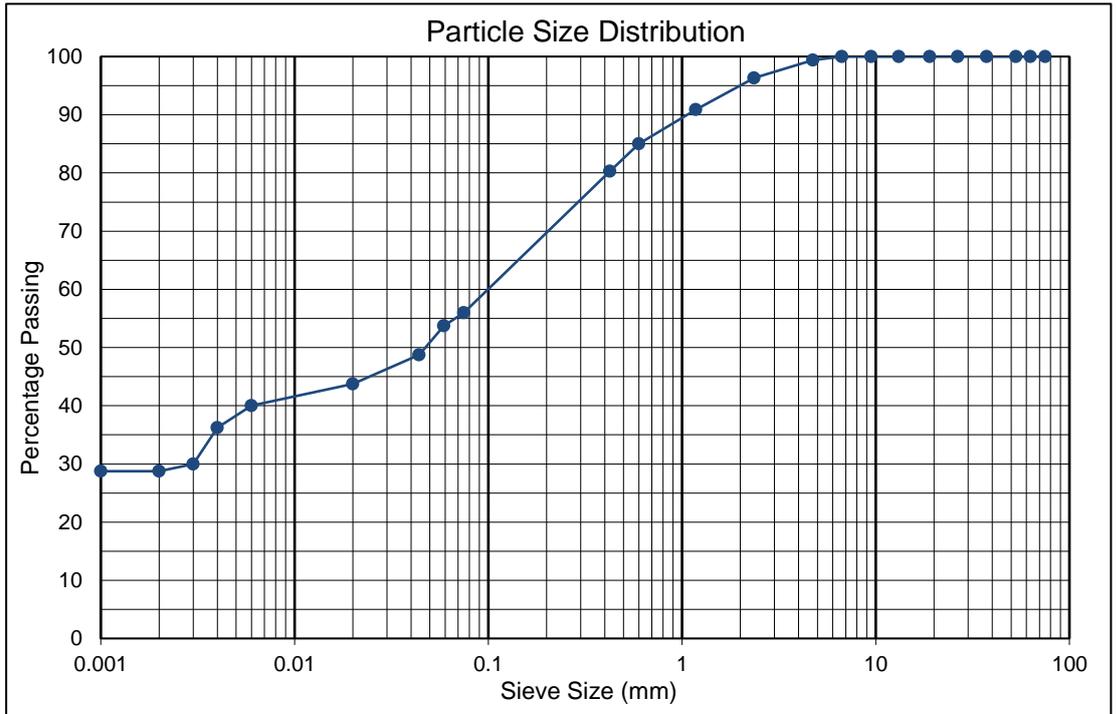
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	Iain Paton	No. of Pages :	10/10

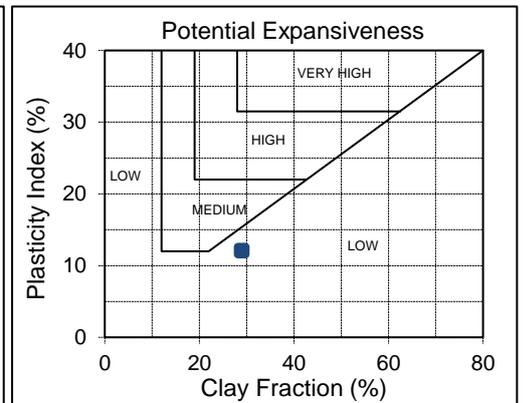
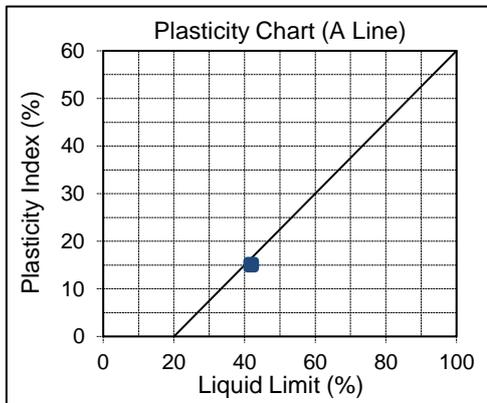
TEST REPORT FOUNDATION INDICATOR - (ASTM Method D422)

Sample Position (SV)	TP19 - Layer 4
Depth (mm):	600-1600
Sample No.:	84523
Materials Description	In-situ
	Reddish Orange to Yellowish Orange
	Sandy Silt
	Trial Pit

75.0mm	100
63.0mm	100
53.0mm	100
37.5mm	100
26.5mm	100
19mm	100
13.2mm	100
9.5mm	100
6.7mm	100
4.75mm	99
2.36mm	96
1.18mm	91
0.6mm	85
0.425mm	80
0.075mm	56
0.059mm	54
0.044mm	49
0.02mm	44
0.006mm	40
0.004mm	36
0.003mm	30
0.002mm	29
0.001mm	29



Liquid Limit (%)	42
Plasticity Index (%)	15
Linear Shrinkage (%)	8
Moisture Content (%)	22.1



% Clay	29
% Silt	25
% Sand	41
% Gravel	5

Unified Soil Classification	ML
AASHTO Soil Classification	A-7-6

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AGGREGATE TEST REPORT

Laboratory Number			C4059/1	C4059/2	C4059/3	C4059/4		
Field Number								
Client Reference			84506	84516	84518	84522		
Depth (mm)			700-1300	800-2500	400-1100	600-1300		
Position			Tp 1 - Layer 3	Tp 13 - Layer 4 & 5	Tp 14 - Layer 2 & 3	Tp 18 - Layer 3		
Description			R/O to Y/O Sandy Silty Clay	R/O to Y/O Gravelly sandy silty clay	R/O to Y/O Clayey Silty Fine Sand	Grey Brown Silty Fine Sand		
Sieve Analysis - SANS 3001 - AG1	% Passing	100 (mm)						
		75 (mm)						
		63 (mm)						
		50 (mm)						
		37.5 (mm)						
		28 (mm)						
		20 (mm)						
		14 (mm)						
		10 (mm)						
		7.1 (mm)						
		5 (mm)						
		(mm)						
		2 (mm)						
		1 (mm)						
		0.6 (mm)						
		0.425 (mm)						
		0.300 (mm)						
0.150 (mm)								
0.075 (mm)								
Fineness Modulus		SANS 3001-PR5						
Coarse Sand Ratio		(%)						
Flakiness Index	Total	SANS 3001-AG4 ⁺ (%)						
	+20mm-28mm	SANS 3001-AG4 ⁺ (%)						
	+14mm-20mm	SANS 3001-AG4 ⁺ (%)						
Aggregate Crushing Value	Dry	SANS 3001-AG10 ⁺ (%)						
	Wet	SANS 3001-AG10 ⁺ (%)						
	Eth. Glycol	SANS 3001-AG15 (%)						
10% Fines Aggregate Crushing Test (FACT)	Dry	SANS 3001-AG10 ⁺ (kN)						
	Wet	SANS 3001-AG10 ⁺ (kN)						
	Eth. Glycol	SANS 3001-AG15 (kN)						
	Wet/Dry Ratio	SANS 3001-AG10* (%)						
Bulk Density	Loose	TMH1 B9* (kg/m ³)						
	Compacted	TMH1 B9* (kg/m ³)						
Average Least Dimension	Manual	SANS 3001-AG2 ⁺ (mm)						
	Machine	SANS 3001-AG2 ⁺ (mm)						
	Computation	SANS 3001-AG3 (mm)						
Water Absorption	>5mm	SANS 3001-AG20 ⁺ (%)						
	<5mm	SANS 3001-AG21 ⁺ (%)						
pH Value		TMH1 - A20	7.8	7.2	6.7	6.8		
Conductivity		TMH1 - A21T (mS/m ⁻¹)	0.0765	0.0437	0.0336	0.0192		

Appendix 4

DCP test data



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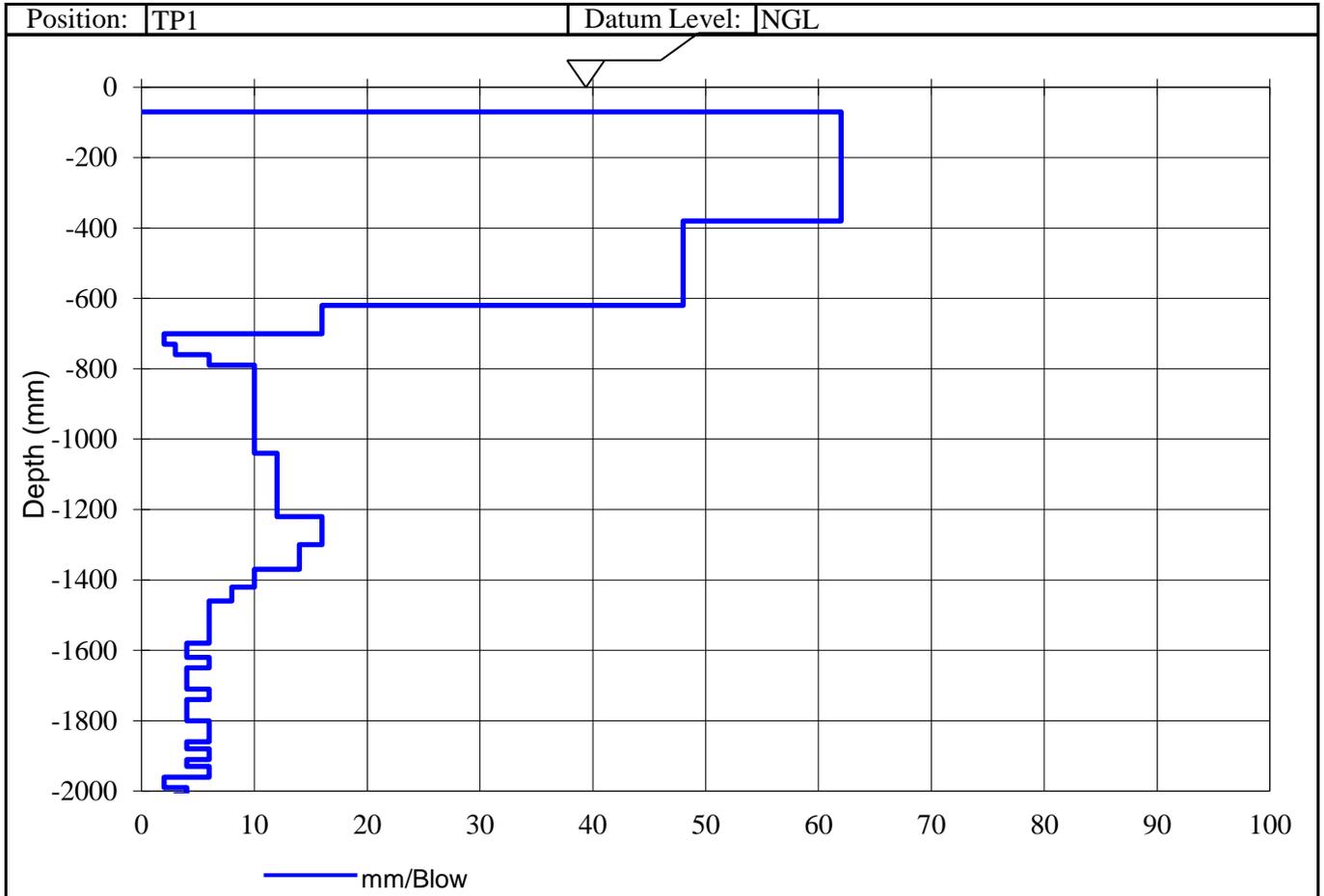
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Dynamic Cone Penetrometer (DCP) - (TMH 6 Method ST6)



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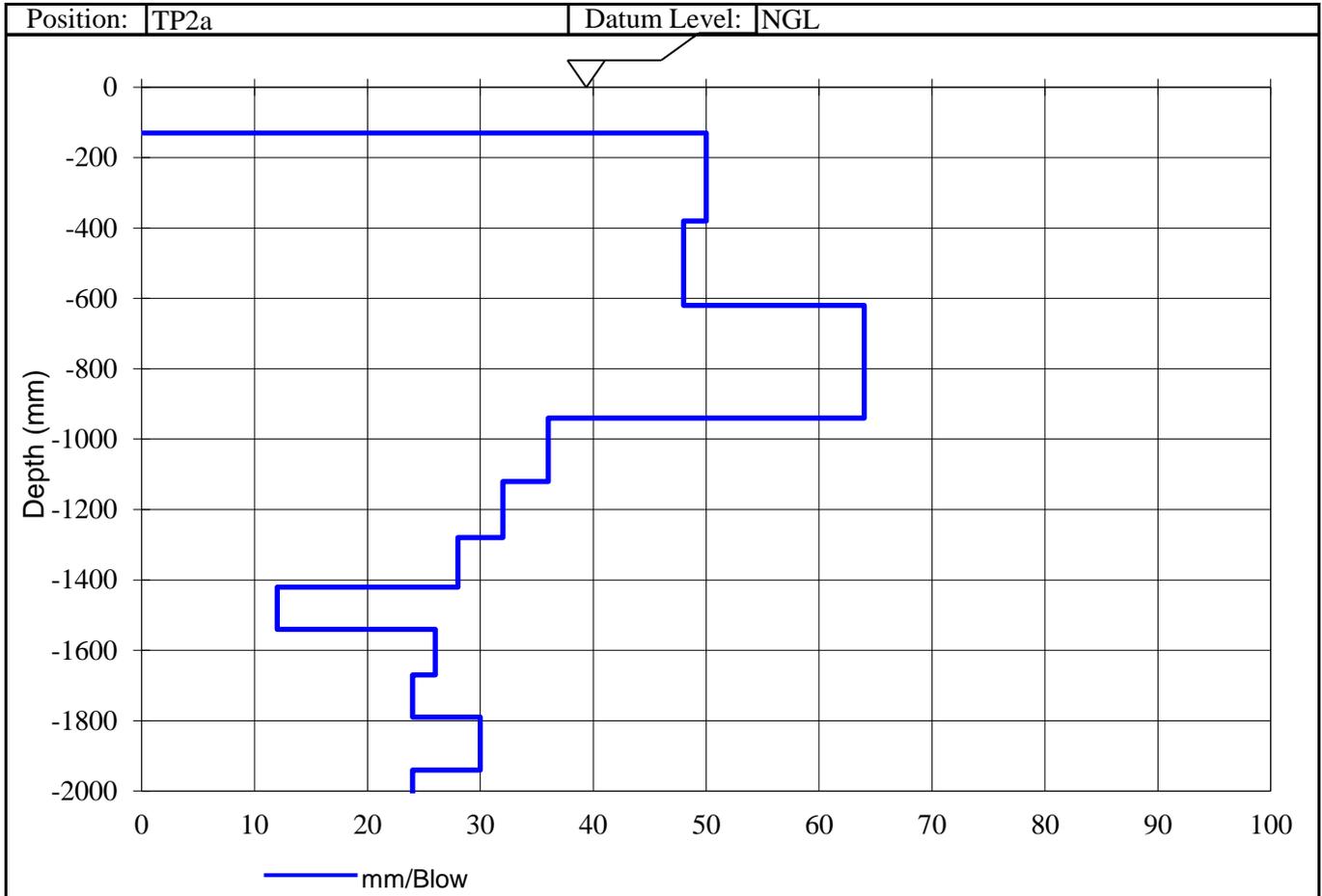
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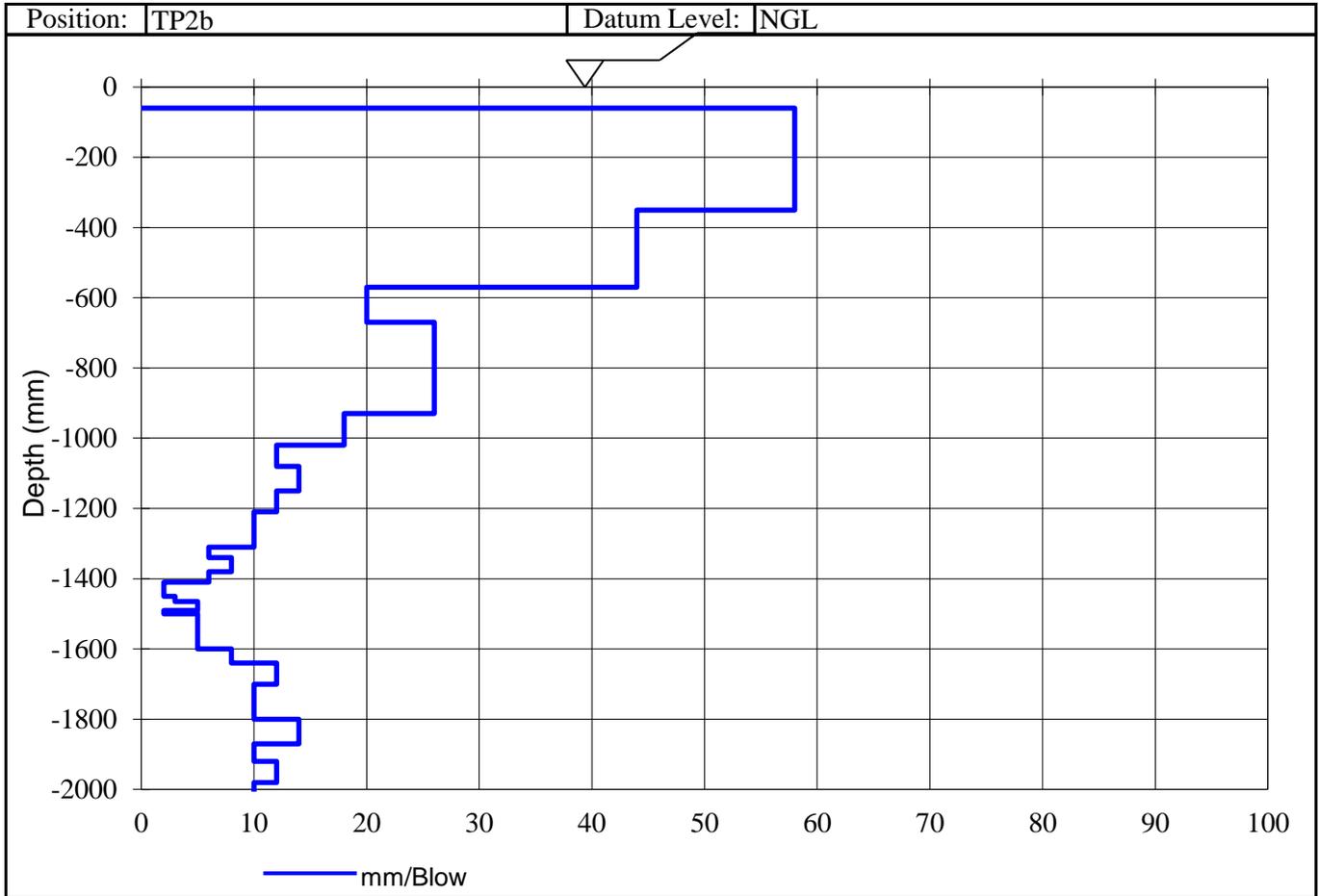
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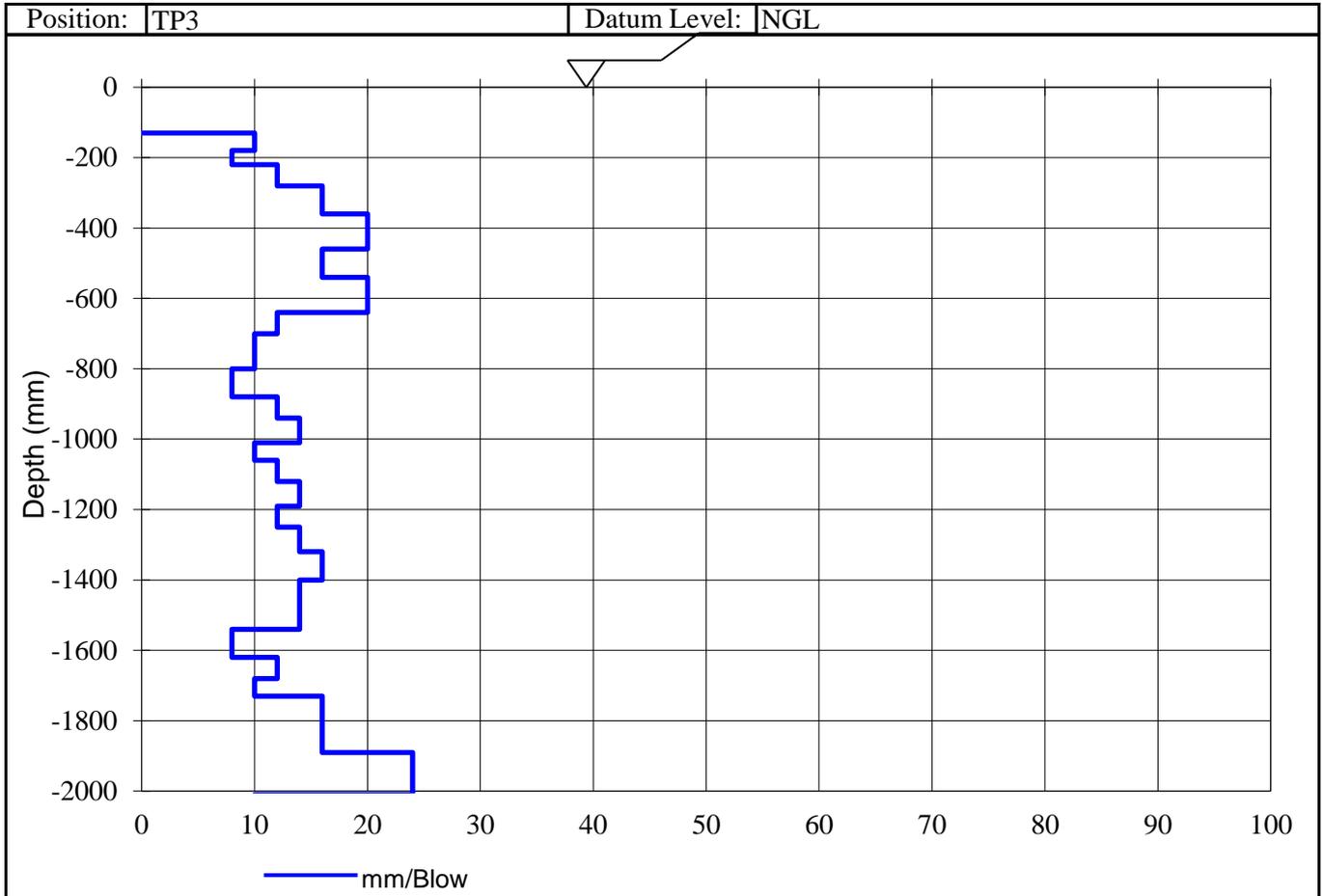
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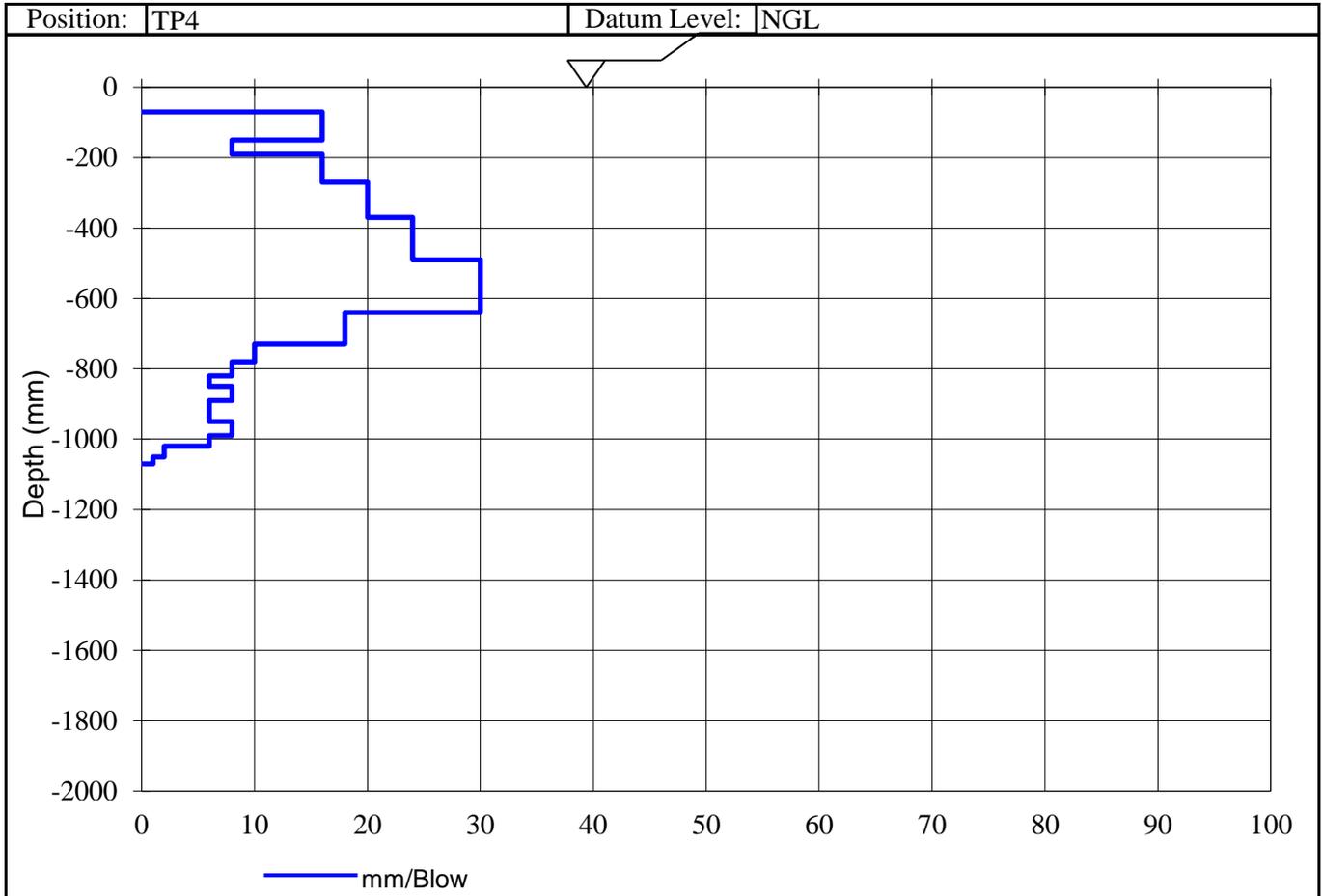
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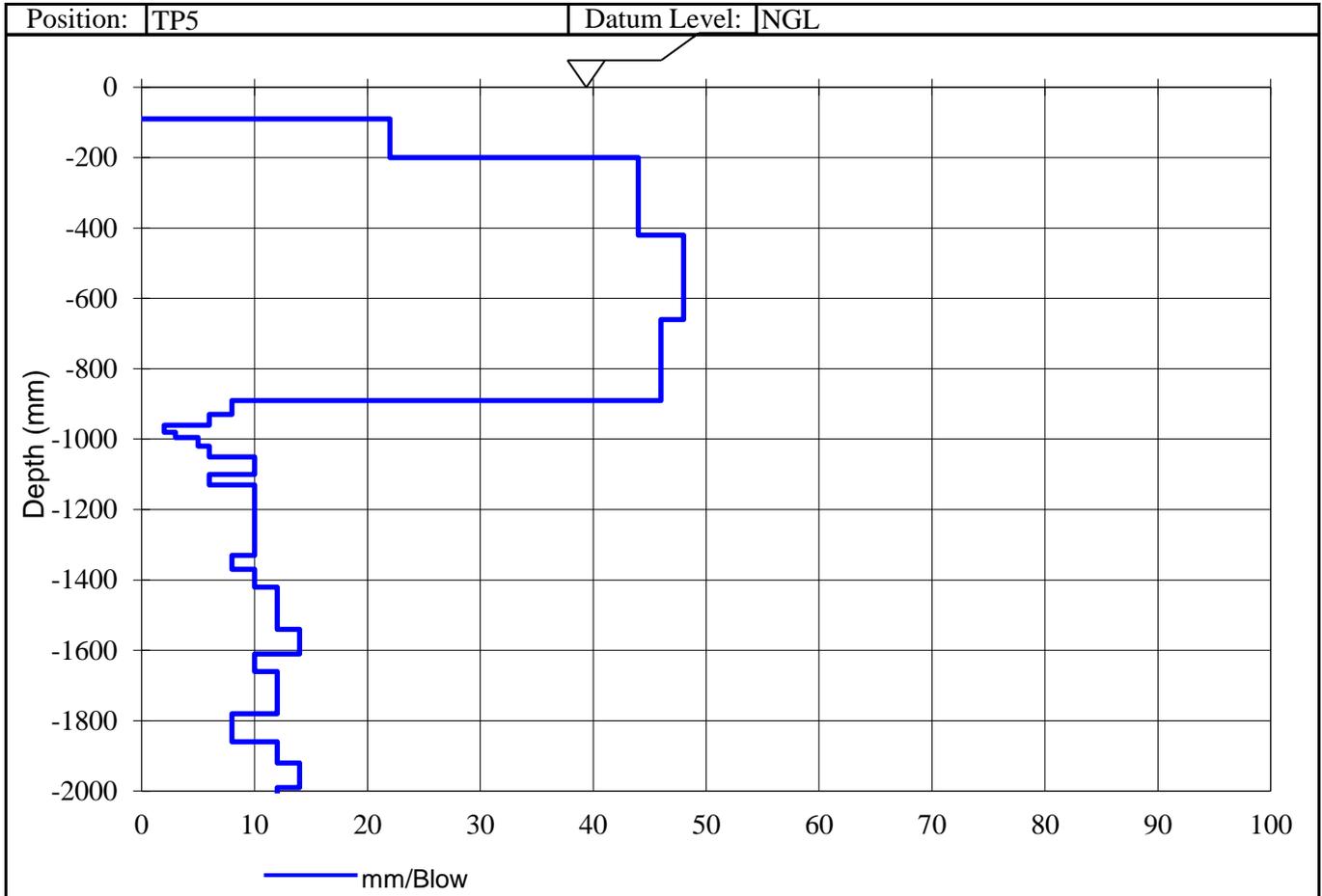
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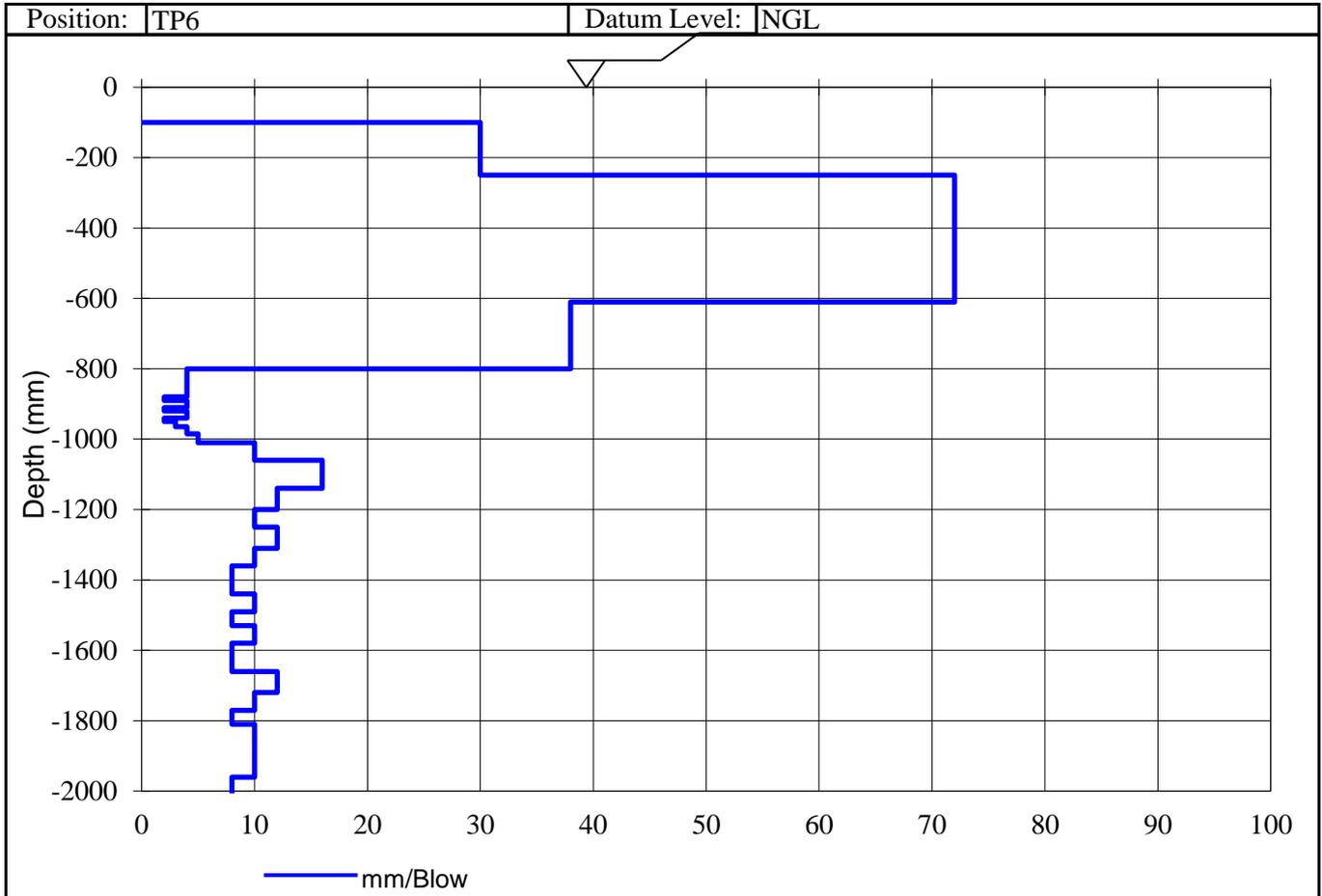
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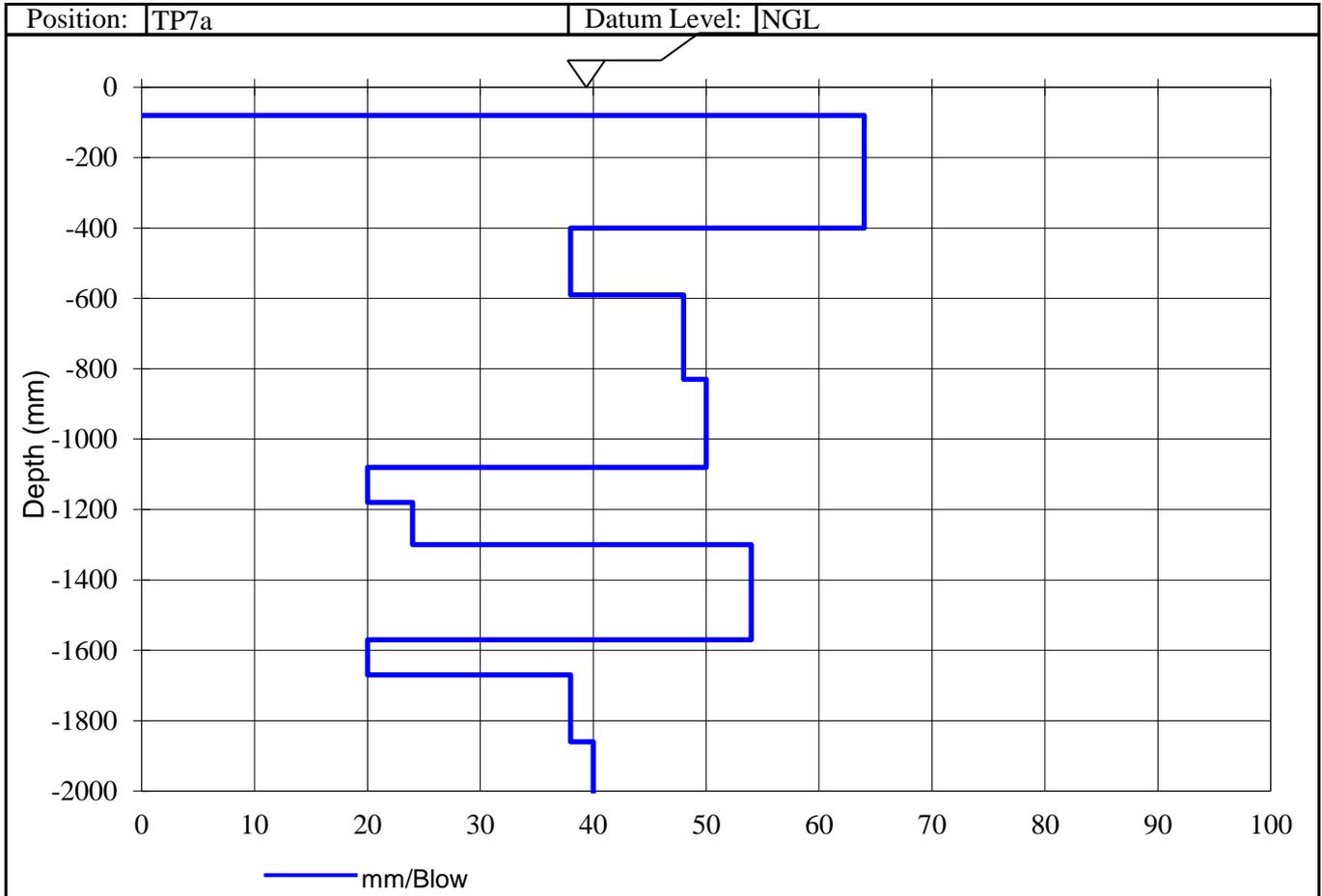
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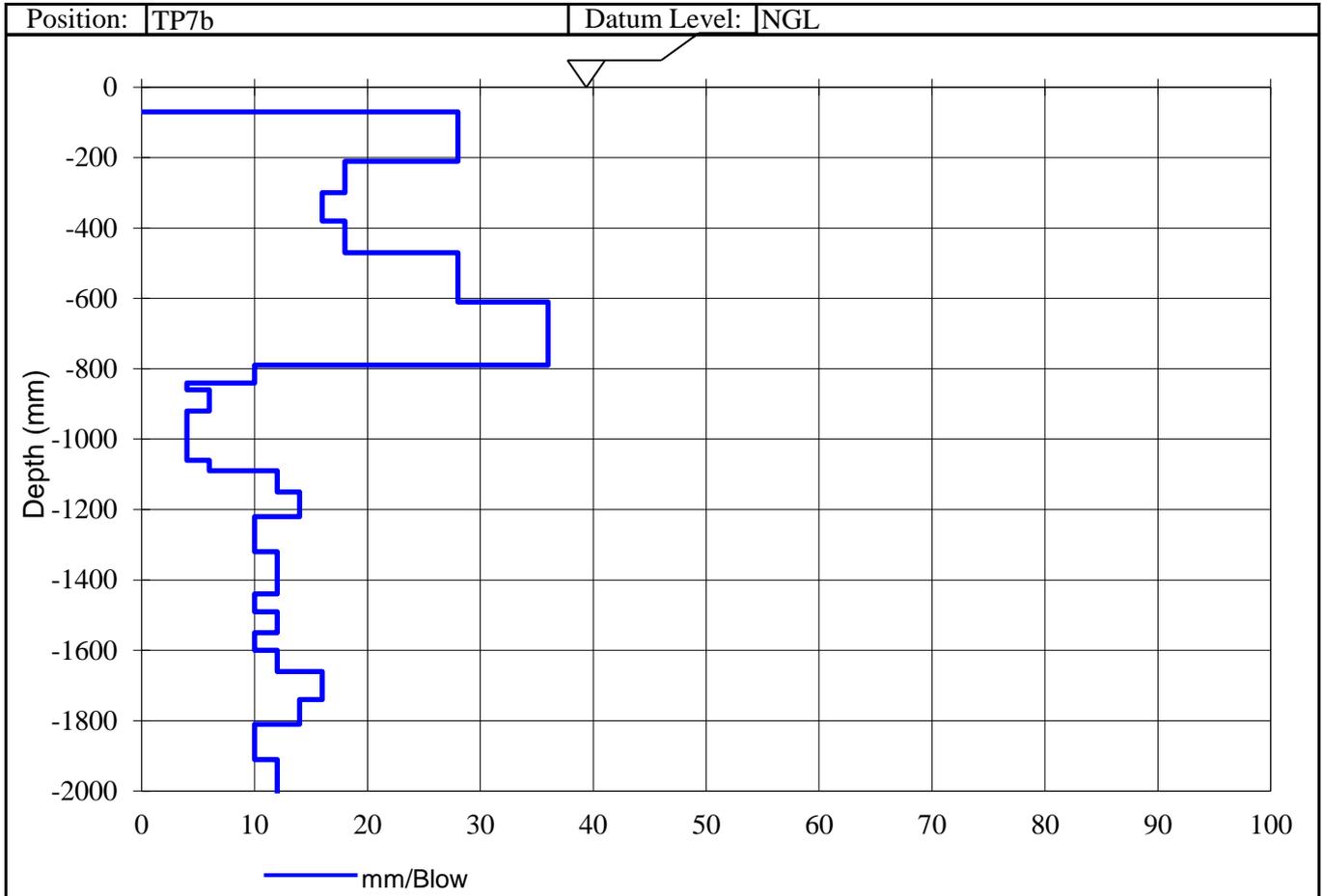
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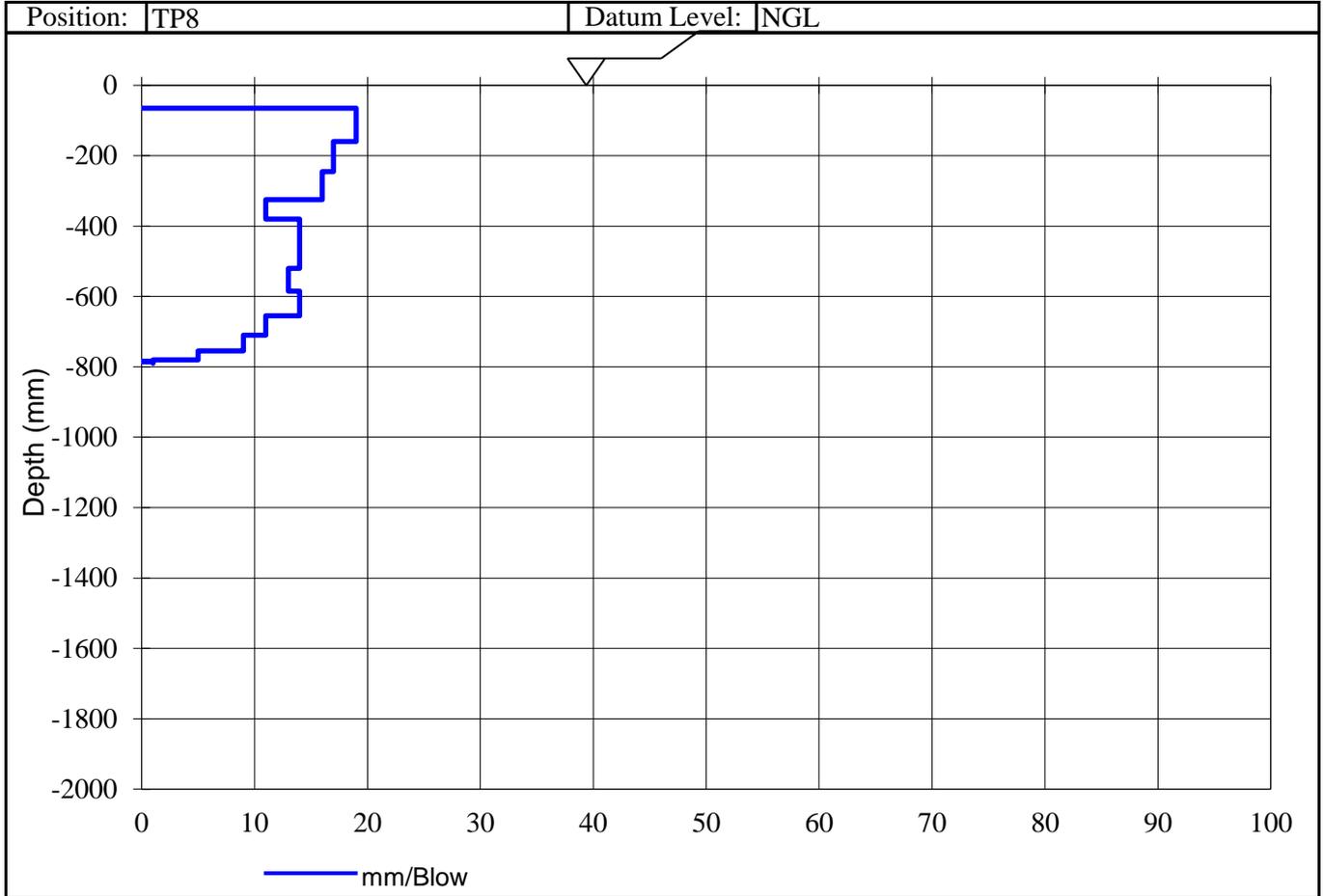
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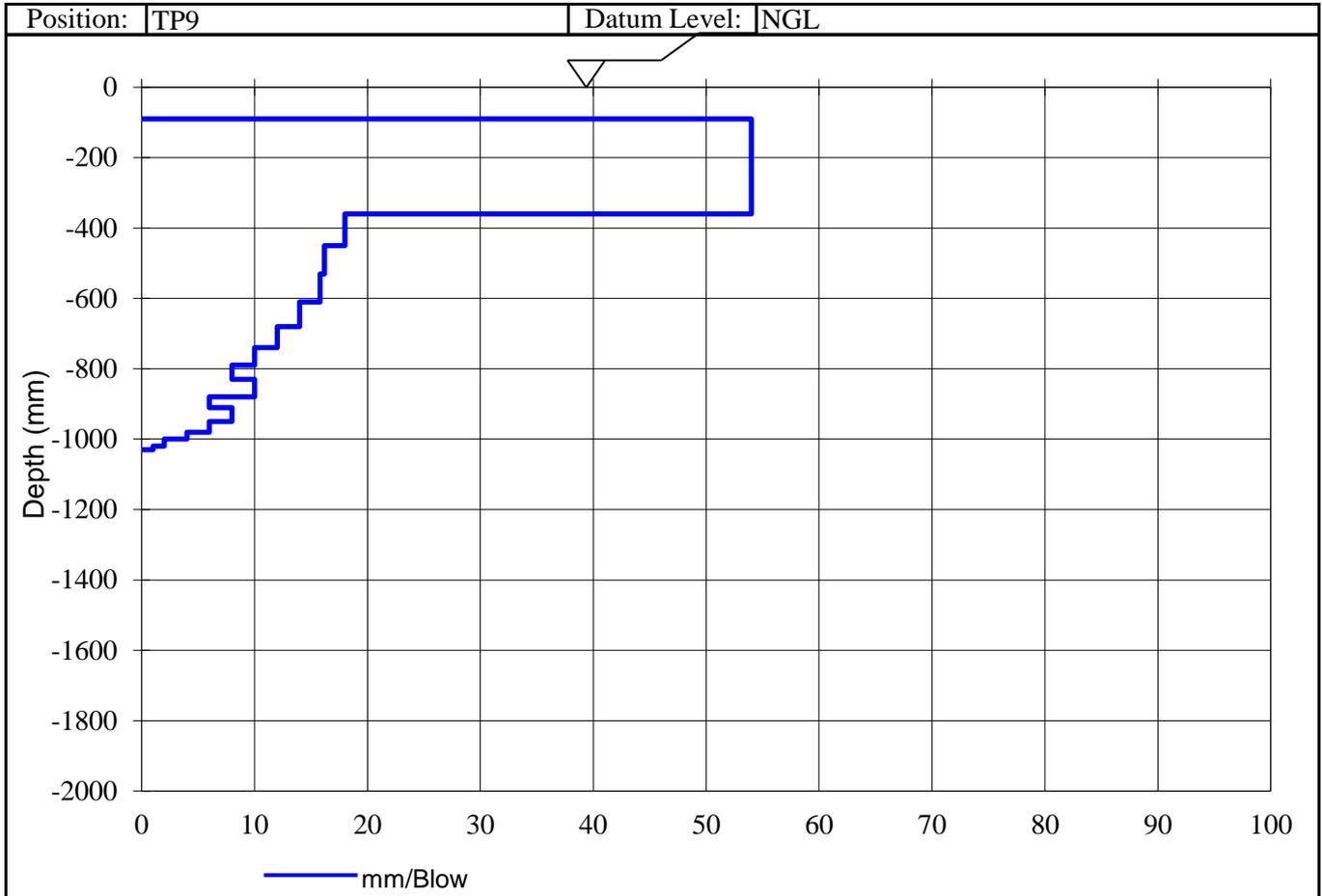
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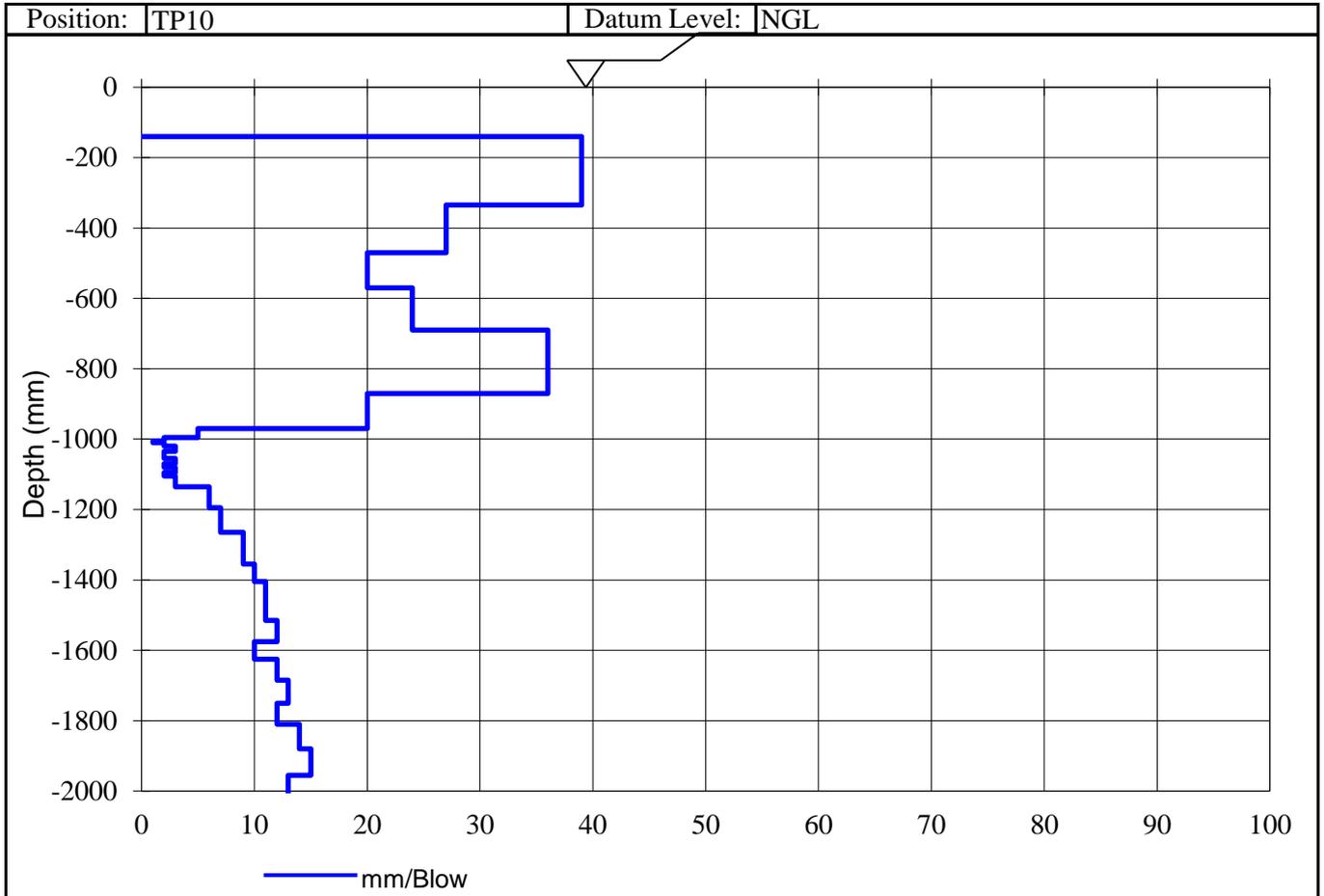
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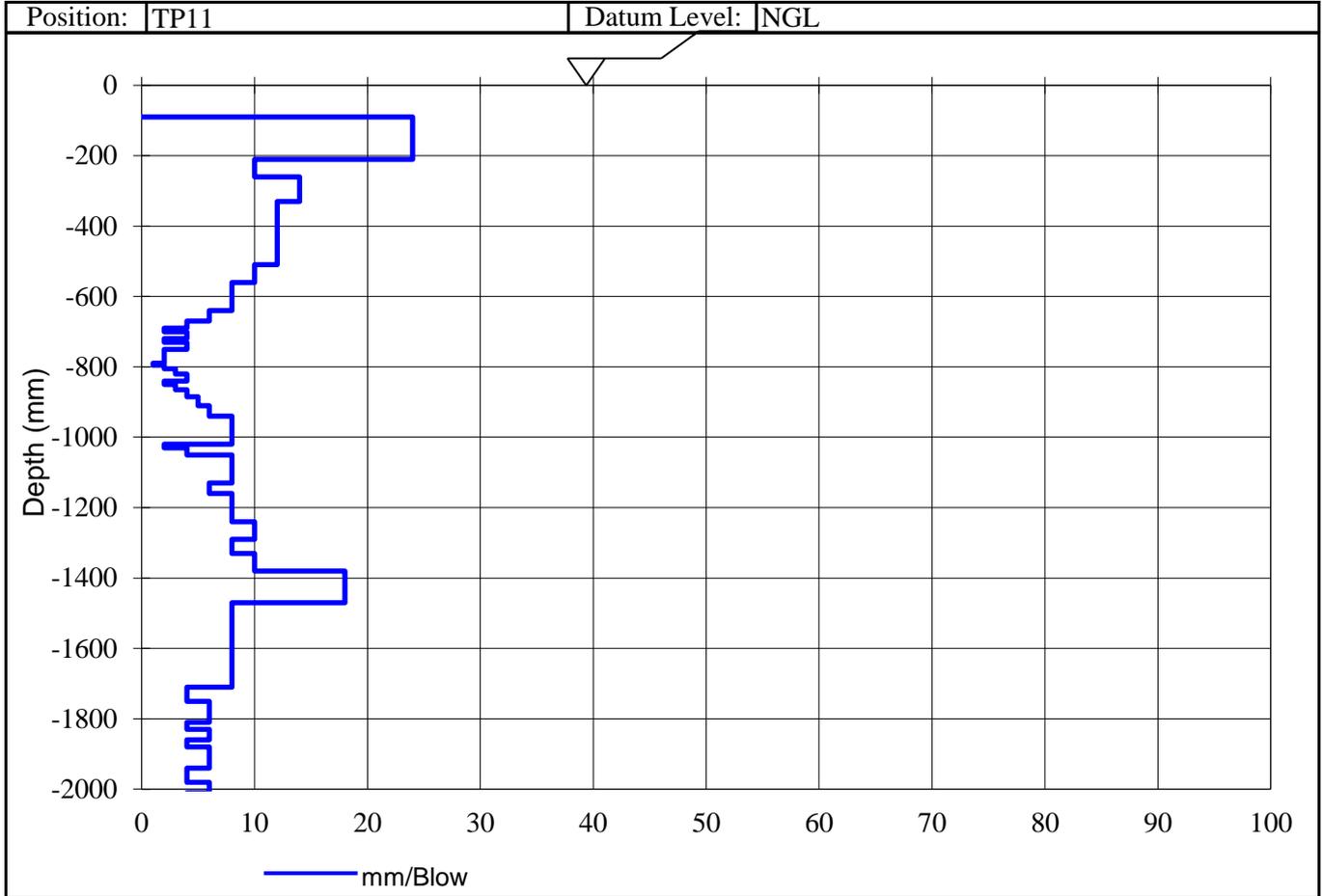
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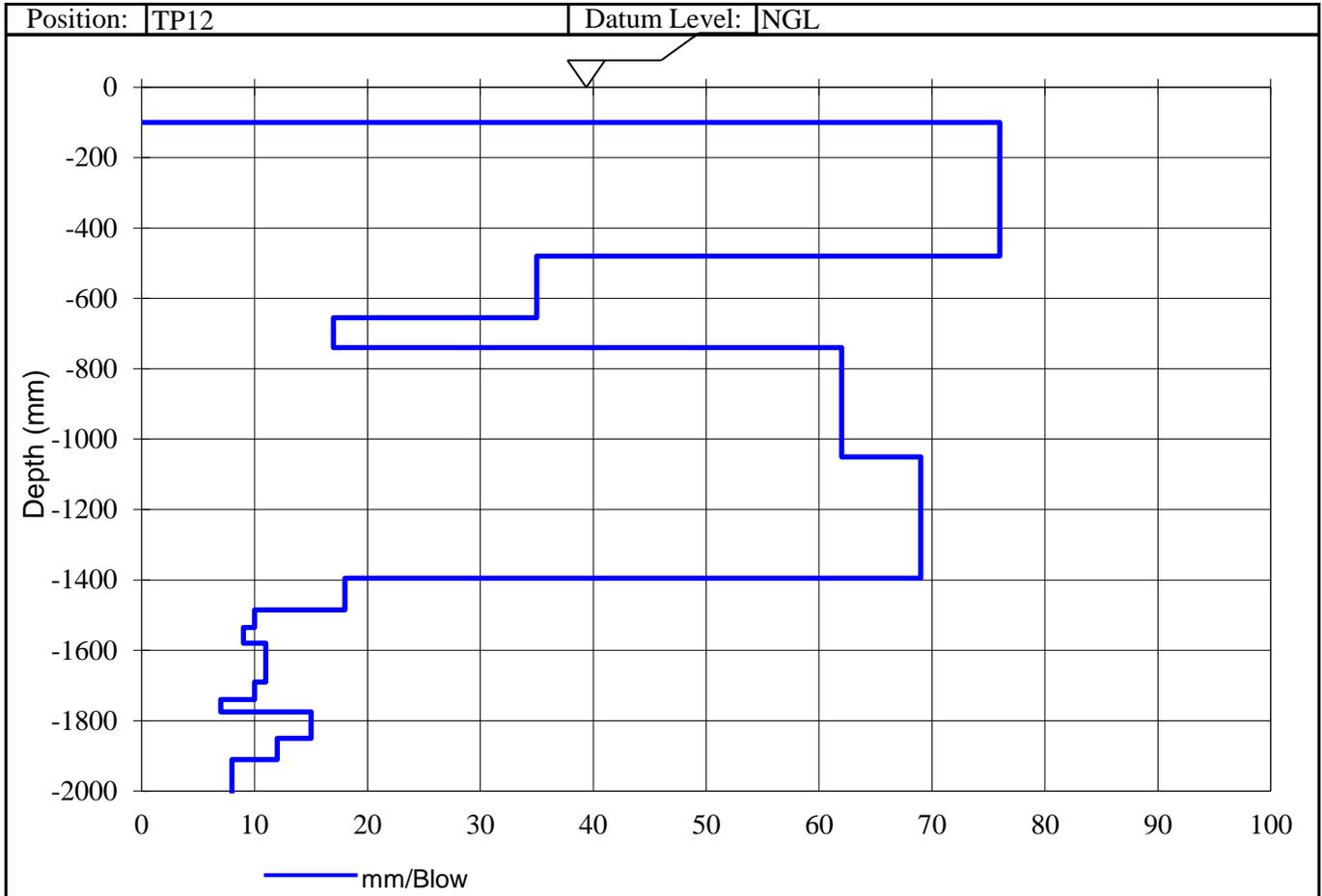
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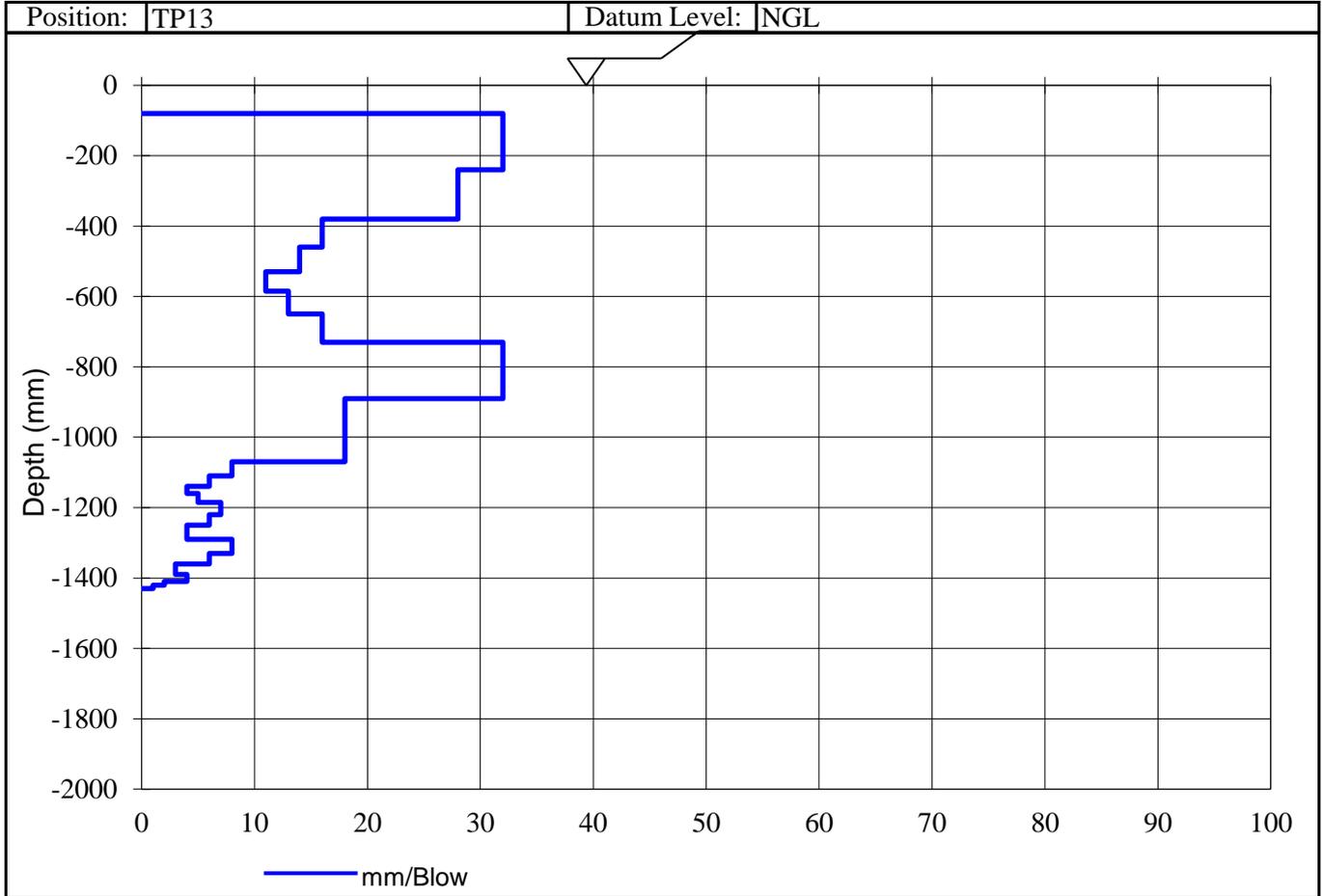
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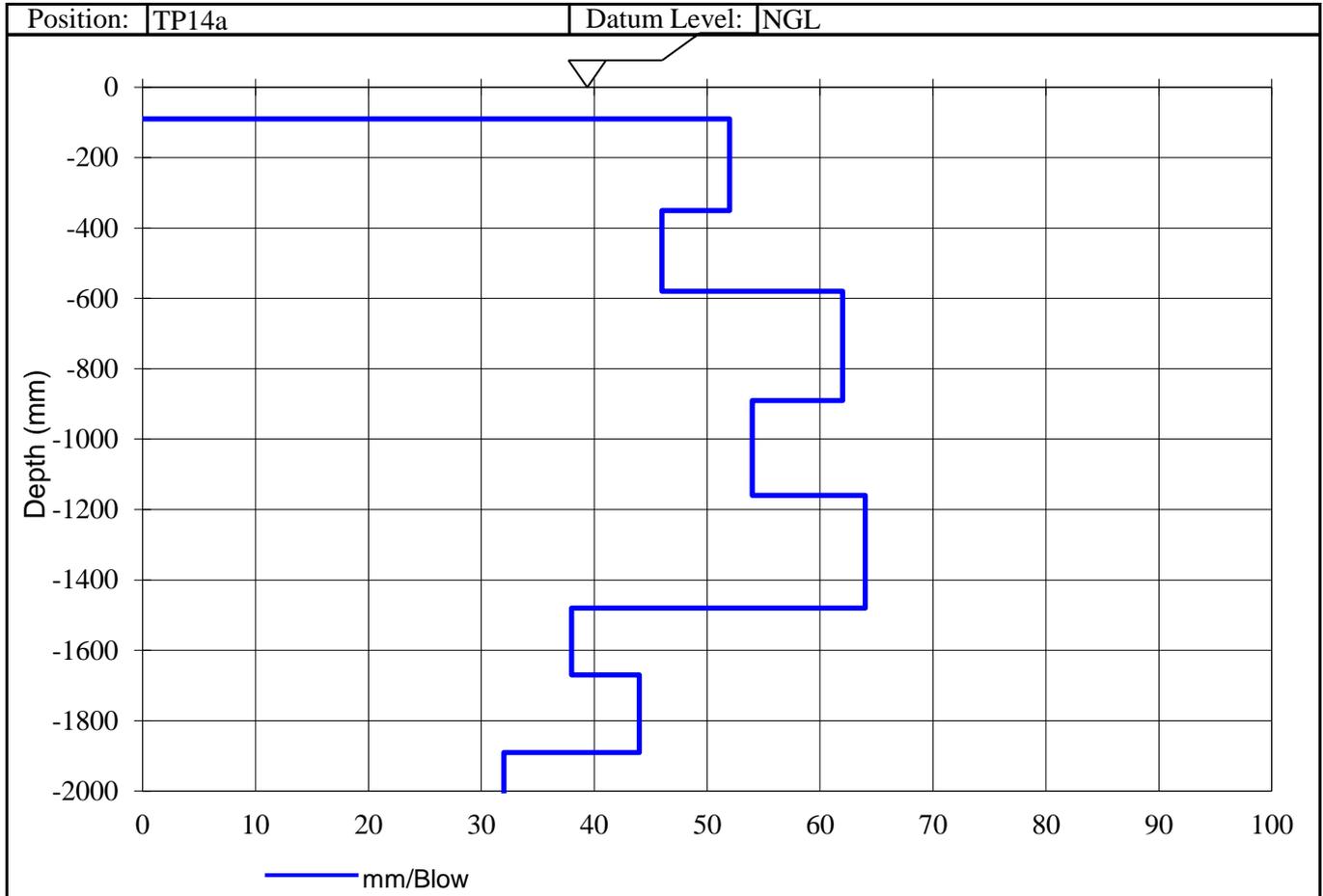
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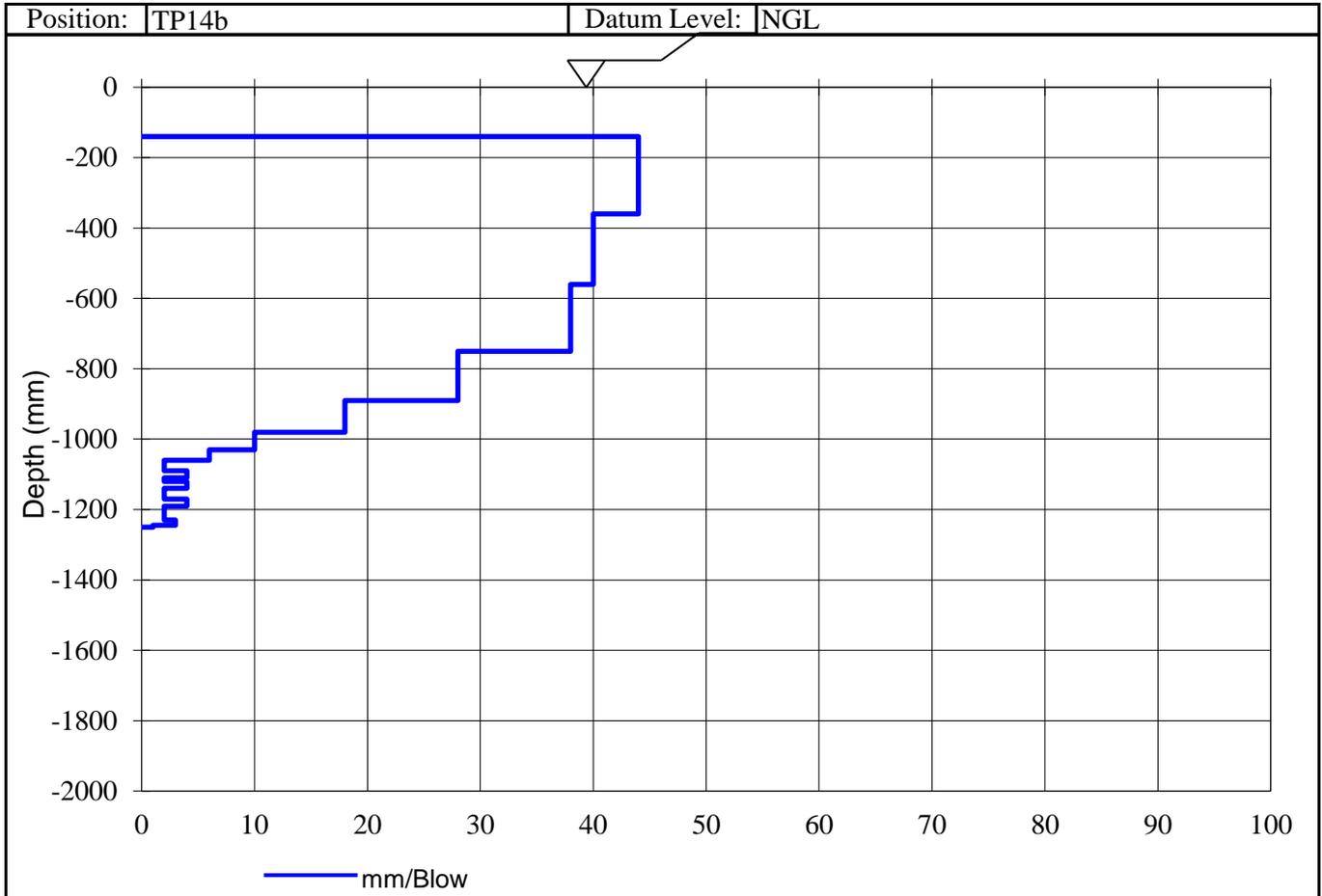
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		Date Received :	27.07.2022
		Date Reported :	3.08.2022
		Req. Number :	
Attention :	Roham Steenekamp	No. of Pages :	17 of 23

TEST REPORT

Dynamic Cone Penetrometer (DCP) - (TMH 6 Method ST6)



I Paton (Member)
For Outeniqua Geotech. Services cc.
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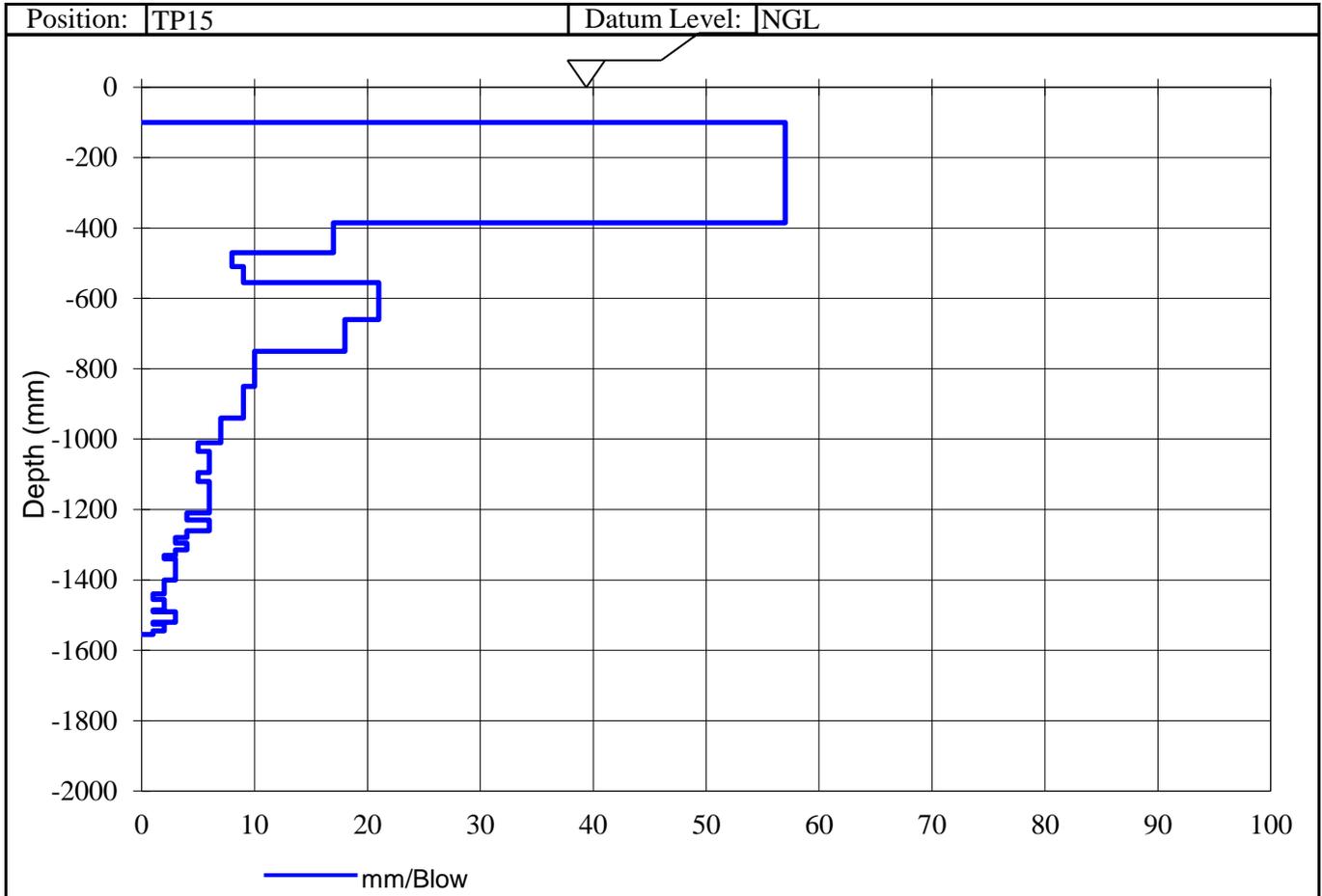
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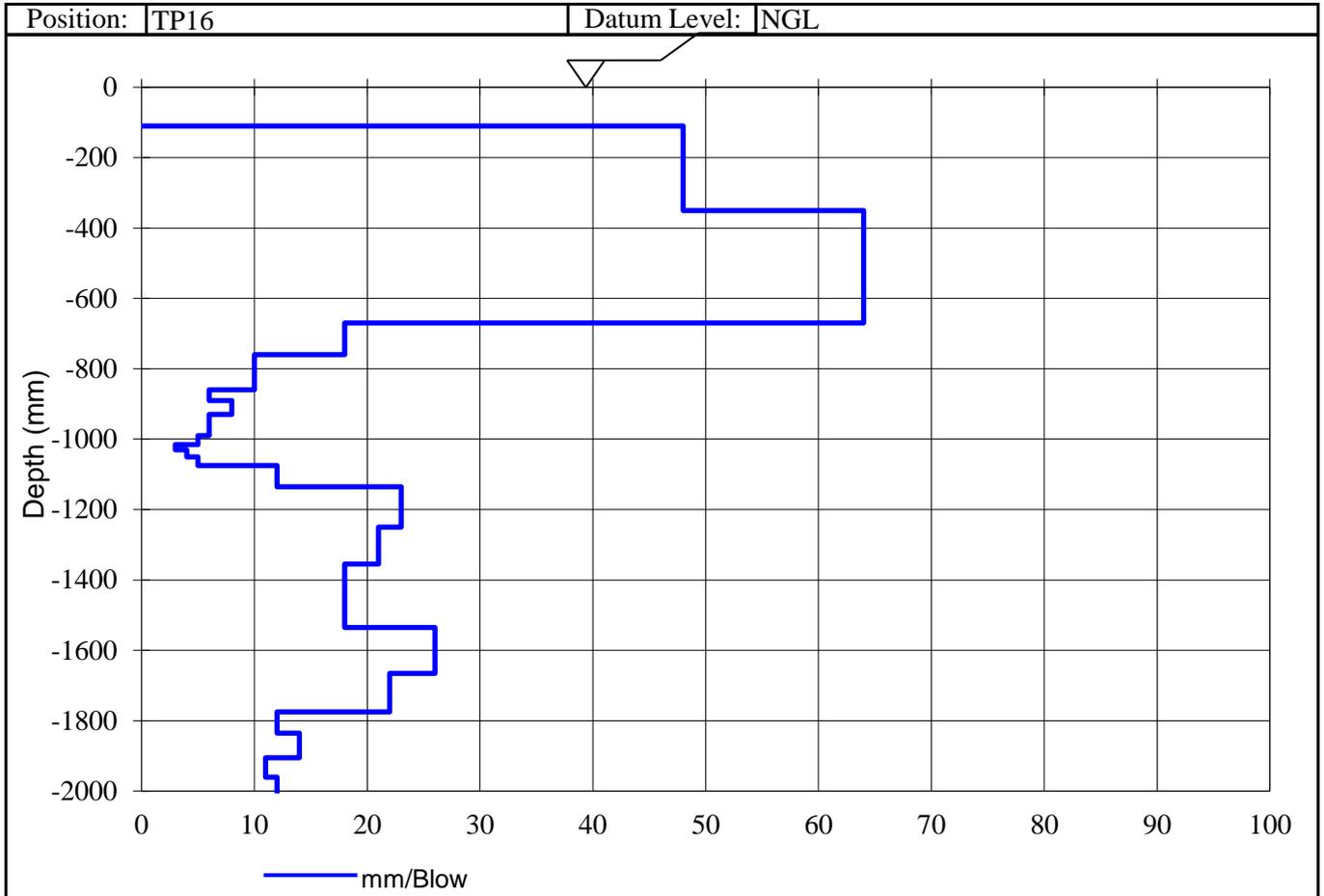
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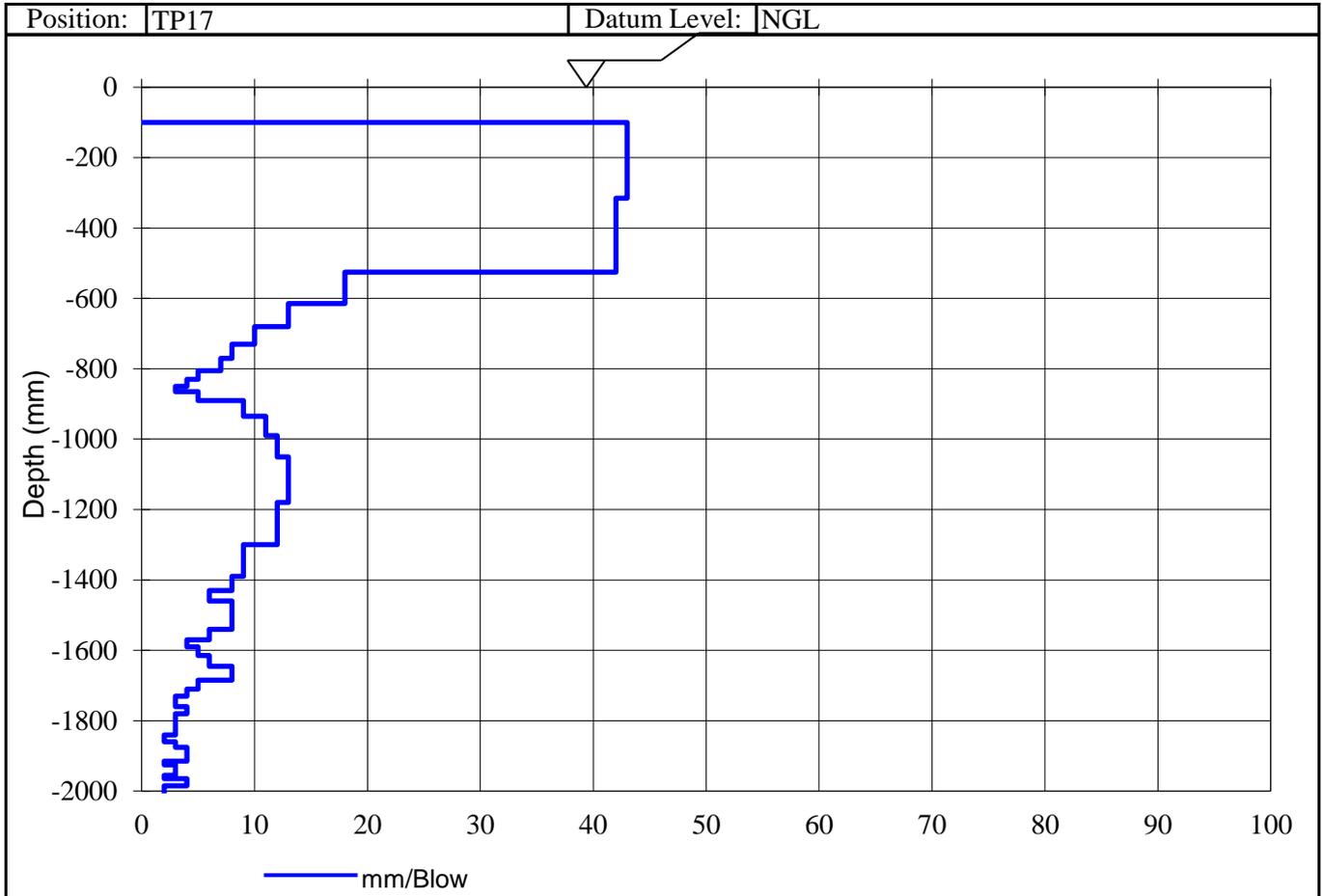
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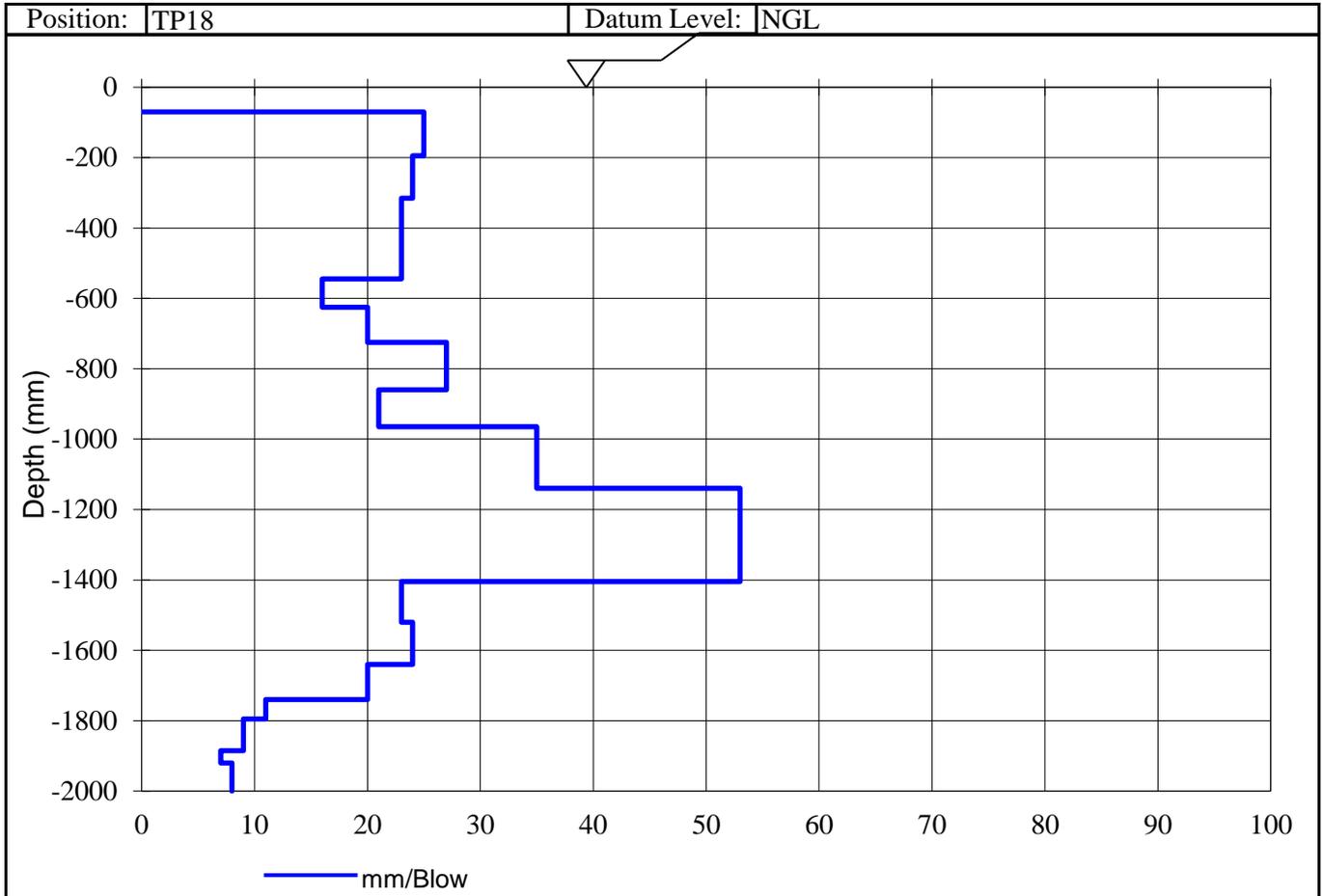
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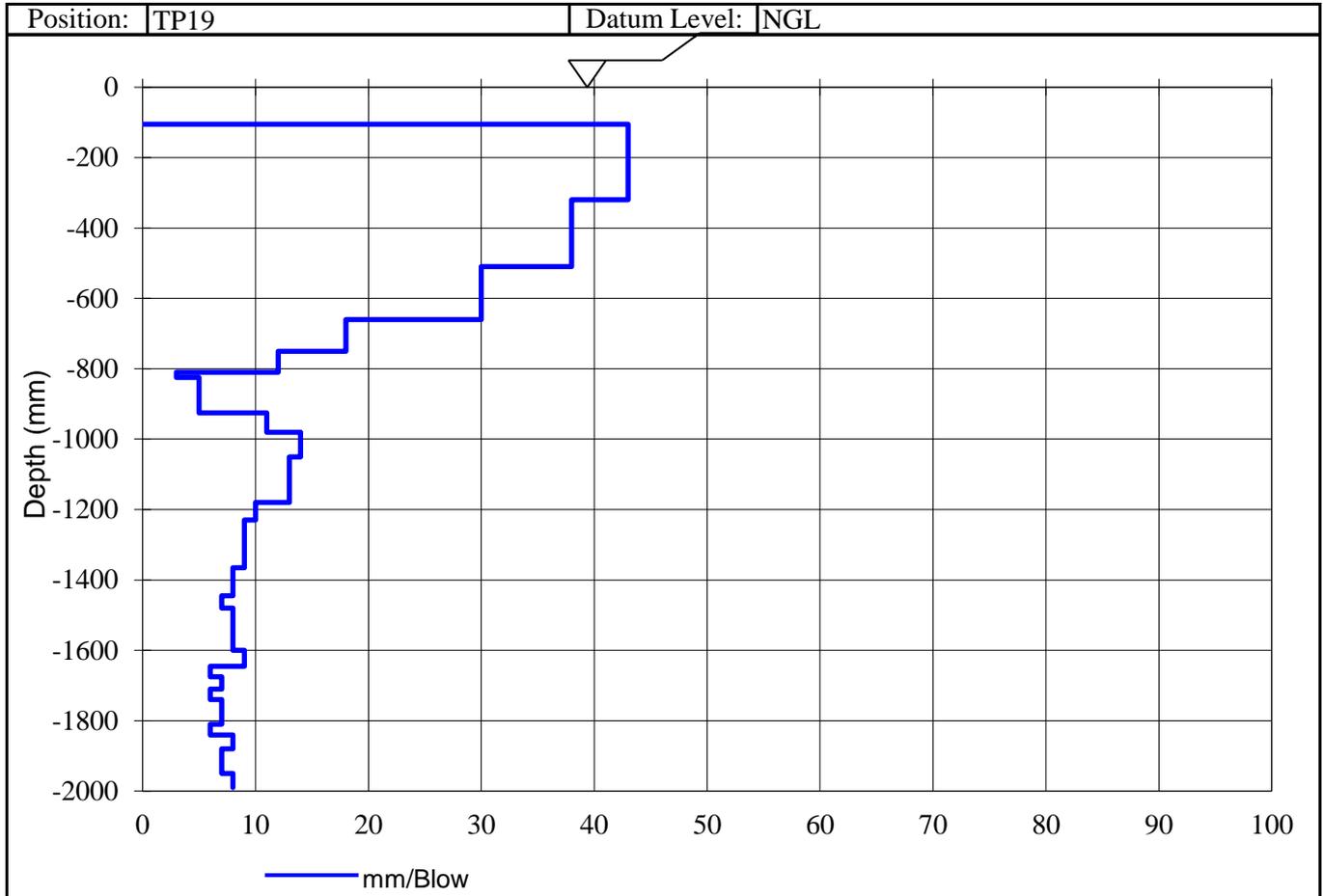
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Members: Iain Paton BSc Hons MEng Pr Sci Nat MSAIEG MSAICE



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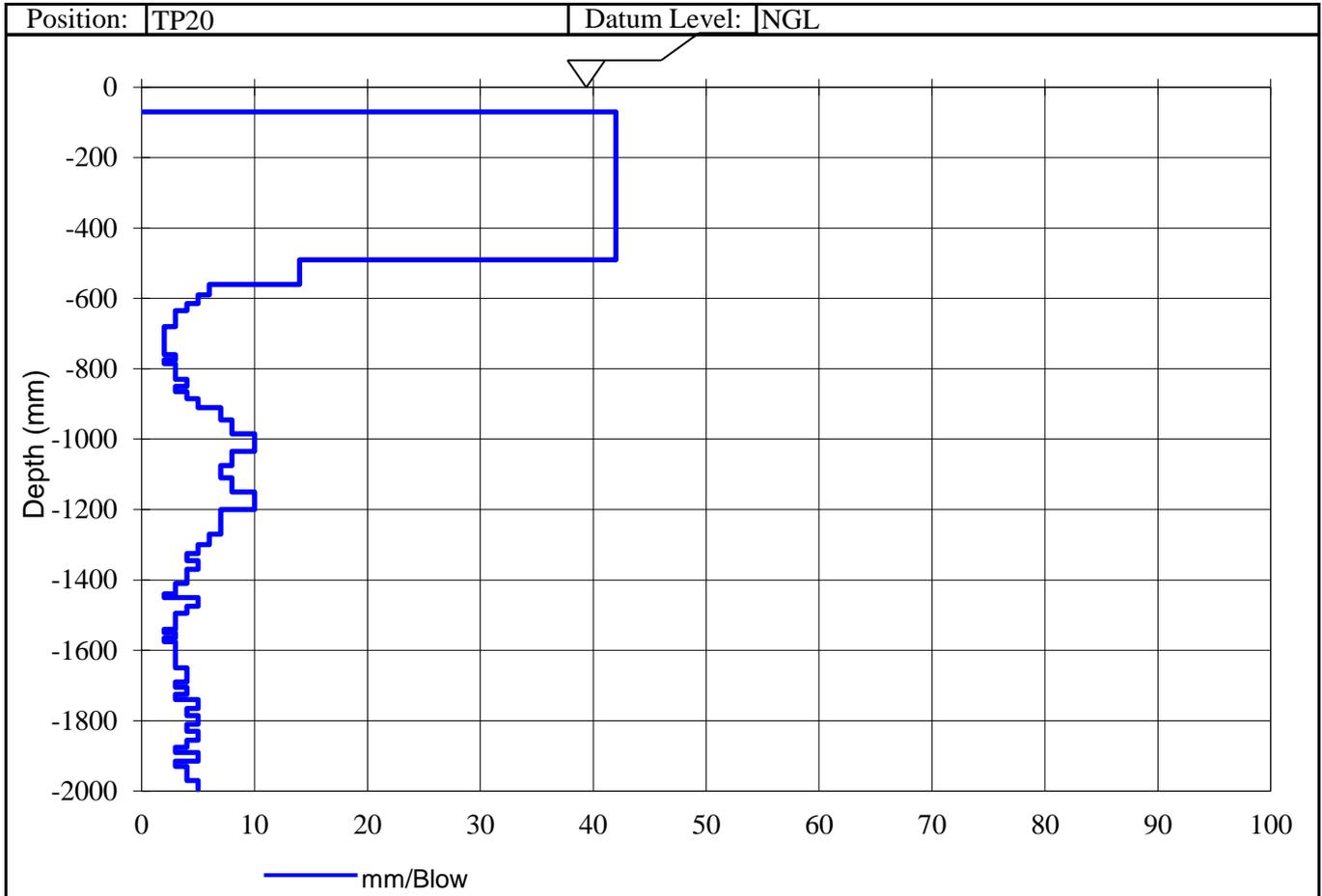
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Appendix 5
Calculations

Potential Heave Calculations - Van der Merwe Method*

Site: Metrogrounds

TP no: 7

From (Depth in mm)	To (Depth in mm)	Depth from (ft)	Depth to (ft)	Depth factor	Potential Expansiveness	Total Heave (in)	Heave (mm)	NHBRC Cat
0	200	0	1	0.943	0	0.0	0.00	
200	700	1	2	0.824	0	0.0	0.00	
700	1000	2	3	0.75	0	0.0	0.00	
1000	2000	3	7	2.268	0.25	0.6	14.40	
2000	2800	7	9	0.798	0	0.0	0.00	
						0.6	14.40	H1

Potential Expansiveness	Inches
Very High	1
High-Very High	0.75
High	0.5
Medium	0.25
Low	0

* Van der Merwe, D M 1964. The prediction of heave from the plasticity index and percentage clay fraction of soils. The Civil Engineer in South Africa, 6(6): 103–107.

Potential Heave Calculations - Van der Merwe Method*

Site: Metrogrounds

TP no: 14

From (Depth in mm)	To (Depth in mm)	Depth from (ft)	Depth to (ft)	Depth factor	Potential Expansiveness	Total Heave (in)	Heave (mm)	NHBRC Cat
0	400	0	1	0.943	0	0.0	0.00	
400	900	1	3	1.574	0	0.0	0.00	
900	1100	3	4	0.668	0	0.0	0.00	
1100	2100	4	7	1.6	0.25	0.4	10.16	
2100	3000	7	10	1.133	0	0.0	0.00	
						0.4	10.16	H1

Potential Expansiveness	Inches
Very High	1
High-Very High	0.75
High	0.5
Medium	0.25
Low	0

* Van der Merwe, D M 1964. The prediction of heave from the plasticity index and percentage clay fraction of soils. The Civil Engineer in South Africa, 6(6): 103–107.

Potential Heave Calculations - Van der Merwe Method*

Site: Metrogrounds

TP no: 19

From (Depth in mm)	To (Depth in mm)	Depth from (ft)	Depth to (ft)	Depth factor	Potential Expansiveness	Total Heave (in)	Heave (mm)	NHBRC Cat
0	200	0	1	0.943	0	0.0	0.00	
200	500	1	2	0.824	0	0.0	0.00	
500	600	2	2	0	0	0.0	0.00	
600	1600	2	5	2.014	0.25	0.5	12.79	
1600	3000	5	10	2.137	0	0.0	0.00	
						0.5	12.79	H1

Potential Expansiveness	Inches
Very High	1
High-Very High	0.75
High	0.5
Medium	0.25
Low	0

* Van der Merwe, D M 1964. The prediction of heave from the plasticity index and percentage clay fraction of soils. The Civil Engineer in South Africa, 6(6): 103–107.

FOUNDATION DESIGN

Subject:				
SOIL BEARING CAPACITY (TERZAGHI)				
Design Code/Ref:	Proj.	Location:	Designer:	Date:
	Metrogrounds	WCape, ZA	IP	23-Sep-22

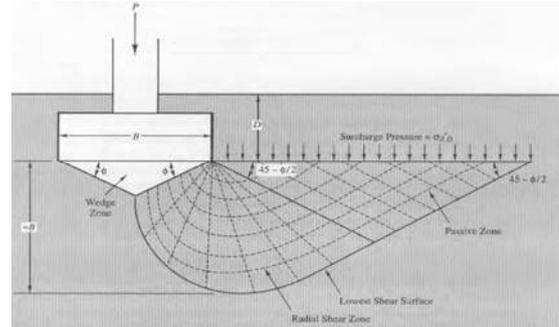
CODE REF. CALCULATIONS & SKETCHES

Compute the allowable bearing pressure using Terzaghi equation for the footing and soil parameters shown in Figure 1

Soil type	CL/ML	Consistency:	F
-----------	-------	--------------	---

D =	0.70 m	Min Footing Embedment Depth
γ =	18.0 kN/m ³	Soil Density
Ø' =	20 deg	Effective Friction Angle
c' =	5 kPa	Effective Cohesion
B =	0.6 m	Footing Width

Footing Type: **Strip**



	Ref
Ø' = 20 deg	1
N _c = 17.69	2
N _q = 7.44	2
N _γ = 3.6	2
s _c = 1.0	2
s _γ = 1.0	2
q = 12.6	

If $q_{ult} = cN_c S_c + qN_q + 0.5\gamma B N_\gamma S_\gamma$ 2

then $q_{ult} = (182.2 + 32.76 B)$
 $q_{ult} = 201.9 \text{ kPa}$

$$q_a = \frac{q_{ult}}{SF}$$

If SF = 3 Factor of Safety

Then $q_a = 67.3 \text{ kPa}$ Allowable bearing capacity

References:

- 1 Byrne, G. et al. 2019. A Guide to Practical Geotechnical Engineering in Africa, 5th Ed. Franki
- 2 Das, B. 2016. Principles of Foundation Engineering, 8th ed. Cengage Learning, Boston MA

Stormwater Management Plan

DEVELOPMENT OF THE METRO GROUNDS
INDUSTRIAL DEVELOPMENT ON A PART
OF PORTION 464

George Municipality

Submission date: 2025/11/07

Document number: 1002372-HL-REP-CC-0001-2502

Revision: 1

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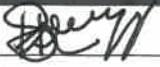
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Document number		1002372-HL-REP-CC-0001-2502	Project number		1002372	
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Rev	Date	Revision details/status	Author	Reviewer	Verifier (if required)	Approver
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1	2025/11/07	Updated Layout	H Laubscher	M Van Wyk		M Botha
Current revision		1				

Approval			
Author signature		Approver signature	
			
Name		Name	
H Laubscher		M Botha	
Title		Title	
Civil Technologist		Technical Specialist	

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 - Zoning Layout and Sensitive Areas**
- Annexure B**
 - Stormwater Services Layouts**
- Annexure C**
 - Energy Dissipation Typical Details 1**
- Annexure D**
 - Energy Dissipation Typical Details 2**

1 Introduction

1.1 Background to Report

As per Figure 1: Locality Map below, the subject portion of the Remainder of Erf 464, George has been identified as land to accommodate an industrial development, with an educational component. The project intent is to enable the release of small industrial stands to users/buyers, whilst the educational erf is to be made available to secondary- or tertiary educational uses.

This report is based on the revised Conceptual Development Framework Layout, Drawing No. 1002372-0000-DRG-CC-0001-H, dated 9 September 2025, attached as Annexure A. Ideally, the existing bulk civil infrastructure will be utilized to accommodate the proposed development, herein referred to as the Metro Grounds Industrial Development. All future reticulation will conform to George Municipal Standards.

Zutari will look at the road design and civil services for the proposed development which includes the necessary infrastructure to collect and control stormwater runoff where required.

1.2 General and Development Location

The subject area is described as part of the Remainder of Erf 464, George and is indicated on the map below. The current zoning of the area in question is “Undetermined Use Zone” as per the provisions of the George Integrated Zoning Scheme Bylaw, 2017. Previously rights were approved for a bus-depot to be located to the east of the subject property. Note however that the implementation of the bus-depot is not included in this project.



Figure 1 : Locality Map

The projected land use for the proposed development is as follows:

Land Use Description/ Erf Type	Zoning (STB. Scheme)	Area (ha)	% of Area
Education Facility	Community Zone I	5.34	30%
Light Industrial	Industrial Zone II	5.56	43%
Transport	Transport Zone 1	1.76	43%
Private Open Space	Open Space Zone II	1.3	7%
Public Street	Transport Zone II	2.58	20%
Total		16.54	100%

2 Objective of Report

The objective of this report is to:

- ▶ Analyze the local catchment area in order to :
 - Determine the 1:5-year (minor system) flow rates at points of interest; and
 - Determine sizes for stormwater drainage pipes, culverts and / or channels within the proposed development.
 - Determine the effect of external stormwater runoff and how this can be accommodated through the proposed development.
 - Make recommendations with respect to the discharge of runoff.
- ▶ Prepare drawings showing the outlet structure components and possible mitigating measures for stormwater drainage and erosion control i.e. energy dissipation and attenuation.

3 Design Criteria and Standards

3.1 Design Criteria

The following document serves as the basis for the detail design criteria and standards:

- ▶ Guidelines for Human Settlement Planning and Design (“Red Book”).

3.2 Construction Specifications

All materials and workmanship shall comply with the specifications as set out in the South African National Standards for Civil Engineering (SANS).

3.3 Stormwater System

The stormwater system forms an integral part of the road and urban planning layout. The system rests on three legs, the minor system, the major system and an emergency system. Minor storms are catered for in the pipe system while major storms are routed through a linked system of roads and public open spaces using attenuation techniques. The emergency system recognizes failure of the minor and major system by storms greater than provided for in the major system or in the event of

malfunction of the minor system by providing continuous overland flow routes to minimize flooding of residential areas.

3.3.1 Minimum design criteria for stormwater system

The criteria to be used for the design of the systems is the following:

- ▶ Minor system: 5 year return period conveyed in an underground pipe system. Preferably the overland flow shall not exceed a depth of 200mm;
- ▶ Major system: 50 year return period. The difference between the 5 year and 50 year to be conveyed in the road prism with a flow depth not exceeding 150mm within the road reserve width;
- ▶ The minimum gradients for pipelines will be designed to give a minimum velocity of 0.7m per second with the pipes flowing full;
- ▶ The maximum flow velocity shall be 3.5m per second;
- ▶ Major Stormwater overflows are to be provided to convey the excess storm water from the streets into designated public open spaces;
- ▶ Stormwater flow velocities in road ways will be kept as low as possible and related to the surface finish to prevent scour and erosion; and
- ▶ Roads will be graded to ensure free and continuous flow to the main Stormwater system and to prevent localized ponding at intersections.

3.3.2 Pipelines/Culverts

- ▶ Stormwater pipes will generally be class 50D, 75D or 100D as required by the loading and installation conditions;
- ▶ Pipes will be laid on Class C bedding;
- ▶ The minimum cover on pipes will be 0.80m; and
- ▶ The minimum pipe diameter will be 450mm for longitudinal runs and catch pit connections.
- ▶ Box culverts will be class 75S, 100S or 150S depending on the span.

3.4 Road System

The road system forms an integral part of the local area plan.

3.4.1 Design criteria for Roads

The design criteria for roads are the following:

- ▶ Road reserve widths: 22m and 30m;
- ▶ Design life of the roads: 20 years;
- ▶ Subgrade CBR: 15 to 20;
- ▶ Subbase CBR: 45 minimum (processed crushed stone);
- ▶ Base course CBR: 80 minimum (processed crushed stone);
- ▶ Surfacing: Asphalt, paving or cape seal;
- ▶ Minimum road longitudinal grade: 0.475%; and
- ▶ Minimum road cross fall: 2-3% depending on final road surfacing type.

3.5 Standard of Engineering Services to be Provided

Level of services regarding roads and stormwater are as follows:

3.5.1 Roads and stormwater

- ▶ Road widths will be 6m in 22m and 6.4m in 30m reserves;
- ▶ Subgrade, Subbase and Base materials will be imported;
- ▶ Subsurface drainage will not be required;
- ▶ The underground piped stormwater drainage system will have a minimum of 450mm diameter;
- ▶ Where roads are surfaced, paving or asphalt surface will be provided;
- ▶ Combination kerbs, CK5 will be provided on the low side of all roads to drain stormwater towards catch pits;
- ▶ Mountable kerb, MK10 will be provided on the higher side of the roads;
- ▶ Barrier kerbs, BK2 and Channel, C1 will be installed around bell mouths. Bellmouth radiuses will be a minimum of 6m.
- ▶ All stormwater drains will be provided with a sand trap of at least 500mm deep.

4 Existing Stormwater Network

The site has a fairly steep slope gradient towards the Eastern, Southern and Western side, increasing towards natural drainage lines. There is no existing stormwater infrastructure near the proposed development. The upstream runoff and generated stormwater runoff from the proposed development will have to be conveyed by means of both an underground system as well as an overland flow system.

The watercourses are the current catchment source point of the proposed site. The internal stormwater will be designed in such a manner that it follows the natural topography of the site, and the outflow will be dispersed via energy dissipating outlets towards the drainage paths.

If required, indigenous vegetation will be established to the specifications of stormwater wetlands plant material contained in various publications to assist in reducing the risk of erosion and the establishment of wetlands for the purpose of stormwater attenuation. All ponds will be cordoned off for security and safety and necessary signage erected indicating the purpose of the ponds to raise awareness amongst the residents and public of the importance of stormwater control and treatment.

5 Stormwater Runoff Calculation

The calculated stormwater runoff is as follows:

Description	Metro Grounds, George	
MAP (mm)	552mm	
Area	20 ha	
Design Period	1:5 years	
Runoff Q (l/s)	Pre Development	Post Development
	2485	6553
Dispersal areas	Watercourses	Watercourses

From the above it can be seen that there will be an increase in volume of stormwater as a result of the proposed development.

6 Proposed Design

The proposed layout of the development is still in draft format and the final stormwater layout and design will be done as soon as the layout has been finalized and approved. **Annexure A** shows the proposed extent of the development as well as proposed coverage.

Conventional stormwater networks consisting of stormwater catch pits, manholes and energy dissipating headwalls will convey the stormwater generated in the area into the proposed stormwater outlets and silt retention structures to minimize the peak runoff towards the existing detention areas. **Annexure D & E** shows typical examples of energy dissipation and silt retention structures.

A site specific and detailed stormwater design including mitigating measures as described in this report will be done within this framework following the finalization of the layout and may vary slightly from what is presented in this plan.

7 Floodlines

This proposed development is not directly affected by any Floodline. Feedback from the George Municipality's Civil Engineering Services Department, indicated that floodlines have been delineated for the Rand Street extension and are currently being reviewed. The intention is that the impact of this development on the flood lines should be considered as part of the study.

8 Spatial Planning Considerations

It is proposed that the Spatial Development Plan take cognizance of the required stormwater management. This includes:

- ▶ Provision of stormwater escape routes between erven to direct minor and major flows towards the existing watercourse area;
- ▶ Roads linking the proposed site with the existing/proposed access road should not restrict stormwater run-off;
- ▶ No erven should be constructed too close to the existing watercourse to impede overland flows or be infringing on the National Water Act (1998) Section 144; and
- ▶ Incorporation of the existing watercourse and detention ponds in the final SDP, if applicable.

9 Stormwater Management Techniques: During Construction

The stormwater surface run-off water will be managed carefully during construction. The following management techniques will be implemented:

- ▶ Temporary cut-off channels and berms;
- ▶ Routing of run-off towards the existing watercourse and current drainage routes;
- ▶ Erosion protection by means of gabions, Reno mattresses, Geofabric and/or any combination thereof;
- ▶ Compliance with a site specific Environmental Management Plan;

- ▶ Provision for dealing with water, in accordance with SABS 1200, will be stipulated in the Project Specification and Contract Documents. Of specific importance will be the following clauses:
 - i. Clause 5.5 in SABS 1200 A;
 - ii. Clause 5.3 in SABS 1200 AA;
 - iii. Clause 5.1.3 in SABS 1200 D; and
 - iv. Clause 5.1.2 in SABS 1200 DB.

10 Stormwater Management Techniques: Post-Construction

The factors to consider in Stormwater Management falls broadly into two main categories, namely those related to quantity and those related to quality.

Any development brings about changes to the natural environment of a site, which in turn has an effect or disrupts the natural hydrological cycle. Changes include, among other:

- ▶ Increase in impermeable surfaces (roads, roofs etc.) resulting in lower infiltration, higher run-off volumes and velocities;
- ▶ Changes to natural flow routes through earthworks, infrastructure and shaping of terrain; and
- ▶ Changes to local water course environment and ecology.

The management of the increased run-off volumes and velocities is important as it can be detrimental to the receiving drainage system and communities downstream of the site, as it could cause severe erosion, property damage and even loss of life.

By restricting peak flows to pre-development levels, the *status quo* of the catchment is maintained. This could be achieved through the implementation of the following recommended practices, as described in paragraphs 10.1 and 10.2 below.

10.1 Infiltration and Dissipation

By dispersing the run-off to various outfalls spread across the site, the recharge of the underground water table is promoted, and the risk of erosion reduced.

Energy dissipating structures combined with Reno mattresses to prevent scouring and erosion will be utilised creating a high friction factor and thereby reduce the velocity of stormwater. Refer to Appendix C for further information regarding energy dissipation.

The installation of Reno mattresses and gabion boxes at outlets acts as energy dissipaters and stilling basins. These structures are also used as silt traps to prevent the loss of silt to the natural water courses. Silt that gets trapped on the Reno mattresses acts as a growing medium for vegetation which thereby accelerates the re-establishment of natural vegetation. This rehabilitated vegetation also acts as a dissipation medium, resulting in attenuated run-off.

10.2 Attenuation

Attenuation functions by the principle of allowing large flows of water to enter a facility but limiting the outflow by having a small opening at the low point in the facility. The difference between in- and outflows is temporarily stored in an allocated space within which safe storage/detention can occur.

Attenuation in the form of large dams will not be possible in this instance, but rainwater in the proposed development will be discharged onto the road and flow into inlet works/catch-pits. The water will then proceed to the lowest point flowing out to the headwall. The aim is to ensure the maximum percentage of rainwater flows to the catchment source point near the proposed development area.

11 Conclusions and Recommendations

The planning of stormwater design elements must always be seen as a holistic process which incorporates much more than the infrastructural elements required in adequately dealing with stormwater. It affects a range of environmental goals and management principles and aims not only to mitigate negative impacts, but actively promote positive modifications in its application.

The design approach to be adopted for the proposed development and as discussed above, can be summarised as follows:

- ▶ Promotion of on-site infiltration;
- ▶ Minimise concentration of stormwater;
- ▶ Maintain pre-development run-off levels as far as possible;
- ▶ Enforcement of management principles;
- ▶ Identify escape routes for major floods;
- ▶ Responsible discharge of stormwater into downstream systems; and
- ▶ Allowing for the necessary attenuation where possible.

Certain aspects will require further consideration during the detail design stage, they are:

- ▶ Stormwater needs to be responsibly conveyed to the existing watercourse;
- ▶ Stormwater collected along the watercourse needs to be able to reach the existing drainage infrastructure downstream;
- ▶ The site development plan needs to adequately provide for servitudes to accommodate major flows;
- ▶ Maximisation of attenuation of the rainwater that most water can be caught.

As indicated in this report, the proposed site's stormwater will be managed in a responsible manner and be safely discharged into the surrounding drainage system, without any detrimental impacts to the environment or communities.

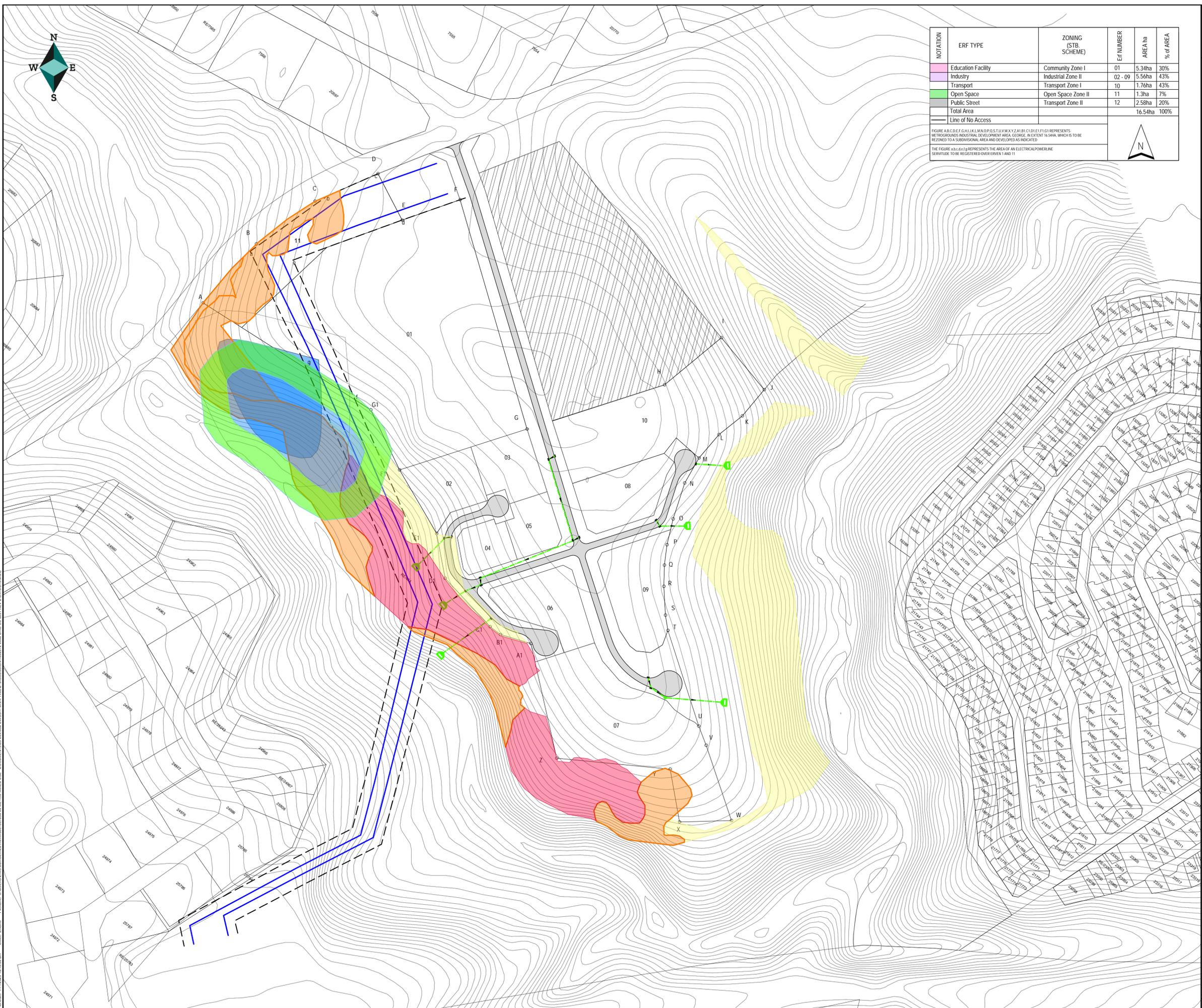
The application of this Plan on this particular project will lead to:

- ▶ Minimisation of the impacts of stormwater from new developments on receiving waters such as watercourses, wetlands, coastal waters, etc; and
- ▶ Prevention of further degradation of receiving waters by stormwater draining from existing developments, as well as in the long term the reversal of current undesirable stormwater impacts.

Annexure A

Zoning Layout and Sensitive Areas





NOTATION	ERF TYPE	ZONING (STB. SCHEME)	ERF NUMBER	AREA ha	% OF AREA
[Pink Box]	Education Facility	Community Zone I	01	5.34ha	30%
[Purple Box]	Industry	Industrial Zone II	02 - 09	5.56ha	43%
[Green Box]	Transport	Transport Zone I	10	1.76ha	43%
[Light Green Box]	Open Space	Open Space Zone II	11	1.3ha	7%
[Grey Box]	Public Street	Transport Zone II	12	2.58ha	20%
	Total Area			16.54ha	100%
[Dashed Line]	Line of No Access				

FIGURE A,B,C,D,E,F,G,H,I,J,K,L,M,N,O,P,Q,R,S,T,U,V,W,X,Y,Z,A1,B1,C1,D1,E1,F1,G1 REPRESENTS METROGROUNDS INDUSTRIAL DEVELOPMENT AREA, GEORGE, IN EXTENT 16-54HA, WHICH IS TO BE REZONED TO A SUBDIVISIONAL AREA AND DEVELOPED AS INDICATED.

THE FIGURE A,B,C,D,E,F,G REPRESENTS THE AREA OF AN ELECTRICAL POWERLINE SERVITUDE TO BE REGISTERED OVER ERFEN 1 AND 11.

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NOTES:
 1. ALL WORK TO BE DONE IN ACCORDANCE WITH SANS 1200.

LEGEND:

[Grey Box]	ROAD PAVED (80mm SA CONCRETE BLOCK)
[Solid Line]	MOUNTABLE KERB (MK10)
[Dashed Line]	COMBINATION KERB (CK5)
[Dotted Line]	BARRIER KERB AND CHANNEL (BK2 & C1)

VEGETATION SENSITIVITY RATINGS

[Yellow Box]	LOW
[Orange Box]	MEDIUM
[Red Box]	HIGH

WETLAND AREAS

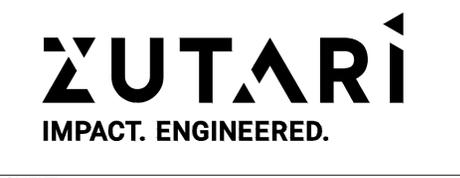
[Blue Box]	WETLAND
[Green Box]	WETLAND 30m BUFFER AREA

ELECTRICAL

[Blue Line]	HIGH VOLTAGE 66KV
[Dashed Line]	SERVITUDE AREA 22m WIDE (11m EITHER SIDE OF 66KV LINES)

EXISTING:

[Dashed Line]	WATER PIPE
[Dashed Line]	SEWER PIPE
[Circle]	SEWER MANHOLE
[Dashed Line]	STORMWATER PIPE
[Square]	STORMWATER CATCHPIT
[Circle]	STORMWATER JUNCTION BOX
[Wavy Line]	OVERHEAD POWER/TELEPHONE LINE
[Triangle]	VALVE
[Square]	FIRE HYDRANT
[Line]	FENCE
[Triangle]	BENCHMARKS



REV	DATE	REVISION DETAILS	APPROVED
A	6/11/25	PRELIMINARY NOT FOR CONSTRUCTION	AC KEYSER

SCALE 1:2000	SIZE A1	PRELIMINARY NOT FOR CONSTRUCTION
DRAWN E BURGER	DESIGNED H LAUBSCHER	
REVIEWED M BOTHA		APPROVED AC KEYSER ECSA-2006/70188

PROJECT
 METROGROUNDS INDUSTRIAL

TITLE
 ZONING LAYOUT

DRAWING NUMBER					
PROJECT No.	WBS	TYPE	DISC	NUMBER	REV
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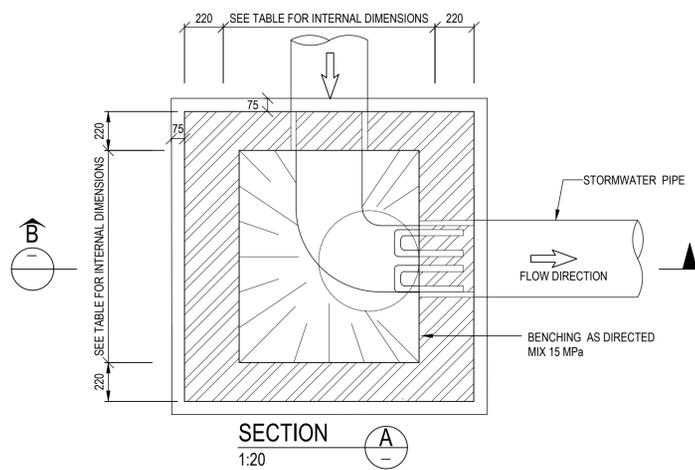
Annexure B
Stormwater Services Layouts



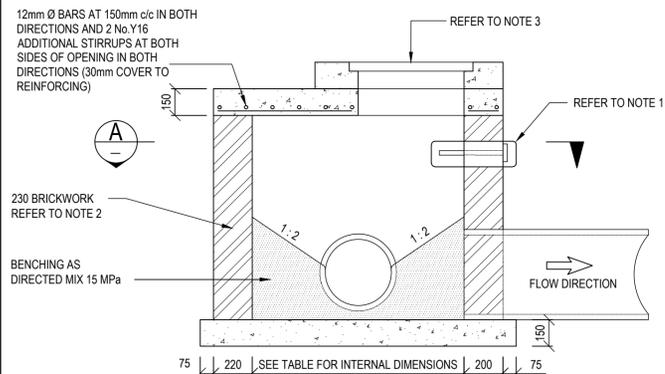
Annexure C

Energy Dissipation Details 1



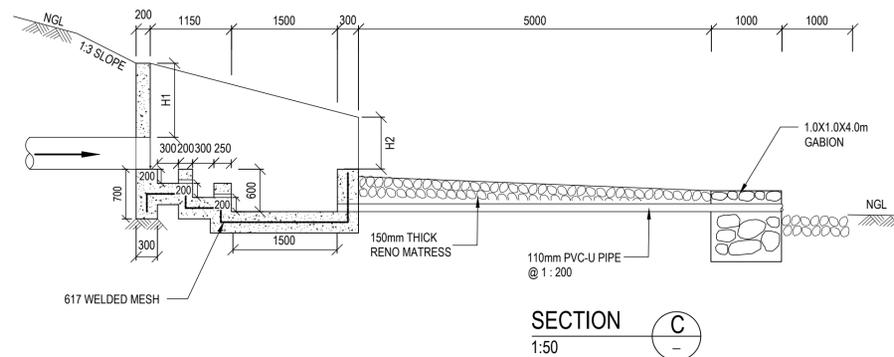


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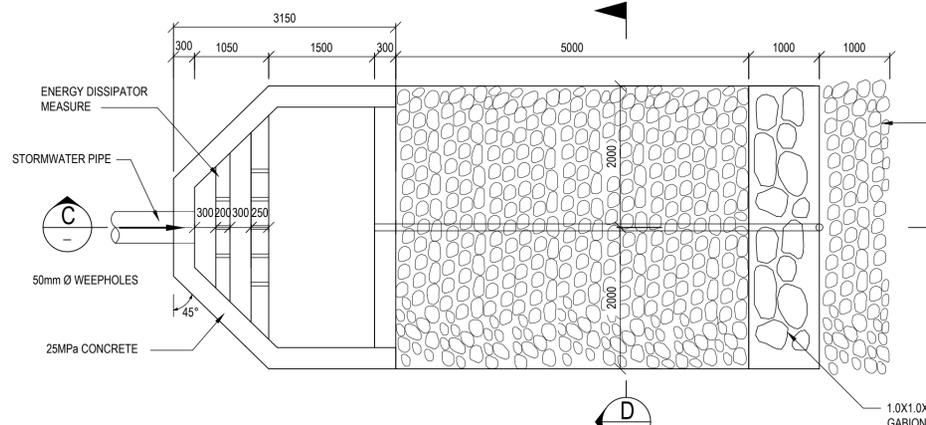
SECTION B
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DETAIL: STORMWATER JUNCTION BOX 01



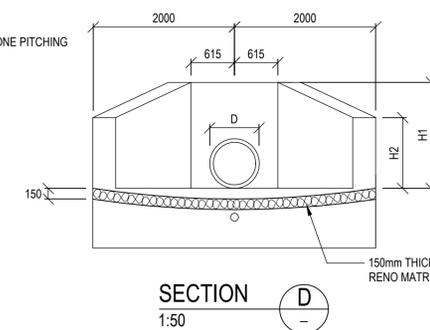
SECTION C
1:50

D	H1	H2
375mm	700mm	450mm
450mm	800mm	550mm
525mm	900mm	650mm
600mm	1000mm	750mm
900mm	1400mm	900mm



PLAN:

DETAIL: SILT RETENTION AND ENERGY DISSIPATER HEADWALL (375 - 600mm ND) 02



SECTION D
1:50

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DESIGNED	H LAUBSCHER		
REVIEWED	M BOTHA		

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A	6/1/2025	PRELIMINARY NOT FOR CONSTRUCTION	AC KEYSER

SCALE	SIZE	PRELIMINARY NOT FOR CONSTRUCTION	
AS SHOWN	A1		
DRAWN	E BURGER	APPROVED	
DESIGNED	H LAUBSCHER	DATE	
REVIEWED	M BOTHA	AC KEYSER ECSA-200670188	

PROJECT
METROGROUNDS INDUSTRIAL

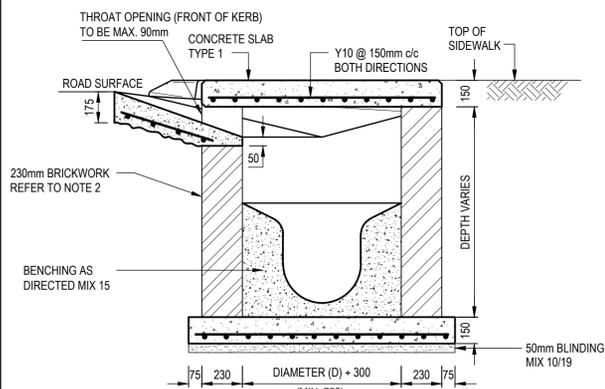
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GENERAL DETAILS

SHEET 1 OF 2

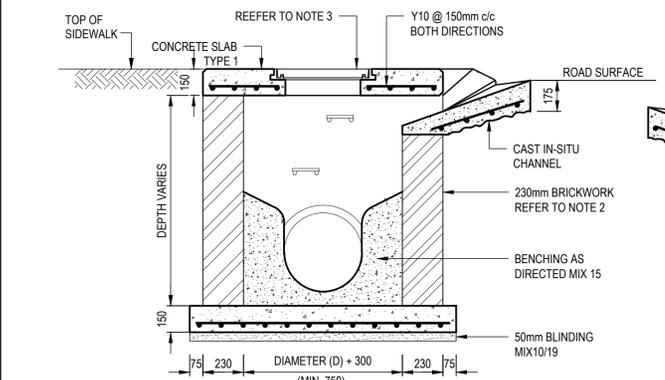
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PLAN (TOP SLAB REMOVED)



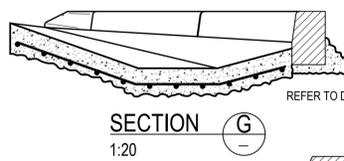
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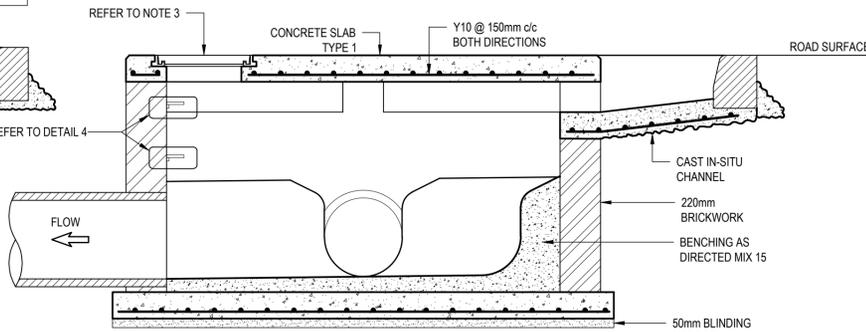
SECTION E
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DOUBLE CATCHPIT WITH SIDE INLET 03

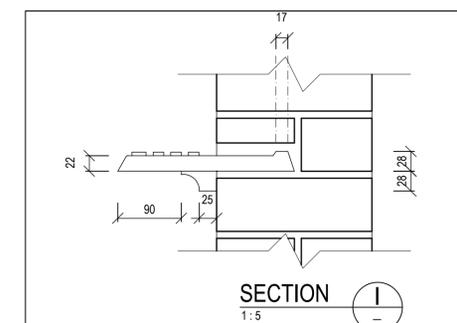
- NOTES**
- FOR DEPTHS GREATER THAN 2.5m BRICKWORK TO BE REINFORCED WITH BRICKFORCE AT EACH COURSE.
 - PIPE AND BENCHING ARRANGEMENT VARIES WITH CIRCUMSTANCES.
 - ALL STORMWATER PIPES ROCLA CLASS 100D.



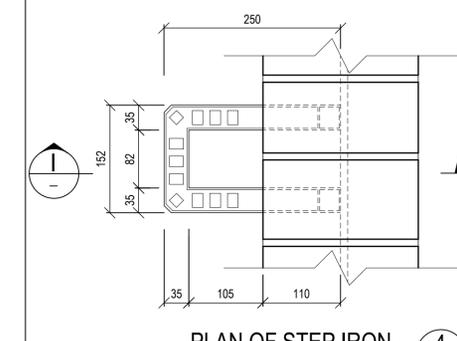
SECTION G
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SECTION H
1:20



SECTION I
1:5



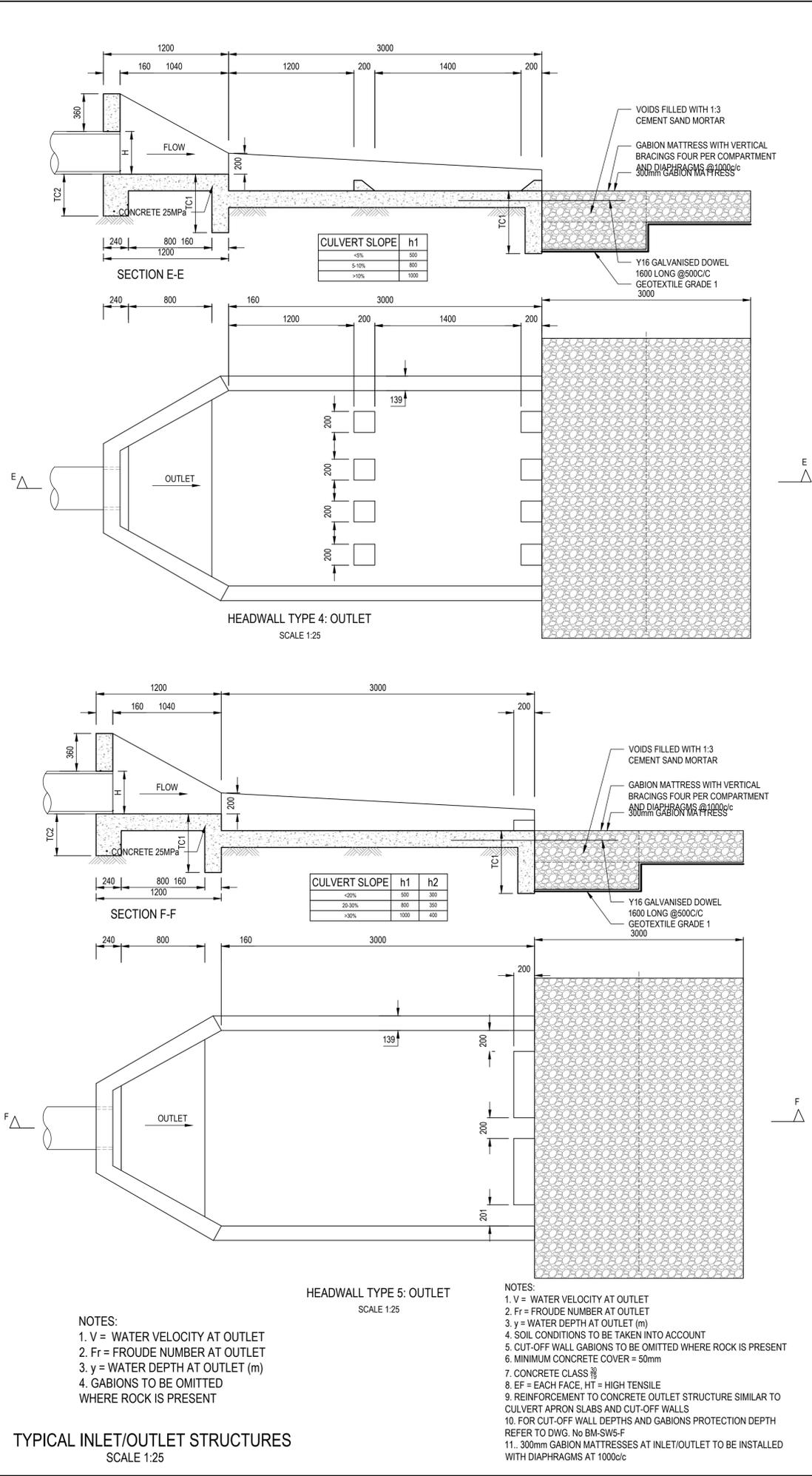
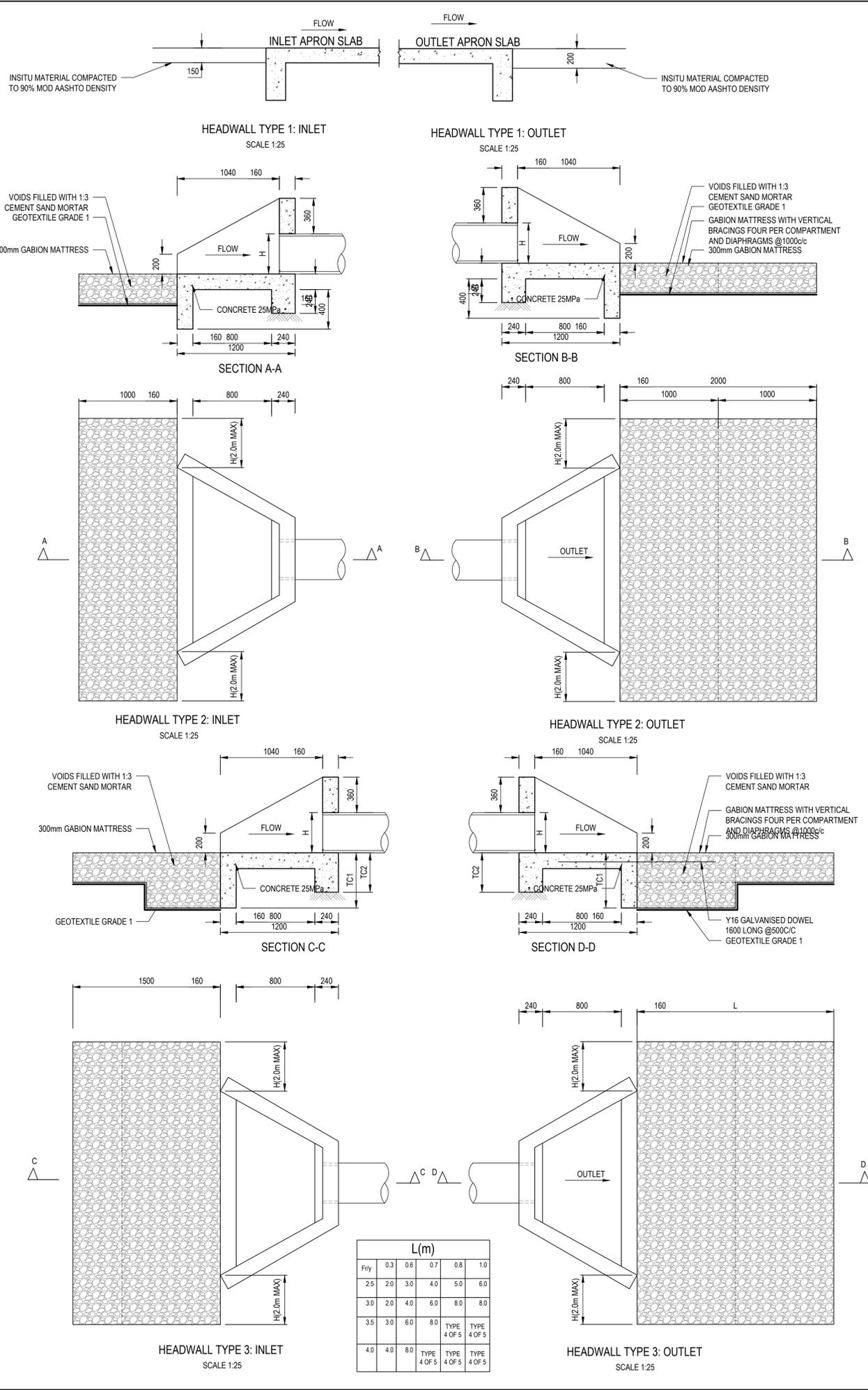
PLAN OF STEP IRON 04
1:5

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 Office: 2495J

Annexure D

Energy Dissipation Details 2



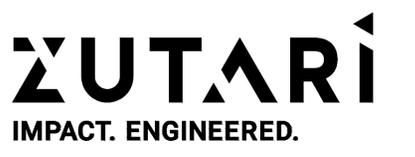


- NOTES:**
1. V = WATER VELOCITY AT OUTLET
 2. Fr = FROUDE NUMBER AT OUTLET
 3. y = WATER DEPTH AT OUTLET (m)
 4. SOIL CONDITIONS TO BE TAKEN INTO ACCOUNT
 5. CUT-OFF WALL GABIONS TO BE OMITTED WHERE ROCK IS PRESENT
 6. MINIMUM CONCRETE COVER = 50mm
 7. CONCRETE CLASS \geq
 8. EF = EACH FACE, HT = HIGH TENSILE
 9. REINFORCEMENT TO CONCRETE OUTLET STRUCTURE SIMILAR TO CULVERT APRON SLABS AND CUT-OFF WALLS
 10. FOR CUT-OFF WALL DEPTHS AND GABIONS PROTECTION DEPTH REFER TO DWG. No BM-SW5-F
 11. 300mm GABION MATTRESSES AT INLET/OUTLET TO BE INSTALLED WITH DIAPHRAGMS AT 1000c/c

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RESPONSIBLE PERSONS (INTERNAL)

	NAME	SIGNATURE	DATE
DRAWN	E BURGER		
DESIGNED	H LAUBSCHER		
REVIEWED	M BOTHA		



CLIENT

REV	DATE	REVISION DETAILS	APPROVED
A	6/1/2025	PRELIMINARY NOT FOR CONSTRUCTION	AC KEYSER

SCALE	AS SHOWN	SIZE	A1	PRELIMINARY NOT FOR CONSTRUCTION APPROVED _____ DATE _____ AC KEYSER ECSA-200670188
DRAWN	E BURGER			
DESIGNED	H LAUBSCHER			
REVIEWED	M BOTHA			

PROJECT
METROGROUNDS INDUSTRIAL

TITLE
GENERAL DETAILS

SHEET 2 OF 2

DRAWING NUMBER

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In diversity there is beauty and
there is strength.

MAYA ANGELOU

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Engineering Services Report

DEVELOPMENT OF THE METRO GROUNDS INDUSTRIAL DEVELOPMENT ON A PART OF PORTION 464

George Municipality

Submission date: 2025/11/07

Document number: 1002372-000-REP-CC-0003-2502

Revision: Rev 3

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1	2024/07/29	Updated layout and inclusion of Client's comments	M van Wyk	R Schröder	N/A	M Botha
2	2025/02/24	Updated layout	M van Wyk	R Schröder	N/A	M Botha
3	2025/11/07	Updated layout	M van Wyk	R Schröder	N/A	M Botha
Current revision		Rev 3				

Approval			
Author signature		Approver signature	
			
Name		Name	
M van Wyk		M Botha	
Title		Title	
Senior Technologist		Technical Specialist	

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 - 3.2 Wastewater Reticulation System.....7
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 - 8.3 Roads and stormwater 10
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Annexures

Annexure A

Water: Existing Services Layouts

Annexure B

Sewer: Existing Services Layouts

Annexure C

Stormwater: Existing Services Layouts

Annexure D

Extract from GLS Sewer Master Plan: Outeniqua drainage area 2020-06
 Extract from GLS Water Master Plan: Bulk & Retic – George main zone 2020-06

Annexure E

Conceptual Development Framework Layout

1 Introduction

1.1 Background to Report

As per Figure 1: Locality Map below, the subject portion of the Remainder of Erf 464, George has been identified as land to accommodate an industrial development, with an educational component. The project intent is to enable the release of small industrial stands to users/buyers, whilst the educational erf is to be made available to secondary- or tertiary educational uses.

This report is based on the revised Conceptual Development Framework Layout, Drawing No. 1002372-0000-DRG-CC-0001-H, dated 09 September 2025, attached as Annexure E. Ideally, the existing bulk civil infrastructure will be utilized to accommodate the proposed development, herein referred to as the Metro Grounds Industrial Development. All future reticulation will conform to George Municipal Standards.

1.2 General and Development Location

The subject area is described as part of the Remainder of Erf 464, George and is indicated on the map below. The current zoning of the area in question is “Undetermined Use Zone” as per the provisions of the George Integrated Zoning Scheme Bylaw, 2017. Previously rights were approved for a bus-depot to be located to the east of the subject property. Note however that the implementation of the bus-depot is not included in this project.



Figure 1 : Locality Map

The projected land use for the proposed development is as follows:

Land Use Description/ Erf Type	Zoning (STB. Scheme)	Area (ha)	% of Area
Education Facility	Community Zone I	5.34	32.29%
Light Industrial	Industrial Zone I	5.56	33.62%
Transport	Transport Zone I	1.76	10.64%
Private Open Space	Open Space Zone II	1.30	7.86%
Public Street	Transport Zone II	2.58	15.60%
Total		16.54	100%

For the sake of completeness, the erf described as “Transport Zone I” is included in the table above. The intention is to consolidate this erf with the area earmarked for the possible future Bus Depot, and any required services will be planned for as part of the Bus Depot, which is excluded in this report.

2 Bulk Water Supply System

2.1 Proposed Water Demand for the Development

Our calculations are based on “The Neighbourhood Planning and Design Guide”.

Existing network capacity in the vicinity of the site is subject to the confirmation by George Municipality. GLS Consulting (GLS) were appointed by George Municipality to compose a Water Master Plan for the Municipal area and to determine the effect of any form of developments in the Municipal area on the Water Master Plan. If required, this and other reports will be submitted to GLS to determine whether the existing water network system has enough capacity to accommodate the proposed housing development.

Bulk water distribution lines with diameter > 200mm and <= 250mm are positioned on the Northern border of the Metro Grounds Site, i.e. along P.W. Botha Boulevard.

According to Table J.2 – J.4 for Calculating the Annual Average Daily Demand (AADD) from “The Neighbourhood Planning and Design Guide”, the following calculations were done to determine the AADD for the various Land Uses:

The water use for the applicable areas of the proposed development is as follows:

Description / Land Use	Calculations	AADD
Education Facility	5.34 x 1ha x 20kℓ/ha/day	106.80 kℓ/day
Light Industrial	5.56 x 1ha x 13kℓ/ha/day	72.28 ℓ/day
Private Open Space	1.3 x 12kℓ/ha	15.60 ℓ/day
Public Street	-	-
TOTAL AADD		194.68 kℓ/day

This development is classified as mainly a Business/Commercial/ Industrial type of development, according to Table J.9. From the design codes, we expect to design for a peak demand of 8.66 l/s.

$$\begin{aligned}\text{Total Peak Hour Demand} &= [(194.68 \text{ k}\ell/\text{d} \times 3.30)] / (60 \times 60 \times 24) \\ &= 7.44 \text{ l/s}\end{aligned}$$

Fire flow:

Such a development would fall into the moderate risk 1 – industrial, business, high-rise flats \geq four storeys category according to Table J.17 – J.18 and as such, the following would apply:

- 50 l/second total fire flow;
- 25 l/second minimum flow at one hydrant;
- 15 m pressure at fire node;
- 5 m pressure at the rest of the system; and
- 4-hour design fire flow.

With the supply spread over a wide area, according to the available GLS Water Master Plan, dated June 2020, the existing reservoirs have enough storage capacity and capacity for fire flow conditions to accommodate this development.

According to the Water Master Plan for the Municipal area, enough capacity exists at the Water Treatment Plants.

A water reticulation system exists within close proximity to which the proposed development could connect (see enclosed GLS Water Master plan, dated June 2020). A system of reservoirs, water pump stations and water mains deliver potable water to developed areas.

2.2 Proposed Services

As per the Water System Master plan dated June 2020 provided by GLS Consulting for George Municipality, the existing system has enough capacity to accommodate the proposed development without bulk supply upgrades as seen in GLS Figure: Master Plan: Bulk & Retic – George Main Zone (Existing Water System Layout), dated June 2020, attached to this report as Annexure D. The available capacity will have to be verified with GLS to confirm the current situation in this regard.

The proposed development can connect to the existing 200mm - 250mm diameter Bulk water distribution line positioned on the Northern border of the Metro Grounds Site, i.e. along P.W. Botha Boulevard. The proposed development should however have their own bulk water meter constructed in order to measure actual water use. See attached Annexure A indicating existing services.

Capacity upgrades have recently been completed and commissioned at both the Old and New Water Treatment Works, ensuring they now have sufficient capacity to accommodate the proposed development.

The demand for fire flow will be addressed as part of the internal network design. This aspect will also require assessment by GLS in terms of the larger network capacity.

A water reticulation system exists within the adjacent neighbourhoods to which the proposed development could connect (see enclosed GLS Water Master plan). A system of reservoirs, water pump stations and water mains deliver potable water to developed areas surrounding the proposed development.

3 Bulk Sewage System

3.1 Wastewater Treatment Works

The proposed development is located within the existing Outeniqua Wastewater Treatment Works Main Outfall drainage area. Thus, effluent generated from the site will drain directly towards the existing Outeniqua Wastewater Treatment Works (WWTW) and joins the Schaapkop Pumpstation, as indicated on GLS's Existing Sewer System Layout (dated June 2020) attached as Annexure D.

Wastewater generated from the proposed development will gravitate into the existing system and be conveyed by means of gravity sewer lines into the existing systems to the Outeniqua Wastewater Treatment Works, where it will be treated.

According to the Sewer Master Plan for the Municipal area, sufficient capacity exists at the Sewage Treatment Plant within the existing system. Once more details are known on the type of industries that will be operating from the properties earmarked for industrial use, detailed consideration will have to be given to these properties in terms of their expected discharge. Additionally, adherence to the relevant bylaws must be ensured to prevent the Wastewater Treatment Works from failing to meet license requirements.

3.2 Wastewater Reticulation System

A wastewater reticulation system exists within the boundaries of the proposed development. It is proposed that the development will drain to the Outeniqua Wastewater Treatment Works where it will be treated as can be seen on GLS Sewer Master plan (June 2020). Since the available information is slightly dated, GLS will have to be requested to confirm through an ad-hoc study that the Schaapkop Pumpstation and bulk pipelines have sufficient capacity.

3.3 Wastewater Flow Demand

Calculations are based on “The Neighbourhood Planning and Design Guide”.

3.3.1 According to Table K4 from “The Neighbourhood Planning and Design Guide”, for Calculating the expected average daily wastewater flow for the different land use categories is as follows:

Description / Land Use	AADD	Sewer ration (% AADD)	kℓ/day
Education Facility	106.80 kℓ/day	65%	69.42
Light Industrial	72.28 ℓ/day	80%	57.82
Private Open Space	15.60 ℓ/day	N/A	-
Public Street	N/A	N/A	-
TOTAL ADWF (kℓ/d)			127.24

Based on the above, the Average Dry Weather Flow (ADWF) for the units would therefore be:

$$\begin{aligned} Q &= 69.42 + 57.82 \\ Q &= 127,240.00 \text{ ℓ/d} \\ \text{ADWF} &= 127.24 \text{ kℓ/d} \end{aligned}$$

3.3.2 The proposed development is classified as Business/ Commercial, with a component of light Industrial and various public facilities, according to Table K8. The average Peak Factor to be used is 2,5.

This would lead to an expected Peak Dry Weather Flow (PDWF) as follows:

$$\begin{aligned} Q &= 127.24 \times 2.5 \\ &= 318.10 \text{ kℓ/d} \\ \text{PDWF} &= 3.68 \text{ ℓ/s} \end{aligned}$$

If an infiltration rate of 30% is used for the ingress of stormwater into the system, the Peak Wet Weather Flow (PWWF) is calculated as follows:

$$\begin{aligned} Q &= 3.68 \times 1.30 \\ \text{PWWF} &= 4.79 \text{ ℓ/s} \end{aligned}$$

3.4 Proposed Services

The proposed development falls within the Outeniqua Wastewater Treatment Works' (WWTW) drainage area and will drain to the WWTW through the existing gravity sewer network where it will be treated.

It is proposed that the development will drain to the existing Schaapkop Pump Station indicated on remainder of erf 13486. From this point all wastewater generated will be pumped

to the Outeniqua Wastewater Treatment Plant where it will be treated as can be seen on GLS Sewer Master plan with reference 2020-06.

Confirmation will be required by George Municipality, through an ad-hoc study by GLS, whether the existing Schaapkop Pump Station will have sufficient capacity to accommodate the additional wastewater generated by the development.

See attached Annexure B indicating existing services in the vicinity of the site.

4 Stormwater

The site has a fairly steep slope gradient, increasing towards natural drainage lines. There is no existing stormwater infrastructure near the proposed development. The upstream runoff and generated stormwater runoff from the proposed development will have to be conveyed by means of both an underground system as well as an overland flow system. Details regarding the proposed stormwater infrastructure, is described in the Stormwater Management Plan.

See attached Annexure C indicating existing services in the vicinity of the site.

5 Access Roads

Access to the proposed development is currently obtained from the existing intersection of PW Botha Boulevard and Ossie Urban Street and the access road to the existing electrical sub-station. Details regarding access have been investigated and discussed in a Traffic Impact Study conducted by Urban Engineering (Report Number 22-158_TIA, Revision (1), dated February 2025).

6 Solid Waste

Refuse removal will be dealt with once a week as applicable to all the current residential and business/ industrial areas within the George Municipal area.

The type of waste categories generated by the industrial, business and commercial waste is currently unknown and the volumes of solid waste generated by the proposed development will therefore be calculated once more details are available. Solid waste is generally based on an estimated 1.29 kg/person/day.

Discussions with the George Municipality's Community Services Department will be required to confirm whether the existing solid waste site will be able to accommodate the additional solid waste generated by the development.

7 Floodlines

This proposed development is not directly affected by any Floodline. Feedback from the George Municipality's Civil Engineering Services Department, indicated that floodlines have been delineated for the Rand Street extension and are currently being reviewed. The intention is that the impact of this development on the flood lines should be considered as part of the study.

8 Standard of Engineering Services to be provided

Levels of services are as follows:

8.1 Sewer

- Pipe diameter: UPVC Class 34, SANS 791, minimum 160mm diameter solid wall for main lines and 110mm solid wall for individual unit connections where required.
- Prefabricated Fibre cement shafts or concrete manhole rings to be used for manholes.
- Concrete to be protected against biogenic corrosion, especially where industrial effluent is discharged to the sewer system. Options that will be considered for biogenic corrosion includes HDPE-lined manholes and/or chambers including the soffit of the lid, or cementitious products (such as SewperCoat®), a calcium aluminate mortar solution for protecting or rehabilitating wastewater from H₂S biogenic corrosion.

8.2 Water

- UPVC Class 9/12 pipes depending on residual pressure.
- Each erf will be serviced with a 20mm diameter connection and a Kamstrip Ultrasonic Smart water meter in a plastic meter box or similar approved meter by the Technical Services Directorate. (To be confirmed with the Operational Department).
- Provision is made for fire hydrants according to design guidelines.
- All fire hydrants shall be 65 mm diameter (internal)
- All fire hydrant outlet shall be of bayonet coupling type. (To be confirmed with the Fire Department).
- All valves shall be AVK type valves – left hand/closing or similar approved.
- Provision is made for a bulk water meter at the connection point.

8.3 Roads and stormwater

- The access road width will be 6.0m minimum.
- Class 3 and Class 4 roads will have an asphalt surfacing.
- Subgrade, sub-base and base materials will be imported.
- Sub-surface drainage, where applicable, will be installed.
- The underground piped stormwater drainage system will be minimum 450mm diameter.
- Combination kerbs, CK5 will be provided on the low side of all roads to drain stormwater towards catch pits;
- Mountable kerb, MK10 will be provided on the higher side of the roads;
- Barrier kerbs, BK2 and Channel, C1 will be installed around bell mouths. Bellmouth radiuses will be a minimum of 6m.
- All stormwater drains will be provided with a sand trap of at least 500mm.
- Low water drifts to be utilised at natural watercourses to accommodate overland flow.

8.4 Design Criteria and Standards

8.4.1 Design criteria

The following documents will serve as a base for the detail design criteria and standards:

- The Neighbourhood Planning and Design Guide (“Red Book”); and
- City of Cape Town Management of Urban Stormwater Impacts Policy – Version 1.1, 2009.
- George Municipality Minimum Standards for The Design of Civil Engineering infrastructure.

8.4.2 Construction specifications

All materials and workmanship shall comply with the specifications as set out in the South African National Standards for Civil Engineering (SANS).

8.4.3 Roads

The road system forms an integral part of the local area plan.

8.4.3.1 *Design Criteria*

The design criterion for roads is as follows:

- Design life – 20 years.
- Subgrade CBR – 15 to 20.
- Subbase CBR – 45minimum (processed crushed stone)
- Base course CBR – 80minimum (processed crushed stone)
- Surfacing – 80mm interlocking concrete paving/ Cape Seal
(To be confirmed with the Roads and Stormwater Department).
- Minimum road grade – 0.5 % Longitudinal
- Minimum Crossfall – 2.00 %

8.4.4 Stormwater

The following references will be used as a basis for the design of the stormwater network:

Standards and Guidelines for Roads and Stormwater of the City of Cape Town (Version 3, February 2022)

The storm water system forms an integral part of the road and urban planning layout. The system rests on three legs, the minor system, the major system and an emergency system. The minor storms are catered for in the pipe system while the major storms are routed through a linked system of roads and public open spaces using attenuation techniques. The emergency system recognizes failure of the minor and major system by storms greater than provided for in major system or in the event of malfunction of the minor system by providing continuous overland flow routes to minimize flooding of residential areas.

8.4.4.1 Minimum design criteria for stormwater system

The data to be used for the design of the system is as follows:

- Minor system : 5-year return period conveyed in an underground pipe system. Preferably the overland flow shall not exceed a depth of 200m.
- Major system : 50-year return period. The difference between the 2 year and 50 year to be conveyed in the road prism with a flow depth not exceeding 150mm within the road reserve width.
- The minimum gradients for pipelines are designed to give a minimum velocity of 0.7m per second with the pipe flowing full.
- The maximum velocity shall be 3.5m per second.
- Major stormwater overflows are to be provided to convey the excess storm water from the streets into designated public open spaces.
- Stormwater flow velocities in roadways will be kept as low as possible and related to the surface finish to prevent scour and erosion.
- Roads will be graded to ensure free and continuous flow to the main stormwater system and to prevent localized ponding at intersections.

8.4.4.2 Pipelines/Culverts

- Storm water pipes are generally 50D, 75D or 100D as required by the loading and installation conditions.
- Pipes are generally laid on Class C bedding.
- The minimum cover on pipes will be 0.80m.
- The minimum pipe diameter will be 450mm for longitudinal runs and catch pit connections.
- Box culverts will be class 75S, 100S or 150S depending on the span.

8.4.5 Sewers

The sewer drainage system forms an integral part of the sewage system. The drainage for the site is towards the Outeniqua Wastewater Treatment Works through the existing gravity sewer network within the development, as described in Item 3.

8.4.5.1 Minimum design criteria

- A conventional waterborne sewerage system is provided with a single connection. The main sewer line will be constructed within open areas on the site, topography dependent.
- Design parameters : Average daily flow – As calculated
: Peak factor – As calculated
: Extraneous flow – 30 %
: Minimum velocity – 0.7m per second
- Minimum cover to pipes : 0.80m
- Minimum pipe size : 110mm diameter for unit connections
: 160mm diameter for sewer mains
- Minimum gradients : 110mm diameter unit connection @ 1:150 (main lines)
: Main lines at 80% capacity as follows:

No. of Units	Grade
Less than 6	1:80
6 to 10	1:100
11 to 80	1:120
81 to 110	1:150
111 to 130	1:180
More than 130	1:200

- Maximum manhole spacing of 80m.

8.4.5.2 Pipelines

- Pipeline material for pipe sizes up to 160mm diameter. UPVC Class 34 complying with SABS.
- Pipes are generally laid on Class C bedding.

8.4.5.3 Manholes

- Dolomitic aggregate and low alkali sulphate resistant cement to SABS 471 shall be used for all concrete, mortar or screed.
- Manhole cover to be central over main pipe on downstream side.
- Manhole covers and frames to be polymer concrete.
- Concrete to be protected against biogenic corrosion, especially where industrial effluent is discharged to the sewer system. Options that will be considered for biogenic corrosion includes HDPE-lined manholes and/or chambers including the soffit of the lid, or cementitious products (such as SewperCoat®).

8.4.6 Water

The water reticulation network forms an integral part of the water distribution system.

8.4.6.1 Minimum design criteria

- The Neighbourhood Planning & Design Guide: Section J – Water Supply (Red Book 2019)
- George Municipality Civil Engineering Services: Civil Engineering Standards & Requirements for Services (Updated January 2009)
- Peak factors for the development calculated in accordance with the “The Neighbourhood Planning and Design Guide: Section J – Water Supply (Red Book 2019)
- Minimum pressures for the network are calculated for the fire flows of 15ℓ per second and peak demand at the point of lowest pressure under peak flow conditions.
- Minimum cover to pipe to be 0.8m.
- Minimum house connection size to be 25mm diameter HDPE.
- Minimum pipe size to be 75mm diameter uPVC.

8.4.6.2 Pipeline materials

- uPVC Class 16 heavy duty pipes complying to SABS 966
- Erf connection – HDPE Class 16 type 5 complying to SABS 533

8.4.6.3 Isolating Valves

- Valves to be placed such that a maximum of 4 valves need to be closed to isolate a section of pipeline.
- Valves to be spaced so that the length of main included in an isolated section does not exceed 600m.
- All valves to be installed at splays where applicable and not within the road surface.
- All valves shall be in accordance with SABS 1200 / SABS 664/1974 and approved by the relevant department head.
- Valves shall be clockwise opening / left hand closing.
- Direction of opening to be clearly marked on the valve body or spindle cap.
- All valves shall be heavy duty, class 16.
- All valves shall have non rising spindles.
- All valves shall be fitted with cast iron cap, secured with retaining bolts.
- All valve belltobies shall be polymer concrete as per AV Moulding, concrete, recycled plastic or cast iron depending on area and relevant condition.
- Only valves supplied with minimum thickness of 225 micron Copon EP 2300 epoxy paint allied to all internal surfaces after it has been thoroughly cleaned by grit blasting to SA ½ finished in compliance with the requirements of SIS 05 90 00 or valves with similar approved coatings, will be accepted.
- Isolating valves shall be placed in brick chambers.

8.4.6.4 Fire hydrants

- Fire hydrants are to be spaced at a maximum of 120 m.
- All fire hydrant types shall be in accordance with SABS 1200, comply with the local Fire Department standard regulations, and approved by the relevant department head.
- All fire Hydrants shall be 65 mm diameter (Internal).
- Outlets shall be London round thread with loose cap and securing chain.
- Hydrant spindles shall be provided with cast iron caps, secured with retaining bolts.
- Hydrants shall be clockwise opening / left hand closing.
- Hydrant covers shall be polymer concrete as per AV Moulding, concrete recycled plastic or cast iron depending on area and relevant conditions.
- All hydrants shall be supplied installed complete with flanged CI extension piece complete with cadmium plated nuts and bolts to ensure depth not greater than 400mm.

8.4.6.5 House connections

- House connections shall be installed as indicated on drawing no CES/W3 as part of new developments.
- SABS approved Ball Cocks, Gate valves or Ferrules shall be installed on the main water pipe.
- All cast iron saddles to be wrapped with Denso tape.
- Marker posts shall not be installed as house connections will be swapped from the old reticulation to the new reticulation.

8.4.6.6 Fittings and specials

- Fittings and specials shall be manufactured from SS304L pipe with SS316L flanges with either a FBE coating or two-pack epoxy inside and out for corrosive soil conditions.
- uPVC fittings and specials shall be class 16, fitted with spigot and socket rubber ring joints and shall comply with the relevant requirements of SABS 966.
- Only stainless-steel bolts and nuts to be used on all underground saddles, flanges, short collar couplings, etc.
- All bolts and flanges shall be denso wrapped for corrosion protection.
- All pipe fittings (Valves, Hydrants and scour valve, beds) shall have thrust blocks.
- 90° bends will be avoided as far as possible and a combination of two 45° degree bends will be utilised.

8.4.6.7 Road Crossing and Reinstatement

Road crossings for the main reticulation as well as house connections will be constructed by means of conventional trench excavation. Road crossings will be reinstated with the following layerworks:

- 40 mm Continuously Graded Asphalt
- 150 mm G2 base compacted to 98% MOD AASHTO.
- Subbase in 150 mm layers from top of bedding to underside of base consisting of G5 material compacted to 95% MOD AASHTO.

Directional drilling and/or moling will be considered for the installation of long house connections beneath the road surface as well as the main reticulation. This is proposed to reduce damage to the existing asphalt road surfacing but will be dependent on the prevailing ground conditions.

9 Conclusion

From the information available, it appears that sufficient capacity exists within the existing infrastructure services to support the proposed development.

However, confirmation will be required by George Municipality, for the following:

- Ad-hoc studies by GLS to confirm whether the existing water and sanitation infrastructure and distribution networks will have sufficient capacity to accommodate the development;
- Confirmation from the Fire Department on the type of fire hydrants and coupling type;
- Confirmation from the Water Services Operational Department on the type of water meter to be allowed for;
- Confirmation from the Roads and Stormwater Department on the surfacing of internal roads; and
- Confirmation from the Directorate: Community Services in terms of solid waste removal and land fill capacity.

We trust that sufficient detail has been provided to enable you to decide regarding the way forward. However, should any additional information be required, or if you wish to discuss this recommendation with us, please do not hesitate to contact us.

Annexure A

Water: Existing Services Layouts





200 - 250mm
dia PVC pipe

Source: George Municipality's GIS Viewer for Consultants
Existing water services

Annexure B

Sewer: Existing Services Layouts





Source: George Municipality's GIS Viewer for Consultants
Existing sewer services

Annexure C

Stormwater: Existing Services Layouts



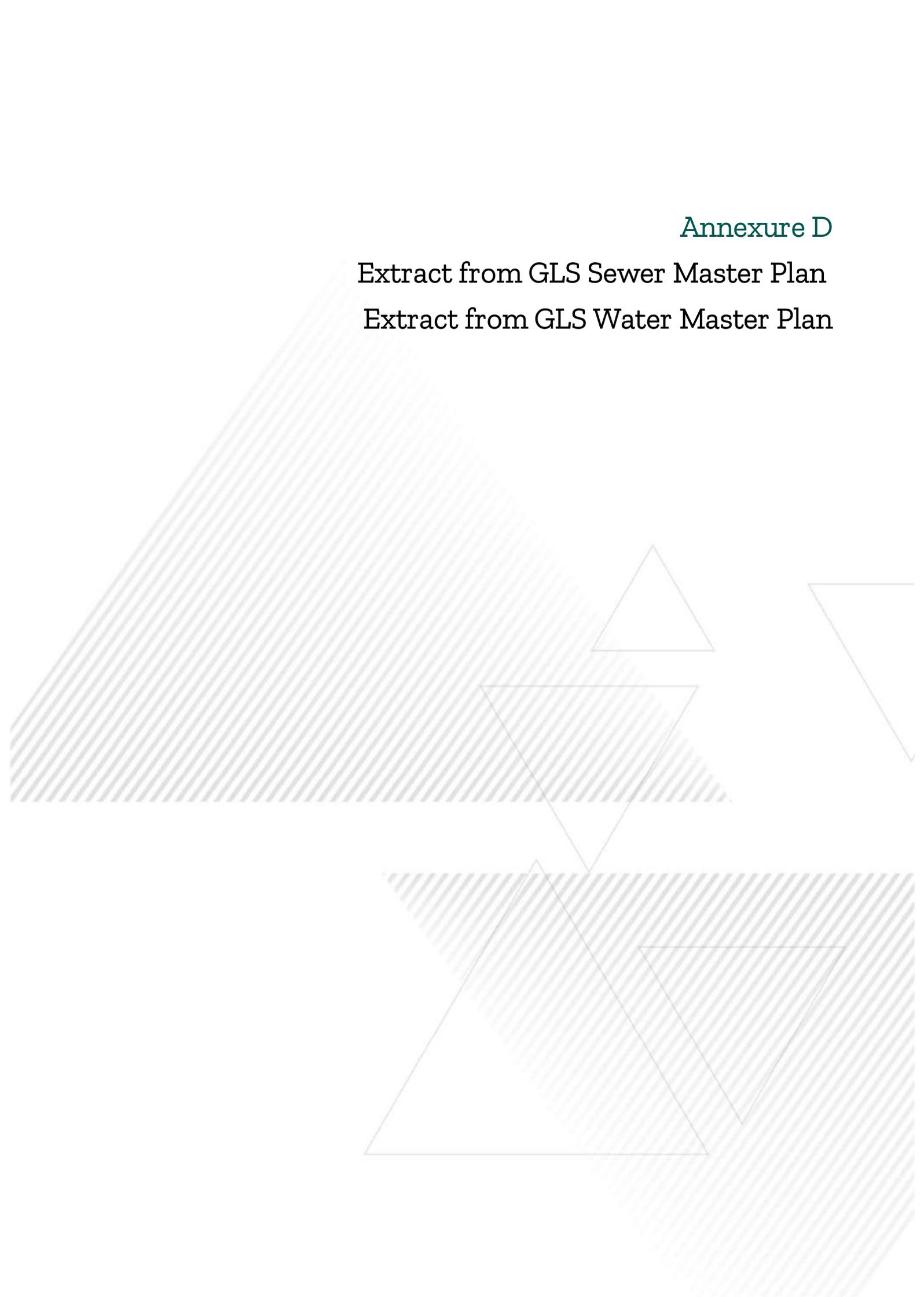


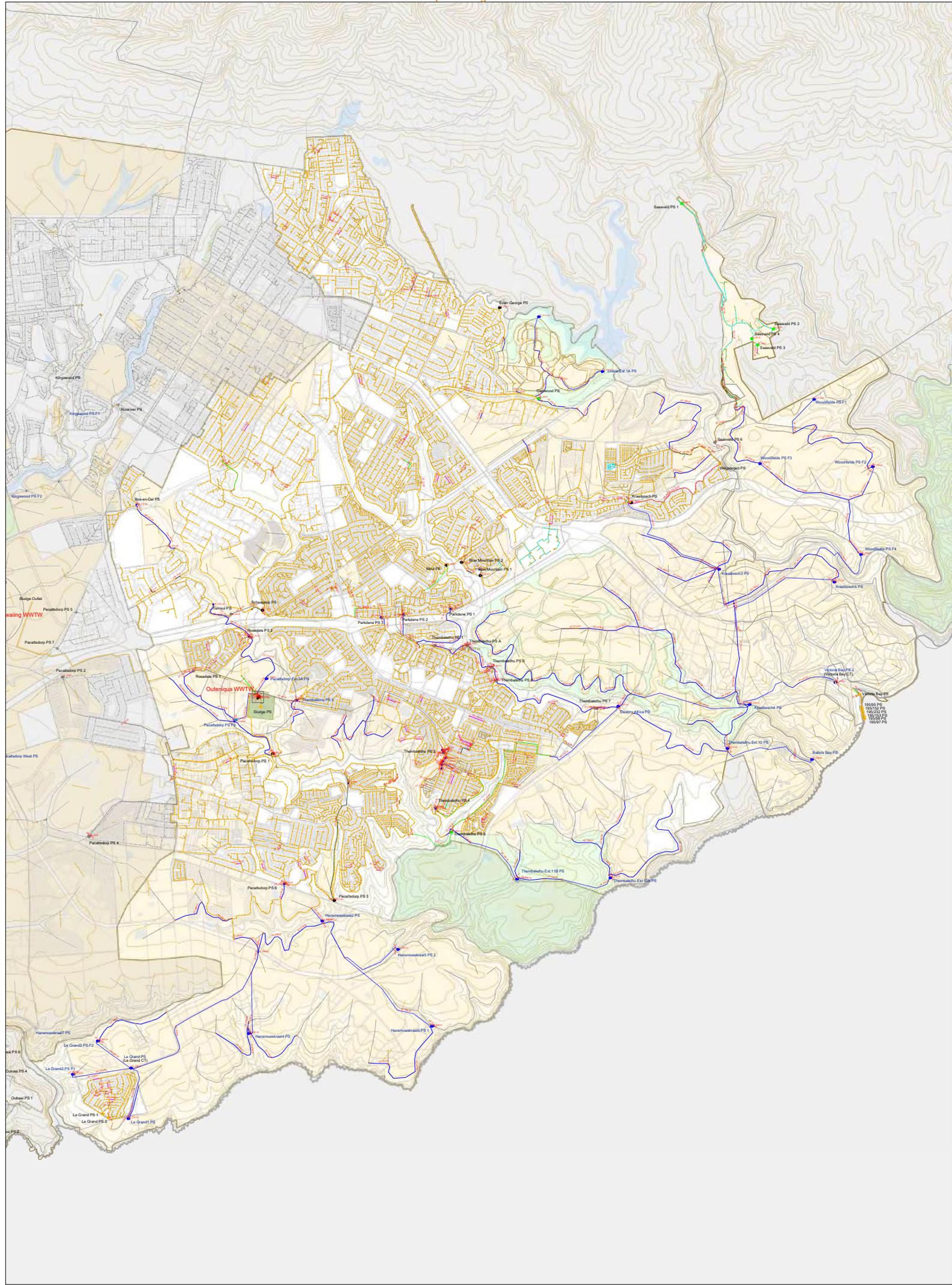
Source: George Municipality's GIS Viewer for Consultants
Existing stormwater services

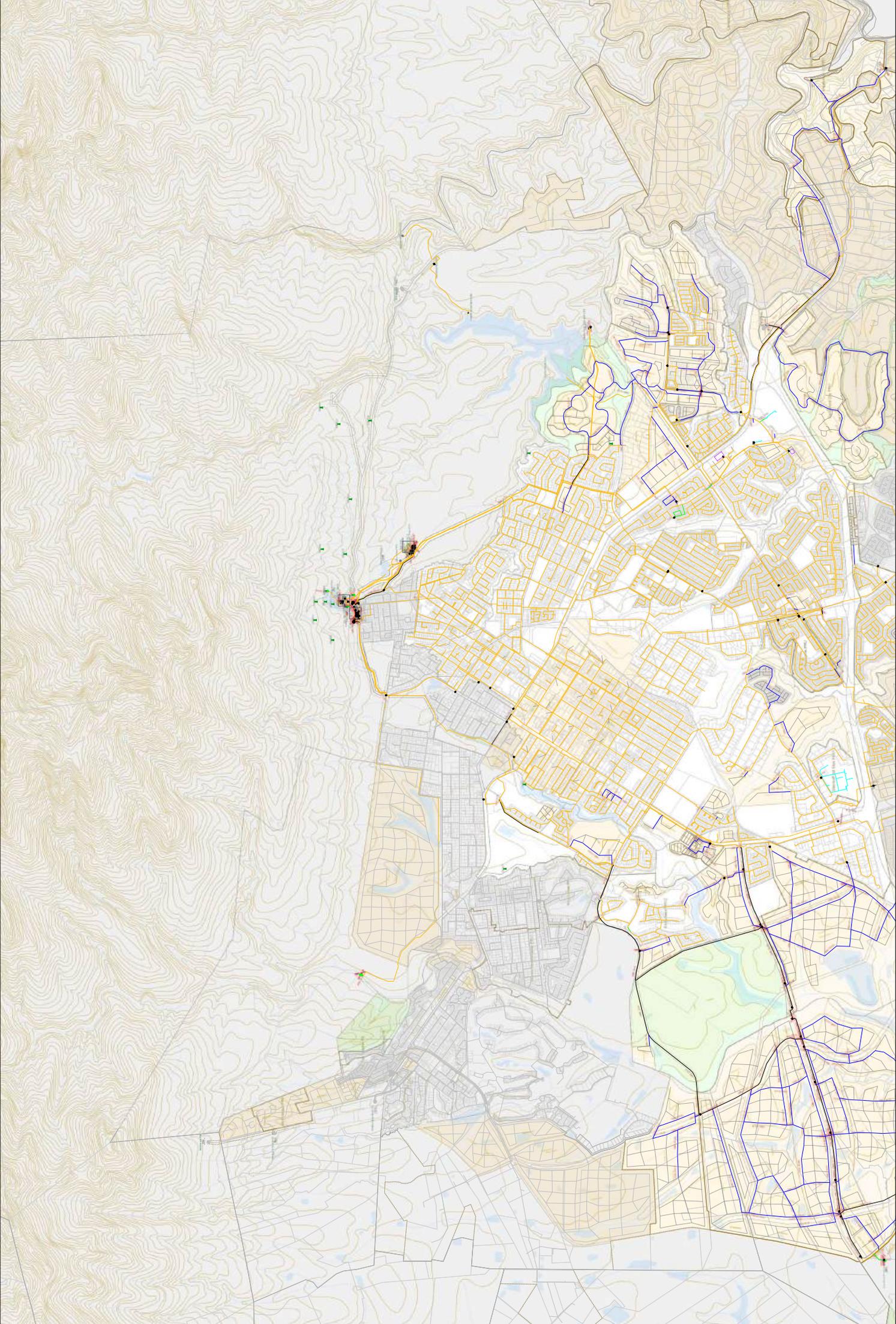
Annexure D

Extract from GLS Sewer Master Plan

Extract from GLS Water Master Plan











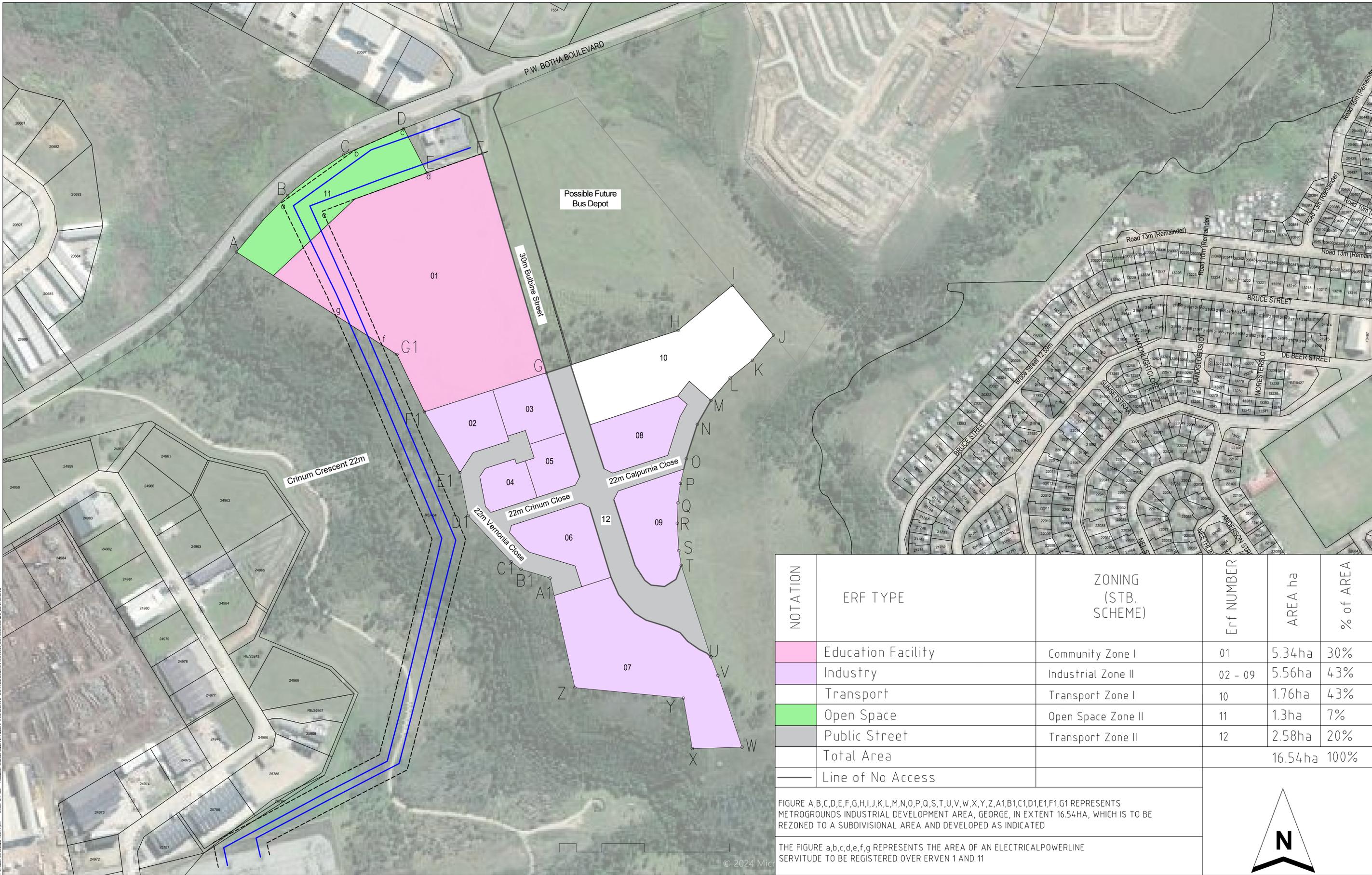
Legend:
 Bulk Mains
 Reticulation Mains
 Service Lines
 Water Bodies
 Green Spaces
 Contour Lines
 Street Grid
 Property Boundaries
 Other Infrastructure

Project Title: Bulk & Retic - George main zone 2020-06
 Issue Date: July 2020
 Sheet Date: July 2020

Annexure E

Conceptual Development Framework Layout





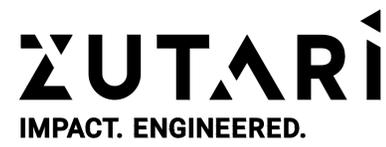
NOTATION	ERF TYPE	ZONING (STB. SCHEME)	Erf NUMBER	AREA ha	% of AREA
	Education Facility	Community Zone I	01	5.34ha	30%
	Industry	Industrial Zone II	02 - 09	5.56ha	43%
	Transport	Transport Zone I	10	1.76ha	43%
	Open Space	Open Space Zone II	11	1.3ha	7%
	Public Street	Transport Zone II	12	2.58ha	20%
Total Area				16.54ha	100%
	Line of No Access				

FIGURE A,B,C,D,E,F,G,H,I,J,K,L,M,N,O,P,Q,R,S,T,U,V,W,X,Y,Z,A1,B1,C1,D1,E1,F1,G1 REPRESENTS METROGROUNDS INDUSTRIAL DEVELOPMENT AREA, GEORGE, IN EXTENT 16.54HA, WHICH IS TO BE REZONED TO A SUBDIVISIONAL AREA AND DEVELOPED AS INDICATED

THE FIGURE a,b,c,d,e,f,g REPRESENTS THE AREA OF AN ELECTRICALPOWERLINE SERVITUDE TO BE REGISTERED OVER ERVEN 1 AND 11



File Name: C:\Users\LEANA\OneDrive - ZUTARI\Documents\250909_METROGROUNDS_ZONING.DWG



CLIENT

DISCLAIMER
IF CONSTRUCTION DRAWINGS ARE ISSUED UNSIGNED, THE MASTER SIGNATURE OF APPROVAL WILL BE HELD AT THE ZUTARI OFFICE OF THE APPROVER

REV	DATE	REVISION DETAILS	APPROVED
B	2/12/2024	Layouts adjusted to exclude environmental sensitive areas	R Schroder
C	3/12/2024	Overhead Powerlines added and layout amended	R Schroder
D	14/1/2025	High and Medium Voltage lines added from Client Information	R Schroder
E	15/5/2025	Inclusion of stormwater servitude	R Schroder
F	27/08/2025	Amended Layout to include realignment of Rand Street Extension	R Schroder
G	02/09/2025	Realignment of entrance and central road	R Schroder
H	03/09/2025	Site boundary adjustment. Change from Industry I to II	R Schroder
I	30/10/2024	Portion of road in front of Bus Depot removed	R Schroder

SCALE	SIZE
1 : 2000	A1
DRAWN	Z Mhlongo
DESIGNED	A Florence-Brander
REVIEWED	R SCHRODER

PRELIMINARY NOT FOR CONSTRUCTION

APPROVED

DATE

R Schroder

PROJECT	METROGROUNDS: INDUSTRIAL DEVELOPMENT					
TITLE	Zoning Drawing					
DRAWING No.	PROJECT No.	WBS	TYPE	DISC	NUMBER	REV
	1002372	0000	DRG	CC	0001	H

In diversity there is beauty and
there is strength.

MAYA ANGELOU

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ZUTARI (Pty) Ltd.

ELECTRICAL SERVICES REPORT

FOR

**PROPOSED METROGROUNDS INDUSTRIAL DEVELOPMENT
ON PORTION OF REMAINDER ERF 464, GEORGE**

REPORT NO: G/19519/R1

Dated: 24 February 2025

Prepared by:

ClinkScales Maughan-Brown (South) (Pty) Ltd.

39 Victoria Street

GEORGE

6529

Contact: R. Steenekamp

Tel. No. 044-8741511



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1.0 **INTRODUCTION**

This report has been prepared by Clinkscales Maughan-Brown (CMB) at their George office, who have been appointed by Messrs Zutari (Pty) Ltd, as the Electrical Consultants for this project. The purpose of this report is to provide the necessary information on the proposed electrical services within this Development and the connection to the existing municipal network in the area in order to obtain all the necessary statutory approvals.

2.0 **LOCATION**

The property to be developed is a portion of the Remainder of Erf 464 situated between PW Botha Boulevard and the N2 National Road in George, as indicated on Drawing No. 19519/E/01 which is attached as Annexure A. The proposed development consists of an education facility erf (5.21ha) and 19 light industrial erven (8.33ha in total). This will be an open development with public street access to all erven.

3.0 **SUPPLY AUTHORITY**

The Supply Authority for the area is George Municipality, and therefore their Electricity Department was consulted on matters related to the electrical services.

4.0 **BASIS OF REPORT**

The report is based on the following:

- (i) Site development Drawing No. 1002372 Rev D prepared by Messrs Zutari.
- (ii) Information obtained from Mr. Danie Greeff from George Municipality's Electricity Department, during meeting held on 5 February 2025.
- (iii) General information received from the Client and other members of the professional team.

5.0 **DEMAND**

Based on the information currently available, the peak kVA demand of the Development has been estimated at 1875kVA, as detailed in Annexure B.

The following objectives will be set to reduce the impact on the municipal network and national grid:

- Comply with SANS 10400.
- Energy efficient light fittings, air conditioning, mechanical ventilation, refrigeration and water heating installations, electric motors, etc.
- Use of energy efficient appliances.
- Building and plant load management systems to reduce power consumption.
- Installation of Photo Voltaic (PV) and other Small Scale Embedded Generators (SSEG), where it can be economically justified. These installations must be registered with and approved by George Municipality's Electricity Department.

6.0 **AVAILABILITY OF CAPACITY**

The capacity required is estimated at 1875kVA. It is assumed that this capacity is available at the identified point of connection.

The proposed development is situated immediately adjacent to the existing Tamsui 66/11kV Substation. The firm transformer capacity at this substation is 20 000kVA. Based on the maximum demand readings taken by the Municipality at this substation the maximum load at present is approximately 15 000kVA, which indicates that some spare capacity should be available.

As part of the environmental approval process, a letter of confirmation on the availability of capacity is normally required from the Supply Authority.

7.0 **POINT OF CONNECTION**

The identified point of connection for the development is at the existing 11kV busbars inside the Tamsui Substation Switchroom.

The proposed connection will include the supply and installation of the following, as indicated on the drawing:

- Two 11kV feeder circuit breakers inside the existing switching station building to supply the development.
- 185mm² Cu x 3 core 11kV underground ring cable from the abovementioned circuit breakers supplying the internal network.

8.0 **BULK AND LINK SERVICES**

It is envisaged that the Developer will not be required to provide any bulk or link services.

9.0 **INTERNAL SERVICES**

It is proposed that the Municipality take-over the entire electrical network on completion thereof. The Municipality will become the owner and be responsible for operating and maintaining same. For this reason, the installation would have to comply with their technical requirements and supply conditions.

The Point of Supply for each of the erven could be at MV (11000V) or low voltage (LV) depending on the size of the supply to the erf. It is envisaged that the majority of the erven will be supplied at LV and that the consumption will be metered inside LV distribution kiosks located in the road reserve. For supplies greater than 500kVA an 11kV ring main unit and bulk metering unit will be provided on the erf boundary to supply the erf. Each consumer will have to enter into a separate supply agreement with the Municipality.

All cables and electrical equipment upstream from the metering point will be installed in servitudes, road reserves and open spaces and will be accessible to the Municipality at all times.

Streetlights will be provided along public roads in accordance with the municipal standards.

There are two existing 66kV municipal overhead lines and three existing 11kV overhead lines / underground cables that runs across portions of the development property, as indicated on the drawing. The existing 66kV overhead lines will remain in position and the necessary servitudes be registered for same. The existing 11kV overhead lines will be replaced with underground cables and relocated to be inside servitudes or road reserves.

10.0 **TECHNICAL PARTICULARS**

All drawings and specifications of the proposed network must comply with the Municipality's technical requirements and must be submitted to them for official approval before any construction can commence.

The 11kV switchgear to be installed inside the existing 11kV switchroom at Tamsui Substation will be the metal-enclosed, indoor, type to match the existing.

The 11kV cable type will be the paper insulated, lead covered with three stranded aluminium conductors, Table 17.

The distribution substations will be the fully enclosed miniature type housing a 11kV ring main unit of the ABB, Lucy Aegis+ or similar type, 11kV/420V transformer and low voltage (LV) distribution equipment and street lighting control equipment.

The Low Voltage (LV) network will be underground cables and ground mounted distribution kiosks. The LV cable type will be PVC insulated, PVC bedded, galvanised steel wire armoured 600/1000V with four copper or aluminium conductors. The LV distribution kiosks will be polyethylene type with doors both front and back.

The LV bulk kWh/kVA consumption meters will be the Landis & Gyr type and must have the ability to be remotely read from the electrical department's offices.

Space provision only will be made in kiosks. Meters will be installed by the Builder's Electrician when the buildings are constructed.

Underground service cables will be installed from the kiosks up to 1 meter inside each individual erf boundary, except for those erven situated immediately adjacent to the metering kiosk or the miniature substations. At this point a 1 meter coil of cable will be buried below ground level and marked for future extension and connection by the Builder's Electrician.

The building's internal electrical installation and earthing will be the responsibility of the Builder's Electrician. The earthing system will be the TN-C-S system in terms of SANS 10292:2013 Edition 2.

Public road streetlights will be the municipal standard luminaire mounted on a galvanised steel pole.

The internal network will be designed so that any internal faults do not cause nuisance tripping of the upstream municipal network.

No switching of supplies or work in close proximity of existing cables / overhead lines will be carried out without prior arrangement with the Municipality's electrical department. The Electrical Contractor will also be required to liaise with the Municipality's civil department and communication service provider/s to ensure that no damage is caused to existing underground piped services during construction.

11.0 **ENVIRONMENTAL REQUIREMENTS**

All work will comply in all respects with the relevant environmental management requirements.

12.0 **PROGRAMME**

It is expected that construction of services will commence soon after all the necessary approvals have been received and the feasibility has been accepted.

It is expected that the total peak demand of the development will be reached over a period of between 1 and 10 years.

13.0 **CAPITAL COSTS**

- (i) The Developer will be responsible for the supply, installation and commissioning of the complete internal network and connecting to the existing network as described above.

- (ii) The Developer will be responsible for the relocation of the existing 11kV overhead lines and underground cables as described above.
- (iii) The Developer will be responsible for payment of the standard municipal development charges towards bulk electrical infrastructure. The level at which the Development connects in the shared network, and thus its contribution to shared networks, must be taken as HV/MV. Based on provisional calculations done the 2024/25 charges, the estimated DC amount is $1875\text{kVA} \times \text{R}3\,738 \text{ per kVA} = \text{R}7\,008\,750$, excl. VAT.

All work will be done under the direction of the Developer's Electrical Consultant, i.e. Messrs Clinkscapes Maughan-Brown, and by an Electrical Contractor to be approved by the Developer and the Municipality.

14.0 **CONCLUSION**

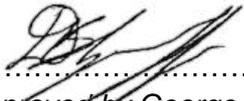
We trust that this information is sufficient to obtain the necessary statutory approvals for the development.

Please contact the writer should more information be required.

In order to speed-up the process, we will also forward a copy of this report directly to the Municipality's electrical department, for their approval and any further comments they may have.



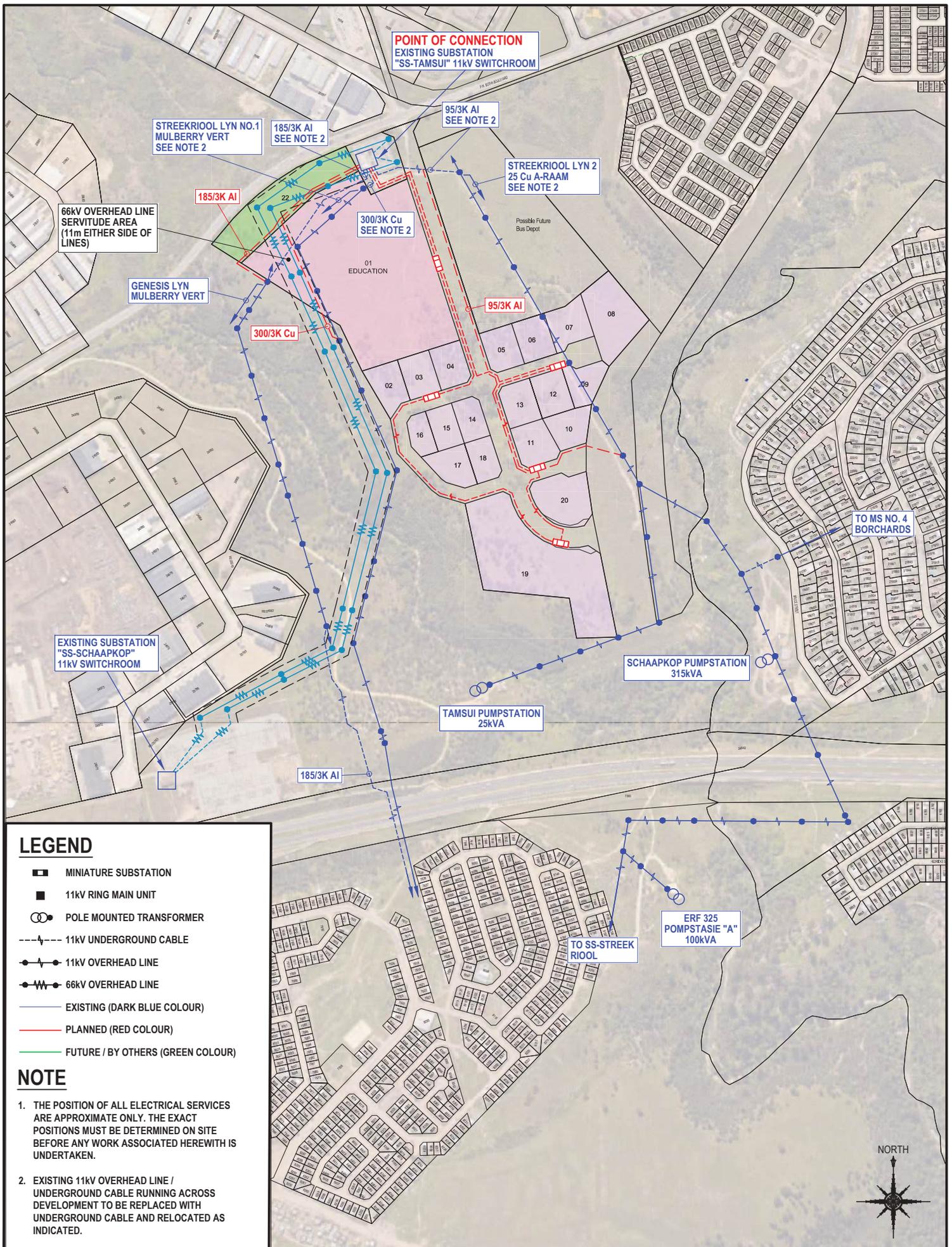
R.L. Steenekamp Pr Eng Pr CPM
CLINKSCALES MAUGHAN-BROWN

..... <i>Approved by Developer</i> <i>Name</i> <i>Date</i>
  <i>Approved by George Municipality Electrical Department</i> Danie Greeff <i>Name</i> 27 Feb 2025 <i>Date</i>

---ooo0ooo---

ANNEXURE A

Drawing No: 19519/E/01 – Plan Layout of Proposed Main Electrical Supply.

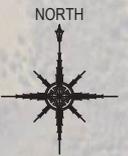


LEGEND

- MINIATURE SUBSTATION
- 11kV RING MAIN UNIT
- POLE MOUNTED TRANSFORMER
- 11kV UNDERGROUND CABLE
- 11kV OVERHEAD LINE
- 66kV OVERHEAD LINE
- EXISTING (DARK BLUE COLOUR)
- PLANNED (RED COLOUR)
- FUTURE / BY OTHERS (GREEN COLOUR)

NOTE

1. THE POSITION OF ALL ELECTRICAL SERVICES ARE APPROXIMATE ONLY. THE EXACT POSITIONS MUST BE DETERMINED ON SITE BEFORE ANY WORK ASSOCIATED HEREWITH IS UNDERTAKEN.
2. EXISTING 11kV OVERHEAD LINE / UNDERGROUND CABLE RUNNING ACROSS DEVELOPMENT TO BE REPLACED WITH UNDERGROUND CABLE AND RELOCATED AS INDICATED.



No.	DATE	DRAWN	DESCRIPTION
REVISIONS			

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CLIENT
ZUTARI (PTY) LTD

PROJECT
METROPOLENS INDUSTRIAL DEVELOPMENT ON PORTION OF REMAINDER ERF 464, GEORGE

DRAWING TITLE
PLAN LAYOUT OF PROPOSED MAIN ELECTRICAL SUPPLY

DRAWN MvM	DESIGNED RLS	CHECKED RLS	APPROVED
SCALE 1:5000	DATE 21/01/2025	CAD REF No. 10606-E-01	DWG-SIZE A3
DRAWING NO 19519/E/01			REVISION

ANNEXURE B

Electrical Load Estimate

Erf No.	Zoning	Unit	Number / Size	ADMD kVA per unit	Coverage *	kVA at Transformer LV busbar	Network factor **	ADMD kVA impact on shared network
EXISTING RIGHTS								
RE 464	Undetermined Use Zone	Unit	-	0.00	1.00	0	1.00	0
						0		0
PROPOSED RIGHTS								
RE 464	Community Zone I (Education Facility)	m ²	52 100	0.04	0.60	1250	0.50	625
RE 464	Industrial Zone I (Light Industrial)	m ²	83 300	0.04	0.75	2499	0.50	1 250
						3749		1 875
	New capacity					3 749		1 875
* Coverage is used in calculation instead of FAR due to typical development in area and network circumstances.								
** Diversity between various loads downstream from the Point of Connection to calculate the development contributions.								

TRAFFIC IMPACT INVESTIGATION

**PROPOSED METRO GROUNDS
INDUSTRIAL DEVELOPMENT**

Report Number 22-158_TIA



Date: November 2025

Revision (2)

QUALITY ASSURANCE DATA

Report Title:	PROPOSED METRO GROUNDS INDUSTRIAL DEVELOPMENT
Client:	Zutari
Report Number:	22-158_TIA
Revision Number	Revision (2)

Revision History

Date	Rev	Written By	Issued to		Distribution
			Name	Institution	
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2024-07-24	0	Frans v Aardt	Rudolf Schröder	Zutari	Email (.pdf)
2025-02-24	1	Frans v Aardt	Rudolf Schröder	Zutari	Email (.pdf)
2025-11-21	2	Frans v Aardt	Rudolf Schröder	Zutari	Email (.pdf)

Written by:

Frans R van Aardt (B.Eng, M.Eng, Pr.Eng)
On behalf of Urban Engineering (Pty) Ltd

EXECUTIVE SUMMARY

This report presents a Traffic Impact Assessment (TIA) conducted by Urban Engineering (Pty) Ltd, commissioned by Zutari, for the proposed Metro Grounds industrial development on the remainder of Erf 464 in George. The assessment aims to evaluate and advise on the proposed internal road network, focusing on planning aspects such as road layout, road reserve widths, intersection spacing, and forms of control, to ensure functionality, connectivity, and access.

1. Site Description:

- Located at the intersection of PW Botha Boulevard and Ossie Urban Street, the site is largely undeveloped.

2. Surrounding Road Network:

- PW Botha Boulevard is classified as a Class 3 District Distributor
- Ossie Urban Street is classified as a Class 5 Access Road.

3. Historical and Existing Conditions:

- Previous traffic studies conducted in 2011, 2015, and 2021 provide context for the current assessment, highlighting the necessity for infrastructure improvements due to increased traffic volumes.

4. Key Issues Identified:

- Poor Shoulder Sight Distance (SSD) at the PW Botha Blvd/Ossie Urban Str intersection.

RECOMMENDATIONS

i. Intersection Upgrades:

- **PW Botha Boulevard/Rand Street:**
 - Maintain as a signalized intersection instead of converting to a roundabout to improve safety and create a synchronized corridor with other signalized intersections.

ii. Intersection of PW Botha Boulevard/Ossie Urban Street:

- Upgrade to a signalized intersection to mitigate the lack of sufficient shoulder sight distance and enhance synchronization with surrounding traffic signals.

iii. Internal Road Network:

- Implement recommended intersection controls and driveway positions as per the provided layout plans to ensure maximum mobility.

iv. Pedestrian and NMT Provisions:

- Establish UA-compliant sidewalks next to all new internal roads and along PW Botha Boulevard. Cross sections to include a landscaped furniture zone to enhance pedestrian safety and enhance the aesthetic appeal of the kerbside environment.
- Include provisions for street lighting alongside new internal Metro Grounds roads to ensure safety and visibility at night.
- Make provision for clearly defined (preferably Class 1 but minimum Class 3) bicycle routes/lanes in all road cross sections. Road layouts should also make provision for safe bicycle crossing areas at intersections.

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LIST OF ABBREVIATIONS

GIZSBL	George Integrated Zoning Scheme By-Law
WCG	Western Cape Government
PGWC	Provincial Government of the Western Cape
AMG	Access Management Guidelines (2020)
RDE	Roadside Development Environment
UA	Universal Accessibility
NMT	Non-Motorised Transport
GLA	Gross Leasable Area
SATGRM	South African Trip Generation Rates Manual
CITP	Comprehensive Integrated Transport Plan
LOS	Level of Service
DoT	Department of Transport
MR	Main Road
DR	Divisional Road
RNIS	Road Network Information System
LILO	Left-In Left-Out
PWBB	PW Botha Boulevard
NMB	Nelson Mandela Boulevard

1 INTRODUCTION

Urban Engineering (Pty) Ltd was appointed by Zutari for the Traffic Impact Assessment pertaining to the proposed industrial development (referred to as Metro Grounds) on the remainder of Erf 464, George.

2 TERMS OF REFERENCE

Based on George Municipality's request for quotation (Reference: ToR Metro Grounds Industrial: Layout Review, Outline Services Report and TIA, Revision 9 dated 27 July 2022), the terms of reference are stipulated as follows:

“Traffic Impact Assessment: A traffic impact assessment for the purposes of the proposed Go-George bus depot was concluded (George Integrated Public Transport Network: Proposed Permanent Bus Depot on Part of Portion 464 George: Traffic Impact Assessment – Draft 2: 14 September 2021), which included references to the impact of the proposed industrial area. Working from the data contained in such report, if possible, a TIA to be done in respect of the proposed industrial development. The roads master planning context and/or the existing and proposed projects in the vicinity (wider context) of the site to be considered in the TIA in order to facilitate functionality, connectivity and access. Non-Motorized Transport and pedestrian movement to be enabled.”

3 OBJECTIVE OF THIS REPORT

This report aims to evaluate and advise on the proposed internal road network, focusing on planning aspects such as layout, road reserve widths, intersection spacing, layouts and forms of control. This report should be seen as a high-level road network planning tool. Road network planning is important when planning new developments because it can have significant impacts on the economy, society and health of the people living in and around the development area.

4 SITE DESCRIPTION AND LOCALITY

The site under consideration belongs to the municipality and comprises a part of the Remainder of Erf 464, George. The site is situated at the intersection of PW Botha Boulevard and Ossie Urban Street, roughly halfway between Nelson Mandela Boulevard and York Street. The site has approximate Latitude/Longitude coordinates of 33°59'21.34"S and 22°27'28.52"E. The site is mainly undeveloped except for an electrical substation situated at the entrance to the site. Photos taken during various site inspections between 2024 and 2025 are attached as **ANNEXURE A**.



Figure 4-1 - Site locality

5 THE SURROUNDING ROAD NETWORK

Depending on which guidelines are being used, the nomenclature used in road classification varies slightly. For ease of reference, the differences between the terms used in the 2006 Department of Transport (DoT) guidelines and those specified in 2018 in the Road Classification and Access Management Guideline (COTO), are listed below:

Road Class	Function	DoT 2006 Guidelines	COTO 2018 (TRH 26 Manual)
Class 1	Mobility	Primary Distributor	Principal Arterial
Class 2		Regional Distributor	Major Arterial
Class 3		District Distributor	Minor Arterial
Class 4	Access / Activity	District Collector	Collector Street
Class 5		Access Road	Local Street
Class 6		Non-motorised access way	Walkway

Table 5-1 - Road Classification Nomenclature

Roadways are classified by function on the basis of the priority given to land access versus through-traffic movement. Class 1 and 2 arterial roads provide a predominantly “mobility” function and Classes 4 and 5 roads perform a collector and local “access” function.

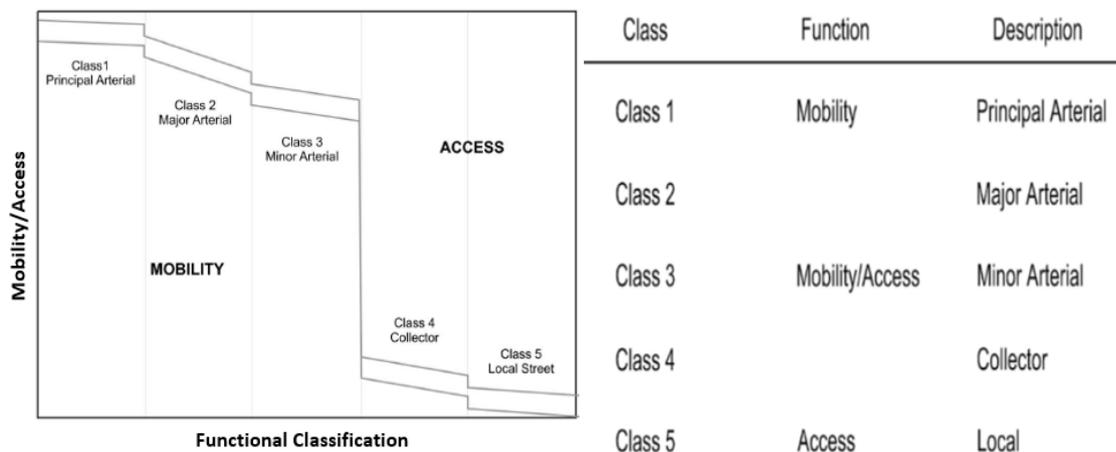


Figure 5-1 - Relationship Between Access and Mobility

The functions of ‘mobility’ and ‘access’ overlap on minor arterials (Class 3 roads). This relationship between access and mobility has been indicated schematically in Figure 5-1.

Access Management is particularly important along Principal, Major and Minor Arterials and other primary roads that are expected to provide safe and efficient movement of traffic as well as limited access to property. However, Access Management is also necessary on lower-order roadways, such as Collector - and Local Streets, to address safety considerations, such as sight distance and corner clearance.

As indicated in Figure 4-1, the site is situated at the intersection of Ossie Urban Street and PW Botha Boulevard. The current intersection layout makes provision for free-flow movement along PW Botha Boulevard, with stop control along the minor roads only.

The current layout of the intersection of PW Botha Boulevard and Ossie Urban Street can be seen in die aerial photos included as Figure 5-2 below.



Figure 5-2 - Intersection Layout

5.1 PW BOTHA BOULEVARD

5.1.1 ROAD CHARACTERISTICS

PW Botha Boulevard is approximately 3100m long and runs predominantly in an East/West direction, providing a transportation link between Nelson Mandela Boulevard (NMB) in the east and York Street (MR0002) in the west. The surfacing is mainly bitumen based (asphalt) but short sections of interlocking paving or concrete are present at high traffic intersections. The cross sections in the vicinity of the site consist of a 9.8m wide surfaced roadway with concrete kerbs and a grassed verge on both sides. Stormwater is diverted by a combination of open stormwater channels and formal pipe infrastructure. The section under consideration has a posted speed limit of 60 km/h. This speed limit increases to 80 km/h, downstream of the PW Botha/Ossie Urban Intersection (towards Nelson Mandela Boulevard).



Figure 5-3 – PW Botha Boulevard Photos

The site is situated next to the GO GEORGE Industria-CBD Bus route (refer to Figure 5-4). Formal sidewalks are provided in isolated positions next to the GO GEORGE bus stops, but in general insufficient provision for Non-Motorised Transport (NMT) has been provided and pedestrians and cyclist are forced to make use of the roadway which they share with passenger vehicles, busses and heavy vehicles.



Figure 5-4 - Intersection Layout

At the time of the 2025 revision to this report (Revision 2), the PW Botha Boulevard road upgrade was in its final stages of completion, and the road surface was in a very good condition as indicated in the photos below.



Figure 5-5 - PW Botha Surface Condition

5.1.2 ROAD CLASSIFICATION

Based on the George Roads Master Plan (Kantey and Templer, June 2006), PW Botha Boulevard is classified as a Class 3 District Distributor (refer to Figure 5-6).

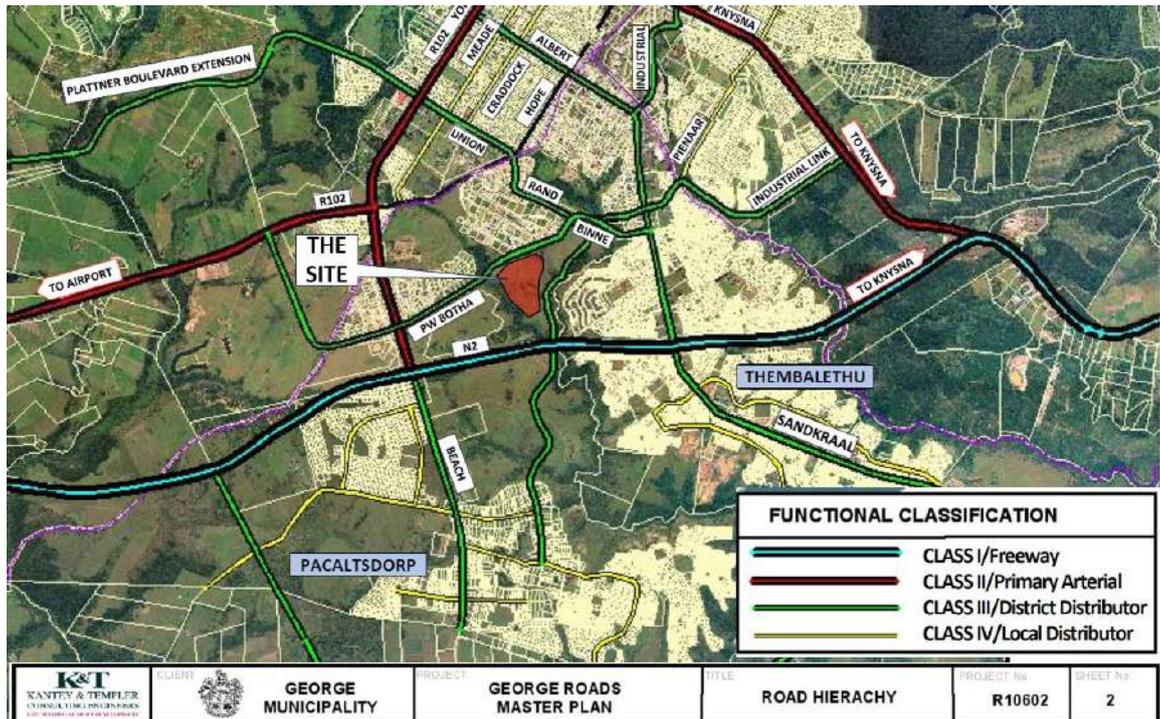


Figure 5-6 - George Roads Master Plan

The TRH 26 (SA Road Classification and Access Manual) defines Class 3 Minor Arterials as follows:

Class U3 Urban Minor Arterials

Urban minor arterials would typically be required to serve traffic in most urban areas, including small towns.

In cities and larger towns, the Class U3 arterials would be used to provide connections between districts of the city or town and form the last leg of the journey on the mobility road network, bringing traffic to within one kilometre of its final destination. In small towns, they would be used to provide general overall mobility to the whole town. The arterials can also be used to serve economic activity centres that are not served by Class 1 or 2 arterials.

The Class U3 arterials should also be used to serve as connectors to rural Class 3 routes. They should preferably start and stop at arterials of equal or one higher Class (2 to 3) but can connect to Class 1 principal arterials.

Minor arterials function as through routes on a district scale. While still carrying predominantly through traffic, they serve shorter distance trips with a length of around 2 km but can be as short as a single block if connecting higher order routes.

The minor arterials would typically carry volumes of traffic of between 10 000 and 40 000 vehicles per day.

5.2 OSSIE URBAN STREET

5.2.1 ROAD CHARACTERISTICS

Ossie Urban Street is approximately 685m long. The road starts at the PW Botha/Ossie Urban Intersection and terminates with a cul-de-sac at the end. The street is surfaced with bitumen-based sealer (asphalt) and the typical cross sections consist of a 9.6m wide surfaced roadway with concrete kerbs both sides. Multiple high- and low volumes driveways give direct access to the various industrial properties situated next to Ossie Urban Street. There are GO GEORGE bus stops at the intersection of Ossie Urban and PW Botha Boulevard, but Ossie Urban Street does not form part of the GO GEORGE bus route. Little to no provision is made for Non-motorized Transport (NMT) and pedestrians are forced to walk on the verge or within the roadway.



Figure 5-7 - Discovery Road Photos

The Roadside Development Environment is influenced by various industrial developments with direct access to Ossie Urban Street, as indicated in Figure 5-8.



Figure 5-8 - Ossie Urban Roadside Development Environment

5.2.2 ROAD CLASSIFICATION

Ossie Urban Street was not specifically addressed in the George Roads Master Plan (prepared by Kantey and Templer), but the road has been included in the George IMQS website. According to the George IMQS, Ossie Urban Street is classified as a Class 5 “Access Road” (refer to Figure 5-9).



Figure 5-9 - George IMQS Road Classification

The TRH 26 (SA Road Classification and Access Manual) defines Class 5 Local (Access) Streets as follows:

Class U5 Local Access Street

Class 5 streets provide access to individual properties. As they must provide exclusively an access or activity function, both traffic volumes and trip lengths must be significantly limited. They must not be continuous between roads of an order higher than Class 4.

Local streets should not carry any through traffic but only traffic with an origin or destination along the street, i.e. all the traffic using the local street will have a destination in the street itself. In terms of the TRH 26 Manual, local streets can be classified as either 5a or 5b as follows:

i) Class 5a Commercial local street

These local streets are found in areas with commercial, business, industrial, shopping and mixed-use residential developments. The streets often carry a high percentage of heavy vehicle traffic which uses the street to access loading areas or bus stops.

Commercial local streets should not carry volumes of more than about 5 000 vehicles per day. The length of the street should be limited to a maximum of about 1 km.

ii) Class 5b Residential local street

These local streets are found in residential areas and almost exclusively serve residential traffic and possibly some public transport as well as refuse and small delivery trucks.

Residential local streets should not carry more than about 1 000 vehicles per day or 100 vehicles during peak hours. If Class 5b residential local street volumes exceed 5 000 per day, this is a criterion to classify the road as a Class 4b residential collector.

Local residential streets should be short blocks of less than 0.5 km, with one kilometre being the maximum for safety reasons.

6 GUIDELINE DOCUMENTS

This investigation was undertaken in accordance with the following guidelines:

- National Land Transport Act, 2009 (Government Gazette No. 32110)
- South African Traffic Impact & Site Traffic Assessment Manual (TMH 16 Volume 1, COTO)
- South African Trip Data Manual (TMH 17, Draft 2.0, May 2018)
- Access Management Guidelines (WCG Dept. Transport and Public Works, 2020)
- George Roads Master Plan (Kantey and Templer, 2007)
- Urban Design Framework, (10 March 2023), Zutari
- Department of Transport, UTG 1 (1996) Geometric Design of Urban Arterial Roads
- Department of Transport UTG 5 (1996) Geometric Design of Urban Collector Roads

7 LITERATURE REVIEW

This report should be read in conjunction with the following reports and historic traffic studies:

1. Transport Impact Statement (TIS) pertaining to: *Proposed Permanent Bus Depot (Borchards) on a Portion of Erf 464 George, (EJ Robertson Consultants, unreferenced, August 2011)*
2. Traffic Impact Assessment (TIA) pertaining to: *Proposed Development on Erf 464 (Metro Grounds) George, (SMEC Report Nr. C1461-Rev02, February 2015)*
3. Traffic Impact Assessment (TIA) pertaining to: *Proposed Permanent Bus Depot on Portion of Erf 464, George. (Zutari Report Nr 1001403-0000-REP-KR-00001-1) Revision (Draft 2), dated 2021/09/14.*

7.1 EJ ROBERTSON'S TRANSPORT IMPACT STATEMENT (UNREFERENCED, AUGUST 2011)

The Traffic Impact Statement (TIS) for the proposed permanent bus depot on Erf 464 in George was conducted to assess the traffic impacts as part of the George Integrated Public Transport Network (GIPTN). This initiative aimed to transform informal minibus taxi and bus operations into a regulated system. The selected 5-hectare site, located adjacent to PW Botha Boulevard, was chosen for its suitability in terms of land availability, operational efficiency, and minimal planning time. The report was based on the 2002 PGWC Road Access Guidelines.

The depot was designed to accommodate around 200 buses, featuring an office/administration block, staff facilities, a workshop, fuelling and wash bays, and security control. Access to the site was planned via a future road between PW Botha Boulevard and the East Rand extension, with provisions for handling large vehicle movements.

The TIS analysed traffic impacts, noting that bus movements were scheduled outside peak hours (04:00-06:00 and 16:00-18:00), minimizing conflicts with regular traffic. The expected increase in traffic was manageable within existing road capacities.

To mitigate traffic impact, recommendations included road modifications such as additional turn lanes, embayed bus stops, sidewalks, and provisions for future traffic signals. The TIS recommended acceptance of the site zoning and subdivision, with a review suggested if the depot was not operational within five years, incorporating data from interim operations at the York Street depot.

7.2 SMEC'S TIA PERTAINING TO THE DEVELOPMENT OF ERF 464 (REPORT C1461-REV 2)

The Traffic Impact Assessment was prepared by SMEC South Africa for Royal Haskoning DHV and evaluated the impact of the Erf 464 residential development, on the existing road network. A short summary of the TIA is included below:

7.2.1 CONTEXT AND OPERATIONAL ANALYSIS

The development plan for Erf 464 included 674 erven, comprising 661 low-income residential erven, 3 transport zones, 6 public open spaces, 1 business zone, 2 crèches, and 1 authority erven. The layout was provided by DELplan Urban and Regional Planners.

Traffic counts were conducted on 20 September 2013 at the P.W. Botha Road / Rand Street / Binne Street T-junction for a 12-hour weekday period. These counts were used to determine the 2013 peak hour traffic volumes, which served as the baseline for analysis.

The analysis was performed using SIDRA INTERSECTION 5.1 software, and the analysis covered both the current (2013) and future (2018) scenarios:

- **2013 Scenario:** With the development, most junction movements will operate at acceptable LOS, except for the right turn from Rand Street in the AM peak hour, which will operate at LOS F.
- **2018 Scenario:** The 4-legged junction will generally operate at acceptable levels, but the right turn from Rand Street (North) will face significant delays (LOS F) and oversaturation.

7.2.2 GEOMETRIC ASPECTS

Access Points and Road Network: Rand Street to be extended to form a 4-legged junction with P.W. Botha Road and Binne Street, providing three access points to the new development.

Road Classification: The roads were classified as Class 4 local collectors.

Shoulder Sight Distance (SSD): SSD at the Rand Street extension is inadequate for both passenger and single unit vehicles, necessitating signalization to mitigate safety concerns.

Intersection Spacing: The proposed spacing of intersections and access points meets the guidelines.

Right Turning Lanes: Future traffic projections warrant a right turning lane at the P.W. Botha Road / Binne Street / Rand Street junction.

Left Turning Lanes: Not warranted based on future traffic projections.

7.2.3 SECONDARY ISSUES:

Pedestrians and Street Lighting: Recommendations include improvements for pedestrian safety and adequate street lighting.

Public Transportation Routes: Adjustments to accommodate new public transport routes and embayments were suggested.

7.2.4 SUMMARY AND RECOMMENDATIONS

The study concludes that the proposed development will significantly impact the existing road network, necessitating the implementation of mitigation measures, particularly signalization at critical junctions and the introduction of right-turn lanes. Ensuring adequate sight distances and intersection spacing will enhance safety and operational efficiency.

7.3 ZUTARI'S TRAFFIC IMPACT ASSESSMENT (REF NR1001403-0000-REP-KR-00001-1)

The Traffic Impact Assessment (TIA) focused on the impact of the proposed permanent depot of the GO-GEORGE bus service on the road network (specifically in the Borchers Industrial area). This new depot was deemed necessary due to the inadequacies of the current temporary depot on Erf 3472, York Street, which could not accommodate the anticipated growth in the bus fleet.

7.3.1 CONTEXT AND SITE DETAILS

The new depot was planned to be situated on a 4.6-hectare site on Erf 464, adjacent to PW Botha Boulevard, within the Borchers Industrial area. This location was strategically chosen as it aligned with the George Spatial Development Framework. The temporary depot managed 122 buses, with an expected increase to 150 buses by 2025. This growth necessitated a larger facility to handle the demands of the bus service.

The TIA included detailed traffic counts (July 2021) and projections and access to the new depot was planned to be from PW Botha Boulevard. The report highlighted the importance of appropriate intersection spacing and throat lengths to ensure smooth ingress and egress from the depot, minimizing congestion and ensuring safety.

Specific recommendations were made for turning lanes at key intersections. The report suggested the installation of left and right turn lanes based on traffic volume projections during peak hours. This included detailed calculations for stacking distances and the capacity of the lanes to manage anticipated traffic without causing delays or safety issues.

7.3.2 MITIGATION MEASURES

Traffic Signal Installations: The TIA recommended the installation of traffic signals at the entrance/ exit into the Depot. Signals were necessary to manage the increased traffic flow and ensure safe turning movements, especially for buses entering and exiting the depot.

Entrance and Waiting Areas: To prevent backup onto the public road network, the depot required two (60m long) entrance lanes and ample stacking areas inside the depot.

Parking: The report recommends 93 passenger car parking bays and 194 bays for busses.

7.3.3 SECONDARY CONSIDERATIONS

Pedestrian and Cyclist Safety: The report also addressed the needs of pedestrians and cyclists, recommending appropriate crossings and safety measures to protect these vulnerable road users amidst the increased bus traffic.

Environmental and Community Impact: Consideration was given to the broader environmental and community impacts. Measures were proposed to mitigate noise and air pollution, ensuring the depot's operations did not affect the surrounding areas.

7.3.1 SUMMARY AND RECOMMENDATIONS

Implementation of Traffic Management Measures: The primary recommendation was the careful implementation of the proposed traffic management measures, including signal installations, turning lanes, and internal depot arrangements.

Monitoring and Evaluation: Ongoing monitoring and evaluation of traffic conditions post-implementation were recommended to ensure the measures were effective and to make adjustments as necessary.

The report proposed that PWBB be dualled should all planned development go ahead.

For ease of reference, the findings and recommendations of the Zutari report has been indicated schematically in Figure 7-1 below:

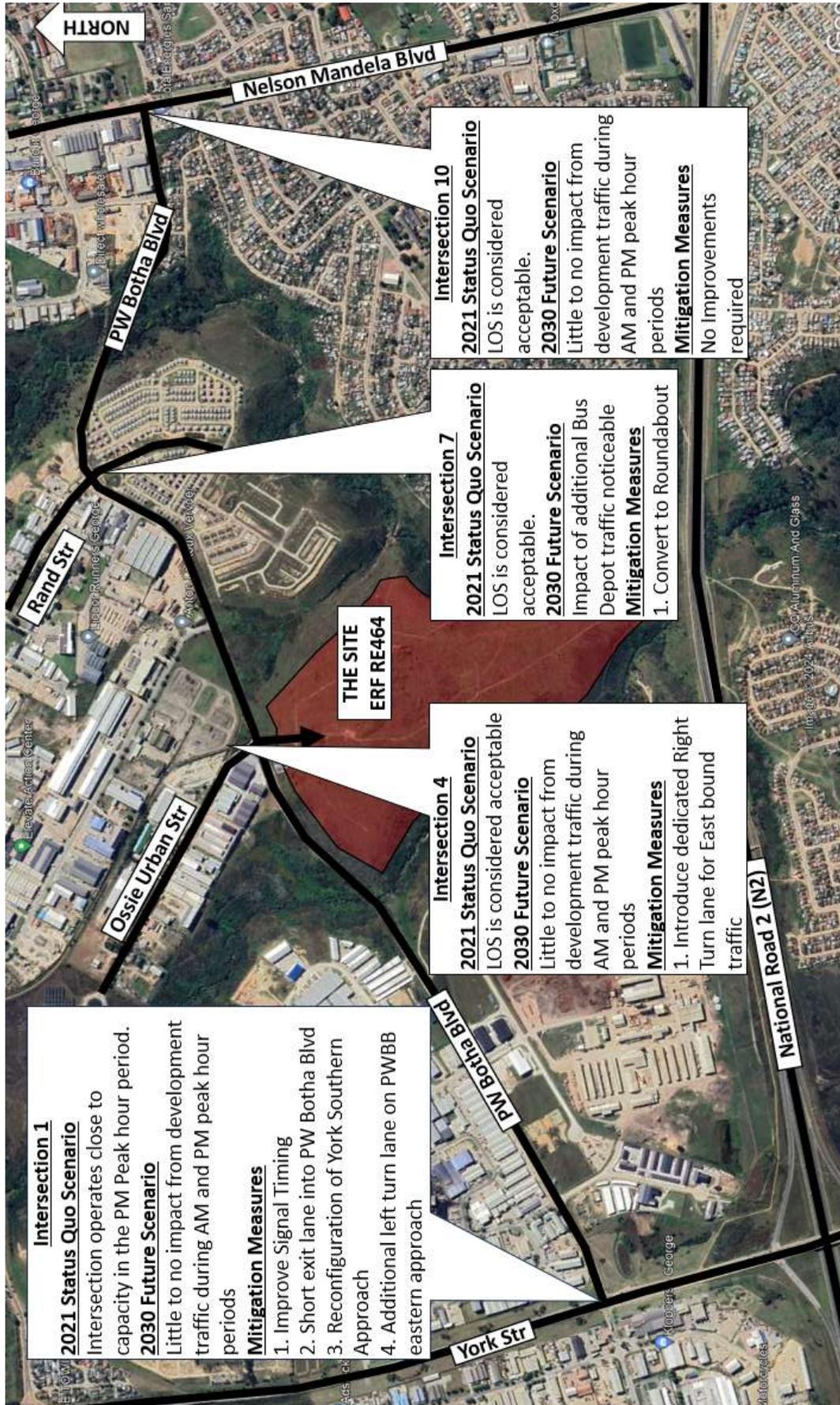


Figure 7-1 - Summary of Findings and Recommendations of Zutari Report

8 EXISTING (EXTERNAL) ROAD NETWORK

8.1 INTERSECTION SPACING

It is important to note that both the SMEC and Zutari reports, were based on the assumption that the intersection of PW Botha Boulevard and Rand Street will be converted to a roundabout. This is, however, not the case and the intersection has instead been converted to a traffic signal-controlled junction. The position of the site in relation to the other junctions (intersection spacing) along PW Botha Boulevard has been indicated schematically in Figure 8-1.

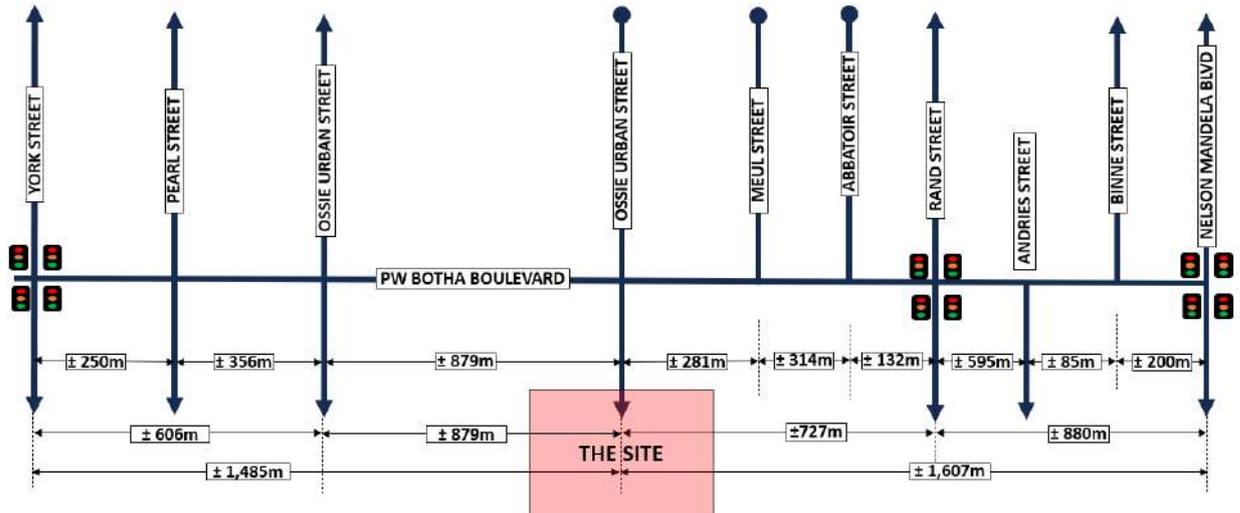


Figure 8-1 - Position of Site along PW Botha Boulevard

Since PW Botha Boulevard is a Class 3 Road (without medians), in the Suburban Roadside Development Environment, the spacing between signalised intersections along PW Botha Boulevard should be a minimum of 540 m, as recommended in the Western Cape Government’s Access Management Guidelines (2020) (refer to Figure 8-2 and Table 8-1 below).

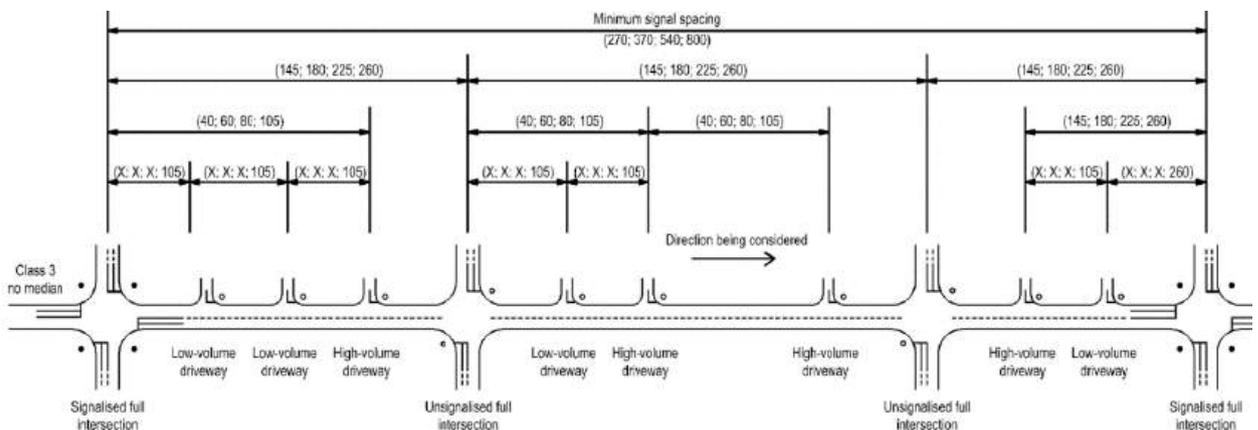


Figure 8-2 - AMG Intersection Spacing for Class 3 Roads

Roadside development environment	Road class Ideal spacing (m)		
	Class 2	Class 3	Class 4
CBD	417	305	243
Intermediate	583	417	305
Suburban	778	583	417
Semi-rural	1 222	778	583

Table 8-1 - Ideal Spacings (m) Before Adjustments

8.2 SHOULDER SITE DISTANCE

At a stop-controlled intersection, the driver of a stationary vehicle must be able to see enough of the intersecting main road to be able to cross before an approaching vehicle reaches the intersection, even if this vehicle comes into view just as the stopped vehicle starts to cross. Shoulder Sight Distance is measured from a passenger driver eye height (passenger car) of 1,05m to an object height of 1,3m. There must be no obstruction to the view in the sight triangle, defined as the area enclosed by the sight line and the centre line of the intersecting main road. The eye position is located 5m back from the road edge as indicated in Figure 8-3

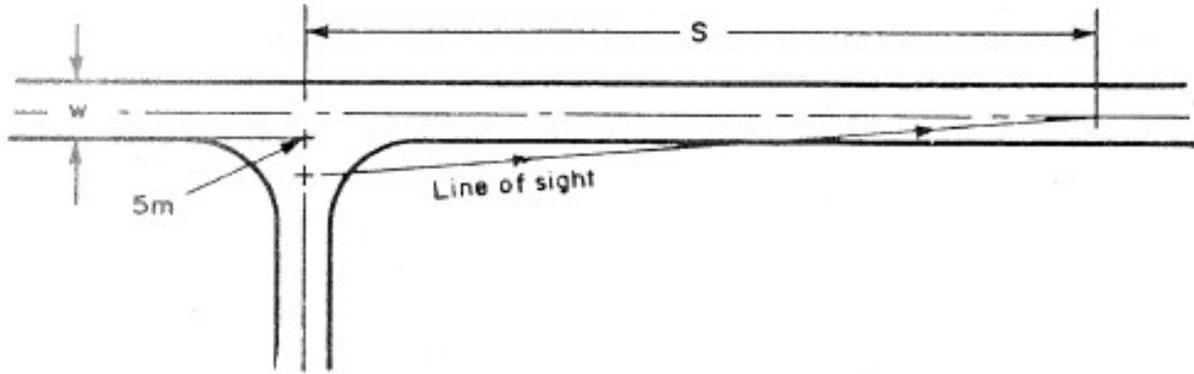


Figure 8-3 - Shoulder Sight Distance Parameters

Shoulder Sight distance is also a function of the Design Speed, Type of vehicle and Road width. In this instance the following assumptions are made:

- Design Speed: 60km/h
- Road Width = min 13,3m (9,8m + additional 3,5m right turn)
- Design Vehicle: Single Unit with Trailer

Based on the above assumptions it follows that a Shoulder Sight Distance of 250m is required along PW Botha Boulevard.

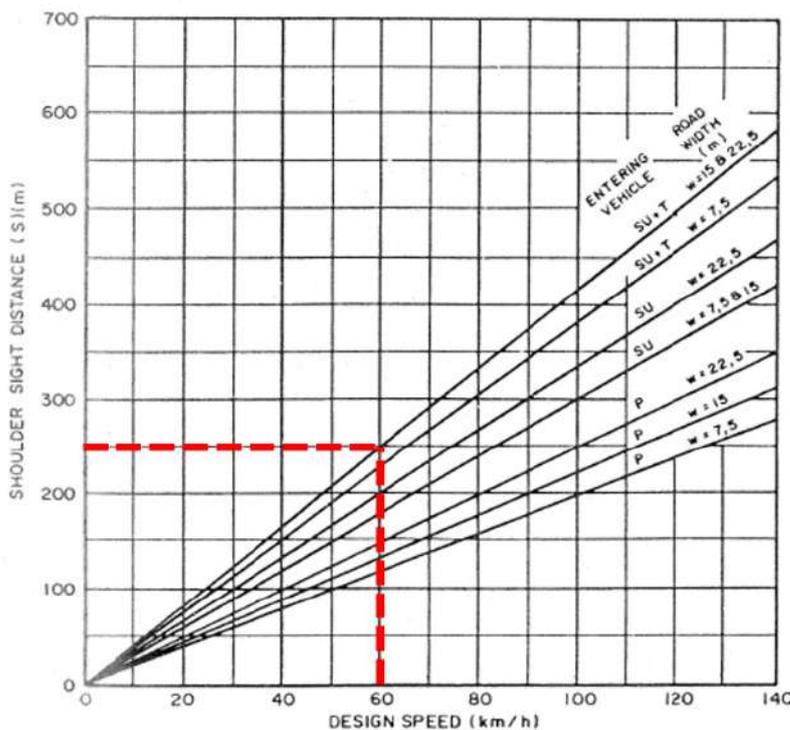


Figure 8-4 - Shoulder Sight Distance Requirement

Shoulder Sight Distance was not addressed in the Zutari Report, but site investigations reveal that SSD in both eastern and western directions, are severely obstructed by existing earth embankments (refer to Figure 8-5 below)



Figure 8-5 – Line of Sight

As an additional check, the line of sight at the road edge, was also measured on site, as indicated in Figure 8-6. It is important to note that the Line of sight was measured directly next to the PW Botha Boulevard road edge, and not at a 5m off-set as required for Shoulder Sight Distance.



Figure 8-6 - Line of sight Measured at Road Edge

Line of Sight:

a) Towards the West

The combination of both a horizontal and vertical curve along the western approach of PW Botha Boulevard, leads to insufficient line of sight (111m) when looking towards the west.

b) Towards the East

Line of sight in excess of 350m is available when looking towards the east from the new proposed intersection.

The lack of sufficient SSD and Line of Sight is highly alarming, especially when combined with slow moving vehicles such as busses and heavy vehicles.

9 NEW (INTERNAL) ROAD NETWORK

9.1 CONCEPTUAL DEVELOPMENT FRAMEWORK

The proposed conceptual development framework was prepared by Zutari and makes provision for the following land uses:

Land Use	Zoning	Erf Number	Area (ha)	% of Area
Education Facility	Community Zone I	01	5.34ha	32%
Industry	Industrial Zone II	02-09	5.56ha	34%
Transport	Transport Zone I	10	1.76ha	11%
Open Space	Open space Zone II	11	1.3ha	8%
Public Streets	Transport Zone II	12	2.58ha	15%
Total Area			16.54ha	100%

Table 9-1 – Metro Grounds Land Use Table

The concept layout plan clearly indicates the proposed internal road network. This plan has been attached as **ANNEXURE B**, but for ease of reference an extract of the plan has been attached as Figure 9-1 below.

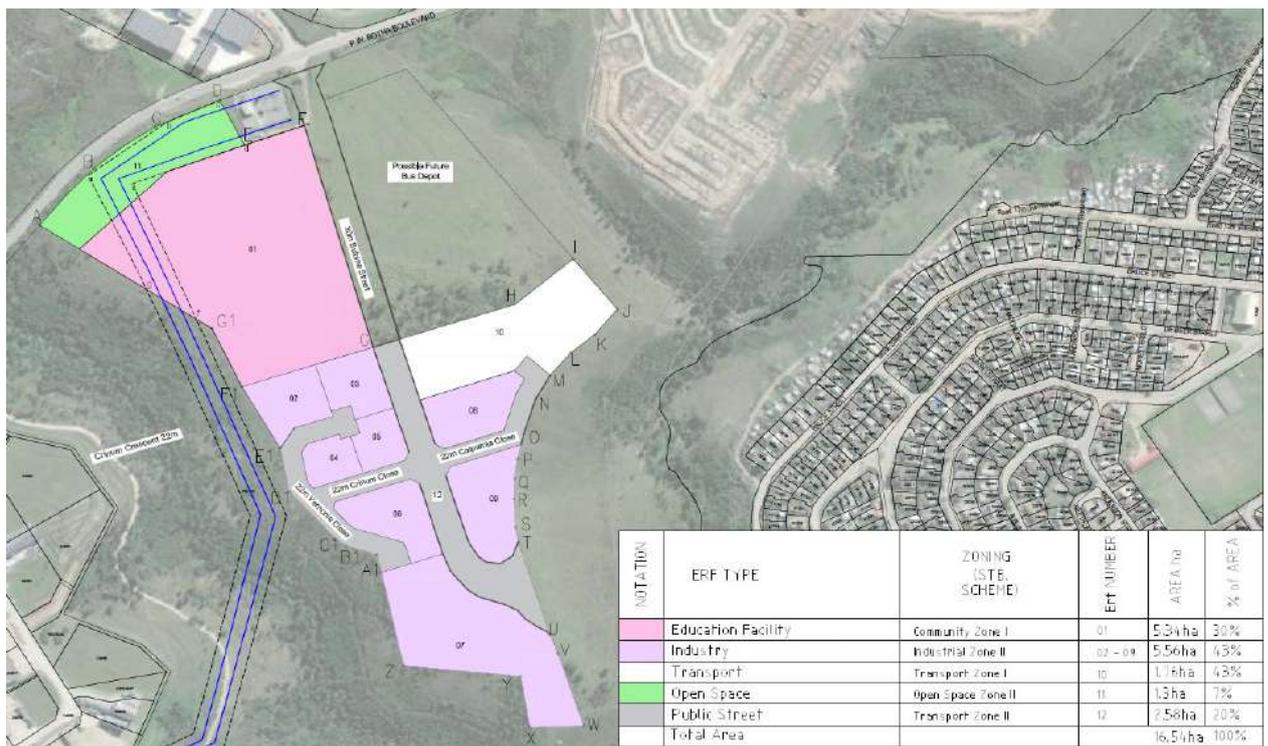


Figure 9-1 – Extract of Zutari’s Zoning Drawing Rev I, (dated 30/10/2024)

From Figure 9-1, it is important to note the following:

1. The zoning drawing does not make provision for the existing electrical sub-station and possible future bus depot. These two erven do not form part of Zutari’s application and will be dealt with directly by the relevant departments at George Municipality.
2. The layout makes provision for two main intersections. The first situated at the current junction of PW Botha Boulevard and Ossie Urban Street, and the second, at the future intersection with the proposed Rand Street extension.

9.2 ROAD CLASSIFICATIONS

Based on the intended function of the internal roads, they can be classified as indicated in Figure 9-2 below.



Figure 9-2 - Proposed Internal Road Classification

Road Classifications are specified in the TRH 26 South African Road Classification and Access Management Manual (Draft 2.0, May 2018). A summary of the relevant sections have been included below:

CLASS U4 URBAN COLLECTOR STREETS

Collector streets are used to penetrate local neighbourhoods with the purpose of collecting (and distributing) traffic between local streets and the arterial system. The streets are mainly intended to serve an access function with limited mobility and traffic volumes; trip lengths and continuity must be limited.

They should ideally not carry any through traffic but only traffic with an origin or destination along or near to the street. The majority of the traffic using the collector street will have a destination in the street itself or in a local street leading off the collector. A collector street must not be quicker to use to pass through an area than a mobility road although it is recognized that in the absence of a mobility route, collectors must allow for some through traffic, albeit at low speeds.

Class 4a major collectors may also be used in preference to arterials when “mixed” through and local traffic is unavoidable, such as when arterials pass commercial centres with no alternative access. In this case, the local access traffic must be favoured at the expense of the mobility function.

In terms of the TRH 26 Manual, collectors must be classified as either 4a or 4b as follows:

i) Class 4a Commercial (major) collector street

These collectors are found in areas with commercial, business, industrial, shopping and mixed-use residential developments. The streets carry a high percentage of heavy vehicle traffic and public transport.

Typical commercial collectors are CBD streets (whether two-way or one-way), shopping centre streets, activity spines and industrial distributors. Traffic volumes on the collectors vary greatly depending on their location. In busy shopping areas, the collectors can carry up to 25 000 vehicles or even more per day. The lengths of the roads should be limited to a maximum of about 2 km or 3 km if no through traffic is present.

ii) Class 4b Residential (minor) collector street

These collectors are found in residential areas and almost exclusively serve residential traffic and public transport.

Residential collectors should not carry more than about 10 000 vehicles per day or 1 000 vehicles during peak hours (although lower volumes are preferred). These volumes are the maximum that can safely be accommodated on this class of streets. If Class 4b residential collector street volumes exceed 10 000 per day, this is an indication that re-classifying the road may be required.

The lengths of the roads should be limited to a maximum of about 2 km.

CLASS U5 URBAN LOCAL STREETS

Class 5 streets provide access to individual properties. As they must provide exclusively an access or activity function, both traffic volumes and trip lengths must be significantly limited. They must not be continuous between roads of an order higher than Class 4.

Local streets should not carry any through traffic but only traffic with an origin or destination along the street, i.e. all the traffic using the local street will have a destination in the street itself.

In terms of this Manual, local streets must be classified as either 5a or 5b as follows:

i) Class 5a Commercial local street

These local streets are found in areas with commercial, business, industrial, shopping and mixed-use residential developments. The streets often carry a high percentage of heavy vehicle traffic which uses the street to access loading areas or bus stops.

Commercial local streets should not carry volumes of more than about 5 000 vehicles per day. The length of the street should be limited to a maximum of about 1 km.

ii) Class 5b Residential local street

These local streets are found in residential areas and almost exclusively serve residential traffic and possibly some public transport as well as refuse and small delivery trucks.

Residential local streets should not carry more than about 1 000 vehicles per day or 100 vehicles during peak hours. If Class 5b residential local street volumes exceed 5 000 per day, this is a criterion to classify the road as a Class 4b residential collector.

Local residential streets should be short blocks of less than 0.5 km, with one kilometre being the maximum for safety reasons.

9.3 ROADSIDE DEVELOPMENT ENVIRONMENT

The density characteristics of the various Roadside Development Environment specified in the WCG's Access Management Guidelines (2020) have been indicated in Table 9-2.

Roadside development environment	Floor Area Ratio (m ² of development per m ² of land area)	Bulk (m ²) Building height du/ha (pp/ha) ¹⁰
CBD	> 1	10 000 m ² /ha @ 50% coverage = 2 × storey @ 30% coverage = 3 × storey Residential = > gross 100 du/ha (400 pp/ha)
Intermediate	0.3–1	3 000 m ² – 10 000 m ² /ha @ 50% coverage = 1 × storey Residential = gross 25–100 du/ha (100–400 pp/ha)
Suburban	0.1–0.3	1 000 m ² – 3 000 m ² /ha Single/double storey Residential = gross < 10 du/ha
Boundary of urban area/defined Urban Edge		
Semi-rural	< 0.1	
Rural	< 1 bldg/10 ha	

Table 9-2 - Roadside Development Environment Characteristics

Based on Table 9-2, it is envisaged that ultimate density of the Metro Ground Industrial site will result in a Roadside Development Environment classification of “**Intermediate**”.

9.4 ROAD RESERVES

Road reserve widths are specified in table 8.4 of the TRH 26 as indicated in Figure 9-3.

Class	Rural		Urban	
	Typical	Range	Typical	Range
Class 1	62	60 – 80	60	60 – 120
Class 2	48	40 – 70	40	38 – 62
Class 3	30	30 – 50	30	25 – 40*
Class 4a	25	-	25	20 – 40
Class 4b			20	16 – 30
Class 5a	20	-	22	15 – 25
Class 5b			14**	10 – 16

* Reserve up to 62 m is required to allow for Strategic Bus Rapid Transit (BRT).

** Reserve of 10.5 m is typical if street is less than 100 m long.

Figure 9-3 - Road Reserve Widths

Based on the above, the actual vs proposed road reserve widths can be summarised as follows:

Road Class	TRH 26 Recommended Road Reserve Width	Zutari Proposed Road Reserve Width	Comment
Class 4a Commercial Collector	25m	30m	Zutari's Proposed Road Reserve width is deemed sufficient
Class 5a Commercial Local Street	22m	22m	Zutari's Proposed Road Reserve width is deemed sufficient

Table 9-3 - Comparison between recommended and proposed road reserve widths

9.5 DRIVEWAYS

The term “driveway” describes the intersecting roadway giving direct access to a privately-owned property adjacent to the road where such intersecting roadway is not a public road or street. A driveway is usually the only access point to the property, although it is possible that connections could be made between adjacent properties through connecting roads provided by agreement between property owners or via a servitude registered for a road access. Larger developments may take access through more than one driveway from more than one road.

The 2020 AMG lists the three categories of “conventional driveways”, defined by the number of vehicular trips generated per hour that use or are projected to use a driveway, as follows:

Domestic equivalent driveways are driveways giving vehicular access to private homes, micro businesses and farms which attract very small traffic volumes. In residential areas with small plot sizes the vehicle using the driveway may have to back into the through road when leaving the property. Domestic equivalent driveways have a small impact on the through road, but can result in conflicts where reversing manoeuvres take place into the through road. For this reason, domestic equivalent driveways are acceptable on Class 5 roads, but should be discouraged on Class 4 roads except where special provision is made for access to properties within the road reserve. This requires that there is sufficient space clear of the through traffic lanes for a vehicle reversing out of a property to manoeuvre within the road reserve so as to enter the traffic stream safely.

Low-volume driveways may carry larger traffic volumes than domestic equivalent driveways and are expected to serve larger developments. The lower volume driveway categories (domestic equivalent driveways and low-volume driveways) have no class equivalent as they generally carry lower volumes than the traffic volume carried by any class of public road.

High-volume driveways are equivalent to Class 5 local roads and are expected to carry larger traffic volumes than low-volume driveways.

Driveway category	Class equivalent	Roadside development environment				
		CBD	Intermediate	Suburban	Semi-rural	Rural
		Vehicles per hour				
Domestic equivalent		< 5	< 5	< 5	< 5	< 5
Low-volume		5–30	5–30	5–30	5–30	5–30
High-volume	5	30–150	30–100	30–60	30–50	30–50
Equivalent collector	4	150–750	100–625	60–500	50–250	50–500
Equivalent minor arterial	3	750–1 500	625–1 250	500–1 000	250–500	500–1 000
Equivalent major arterial	2	> 1 500	> 1 250	> 1 000	> 500	> 1 000

Figure 9-4 - Categories of Driveways and threshold volumes

The WCG Access Management Guidelines (2020) provides guidelines on where driveways should be allowed for a given combination of road class and roadside development environment. The table shows that on Class 3 roads only high-volume driveways should be permitted.

Roadside development environment	Class 2 Major	Class 3 Minor		Class 4 Collector			Class 5 Local			
	LVD+HVD	DED	LVD	HVD	DED	LVD	HVD	DED	LVD	HVD
CBD										
Intermediate										
Suburban										

Figure 9-5 - Guidelines for permitting "conventional" driveways

9.6 INTERSECTION SPACING (CLASS 4 MAIN ROAD)

The guidelines published in the WCG Road Access Guidelines 2020 are proposed for the Metro Grounds development site. The minimum spacing distances are a function of the road class and level of intersection control as indicated schematically in the diagrams below:

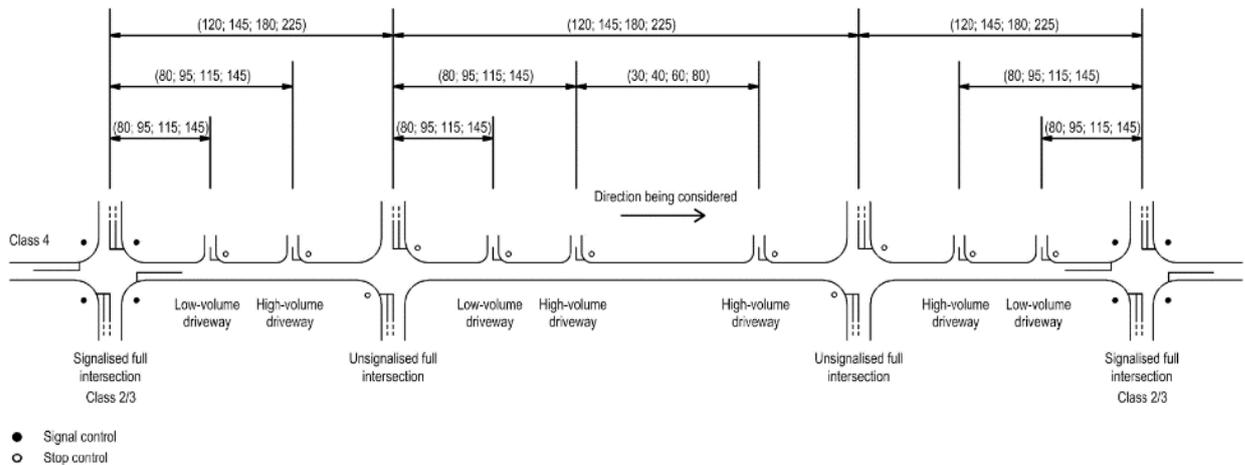


Figure 9-6 - Class 4 minimum spacing distances

Table 9.7 in the WCG Road Access Guidelines 2020 specifies a minimum spacing of 270m between signalised intersections on Class 4 roads as indicated in Figure 9-7 below.

Roadside development environment	Road class Minimum spacing (m)		
	Class 2	Class 3	Class 4
CBD	370	270	210
Intermediate	540	370	270
Suburban	800	540	370
Semi-rural ¹⁶	1 200	800	540

Figure 9-7 - Minimum spacing of signalised intersection

Using the guidelines above, it is possible to provide the following:

1. Upgrade the existing PW Botha Boulevard/Ossie Urban Intersection into a signal controlled, full intersection.
2. Provide direct access into both the bus depot and education site via a signal controlled full intersection. This intersection must be situated a minimum distance of 270m from the existing PW Botha Boulevard/Ossie Urban Intersection.
3. Unsignalised Full Intersections on the two intersections with the minor (Class 5) roads.
4. Provide a signal-controlled intersection at the junction of Rand Road Extension and the future Metro Grounds Main Road.

This proposed layout has been indicated schematically in Figure 9-8, and a layout plan has been attached as **ANNEXURE C**

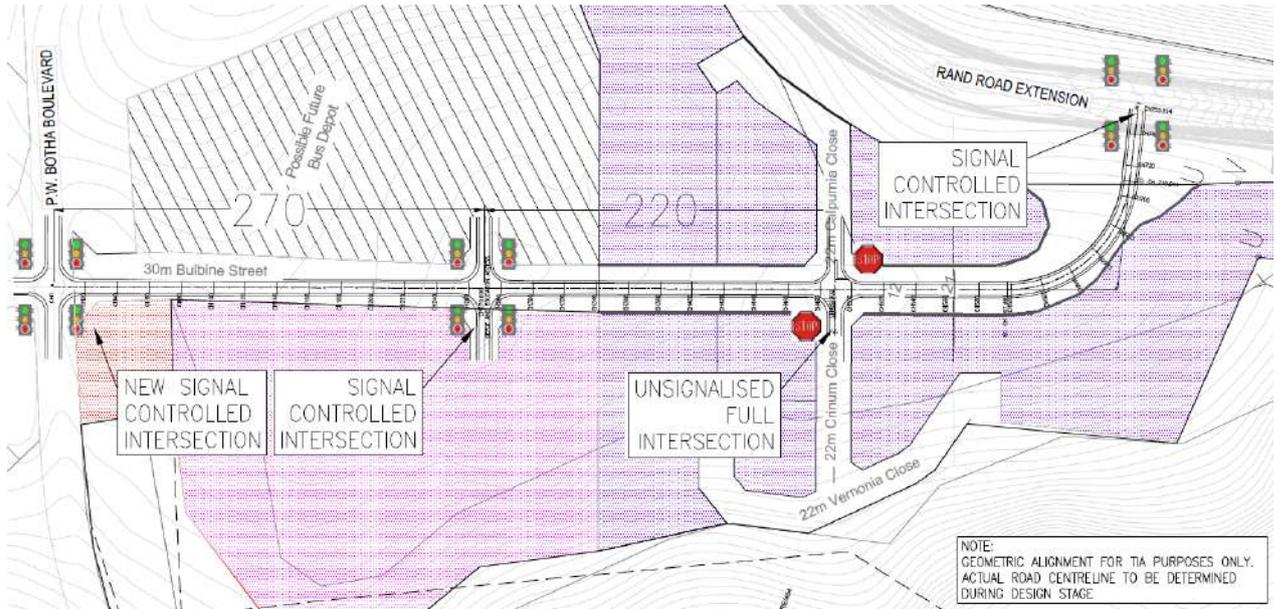


Figure 9-8 Proposed Internal Road Intersection Control

Since the proposed signal-controlled intersection at the junction of Rand Road Extension and the future Metro Grounds Main Road can only be implemented after both roads have been constructed, an interim solution is to provide a temporary turning circle at the end of Metro Grounds Main Road. A preliminary design of this circle has been prepared by Zutari and has been attached as **ANNEXURE D** to this report.

9.7 DRIVEWAY POSITIONS (CLASS 5 ROADS)

High and low volume driveway on the Class 5 roads must comply to spacing requirements indicated in Figure 9-9 below.

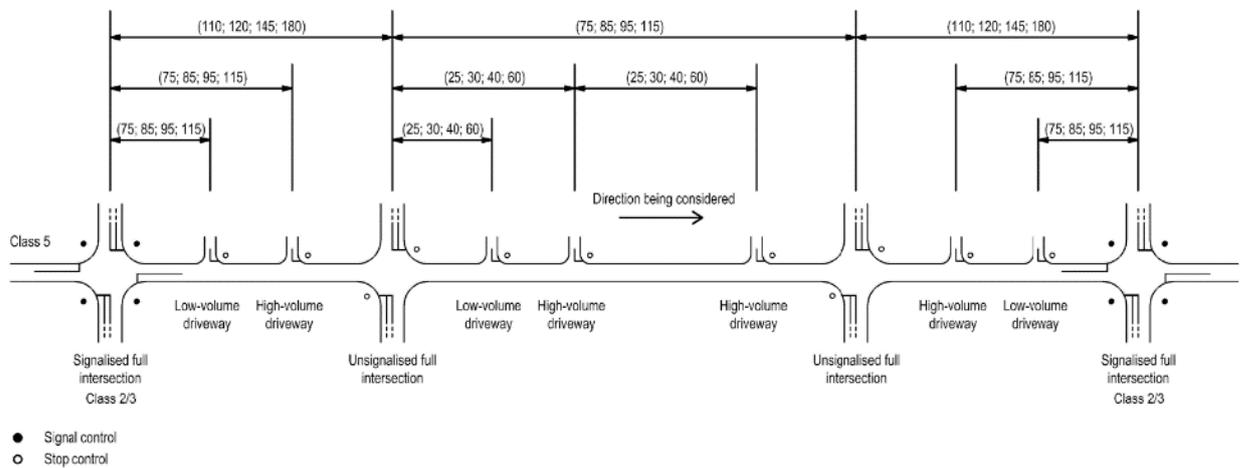


Figure 9-9 - Class 5 minimum spacing distances

Using Figure 9-9 as reference, the site access (driveway) positions must comply to the positions indicated in Figure 9-10 (refer to **ANNEXURE C** for a layout plan).



Figure 9-10 - Driveway Positions

9.8 HORIZONTAL CURVATURE

Based on both the UTG 1 (Geometric Design of Urban Arterial Roads) and UTG 5 (Geometric Design of Urban Collector Roads) guidelines, the recommended design practice is to use large radius curves without superelevation as far as possible. However, where large radius curves are not possible, superelevation can be introduced to offset the side friction forces of smaller radius curves. The following table should be used as guideline:

Minimum Radius for Horizontal Curves (m)						
Design Speed (Km/h)	Side Friction Factor (f)	Minimum radius for maximum superelevation rates (e)				
		-0.02	0	+0.02	+0.04	+0.06
60	0.15	220	190	170	150	135
80	0.14	425	365	315	280	255
100	0.13	-	610	530	465	420

Table 9-4 - Minimum Radius for Horizontal Curves

9.9 VERTICAL CURVES

The minimum rate of vertical curvature is determined by sight distance as well as by considerations of comfort of operation and aesthetics. The sight distance most frequently employed is the stopping sight distance measured from an eye height of 1.05m to an object height of 0.15m. In the case of sag curves, the sight distance is replaced by headlight illumination distance of the same magnitude, assuming headlight height of 0.6m and a divergence angle equal to 1 degree above the longitudinal axis of the headlights. Based on both the UTG 1 (Geometric Design of Urban Arterial Roads) and UTG 5 (Geometric Design of Urban Collector Roads) guidelines, values of K (based on stopping sight distance in the case of crest curves and headlight illumination distance in the case of sag curves) are given in Table 9-5

Minimum Values of K for Vertical Curves				
Design Speed (Km/h)	Stopping sight Distance (m)	Crest	K	
			Sag	
			Headlight	Comfort
60	80	16	17	8
80	115	33	31	16
100	155	60	52	25
120	210	110	60	30

Table 9-5 - Minimum Values of K for Vertical Curves

The minimum lengths of vertical curves are indicated in Table 9-6 below:

Minimum lengths of vertical curves	
Design Speed (km/h)	Length of Curve (m)
60	100
80	140
100	180
120	220

Table 9-6 - Minimum lengths of vertical curves

9.10 MAXIMUM AND MINIMUM GRADIENTS

The speed of passenger cars is relatively unaffected by gradient and the horizontal alignment will tend to govern the selection of speed. Truck speeds are however markedly affected by gradient. Both the UTG 1 (Geometric Design of Urban Arterial Roads) and UTG 5 (Geometric Design of Urban Collector Roads) provide guidelines with regards to the maximum gradients for different speeds and types of topography. Even though these documents are guidelines only and factors such as provision of auxiliary lanes and whole life economy of the road may suggest some other gradient, it is important that the geometric road designs adhere to these recommendations as far as possible.

Where two roads intersect, the numerical sum of the gradients should not exceed 8% with a maximum gradient of 6% on either roadway.

In order to ensure effective stormwater flow, a minimum gradient of 1:200 (0.5%) should be adhered to as far as possible.

9.11 PARKING PROVISION

The George Integrated Zoning Scheme By-Law (2023) should be used to determine the parking requirements of the various land uses. It is important to note that the GIZSBL does not make provision for on-street parking and parking should be provided on the property for which parking is required.

SITE ACCESS AND EXIT

Based on the GIZSBL, vehicle entrances and exit ways to and from a property must conform to the following requirements:

- 1) The Municipality may require compliance with standard municipal or provincial access spacing guidelines.

- 2) No access may be closer than 10 metres from an intersection as defined by the prolongation of street boundaries, except for industrial-zoned properties, where the distance must be 15 metres.
- 3) The Municipality may restrict or prohibit access if a pedestrian or traffic hazard is created or is likely to be created.
- 4) Vehicle entrances and exit ways to and from a property must conform to the following requirements:
 - a) motor vehicle carriageway crossings must be limited to one per site per proclaimed street, public street or private road abutting the site;
 - b) despite paragraph (a), where the total length of any street boundary of a site is 30 metres in length or more, one additional carriageway crossing may be permitted, provided that no two carriageway crossings are closer than 12 metres to each other;
 - c) the minimum and maximum widths of motor vehicle carriageway crossings must be in accordance with the table, titled “Width of motor vehicle carriageway crossings” as measured on the street boundary, where a single carriageway crossing means the crossing may only be used as either an entrance or an exit only, not both, and a combined carriageway crossing means that the crossing can be used for both an entrance and an exit;
 - d) the minimum width of a panhandle access may not be less than 4 metres wide unless otherwise determined by the Municipality. Width of motor vehicle carriageway crossing must comply to the table below:

Type of carriageway crossing	Minimum width	Maximum width
Dwelling units	2.5 metres	8.0 metres
Single entrance or exit way for other land uses	2.5 metres	4.0 metres
Combined entrance and exit way for other land uses	5.0 metres	8.0 metres

PARKING LAYOUT REQUIREMENTS

The following parking layout requirements apply unless otherwise stated in the zoning scheme:

- a) parking layout configurations, minimum dimensions and ramps to a parking area must be in accordance with this zoning scheme or an approved site development plan;
- b) A standard 90-degree parking bay for a motor vehicle shall measure at least 2,5 metres in width and 5.0 metres in length with 7.5 metres manoeuvring space or otherwise determined by the Municipality;
- c) the layout of any parking area, except for parking in Single Residential Zone I, Single Residential Zone III and General Residential Zones I to III must ensure that vehicles can readily leave the site without reversing across the sidewalk, unless otherwise approved by the Municipality;
- d) a tandem bay accommodating two motor vehicles is regarded as one bay for the purposes of this zoning scheme, except for Single Residential Zone I, Single Residential Zone III and General Residential Zones I to III, where a tandem bay is regarded as two bays;
- e) visitor parking bays must be clearly demarcated, readily visible and accessible to visitors, and preferably grouped together;

- f) parking areas must be used for the parking of vehicles which are lawfully allowed on them, and any activity which causes an obstruction for vehicular traffic or pedestrian use of the sidewalk is prohibited;
- g) parking areas must be constructed and maintained in a state suitable for the parking and movement of vehicles;
- h) control of access to and reservation of parking bays and / or areas is not permitted unless written approval has been obtained from the Municipality; either through an approved site development plan or other written approval; and
- i) despite paragraphs (a) to (h), the Municipality may lay down more restrictive requirements related to parking, site access or motor vehicle carriageway crossing, if it considers this to be necessary from a pedestrian or traffic safety point of view.

9.12 PEDESTRIAN WALKWAYS AND FURNITURE ZONES

Where practically possible, the walkway should not be placed directly up against the road edge, but a furniture zone should be created between the road edge and the sidewalk, increasing the safety of those making use of the walkways. This notion is further advocated in The Neighborhood Planning and Design Guide (Department of Human Settlements, July 2019) also known as “The Red Book” in which the cross section included as Figure 9-11 is proposed.

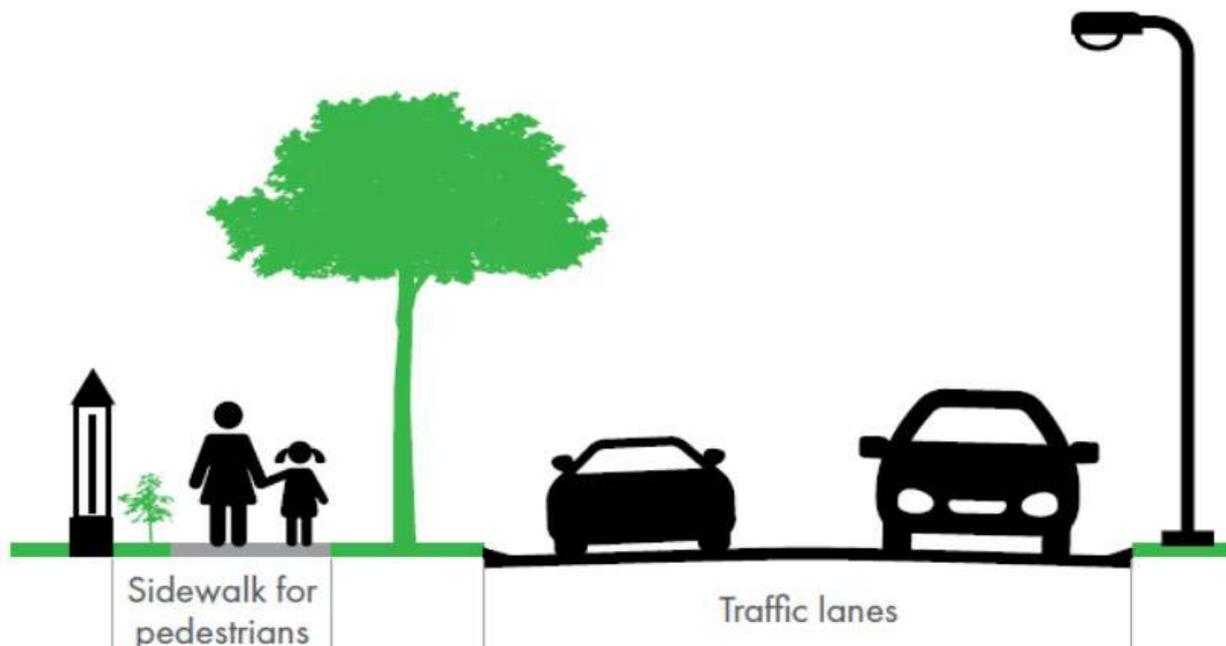


Figure 9-11 - Proposed Cross Section

10 SUMMARY

- 1) Urban Engineering (Pty) Ltd was appointed by Zutari for the Traffic Impact Assessment pertaining to a proposed industrial development (referred to as Metro Grounds) on remainder of Erf 464, George
- 2) The objective of this assessment is to evaluate and advise on the proposed internal road network planning aspects like layout, reserve widths, and intersections to ensure high-level functionality and safety.
- 3) Various historic TIA's pertaining to the proposed Meto Grounds development have been produced to date. The reports are listed below:

- a) Transport Impact Statement (TIS) pertaining to: Proposed Permanent Bus Depot (Borchers) on a Portion of Erf 464 George, (EJ Robertson Consultants, unreferenced, August 2011)
 - b) Traffic Impact Assessment (TIA) pertaining to: Proposed Development on Erf 464 (Metro Grounds) George, (SMEC Report Nr. C1461-Rev02, February 2015)
 - c) Traffic Impact Assessment (TIA) pertaining to: Proposed Permanent Bus Depot on Portion of Erf 464, George. (Zutari Report Nr 1001403-0000-REP-KR-00001-1) Revision (Draft 2), dated 2021/09/14.
- 4) This assessment, which focused on the master planning context of roads, including functionality, connectivity, and access, was based on the Zutari TIA dated 2021/09/14.
 - 5) The Zutari TIA included traffic counts and detailed intersection analysis to reach the following recommendations:

Intersection of PW Botha Boulevard and York Street

- a) Improve Signal Timing
- b) Short exit lane into PW Botha Blvd
- c) Reconfiguration of York Southern Approach
- d) Additional left turn lane on PWBB eastern approach

Intersection of PW Botha Boulevard and Ossie Urban Street

- e) Introduce dedicated Right Turn Lane for East bound traffic

Intersection of PW Botha Boulevard and Rand Street

- f) Convert to roundabout

Intersection of PW Botha Boulevard and Nelson Mandela Boulevard

- g) No Improvements required

- 6) An inspection of the site revealed unacceptable poor Shoulder Sight Distance at the PW Botha Boulevard/ Ossie Urban Intersection.
- 7) Analysis of the internal road network indicates that the proposed junctions are perfectly spaced in terms of the guidelines published in the Western Cape's Access Management Guidelines (2020).

11 RECOMMENDATIONS

Based on the findings of this report, the following recommendations are made:

1. The intersection of PW Botha Blvd/Rand Street should remain a signalised intersection.
 - 1.1. Despite the recommendation in the Zutari TIA (*Proposed Permanent Bus Depot on Portion of Erf 464, George; Report Nr 1001403-0000-REP-KR-00001-1; Draft 2; dated 2021/09/14*) suggesting the upgrade of the PW Botha Boulevard/Rand Street Intersection to a roundabout, it is the opinion of this author that a signalised intersection would be a safer alternative due to the limited line of sight. Additionally, a signalised junction offers the potential for establishing a synchronized corridor between the existing signalised intersections at PW Botha Blvd/York Str and PW Botha Blvd/Nelson Mandela Blvd.
 - 1.2. This recommendation should be proposed to the authors of the Zutari report for consideration and comment.
2. The junction of PW Botha Blvd & Ossie Urban Str should be upgraded to a signalised intersection.

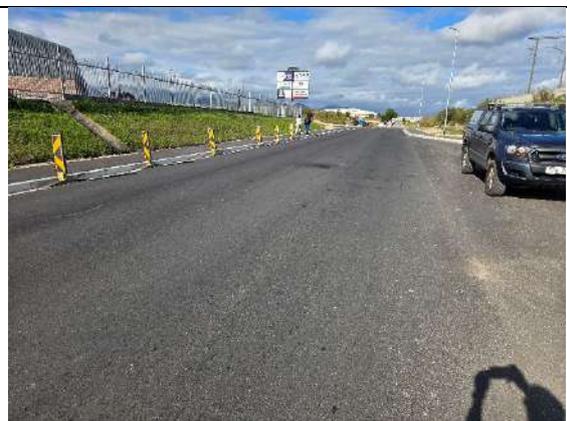
- 2.1. Contradictory to the Zutari TIA, it is the recommendation of this investigation to convert the PW Botha Blvd/Ossie Urban intersection into a signalised intersection. Once again, the introduction of a signalized intersection provides the opportunity to create a synchronised corridor and also mitigates the lack of sufficient sight lines and shoulder sight distances.
- 2.2. This recommendation should be proposed to the authors of the Zutari report for consideration and comment.
3. All other recommendations in the Zutari TIA should be adhered to.
4. Intersection controls for internal roads must comply to Drawing 22-158-01 (**ANNEXURE C**)
 - 4.1. Access to the proposed bus depot and education facility should be provided by means of a signalised intersection. The position of the intersection should not be closer than 270m from Ossie Urban intersection and not closer than 145m from the new proposed Bulbine Street/Calpurnia Close/Crinum Close intersection.
 - 4.2. The intersection of Bulbine Street and Rand Street Extension should be signal controlled as shown in Drawing 22-158-01 (**ANNEXURE C**). If Bulbine Street is built before Rand Street Extension, a turning circle (**ANNEXURE D**) must be provided at its end. Once Rand Street Extension reaches the Bulbine Street intersection, the turning circle should be replaced with a signalized intersection.
 - 4.3. Junctions between the Class 4 and Class 5 roads should be 2-way STOP controlled, with priority movement along the Class 4 road (Bulbine Street)
5. As indicated in Drawing 22-158-02 (**ANNEXURE C**) no driveway access should be allowed from Bulbine Street onto any neighbouring property.
6. Provision should be made for UA compliant sidewalks next to all new roads. These sidewalks must include a landscaped (grassed) furniture zone between the road edge and the sidewalk.
7. Since the proposed Metro Grounds Development includes an educational facility, provision should be made for new UA compliant pedestrian sidewalks next to PW Botha Boulevard, all the way from York Street to Nelson Mandela Boulevard. These sidewalks must include a landscaped (grassed) furniture zone between the road edge and the sidewalk.
8. Provision should be made for street lighting next to all new internal Metro Grounds roads.
9. Cross sections of all new Metro Ground internal roads must make provision for clearly defined (Class 1 preferred but Class 3 as a minimum) bicycle routes/lanes. Road layouts must also include safe bicycle crossing areas at all intersections.
10. Geometric design of Metro Grounds internal roads must comply to the various guidelines and standards with regards to horizontal and vertical alignments.

ANNEXURE A
PHOTOS TAKEN DURING
VARIOUS SITE INSPECTIONS





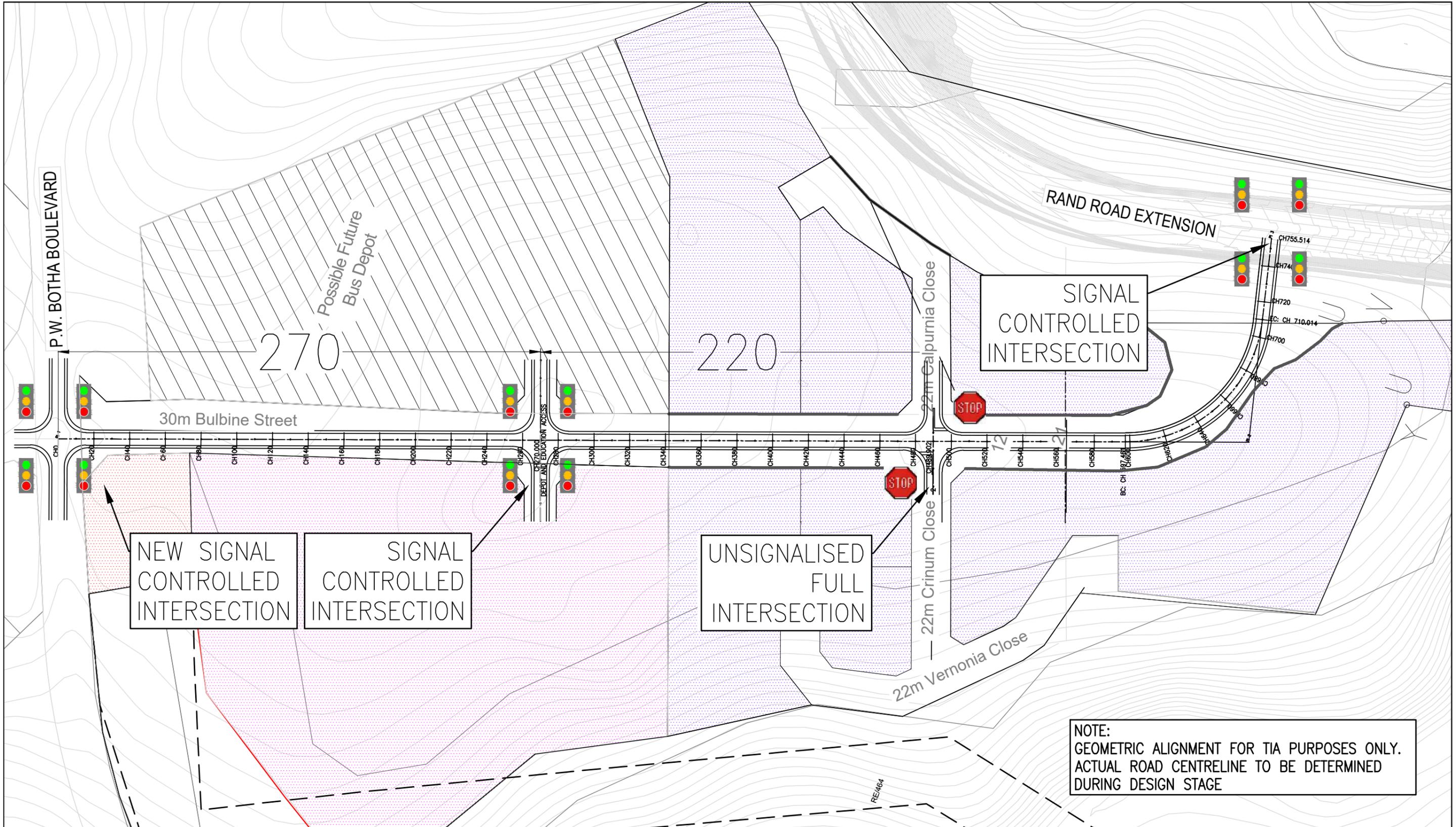




ANNEXURE B
**ZUTARI CONCEPTUAL
DEVELOPMENT FRAMEWORK**

ANNEXURE C

DRAWINGS



NOTE:
 GEOMETRIC ALIGNMENT FOR TIA PURPOSES ONLY.
 ACTUAL ROAD CENTRELINE TO BE DETERMINED
 DURING DESIGN STAGE

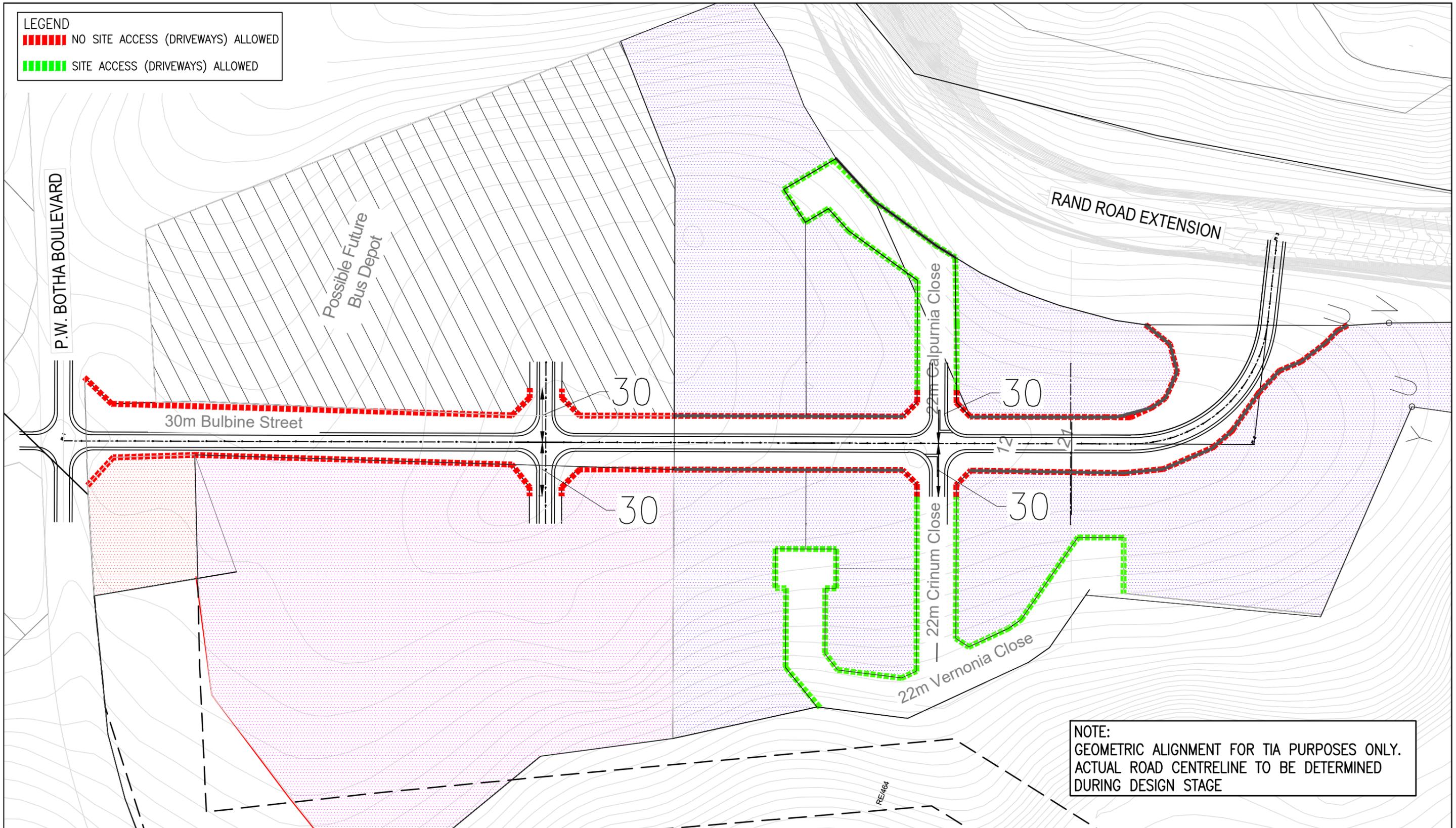
No.	Date	Description	Designed
0	05/06/2024	FOR TIA PURPOSES	F van AARDT (Pr Eng)
1	21/02/2025	FOR TIA PURPOSES - UPDATED LAYOUT	F van AARDT (Pr Eng)
2	20/11/2025	FOR TIA PURPOSES - UPDATED LAYOUT	F van AARDT (Pr Eng)



METROGROUNDS
 PROPOSED INTERSECTION
 CONFIGURATION

A3	Scale	NTS
Drawing No.		22-158-01
Rev No.	02	

LEGEND	
	NO SITE ACCESS (DRIVEWAYS) ALLOWED
	SITE ACCESS (DRIVEWAYS) ALLOWED



No.	Date	Description
0	05/06/2024	FOR TIA PURPOSES
1	21/02/2025	FOR TIA PURPOSES - UPDATED LAYOUT
2	20/11/2025	FOR TIA PURPOSES - UPDATED LAYOUT

Designed	F van AARDT (Pr Eng)
Checked	F van AARDT (Pr Eng)
Drawn	F van AARDT (Pr Eng)
Checked	F van AARDT (Pr Eng)

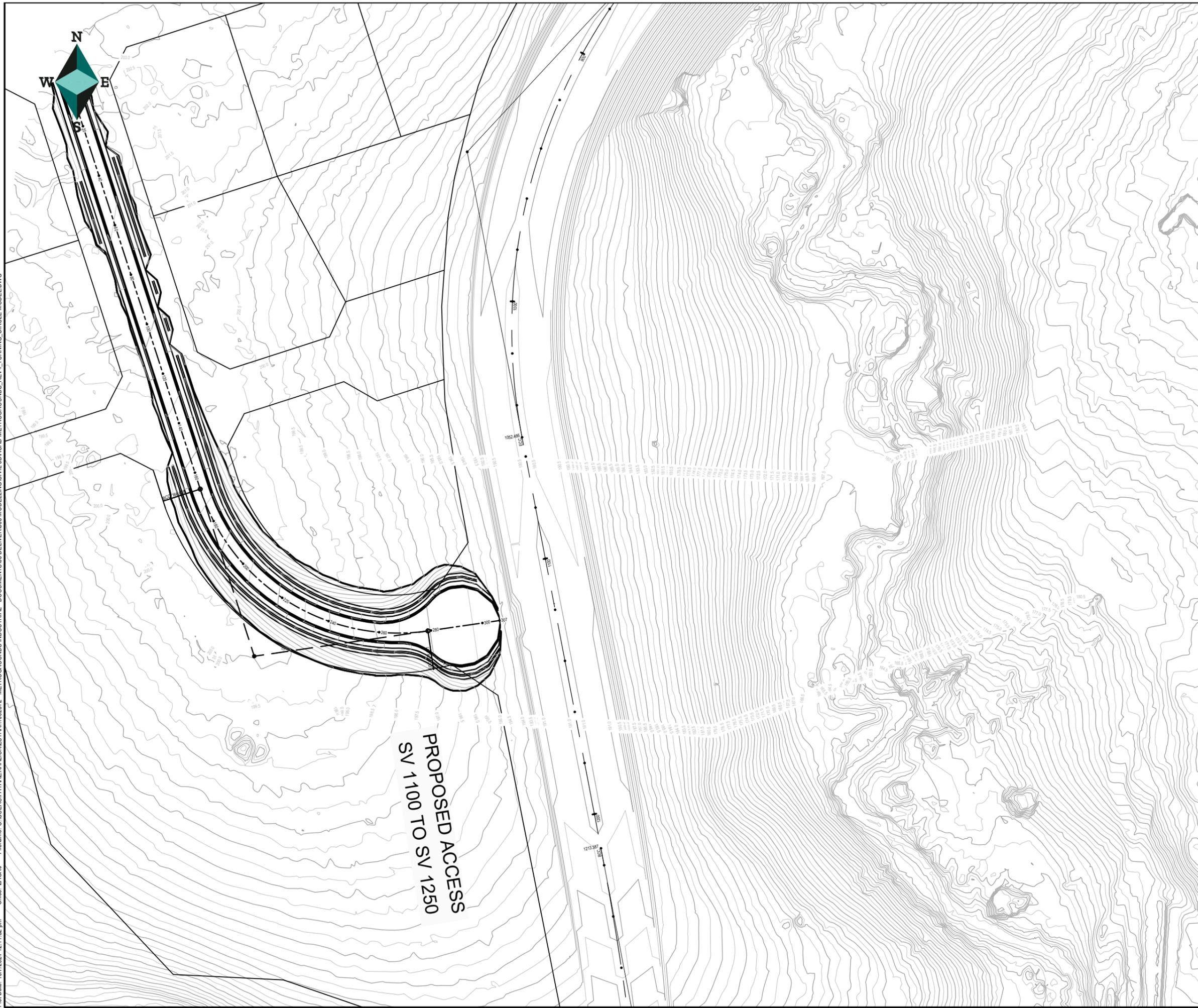


METROGROUNDS
DRIVEWAY LOCATIONS

A3	Scale	NTS
Drawing No.		22-158-02
Rev No.	02	

ANNEXURE D
**ZUTARI CONCEPT TURNING
CIRCLE PLAN**

Plot Date: 10/7/2024 12:11:32 pm Office: ZAGRJ File: C:\USERS\FAYAZ.KHALICK\ZUTARI\1002372 - METROGROUNDS INDUSTRIAL - DOCUMENTS\05 DELIVER\05 MODELING\CIVIL_3D\CAD\METROGROUNDS_REV4_TURNING_CIRCLE_MODEL.DWG



DISCLAIMER
IF CONSTRUCTION DRAWINGS ARE ISSUED UNSIGNED, THE MASTER WITH THE ORIGINAL SIGNATURE OF APPROVAL WILL BE HELD AT THE ZUTARI OFFICE OF THE APPROVER

RESPONSIBLE PERSONS (INTERNAL)			
	NAME	SIGNATURE	DATE
DRAWN			
DESIGNED			
REVIEWED			

ZUTARI
IMPACT. ENGINEERED.

CLIENT

REV	DATE	REVISION DETAILS	APPROVED
A			

SCALE	AS SHOWN	SIZE	A3	PRELIMINARY NOT FOR CONSTRUCTION
DRAWN		APPROVED		
DESIGNED				DATE
REVIEWED				AC KEYSER ECSA-200670188

PROJECT

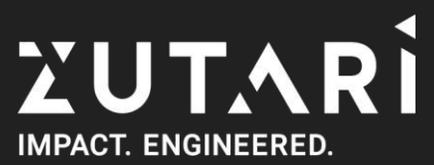
TITLE

DRAWING NUMBER					
PROJECT No.	WBS	TYPE	DISC	NUMBER	REV
	0000	DRG			A



Metro Grounds Mixed Use Industrial Development

Urban Design Framework and Guidelines
December 2025



Contents

1. Project Location
2. Development Vision
3. Key Design Informants
4. Metro Grounds Framework
5. Access and Movement
6. Central Boulevard
7. Indicative Street Sections
8. Street Guidelines
9. Land Use and Activity
10. Industry
11. Education
12. Public Realm Guidelines
13. Approach to Stormwater
14. Visual Impact Guidelines

Project Location

The study area is located on a portion of the Remainder of Erf 464 George, in the George Industrial area east of York Street and north of the N2. The site is located at the intersection of PW Botha Boulevard and Ossie Urban Street roughly halfway between Nelson Mandela Boulevard and York Street, adjacent to an existing substation and the proposed future GO George bus depot.



Development Vision

A Productive, Working and Learning Environment

Three design principles and associated objectives guide design decisions and the development framework of the site

CONNECTED

Providing an **integrated street network** that provides access to internal development parcels as well as connecting to the existing and proposed street network



SAFE & SECURE

Through **good management** and safety through **surveillance**, ensure a safe and **secure** development for both the site's users and the property and infrastructure.



DIVERSE

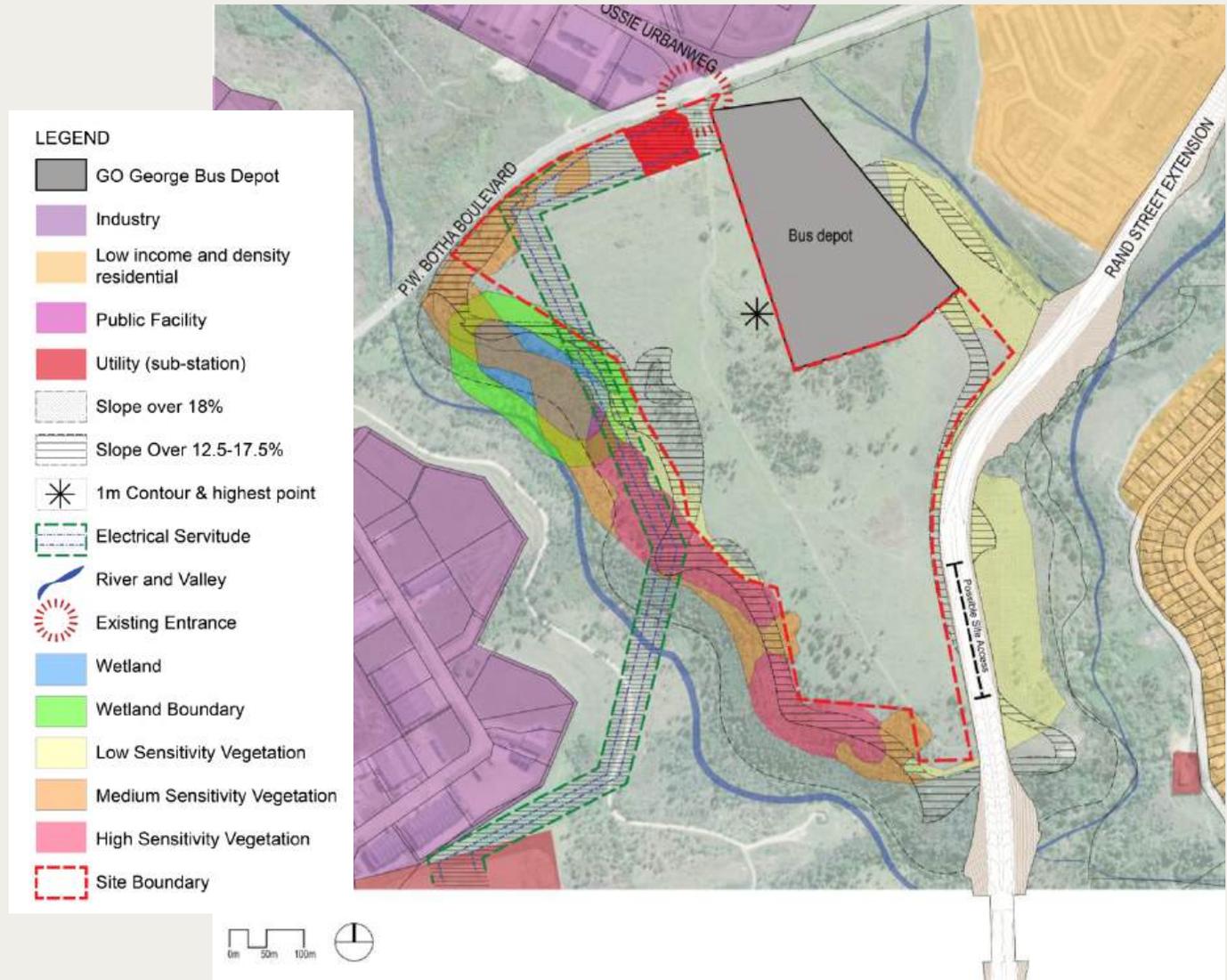
Optimising the accessible and prominent **location** of the site with a development focussed on providing opportunities for varying industrial uses as well as education, utility and power.



Key Design Informants

The following key site informants unpacked during the analysis phase provide spatial guidance to where development can and cannot occur and the limitations to it. These include:

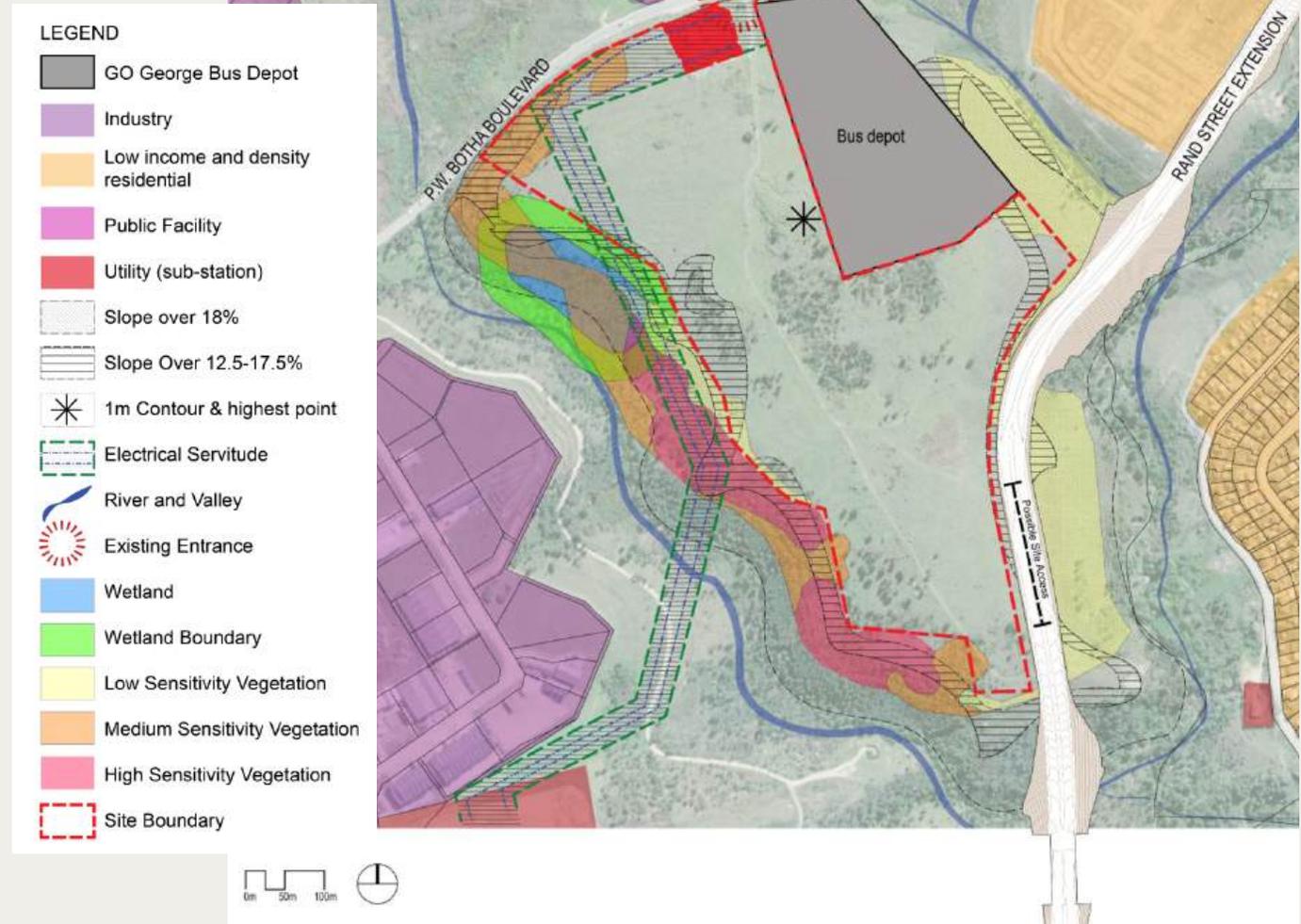
- Steep slopes, which have limited the developable area located along the western, southern and eastern edges of the site associated with river valleys and sensitive environmental areas.
- A botanical assessment was undertaken, and areas to the east of the site, on the steeper slopes along the river corridor were identified as including sensitive vegetation. These are indicated on the opposite map, and the High Sensitivity areas are excluded from the development footprint.
- A wetland and its associated 30m buffer is located on the western edge of the site, associated with the sensitive vegetation areas.



Key Design Informants

Continued

- Existing electrical servitude that is located along the northern and western edges of the site where no development can occur.
- Existing street network within limited accessibility and a requirement to provide movement access to the site from the proposed Rand Street extension and PW Botha Boulevard
- Site access is limited to one point along FW Botha Boulevard and a small area along the Rand Street extension.
- At the entrance to the site from P.W. Botha Boulevard is a sub-station to the west and the proposed GO George Bus depot to the east. The bus depot will require direct access from the Metrogrounds development.



Key Design Informants

Rand Street Extension

The Rand Street Extension, the road forming the eastern boundary of the site is a planned route connecting Pacaltsdorp to the centre of George.

The horizontal geometric design of this road was a key informant of the design of the Metrogrounds Development. The two drawings opposite illustrate the two options of the proposed road going over or under the N2 highway. Each option gave access to the Metrogrounds development at different locations, presenting challenges of traversing steep topography, line of sight from approaching traffic and ease of connection into the development. Ultimately, the overpass was decided to be the best option, providing the best access to the site and the easiest road connection.

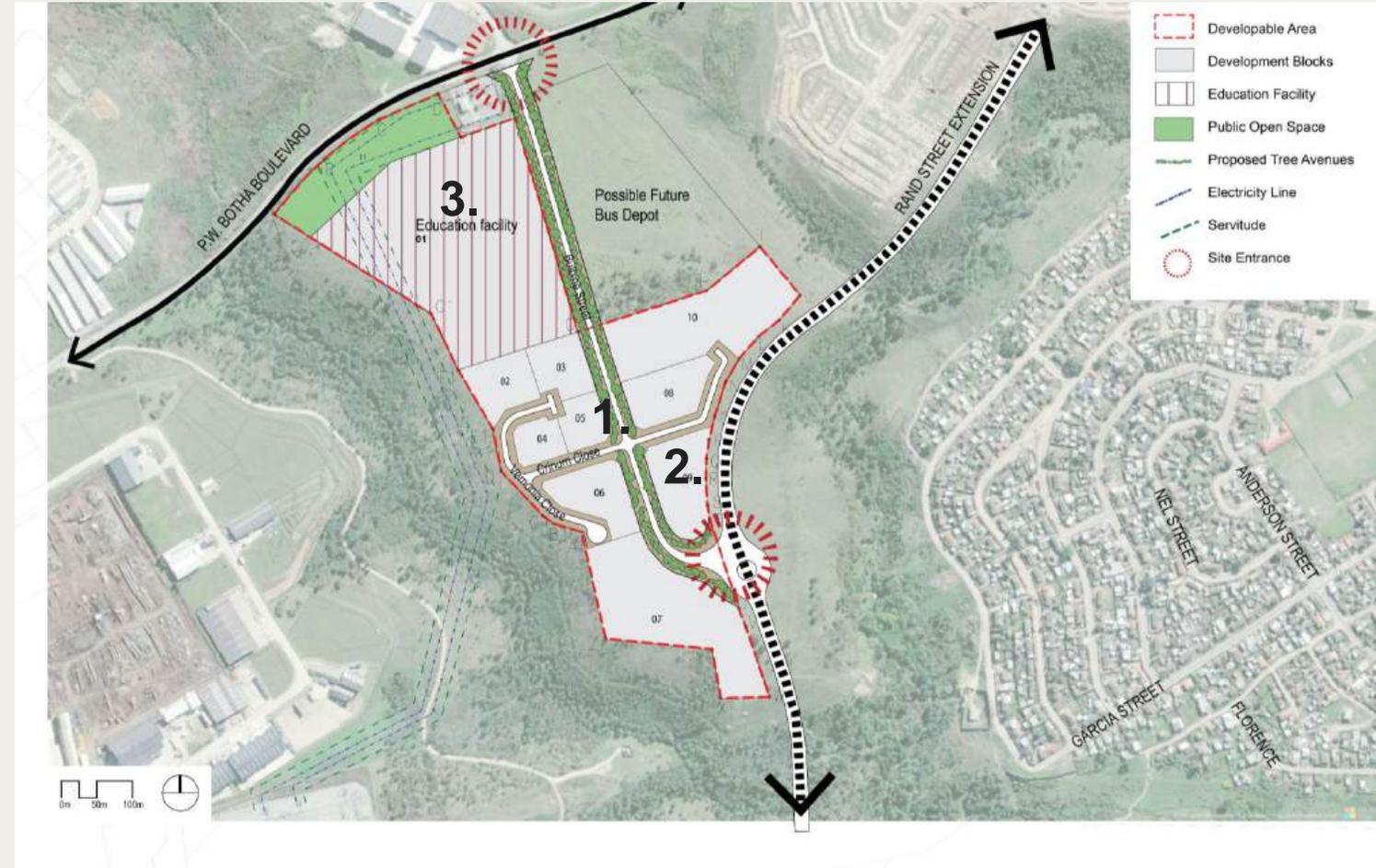


Metrogrounds Framework

Guiding Concepts

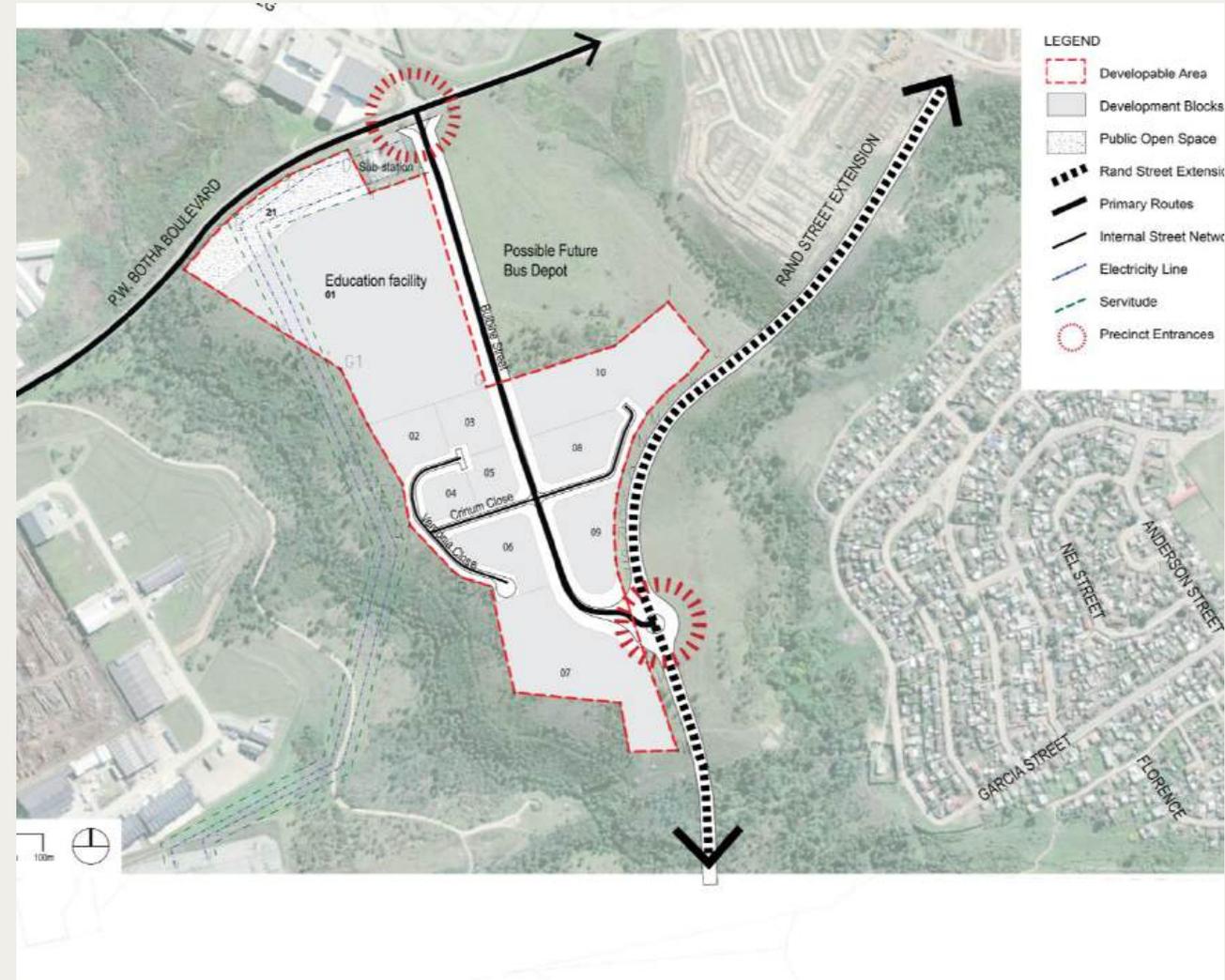
The development framework is guided by the design principles as well as the key spatial informants. It is structured around:

1. A central, landscaped boulevard, which creates a connection between the proposed Rand Street Extension and PW Botha Boulevard.
2. A range of development parcels providing industrial opportunities for a range of users.
3. A tertiary education facility located along PW Botha Boulevard with direct access from the central boulevard.



Access and Movement

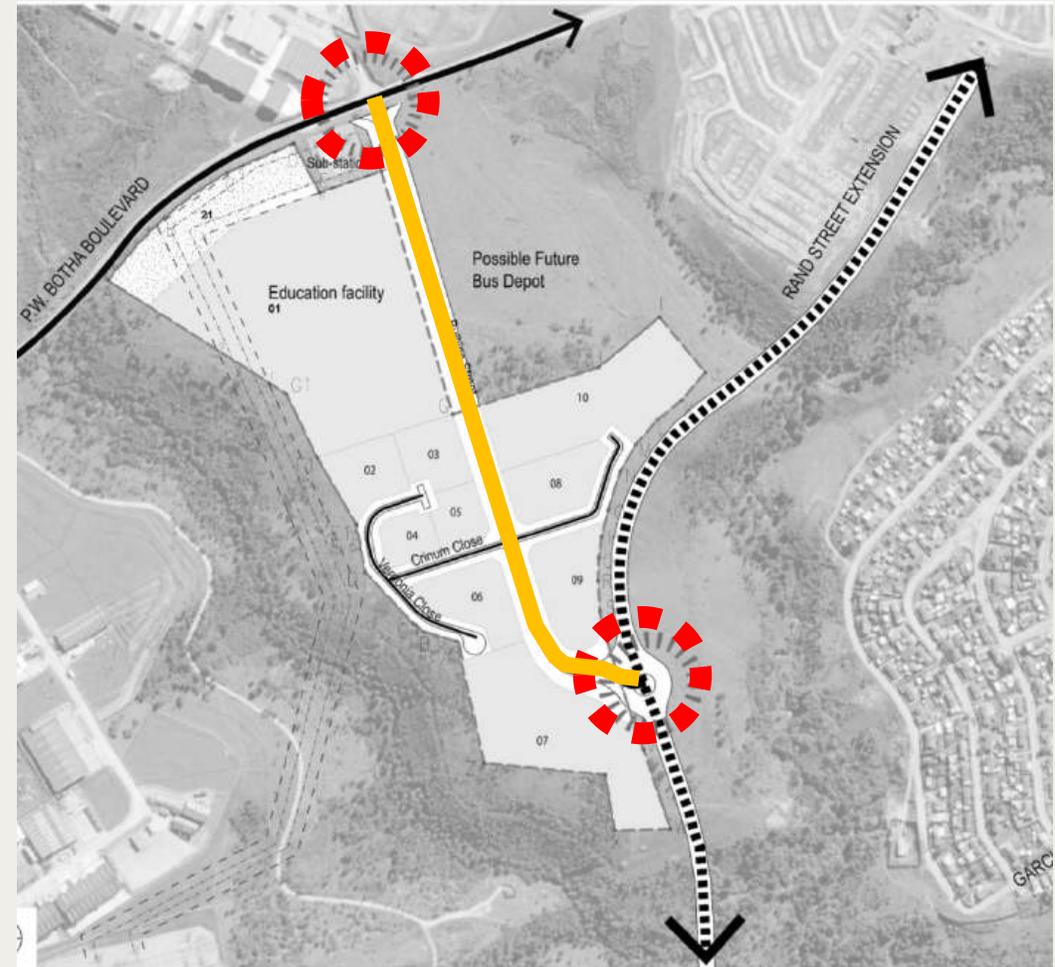
- Two entrances off to the development. The northern entrance off P.W. Botha Boulevard and the southern entrance off Rand Street Extension.
- The primary north-south movement route (30m wide) has restricted driveway access due to its road class but it provides access to the secondary routes.
- Access to the education facility is directly off the primary route.
- The secondary routes provide access to the industrial properties (22m wide)
- Rand Street Extension is a future road that has been identified in the George Roads Masterplan. The timing of the road construction may not align with the development of Metrogrounds, but the layout has been designed in a way that site movement and access can still work without the Rand Street Extension.
- To the north-east of the site an area has been designated as a permanent bus depot for the GO George buses. This is located outside of the site extent but is accessed via the Central Boulevard.



Central Boulevard

Connecting Street

- Primary structuring, limited access through-route connecting north and south access points
- Providing access between all areas of the development
- Generously and consistently landscaped with people-friendly elements to create a cohesive environment
- Bicycle infrastructure along the Boulevard should be accommodated in the street design

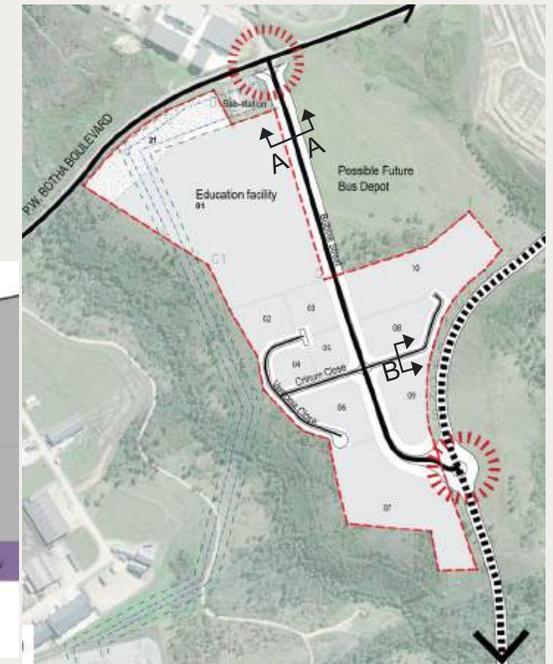
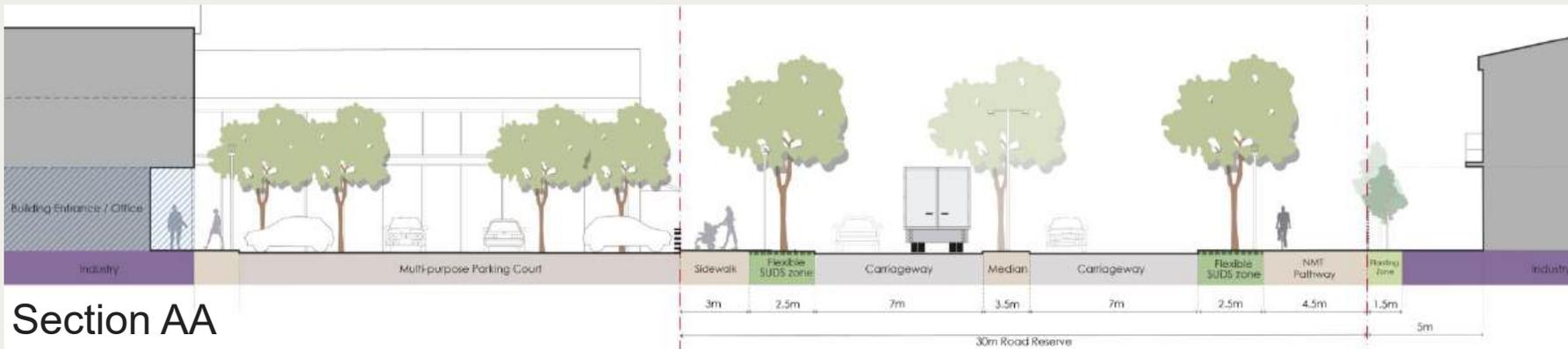
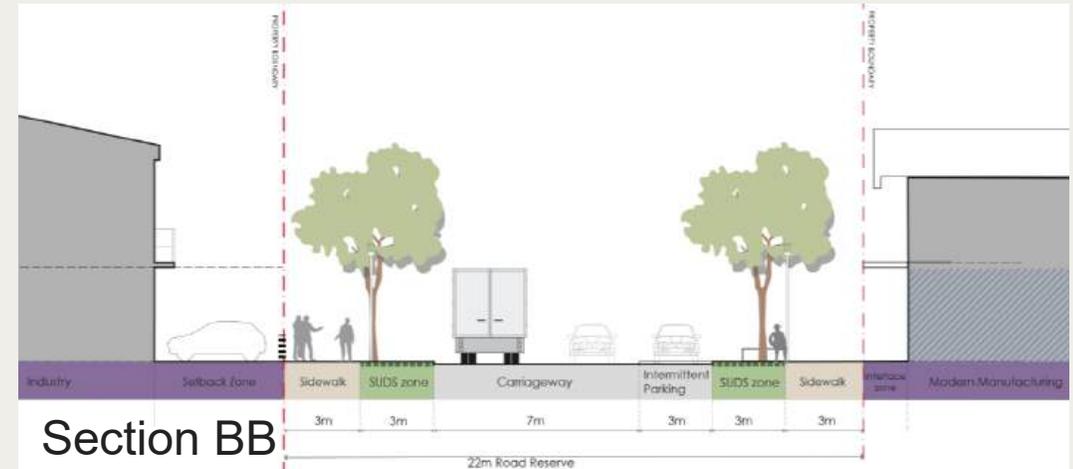


Indicative Street Sections

The indicative street sections below illustrate the two street typologies.

The **Central Boulevard (Section AA)** accommodates 4 lanes of traffic and generous sidewalks, including a bicycle path to support safe NMT movement and access to public transport. The road is wide enough to accommodate bus embayments where necessary. No direct access property access is allowed off this street.

The **Secondary Streets (Section BB)** play a role in providing vehicle access onto each property. These streets are narrower at 22m wide and include intermittent street parking, generous sidewalks and sustainable urban drainage zones.



Street Guidelines

The following guidelines apply to create safe and functional streets:

- The fronts of the buildings, including the front door, windows and shopfronts must face onto the street.
- Small landscaped parking courts are allowed along the Central Boulevard. This enables the fronts of buildings to be easily accessed and encourages the front façade of the building to overlook the street. These parking courts should provide a row of parking bays along the street edge and a road of parking bays along the building edge with a narrow access road in between. They should not be extensive parking lots with a maximum number of 3 rows of parking allowed.
- Safety through surveillance is encouraged by maintaining visual connections between public and private properties with visually permeable fencing encouraged along the street edge.
- A solid boundary wall is permitted along up to 40% of the street-facing property boundary, with a maximum height of 2 meters. The remaining 60% must be made up of permeable fencing if a secured boundary is required.

NOTE: Refer to the indicative street sections for illustration of the above guidelines



Front façade of building overlooking street



Small parking area along street edge

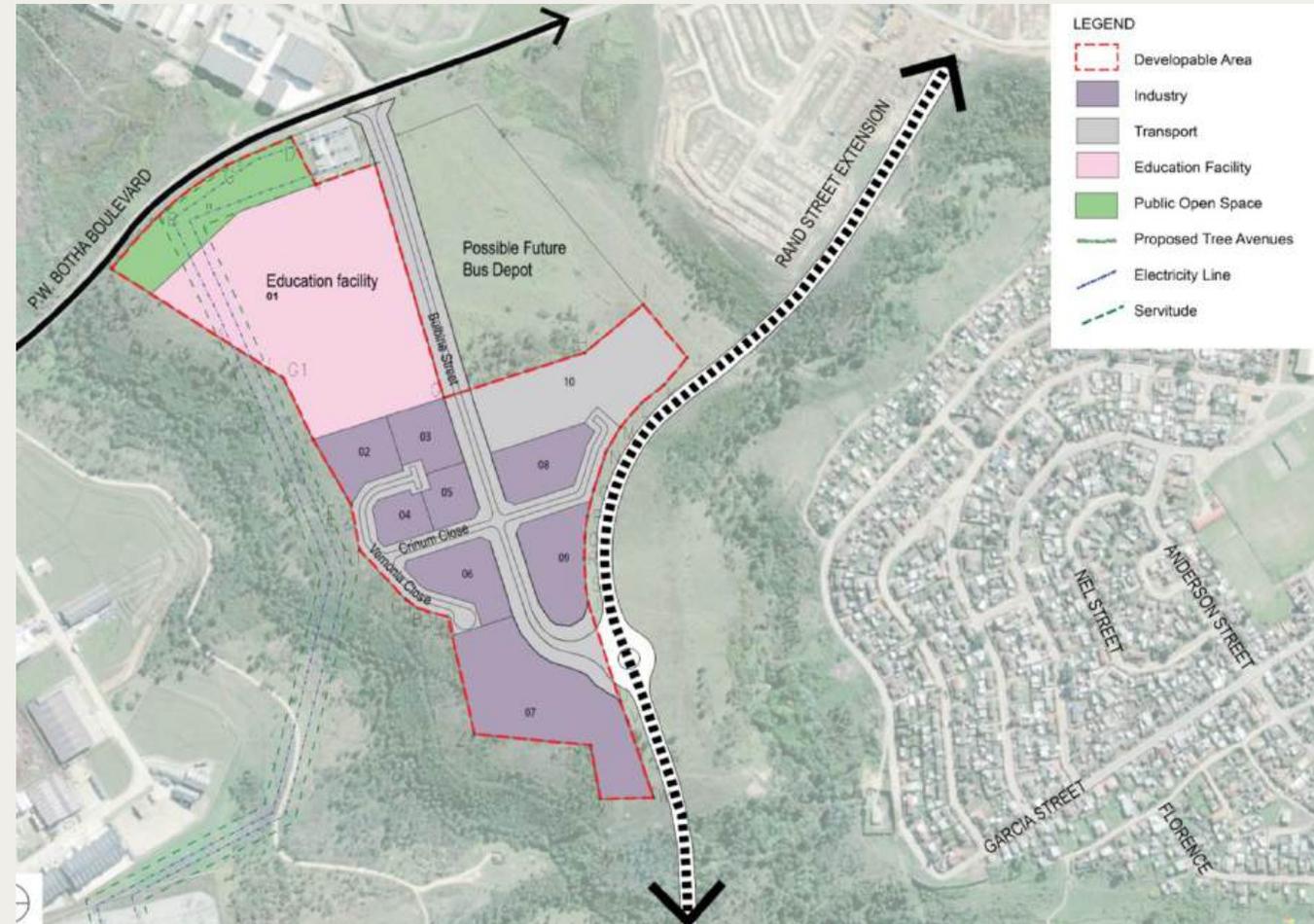
Land Use and Activity

A mix of uses are distributed across the development including:

- Range of industry
- Tertiary education facility
- Open space

Erf 10 will be developed with the Bus Depot as a transport facility.

The area deemed open space forming the northern edge of the site between P.W. Botha Boulevard and the education facility accommodates an electrical powerline servitude and medium sensitive vegetation. The maintenance and upkeep of this area is vital to create an attractive edge and entrance to the development. It could be used by the educational facility for passive recreation or parking on agreement.



Industry

Description and Guidelines

Industrial properties of varying sizes make up the majority of the development on the site. The property sizes are flexible enough to accommodate a range of industrial uses, from warehousing and light industry to small-scale manufacturing. No noxious industry is allowed.

- Buildings should be located towards the street edge of the property with larger, extensive parking lots, loading bays, delivery entrances and 'back of house' uses to be located to the back of the plot, away from the street.
- More public/active elements of the industrial development should be located to the front of the building along the street edge for example, lobbies, offices, storefronts, staff canteens etc.



Education

Guidelines

- The tertiary education institution is to be located at the northern entrance to the site with direct access off Central Boulevard.
- Buildings on the site should be located along the Central Boulevard edge, providing passive surveillance and ease of access into the facility.
- A compact, multi-story facility should be promoted with the possibility of incorporating multi-purpose sports facilities and residential opportunities (subject to supplementary land use management applications)
- The area under the power lines (adjacent to the open space) should be included in the landscape/parking plan of the facility with focus on the visual impact of the facility on PW Botha Boulevard. Maintenance of this area must be linked to educational use
- Landscaping and greening to be illustrated during site development plan stages, to include recreation areas for students. Recreational facilities to be provided.



Public Realm Guidelines

General

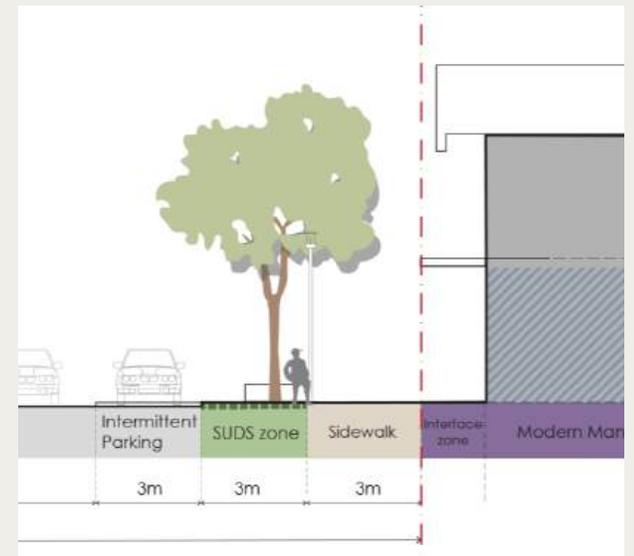
The following guidelines apply to the landscaping elements of the site:

- A landscape plan must be submitted with the site development plan for each property.
- Visually permeable fences to be provided along boundaries abutting the central boulevard and all adjacent open space/riverine areas
- The site owner is responsible for the upkeep and maintenance of the public space directly adjacent to their property.
- Lighting should ensure that primary streets, pathways and open spaces are well illuminated during hours of darkness to ensure visibility and enhance safety in the public realm.
- Landscape elements should represent a common design language and style that improve the legibility and continuity of the public realm throughout a development.
- Ensuring the safety, security and maintenance of the public realm (public walkways, pavements and open spaces) directly abutting the development and its buildings is the responsibility of the managing agent through an adopt a spot agreement.



Approach to Stormwater

- Stormwater management is to be incorporated into the site and illustrated on the site development plan, in line with specialist reports and environmental authorisations.
- Integrate storm-water management and visual surveillance with the adjacent open space (riverine area) to be addressed in site and building design
- Sustainable drainage systems (SUDS) are designed to manage stormwater on-site to mimic natural drainage and encourage its infiltration, attenuation and passive treatment.
- Design sustainable urban drainage systems (SUDs) into the street sections and create a linear system to avoid large attenuation and detention ponds, which sterilise large pieces of developable land.
- Rainwater harvesting and greywater systems should be integrated into the development design. Rainwater from roofs and grey water from non-toilet plumbing systems can be used for irrigation, laundry and toilet flushing.
- Well well-landscaped green roof can be used to mimic pre-development conditions.
- Permeable paving to be designed with appropriate layer thickness, clean aggregate, and maintenance provisions to ensure effective stormwater infiltration and prevent clogging.



Visual Impact Guidelines

- The design of Metro Grounds development must address visual impact from existing and proposed streets, including the Rand Street Extension, as well as from key vantage points across the watershed to the west and east, and from the N2 highway.
- Service yards, storage areas, and other back-of-house functions should be screened or integrated architecturally to minimize their visual impact on the public realm and surrounding landscape.
- Integration of storm-water management and visual surveillance with adjacent open space (riverine area) to be addressed in the site and building design.
- Visual impact from existing and proposed streets, and also from across the watershed to the west to be considered in building design



Western Cape
Government

Department of Environmental Affairs and
Development Planning

BASIC ASSESSMENT REPORT

THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT NO. 107 OF 1998) AND THE ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS.

NOVEMBER 2025



Western Cape
Government

BASIC ASSESSMENT REPORT

**THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT NO. 107 OF 1998) AND
THE ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS.**

APRIL 2024

(For official use only)	
Pre-application Reference Number (if applicable):	
EIA Application Reference Number:	
NEAS Reference Number:	
Exemption Reference Number (if applicable):	
Date BAR received by Department:	
Date BAR received by Directorate:	
Date BAR received by Case Officer:	

GENERAL PROJECT DESCRIPTION

(This must include an overview of the project, including the Farm name/Portion/Erf number)

<p>Project Title: Metro Grounds Mixed-Use Development</p> <p>The George Municipality proposes the establishment of a light industrial development and an educational facility on part of the Remainder of Erf 464, George. The project involves the subdivision and rezoning of erven as well as the design and construction of the following:</p> <ul style="list-style-type: none"> • Internal road network (including road signs, markings and intersections), • Stormwater controls (road drainage and stormwater outlet structures), • Potable water reticulation, • Electrical reticulation, and • Sewage reticulation.

IMPORTANT INFORMATION TO BE READ PRIOR TO COMPLETING THIS BASIC ASSESSMENT REPORT

1. The purpose of this template is to provide a format for the Basic Assessment report as set out in Appendix 1 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA"), Environmental Impact Assessment ("EIA") Regulations, 2014 (as amended) in order to ultimately obtain Environmental Authorisation.
2. The Environmental Impact Assessment ("EIA") Regulations is defined in terms of Chapter 5 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA") hereinafter referred to as the "NEMA EIA Regulations".
3. Submission of documentation, reports and other correspondence: The Department has adopted a digital format for corresponding with proponents/applicants or the general public. If there is a conflict between this approach and any provision in the legislation, then the provisions in the legislation prevail. If there is any uncertainty about the requirements or arrangements, the relevant Competent Authority must be consulted.
4. The Directorate: Development Management has created generic e-mail addresses for the respective Regions, to centralise their administration. Please make use of the relevant general administration e-mail address below when submitting documents:

DEADPEIAAdmin@westerncape.gov.za
Directorate: Development Management (Region 1):
City of Cape Town; West Coast District Municipal area;
Cape Winelands District Municipal area and Overberg District Municipal area.

DEADPEIAAdmin.George@westerncape.gov.za
Directorate: Development Management (Region 3):
Garden Route District Municipal area and Central Karoo District Municipal area

5. General queries must be submitted via the general administration e-mail for EIA related queries. Where a case-officer of DEA&DP has been assigned, correspondence may be directed to such official and copied to the relevant general administration e-mail for record purposes.
6. All correspondence, comments, requests and decisions in terms of applications, will be issued to either the applicant/requester in a digital format via email, with digital signatures, and copied to the Environmental Assessment Practitioner ("EAP") (where applicable).
7. The required information must be typed within the spaces provided in this Basic Assessment Report ("BAR"). The sizes of the spaces provided are not necessarily indicative of the amount of information to be provided.
8. All applicable sections of this BAR must be completed.
9. Unless protected by law, all information contained in, and attached to this BAR, will become public information on receipt by the Competent Authority. If information is not submitted with this BAR due to such information being protected by law, the applicant and/or Environmental Assessment Practitioner ("EAP") must declare such non-disclosure and provide the reasons for believing that the information is protected.
10. This BAR is current as of April 2024. It is the responsibility of the Applicant/ EAP to ascertain whether subsequent versions of the BAR have been released by the Department. Visit this Department's website at <http://www.westerncape.gov.za> to check for the latest version of this BAR.
11. This BAR is the standard format, which must be used in all instances when preparing a BAR for Basic Assessment applications for an environmental authorisation in terms of the NEMA EIA Regulations when the Western Cape Government Department of Environmental Affairs and Development Planning ("DEA&DP") is the Competent Authority.
12. Unless otherwise indicated by the Department, one hard copy and one electronic copy of this BAR must be submitted to the Department at the postal address given below or by delivery thereof to the Registry Office of the Department. Reasonable access to copies of this Report must be provided to the relevant Organs of State for consultation purposes, which may, if so indicated by the Department, include providing a printed copy to a specific Organ of State.
13. This BAR must be duly dated and originally signed by the Applicant, EAP (if applicable) and Specialist(s) and must be submitted to the Department at the details provided below.
14. The Department's latest Circulars pertaining to the "One Environmental Management System" and the EIA Regulations, any subsequent Circulars, and guidelines must be taken into account when completing this BAR.
15. Should a water use licence application be required in terms of the National Water Act, 1998 (Act No. 36 of 1998) ("NWA"), the "One Environmental System" is applicable, specifically in terms of the synchronisation of the consideration of the application in terms of the NEMA and the NWA. Refer to this Department's Circular EADP 0028/2014: One Environmental Management System.
16. Where Section 38 of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) ("NHRA") is triggered, a copy of Heritage Western Cape's final comment must be attached to the BAR.
17. The Screening Tool developed by the National Department of Environmental Affairs must be used to generate a screening report. Please use the Screening Tool link <https://screening.environment.gov.za/screeningtool> to generate the Screening Tool Report. The screening tool report must be attached to this BAR.

18. Where this Department is also identified as the Licencing Authority to decide on applications under the National Environmental Management: Air Quality Act (Act No. 29 of 2004) ("NEM:AQA"), the submission of the Report must also be made as follows, for-
- o Waste Management Licence Applications, this report must also (i.e., another hard copy and electronic copy) be submitted for the attention of the Department's Waste Management Directorate (Tel: 021-483-2728/2705 and Fax: 021-483-4425) at the same postal address as the Cape Town Office.
 - o Atmospheric Emissions Licence Applications, this report must also be (i.e., another hard copy and electronic copy) submitted for the attention of the Licensing Authority or this Department's Air Quality Management Directorate (Tel: 021 483 2888 and Fax: 021 483 4368) at the same postal address as the Cape Town Office.

DEPARTMENTAL DETAILS	
CAPE TOWN OFFICE: DIRECTORATE: DEVELOPMENT MANAGEMENT (REGION 1) (City of Cape Town, West Coast District, Cape Winelands District & Overberg District)	GEORGE REGIONAL OFFICE: DIRECTORATE: DEVELOPMENT MANAGEMENT (REGION 3) (Central Karoo District & Garden Route District)
The completed Form must be sent via electronic mail to: DEADPEIAAdmin@westerncape.gov.za	The completed Form must be sent via electronic mail to: DEADPEIAAdmin.George@westerncape.gov.za
Queries should be directed to the Directorate: Development Management (Region 1) at: E-mail: DEADPEIAAdmin@westerncape.gov.za Tel: (021) 483-5829	Queries should be directed to the Directorate: Development Management (Region 3) at: E-mail: DEADPEIAAdmin.George@westerncape.gov.za Tel: (044) 814-2006
Western Cape Government Department of Environmental Affairs and Development Planning Attention: Directorate: Development Management (Region 1) Private Bag X 9086 Cape Town, 8000	Western Cape Government Department of Environmental Affairs and Development Planning Attention: Directorate: Development Management (Region 3) Private Bag X 6509 George, 6530

MAPS

<p>Provide a location map (see below) as Appendix A1 to this BAR that shows the location of the proposed development and associated structures and infrastructure on the property.</p>	
<p>Locality Map:</p>	<p>The scale of the locality map must be at least 1:50 000. For linear activities or development proposals 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 map must indicate the following:</p> <ul style="list-style-type: none"> • an accurate indication of the project site position as well as the positions of the alternative sites, if any; • road names or numbers of all the major roads as well as the roads that provide access to the site(s) • a north arrow; • a legend; and • a linear scale. <p>For ocean-based or aquatic activity, the coordinates must be provided within which the activity is to be undertaken, and a map at an appropriate scale, clearly indicating the area within which the activity is to be undertaken.</p> <p>Where a comment from the Western Cape Government: Transport and Public Works is required, a map illustrating the properties (owned by the Western Cape Government: Transport and Public Works) that will be affected by the proposed development must be included in the Report.</p>
<p>Provide a detailed site development plan / site map (see below) as Appendix B1 to this BAR; and if applicable, all alternative properties and locations.</p>	
<p>Site Plan:</p>	<p>Detailed site development plan(s) must be prepared for each alternative site or alternative activity. The site plans must contain or conform to the following:</p> <ul style="list-style-type: none"> • The detailed site plan must preferably be at a scale of 1:500 or at an appropriate scale. The scale must be clearly indicated on the plan, preferably together with a linear scale. • The property boundaries and numbers of all the properties within 50m of the site must be indicated on the site plan. • On land where the property has not been defined, the co-ordinates of the area in which the proposed activity or development is proposed must be provided. • The current land use (not zoning) as well as the land use zoning of each of the adjoining properties must be clearly indicated on the site plan. • The position of each component of the proposed activity or development as well as any other structures on the site must be indicated on the site plan. • Services, including electricity supply cables (indicate aboveground or underground), water supply pipelines, boreholes, sewage pipelines, storm water infrastructure and access roads that will form part of the proposed development must be clearly indicated on the site plan. • Servitudes and an indication of the purpose of each servitude must be indicated on the site plan. • Sensitive environmental elements within 100m of the site must be included on the site plan, including (but not limited to): <ul style="list-style-type: none"> o Watercourses / Rivers / Wetlands o Flood lines (i.e., 1:100 year, 1:50 year and 1:10 year where applicable); o Coastal Risk Zones as delineated for the Western Cape by the Department of Environmental Affairs and Development Planning ("DEA&DP"); o Ridges; o Cultural and historical features/landscapes; o Areas with indigenous vegetation (even if degraded or infested with alien species). • Whenever the slope of the site exceeds 1:10, a contour map of the site must be submitted. • North arrow <p>A map/site plan must also be provided at an appropriate scale, which superimposes the proposed development and its associated structures and infrastructure on the environmental sensitivities of the preferred and alternative sites, indicating any areas that should be avoided, including buffer areas.</p>
<p>Site photographs</p>	<p>Colour photographs of the site that show the overall condition of the site and its surroundings (taken on the site and taken from outside the site) with a description of each photograph. The vantage points from which the photographs were taken must be indicated on the site plan, or locality plan as applicable. If available, please also provide a recent aerial photograph. Photographs must be attached to this BAR as Appendix C. The aerial photograph(s) should be supplemented with additional photographs of relevant features on the site. Date of photographs must be included. Please note that the above requirements must be duplicated for all alternative sites.</p>
<p>Biodiversity Overlay Map:</p>	<p>A map of the relevant biodiversity information and conditions must be provided as an overlay map on the property/site plan. The Map must be attached to this BAR as Appendix D.</p>
<p>Linear activities or development and multiple properties</p>	<p>GPS co-ordinates must be provided in degrees, minutes and seconds using the Hartebeeshoek 94 WGS84 co-ordinate system. Where numerous properties/sites are involved (linear activities) you must attach a list of the Farm Name(s)/Portion(s)/Erf number(s) to this BAR as an Appendix. For linear activities that are longer than 500m, please provide a map with the co-ordinates taken every 100m along the route to this BAR as Appendix A3.</p>

ACRONYMS

DAFF:	Department of Forestry and Fisheries
DEA:	Department of Environmental Affairs
DEA& DP:	Department of Environmental Affairs and Development Planning
DHS:	Department of Human Settlement
DoA:	Department of Agriculture
DoH:	Department of Health
DWS:	Department of Water and Sanitation
EMPr:	Environmental Management Programme
HWC:	Heritage Western Cape
NFEPA:	National Freshwater Ecosystem Protection Assessment
NSBA:	National Spatial Biodiversity Assessment
TOR:	Terms of Reference
WCBSP:	Western Cape Biodiversity Spatial Plan
WCG:	Western Cape Government

ATTACHMENTS

Note: The Appendices must be attached to the BAR as per the list below. Please use a ✓ (tick) or a x (cross) to indicate whether the Appendix is attached to the BAR.

The following checklist of attachments must be completed.

APPENDIX			✓ (Tick) or x (cross)
Appendix A:	Maps		
	Appendix A1:	Locality Map	✓
	Appendix A2:	Coastal Risk Zones as delineated in terms of ICMA for the Western Cape by the Department of Environmental Affairs and Development Planning	x
	Appendix A3:	A map with the GPS coordinates for linear activities	x
Appendix B:	Appendix B1:	Site development plan(s)	✓
	Appendix B2	A map of appropriate scale, which superimposes the proposed development and its associated structures and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffer areas;	✓
Appendix C:	Photographs		✓
Appendix D:	Biodiversity overlay map		✓
Appendix E:	Permit(s) / license(s) / exemption notice, agreements, comments from the State Department/Organs of state and service letters from the municipality.		
	Appendix E1:	Final comment/ROD from HWC	See final
	Appendix E2:	Copy of comment from Cape Nature	See final
	Appendix E3:	Final Comment from the DWS	See final
	Appendix E4:	Comment from the DEA: Oceans and Coast	n/a
	Appendix E5:	Comment from the DAFF	See final
	Appendix E6:	Comment from WCG: Transport and Public Works	See final
	Appendix E7:	Comment from WCG: DoA	See final
	Appendix E8:	Comment from WCG: DHS	See final
	Appendix E9:	Comment from WCG: DoH	See final
	Appendix E10:	Comment from DEA&DP: Pollution Management	See final
	Appendix E11:	Comment from DEA&DP: Waste Management	See final
	Appendix E12:	Comment from DEA&DP: Biodiversity	See final
	Appendix E13:	Comment from DEA&DP: Air Quality	See final
	Appendix E14:	Comment from DEA&DP: Coastal Management	n/a
	Appendix E15:	Comment from the local authority	See final
	Appendix E16:	Confirmation of all services (water, electricity, sewage, and solid waste management)	✓
	Appendix E17:	Comment from the District Municipality	See final
	Appendix E18:	Copy of an exemption notice	n/a
	Appendix E19:	Pre-approval for the reclamation of land	n/a
	Appendix E20:	Proof of agreement/TOR of the specialist studies conducted.	*See specialist studies Appendix G
	Appendix E21:	Proof of land use rights	n/a
Appendix E22:	Proof of public participation agreement for linear activities	n/a	
Appendix F:	Public participation information: including a copy of the register of I&APs, the comments and responses Report, proof of notices, advertisements and any other public participation information as is required.		See final
Appendix G:	Specialist Report(s)		✓
Appendix H:	EMPr		✓
Appendix I:	Screening tool report		✓
Appendix J:	The impact and risk assessment for each alternative		n/a
Appendix K:	Need and desirability for the proposed activity or development in terms of this Department's guideline on Need and Desirability (March 2013)/DEA Integrated Environmental Management Guideline		✓

Appendix L	Any other attachments must be included as subsequent appendices		
	Appendix L1	EAPs CV	✓
	Appendix L2	EAPS' EAPASA Certificate	✓
	Appendix L3	Engineering Services Report	✓
	Appendix L4	Electrical Services Report	✓
	Appendix L5	Stormwater Management Plan	✓

SECTION A: ADMINISTRATIVE DETAILS

Highlight the Departmental Region in which the intended application will fall	CAPE TOWN OFFICE: REGION 1		GEORGE OFFICE: REGION 3
	(City of Cape Town, West Coast District	(Cape Winelands District & Overberg District)	(Central Karoo District & Garden Route District)
Duplicate this section where there is more than one Proponent Name of Applicant/Proponent: Name of contact person for Applicant/Proponent (if other): Company/ Trading name/State Department/Organ of State: Company Registration Number: Postal address: Telephone: E-mail:	George Municipality		
	Delia Power		
	George Municipality		
	N/A		
	PO Box 19		
	George	Postal code: 6530	
	+27(0) 44 801 9476	Cell: N/A	
	dpower@george.gov.za	Fax: N/A	
	George Municipality		
Company of EAP: EAP name: Postal address: Telephone: E-mail: Qualifications: EAP registration no:	Zutari (Pty) Ltd		
	Patrick Killick		
	PO Box 509		
	George	Postal code: 6530	
	+27(0) 44 805 5432	Cell: N/A	
	Patrick.killick@zutari.com	Fax: (044) 873 5843	
	MPhil: Environmental Management 2021/4095		
	Supporting EAP: Siliindile Sibiya Bsc Hons in Environmental Science and is registered as an EAP with EAPASA (2021/3651)		
	George Municipality		
Duplicate this section where there is more than one landowner Name of landowner: Name of contact person for landowner (if other): Postal address: Telephone: E-mail:	George Municipality		
	Delia Power		
	PO Box 19		
	George	Postal code: 6530	
	+27(0) 44 801 9476	Cell: N/A	
	post@george.gov.za	Fax: N/A	
	George Municipality		
	Delia Power		
	PO Box 19		
George	Postal code: 6530		
+27(0) 44 801 9476	Cell: N/A		
post@george.gov.za	Fax: N/A		
Name of Person in control of the land: Name of contact person for the person in control of the land: Postal address: Telephone: E-mail:	George Municipality		
	Delia Power		
	PO Box 19		
	George	Postal code: 6530	
	+27(0) 44 801 9476	Cell: N/A	
	post@george.gov.za	Fax: N/A	
	George Municipality		
	Delia Power		
	PO Box 19		
George	Postal code: 6530		
+27(0) 44 801 9476	Cell: N/A		
post@george.gov.za	Fax: N/A		
Duplicate this section where there is more than one Municipal Jurisdiction Municipality in whose area of jurisdiction the proposed activity will fall: Contact person: Postal address: Telephone: E-mail:	George Municipality		
	Delia Power		
	PO Box 19		
	George	Postal code: 6530	
	+27(0) 44 801 9476	Cell: N/A	
	dpower@george.gov.za	Fax: N/A	
	George Municipality		
	Delia Power		
	PO Box 19		
George	Postal code: 6530		
+27(0) 44 801 9476	Cell: N/A		
dpower@george.gov.za	Fax: N/A		

SECTION B: CONFIRMATION OF SPECIFIC PROJECT DETAILS AS INCLUDED IN THE APPLICATION FORM

1.	Is the proposed development (please tick):	New	✓	Expansion	
2.	Is the proposed sites (s) a brownfield or greenfield site? Please explain.				
The site is a greenfield site from a development perspective. The proposed industrial area is currently undeveloped, with modified grassland and stands of predominantly Wattle species.					
Although the site is described as a greenfield, it has experienced various levels of disturbance activity in the past and is therefore not representative of the natural environmental state. Aerial images show, and the George Municipality confirmed, that the site was used in the past for the disposal of night soil, and the disposal furrows are clearly visible on historic aerial images.					
3.	For Linear activities or developments				
3.1.	Provide the Farm(s)/Farm Portion(s)/Erf number(s) for all routes:				
3.2.	Development footprint of the proposed development for all alternatives.				—m ²
3.3.	Provide a description of the proposed development (e.g. for roads the length, width and width of the road reserve in the case of pipelines indicate the length and diameter) for all alternatives:				
3.4.	Indicate how access to the proposed routes will be obtained for all alternatives:				
3.5.	SG-Digit codes of the Farms/Farm Portions/Erf numbers for all alternatives				
3.6.	Starting point co-ordinates for all alternatives				
	Latitude (S)	°	′	″	
	Longitude (E)	°	′	″	
	Middle point co-ordinates for all alternatives				
	Latitude (S)	°	′	″	
	Longitude (E)	°	′	″	
	End point co-ordinates for all alternatives				
	Latitude (S)	°	′	″	
	Longitude (E)	°	′	″	
Note: For Linear activities or developments longer than 500m, a map indicating the coordinates for every 100m along the route must be attached to this BAR as Appendix A3.					
4.	Other developments				
4.1.	Property size(s) of all proposed site(s):			Erf 464: ± 1,108.72 ha (11,087,244.40m²) (includes large portions of undeveloped land and road reserves spread across George)	
4.2.	Developed footprint of the existing facility and associated infrastructure (if applicable):			0 m ²	
4.3.	Development footprint of the proposed development and associated infrastructure size(s) for all alternatives:			± 16.54 ha (16,540 m²)	
4.4.	Provide a detailed description of the proposed development and its associated infrastructure (This must include details of e.g. buildings, structures, infrastructure, storage facilities, sewage/effluent treatment and holding facilities).				
The proposed infill industrial development intends to accommodate industrial erven, appropriate to the site context and facilitating small- and medium-enterprise development. The small industrial stands will be released to users or buyers. The proposed development also includes an educational erf that is earmarked to be developed as a tertiary educational facility. The proposed development does not require the future Rand Street extension for access or to make it functional; it will link into PW Botha Blvd. Extension of Rand Street is therefore not included in this development proposal. A Transport Zone I site is also included to accommodate a portion of the bus depot project, adjoining the project.					
The proposed infill development will be subdivided into the components and footprints as included in Table 1 below, please see the site plan/ layout in					

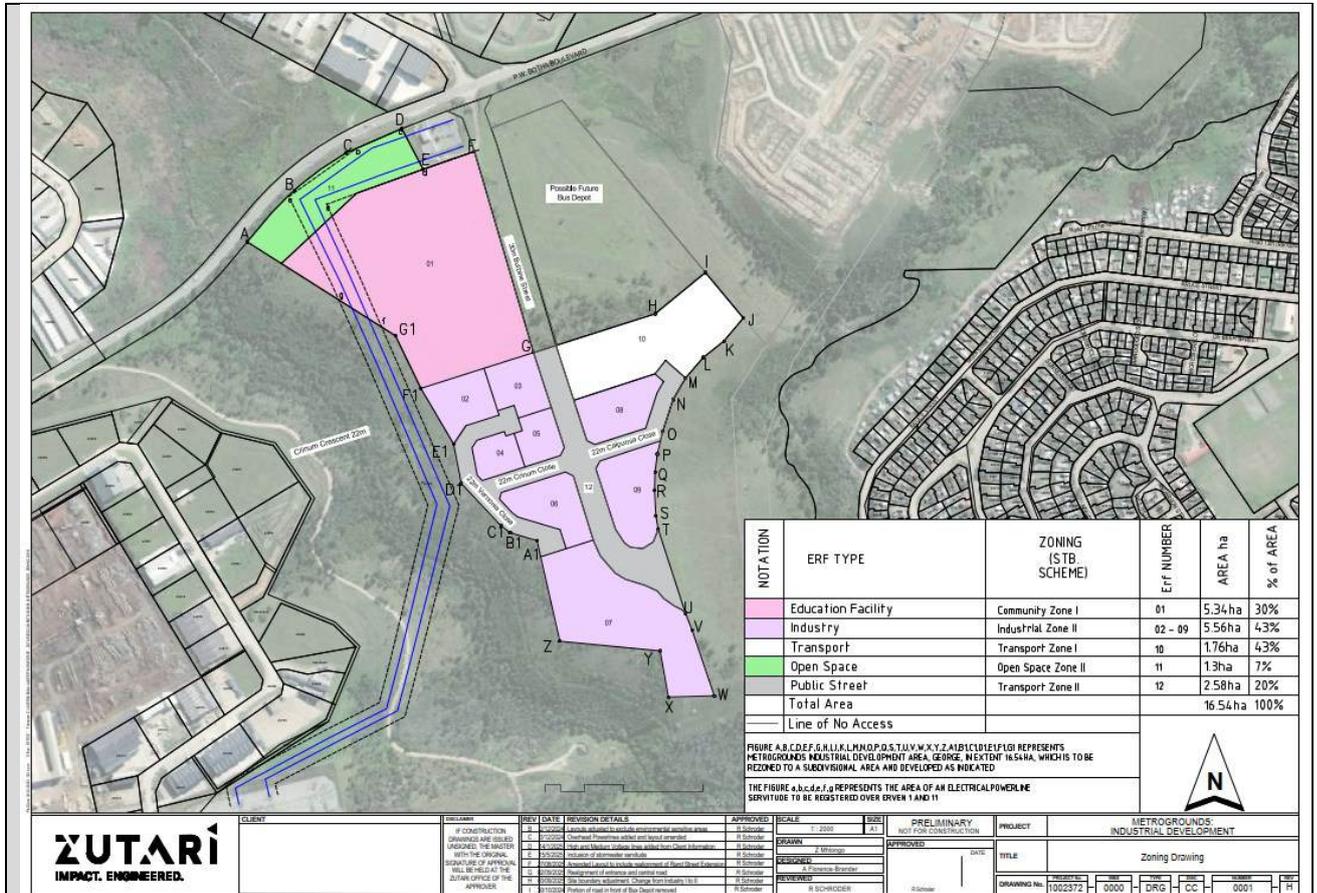


Figure 1 below.

Table 1: Summary of the proposed land uses

Land Use	Zoning	Erven	Area (ha)
Education Facility	Community Zone I	1	5.34
Industrial	Industrial Zone II	2-9	5.56
Transport	Transport Zone I	10	1.76
Open Space	Open Space II	11	1.3
Public Street	Transport Zone II	12	2.58
Total			16.54



Figure 2: Existing water services bordering the site.

Bulk Sewage System

- A wastewater reticulation system exists within the boundaries of the proposed development.
- The proposed development falls within the Outeniqua Wastewater Treatment Works' (WWTW) drainage area and will drain to the WWTW through the existing gravity sewer network, where it will be treated.
- It is proposed that the development will drain to the existing Schaapkop Pump Station indicated on the remainder of erf 13486. From this point, all wastewater generated will be pumped to the Outeniqua Wastewater Treatment Plant, where it will be treated.
- The George Municipality has confirmed that sufficient spare bulk sewerage services capacity is available – Appendix E16.

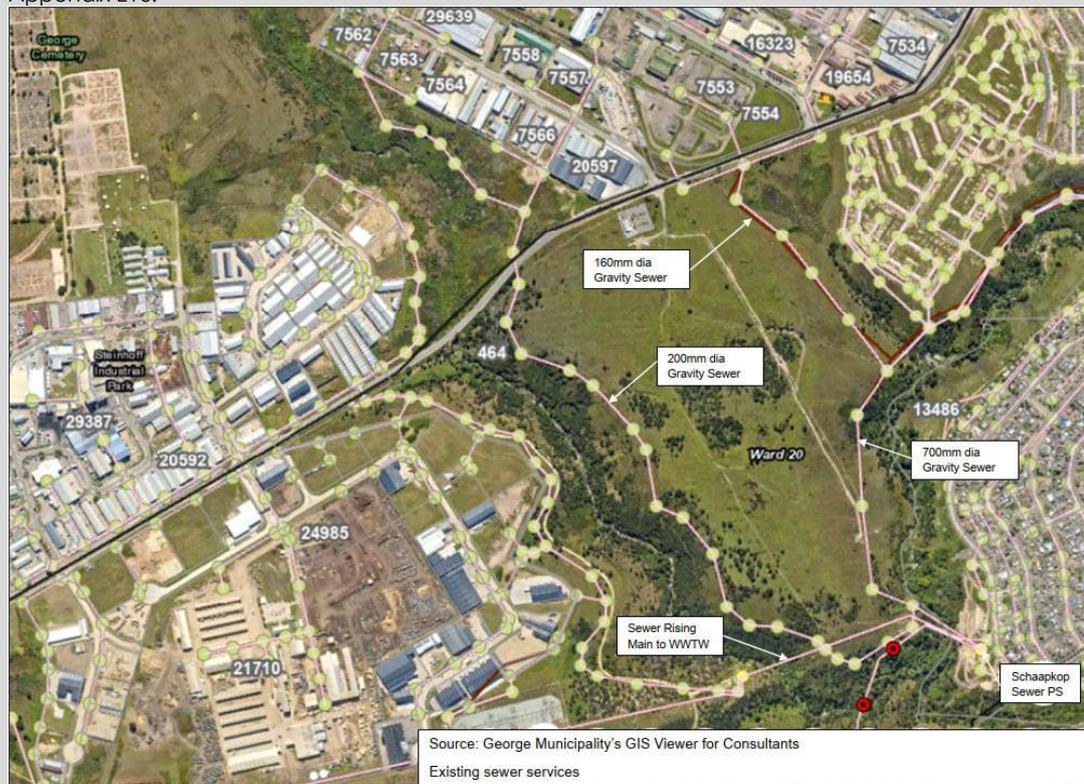


Figure 3: Existing sewer services at the site.

Stormwater

- A stormwater management plan was developed for the site and is included in Appendix L5.
- The site has a fairly steep slope gradient, increasing towards natural drainage lines. There is no existing stormwater infrastructure near the proposed development.
- The upstream runoff and generated stormwater runoff from the proposed development will have to be conveyed by means of both an underground system as well as an overland flow system.
- The internal stormwater will be designed in such a manner that it follows the natural topography of the site, and the outflow will be dispersed via energy-dissipating outlets towards the drainage paths.

- Conventional stormwater networks consisting of stormwater catch pits, manholes and energy dissipating headwalls will convey the stormwater generated in the area into the proposed stormwater outlets and silt retention structures to minimise the peak runoff.
- Energy dissipating structures combined with Reno mattresses to prevent scouring and erosion will be utilised, creating a high friction factor and thereby reducing the velocity of stormwater. These will be utilised at the stormwater outlet structures.
- The stormwater system forms an integral part of the road and urban planning layout. The system rests on three legs, the minor system, the major system and an emergency system. Minor storms are catered for in the pipe system while major storms are routed through a linked system of roads and public open spaces using attenuation techniques. The emergency system recognises failure of the minor and major systems by storms greater than provided for in the major system or in the event of malfunction of the minor system, by providing continuous overland flow routes to minimise flooding of residential areas.

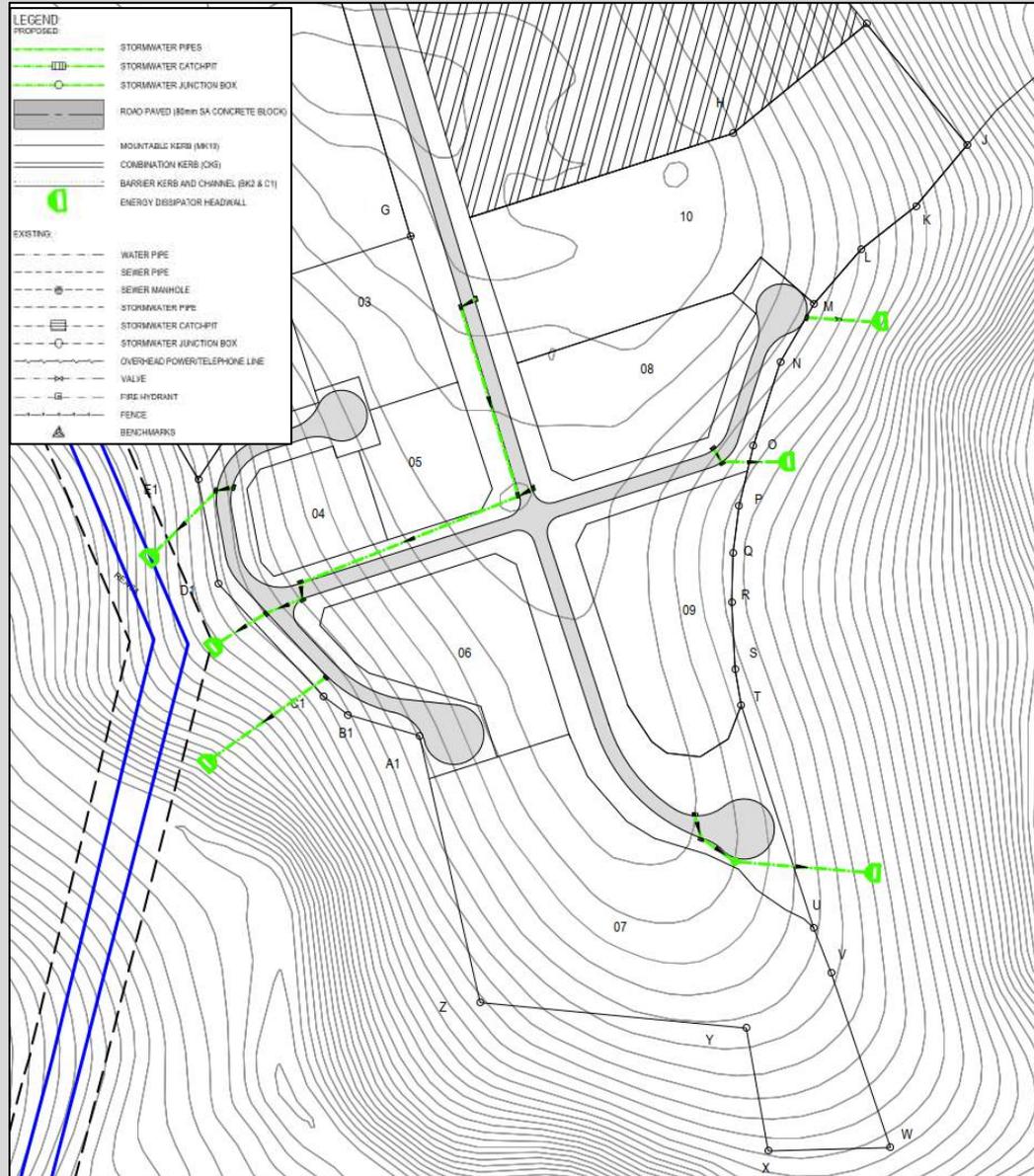


Figure 4: Proposed stormwater management at the site (green).

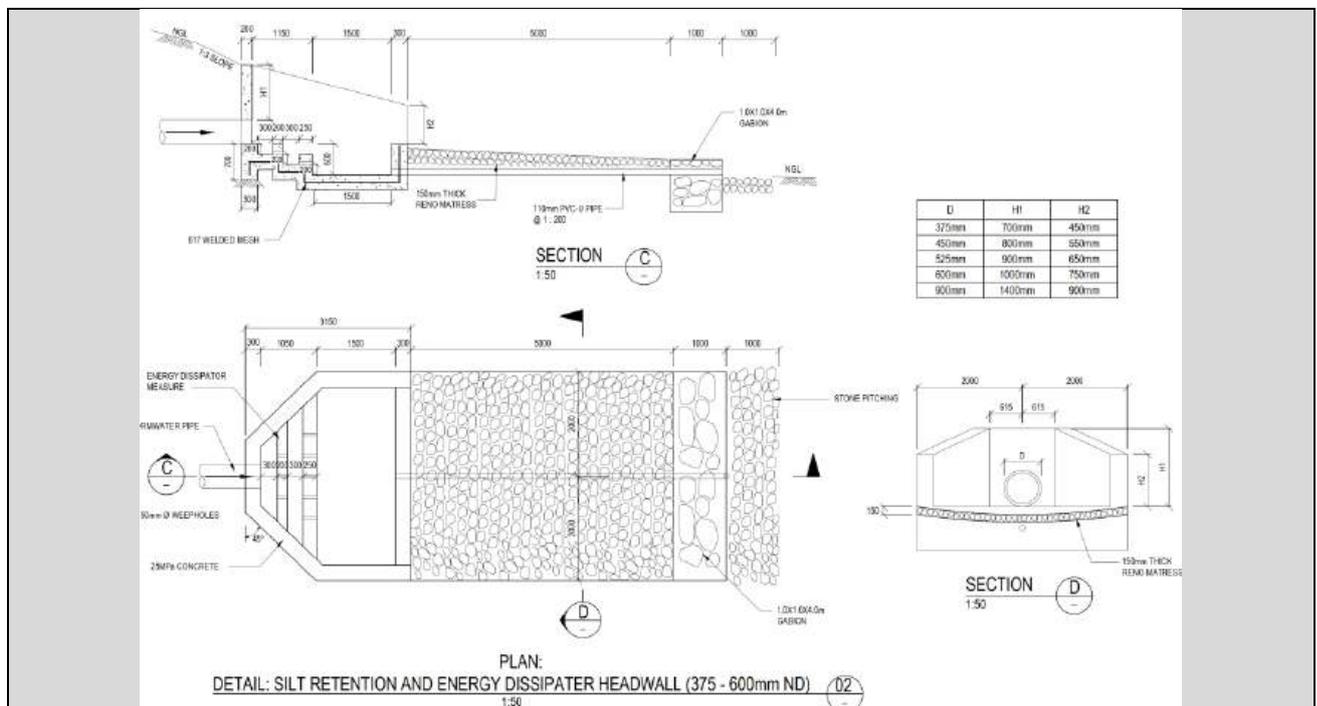


Figure 5: Example of a silt retention and energy dissipating headwall at stormwater outlets.

Access Roads

- Access to the proposed development is currently obtained from the existing intersection of PW Botha Boulevard and Ossie Urban Street and the access road to the existing electrical sub-station. Details regarding access have been investigated and discussed in a Traffic Impact Study conducted by Urban Engineering.
- The proposed development does not require the future Rand Street extension for access or to make it functional; it will link into PW Botha Blvd.

Solid Waste

- Refuse removal will be dealt with once a week, as applicable to all the current residential and business/ industrial areas within the George Municipal area.
- The George Municipality has confirmed that sufficient spare waste services capacity is available – Appendix E1.6.
- Waste will be collected as part of the existing operation.
- George Municipality does not have a landfill site for domestic waste, and all domestic waste is transferred to the Petro SA Landfill site.

Electrical Services

- An electrical services report has been compiled for the project and is included in Appendix L6.
- The George Municipality has confirmed that there is sufficient spare electrical capacity to cater for the needs of the development – Appendix E1.6.
- The identified point of connection for the development is at the existing 11kV busbars inside the Tamsui Substation Switchroom.
- The proposed connection will include the supply and installation of the following (indicated in the figure below and described in more detail in the electrical services report):
 - Two 11kV feeder circuit breakers inside the existing switching station building to supply the development
 - 185 mm² Cu x 3 core 11kV underground ring cable from the above-mentioned circuit breakers supplying the internal network.
- Please refer to the full electrical report for details and high-definition drawing.
- The electrical reticulation will be revised in accordance with the latest project plan

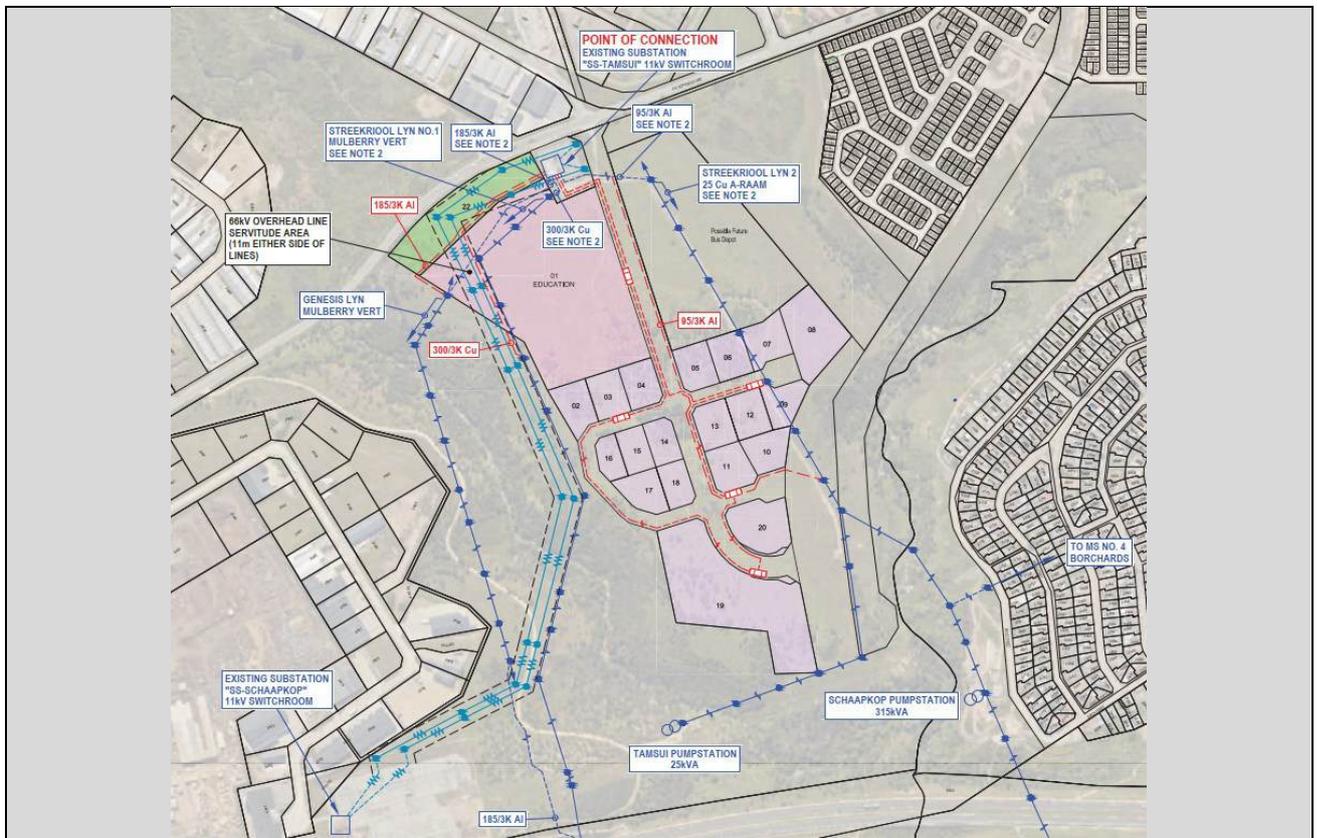


Figure 6: Layout of proposed main electrical supply.*

4.5. Indicate how access to the proposed site(s) will be obtained for all alternatives.

Access to the proposed development is currently obtained from the existing intersection of PW Botha Boulevard and Ossie Urban Street and the access road to the existing electrical sub-station. Access to the Metro Mixed Use Development will be provided by and shared with the planned bus depot, adjacent to the development. The access road was removed from the Metro Grounds development and included as part of the bus depot application, as the bus depot will be developed first.

The proposed development will also provide an intersection with the planned Rand Street extension, which can be developed once both roads have been established. In the interim, a temporary turning circle is planned at the end of Metro Grounds Main Road, where it would intersect the future Rand Street extension.

The proposed development does not require the future Rand Street extension for access or to make it functional; it will link into PW Botha Blvd.

4.6.	SG Digit code(s) of the proposed site(s) for all alternatives:	C	0	2	7	0	0	0	0	0	0	0	0	0	0	0	4	6	4	0	0	0	0	0
------	--	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

4.7.	Coordinates of the proposed site(s) for all alternatives:			
	Latitude (S)	33°	59'	25.98"
	Longitude (E)	22°	27'	31.50"

SECTION C: LEGISLATION/POLICIES AND/OR GUIDELINES/PROTOCOLS

Exemption applied for in terms of the NEMA and the NEMA EIA Regulations

Has an exemption been applied for in terms of the NEMA and the NEMA EIA Regulations? If yes, include a copy of the exemption notice in Appendix E18.	YES	√NO
--	-----	-----

Is the following legislation applicable to the proposed activity or development?

The National Environmental Management: Integrated Coastal Management Act, 2008 (Act No. 24 of 2008) ("ICMA"). If yes, attach a copy of the comment from the relevant competent authority as Appendix E4 and the pre-approval for the reclamation of land as Appendix E19.	YES	√NO
The National Heritage Resources Act, 1999 (Act No. 25 of 1999) ("NHRA"). If yes, attach a copy of the comment from Heritage Western Cape as Appendix E1.	√YES	NO
The National Water Act, 1998 (Act No. 36 of 1998) ("NWA"). If yes, attach a copy of the comment from the DWS as Appendix E3.	√YES	NO
The National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) ("NEM:AQA"). If yes, attach a copy of the comment from the relevant authorities as Appendix E13.	YES	√NO
The National Environmental Management Waste Act (Act No. 59 of 2008) ("NEM:WA")	YES	√NO
The National Environmental Management Biodiversity Act, 2004 (Act No. 10 of 2004 ("NEMBA").	√YES	NO
The National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) ("NEMPAA").	YES	√NO
The Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983). If yes, attach comment from the relevant competent authority as Appendix E5.	YES	√NO

1. Other legislation

List any other legislation that is applicable to the proposed activity or development.	
LEGISLATION, POLICIES, PLANS, GUIDELINES, SPATIAL TOOLS, MUNICIPAL DEVELOPMENT PLANNING FRAMEWORKS, AND INSTRUMENTS	Describe how the proposed development complies with and responds:
National Environmental Management Act (Act 107 of 1998 as amended)	Environmental Impact Assessment is being undertaken in terms of Chapter 5 of NEMA using the 2017 EIA regulations.
National Environmental Management: Biodiversity Act (Act 10 of 2004)	The identification of the on-site vegetation and the ecosystem status associated with the vegetation is undertaken in terms of this Act. This Act also applies to the control and management of Alien Invasive Species (AIS), which includes animals and vegetation.
National Water Act (Act 36 of 1998)	The proposed project is located within 500m of a regulated area. According to Section 21 (c) and (i) of the National Water Act, any water use activities that occur within the regulated area of a watercourse will require authorisation. Low-Risk activities require a General Authorisation (GA), while Medium or High-Risk activities require a Water Use License (WUL).
National Waste Management Strategy	All waste from construction to decommissioning must be dealt with in terms of this strategy.
Western Cape Biodiversity Act (Act 6 of 2021)	The purpose is to protect biodiversity in the Western Cape. It regulates activities that may impact biodiversity, including development projects. The potential impacts on biodiversity for the proposed project have been assessed. The proposed project is located within a Terrestrial Biodiversity CBA in terms of the Western Cape Biodiversity Spatial Plan (WCBSPP), 2023.
Spatial Planning and Land Use Management (Act 16 of 2013)	This application complies with the following General Principles for development as stated in Chapter 2 of SPLUMA Section 7 (b): The principle of spatial sustainability, whereby spatial planning and land use management systems must: (vi) promote land development in locations that are sustainable and limit urban sprawl; and (vii) result in communities that are viable; Section 7 (c): The principle of efficiency whereby: Land development optimises the use of existing resources and infrastructure.

2. Policies

Explain which policies were considered and how the proposed activity or development complies with and responds to these policies.	
George Municipality Spatial Development Framework (2023)	The MSDF (2023) promotes the extension of industrial areas in George. A part of the implementation of this policy includes new industrial (range of erf sizes and industry types) areas for implementation. The Metro grounds Industrial area package has been released.
George Municipality Integrated Development Plan (2022-2027)	The Metro Grounds development is identified as a catalytic project in the Integrated Development Plan (IDP) and is part of the provincial investment projects.

Western Cape Provincial Spatial Development Framework (2022)	Over the past few years, the Western Cape Province has explored ways of fostering intergovernmental planning and implementation. This process has evolved and is now set to enable the implementation of the NDP, on the one hand, and to enhance the development and implementation of the Provincial Strategic Plan, on the other. Planning in the Western Cape Province has matured to a phase where joint planning and implementation is a fundamental element in ensuring Sustainable and integrated service delivery. The Metro Grounds industrial development is a part of the provincial infrastructure investment projects 2022/2023-2023/2024.
Garden Route District Municipality (2022-2027)	According to the Garden Route District Municipality IDP, one of the strategic objectives of George Municipality is to develop and grow. George is the economic hub of the Garden Route and is renowned for its diverse economy, driven by agriculture, manufacturing, tourism, and retail. As a regional centre, it boasts well-established infrastructure, including an airport that connects the district to major cities. The proposed infill development will contribute to the economic growth of George.

3. Guidelines

List the guidelines which have been considered relevant to the proposed activity or development, and explain how they have influenced the development proposal.	
Western Cape Biodiversity Spatial Plan (WCBSP) and Guidelines (2023)	The WCBSP was considered as part of this EIA to determine any biodiversity priority areas located within the development site.
Guideline for Public Participation (2013)	The PPP for this process is based on this Guideline and also includes any updated regulations.
Guideline on Need & Desirability (2013)	Need & Desirability refers to the temporal and spatial need of an area for a specific development. This Guideline was used to define the requirements and implications of Need & Desirability.
Guideline for Environmental Management Plans (2005)	An EMPr has been included with this Basic Assessment to provide practical and implementable actions to ensure that the development maintains sustainability and minimise impacts through all its phases. The document is drafted as per the Guidelines and requirements of NEMA.
Guideline on Environmental Management Plans (2005)	An EMPr has been included with this Basic Assessment to provide practical and implementable actions to ensure that the development maintains sustainability and minimise impacts through all its phases. The document is drafted as per the Guidelines and requirements of NEMA.

4. Protocols

Explain how the proposed activity or development complies with the requirements of the protocols referred to in the NOI and/or application form				
A Screening Tool Report (STR) was generated using the DFFE's online Screening Tool, and the theme sensitivities identified by the report are identified in Table 2 below.				
Table 2: Environmental sensitivities picked up by the DFFE Screening Tool				
Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme			X	
Animal Species Theme		X		
Aquatic Biodiversity Theme	X			
Archaeological and Cultural Heritage Theme	X			
Civil Aviation Theme	X			
Defence Theme				X
Plant Species Theme			X	
Terrestrial Biodiversity Theme	X			
The Screening Tool sensitivity rating, verified sensitivity rating and the implications for specialist studies are disclosed for each of the relevant themes to follow:				
<ul style="list-style-type: none"> • Landscape/Visual Impact Assessment <ul style="list-style-type: none"> ○ The STR recommended that a Landscape/Visual Impact Assessment be considered for the proposed project, even though a sensitivity has not been picked up for this theme. ○ The project is located adjacent to a residential area and will be visible from the N2 highway and, therefore, a Landscape/Visual Impact Assessment was undertaken as part of the application for Environmental Authorisation, this report has been attached as an appendix. 				

- **Archaeological and Cultural Heritage Impact Assessment**
 - The DFFE STR gives the site a **Very high** Archaeological and Cultural Heritage sensitivity.
 - The specialist finds little archaeological, palaeontological or built heritage of cultural significance on the site and is deemed to be of **Low** sensitivity. A Notice of Intent to Development (NID) was submitted to Heritage Western Cape (HWC).
 - In response to the Notification of Intent to Develop, Heritage Western Cape responded that, You are hereby notified that, since there is no reason to believe that the proposed development of an industrial area on Erf 464 Portion Remainder, Metro Grounds Industrial Development, George will impact on heritage resources, no further action under Section 38 of the National Heritage Resources Act (Act 25 of 1999) is required. However, should any heritage resources, including evidence of graves and human burials, archaeological material and paleontological material be discovered during the execution of the activities above, all works must be stopped immediately, and Heritage Western Cape must be notified without delay.
 - Therefore, no heritage impact assessment is required for the proposed development.
- **Palaeontology Impact Assessment**
 - The STR states that a palaeontology impact assessment be included even though a sensitivity has not been identified for this theme.
 - The specialist finds little archaeological, palaeontological or built heritage of cultural significance on the site and is deemed to be of **Low** sensitivity. A NID was submitted to HWC.
 - A **palaeontological impact assessment will, therefore, not be undertaken** based on the response from HWC.
- **Terrestrial Biodiversity Impact Assessment**
 - The DFFE STR gives the site a **Very high** Terrestrial Biodiversity sensitivity.
 - The specialist confirms this rating and finds that portions of the site (secondary fynbos along the valley edges) carry a **Very high** sensitivity rating.
 - A **terrestrial biodiversity impact assessment as per the protocols was undertaken** by a biodiversity specialist. The report's findings are included in this Basic Assessment Report.
- **Aquatic Biodiversity Impact Assessment**
 - The DFFE STR gives the site a **Very high** Aquatic Biodiversity sensitivity.
 - The specialist confirms the **Very high** rating and concludes: Considering that the proposed development is to take place within the regulated area of 3 watercourses, the development is in the Outeniqua SWSA, together with the present impact on the watercourses that include chemical pollution (leaking sewer infrastructure) and erosion, as well as the increase of harden surfaces by the proposed development, the aquatic biodiversity potentially affected by the proposed development is confirmed to be **Very High**.
 - An **aquatic impact assessment as per the protocols was undertaken** by an aquatic specialist. The report's findings are included in this Basic Assessment.
- **Socio-Economic Assessment**
 - The DFFE STR does not provide a sensitivity rating for this theme but identifies a socioeconomic assessment as a required study.
 - The project to construct a mixed-use industrial development will have a range of positive and negative socioeconomic impacts on surrounding communities and the economy, which will be an important consideration in reaching a decision.
 - A **socioeconomic assessment was undertaken** by a socioeconomic specialist and the findings are included in this Basic Assessment.
- **Plant Species Assessment**
 - The DFFE STR rates the site as having a **medium** plant species sensitivity.
 - The specialist concluded that the fynbos vegetation along the valleys and valley edges has a **High** sensitivity, while the vegetation in the transformed fields are unlikely to support SCC and, therefore, has a **Low** sensitivity.
 - With some high-sensitivity areas, a **plant species impact assessment was undertaken** as per the protocols by a botanical specialist. The report's findings are included in this Basic Assessment.
- **Animal Species Assessment**
 - The DFFE STR gives the site a **High** rating for animal species sensitivity.
 - Following a site investigation, the specialist found a **Low** sensitivity for the following reasons:
 - This is attributed to the degraded condition of the site and the absence of suitable habitat for SCCs.
 - The habitat of the Knysna Warbler (*Bradypterus sylvaticus*), which is present in the riparian thick vegetation along the Skaapkop River valley adjacent to the proposed development area, will not be impacted as the proposed development footprint is located at a significant distance from its suitable habitat.
 - The observed faunal diversity during the site visit was notably low, indicating that the area is not functioning as a significant habitat for key faunal species.
 - The development of the industrial zone surrounding the site has largely contributed to the decline of the site's ecological value. Industrial activities often lead to habitat destruction, pollution, and increased human encroachment, which impact the faunal diversity in surrounding areas.
 - An **animal species compliance statement was undertaken**; the findings are included as part of this Basic Assessment.
- **Agricultural Impact Assessment (Not required by the STR)**
 - The DFFE STR gives the site a **Medium** for agricultural sensitivity.
 - The agricultural assessment also finds the site to be of **Medium** sensitivity but disputes the classified land capability of >6 and rates the entire assessed area as having a maximum land capability of 6. Although the climate and terrain may allow for viable crop production, other factors constrain the potential of the site to practically deliver agricultural produce and, therefore, limit its agricultural production potential. These factors include:
 - Its location, which has been transformed by expanding urbanisation, leaves it surrounded largely by non-agricultural land uses.

<ul style="list-style-type: none"> ▪ The fact that land use planning in the spatial development framework designates the site for non-agricultural use. ○ For these reasons, the site will never be viably utilised for agricultural production, and its potential is therefore assessed here as non-existent. An agricultural impact must, by definition, cause a change to the future agricultural production potential of the land. If there is no change, there is no impact. Because the site has no current agricultural production potential due to the limitations of its location, the occupation of the site by the development cannot change its agricultural production potential. The development will, therefore, have zero agricultural impact and is therefore assessed as acceptable. ○ With a verified medium sensitivity and under the agriculture protocols for specialist assessment, an agricultural compliance statement was undertaken the findings are included in this Basic Assessment Report. <ul style="list-style-type: none"> • Civil Aviation Theme (Not required by the STR) <ul style="list-style-type: none"> ○ The DFFE STR rates the site as Very high for civil aviation sensitivity but does not identify the need for a civil aviation specialist assessment. ○ The George Airport is located ~7.5km from the proposed development, which is within 8km of the George Airport and confirms the Very high civil aviation sensitivity rating. ○ As per the Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Civil Aviation Installations, a Civil Aviation Compliance Statement is included as part of this Basic Assessment Report. • Defence Theme (Not required by the STR) <ul style="list-style-type: none"> ○ The DFFE STR gives the site as Low for defence sensitivity and does not identify the need for a defence specialist assessment. ○ No negative impacts are expected on defence installations in the Low sensitivity areas, and therefore, no further assessment will be undertaken.

SECTION D: APPLICABLE LISTED ACTIVITIES

List the applicable activities in terms of the NEMA EIA Regulations

Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 1	Describe the portion of the proposed development to which the applicable listed activity relates.
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 are undertaken in accordance with a maintenance management plan.	The proposed development requires the clearance of approximately 16.54 hectares of defined indigenous vegetation.
Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 3	Describe the portion of the proposed development to which the applicable listed activity relates.
4	The development of a road wider than 4 metres with a reserve of less than 13,5 metres. Western Cape i. Areas zoned for use as public open space or equivalent zoning; ii. Areas outside urban areas; (aa) Areas containing Indigenous vegetation; (bb) Areas on the estuary side of the development setback line or in an estuarine functional zone where no such setback line has been determined; or iii. Inside urban areas: (aa) Areas zoned for conservation use; or (bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority.	The development will result in the construction of new roads wider than 4m outside the urban area where there is Indigenous vegetation. The proposed development is not located within the current outer extent of actual urban development.
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. Western Cape 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 identified in bioregional plans;	The proposed development will result in the clearance of more than 300m ² of defined indigenous vegetation where the ecosystem, Garden Route Granite Fynbos, is listed as Critically Endangered in terms of the ecosystem threat status. The site is also located inside a Critical Biodiversity Area (CBA) as per the 2023 Biodiversity Spatial Plan (which is not a bioregional plan).

	<p>iii. Within the littoral active zone or 100 metres inland from the high water mark of the sea or an estuarine functional zone, whichever distance is the greater, excluding where such removal will occur behind the development setback line on erven in urban areas;</p> <p>iv. 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; or</p> <p>v. On land designated for protection or conservation purposes in an Environmental Management Framework adopted in the prescribed manner, or a Spatial Development Framework adopted by the MEC or Minister.</p>	
<p>Note:</p> <ul style="list-style-type: none"> The listed activities specified above must reconcile with the activities applied for in the application form. The onus is on the Applicant to ensure that all applicable listed activities are included in the application. If a specific listed activity is not included in an Environmental Authorisation, a new application for Environmental Authorisation will have to be submitted. Where additional listed activities have been identified that have not been included in the application form, an amended application form must be submitted to the competent authority. 		

List the applicable waste management listed activities in terms of the NEM:WA

Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Category A	Describe the portion of the proposed development to which the applicable listed activity relates.
N/A	N/A	N/A

List the applicable listed activities in terms of the NEM:AQA

Activity No(s):	Provide the relevant Listed Activity(ies)	Describe the portion of the proposed development to which the applicable listed activity relates.
N/A	N/A	N/A

SECTION E: PLANNING CONTEXT AND NEED AND DESIRABILITY

1.	Provide a description of the preferred alternative.																					
<p>The applicant proposes the establishment of light industrial erven and an erf for an education facility on part of the Remainder of Erf 464. It is the intention of the application to subdivide and rezone the property for the following development components:</p> <table border="1"> <thead> <tr> <th>Land Use</th> <th>Zoning</th> <th>Area (ha)</th> </tr> </thead> <tbody> <tr> <td>Education Facility</td> <td>Community Zone I</td> <td>5.34</td> </tr> <tr> <td>Industry</td> <td>Industrial Zone II</td> <td>5.56</td> </tr> <tr> <td>Transport</td> <td>Transport Zone I</td> <td>1.76</td> </tr> <tr> <td>Open Space</td> <td>11 Open Space II</td> <td>1.3</td> </tr> <tr> <td>Public Street</td> <td>12 Transport Zone II</td> <td>2.58</td> </tr> <tr> <td colspan="2" style="text-align: right;">Total</td> <td>16.554</td> </tr> </tbody> </table> <p>Please refer to Section 4.4 of this report, which provides a detailed description of the preferred alternative for the proposed project.</p>		Land Use	Zoning	Area (ha)	Education Facility	Community Zone I	5.34	Industry	Industrial Zone II	5.56	Transport	Transport Zone I	1.76	Open Space	11 Open Space II	1.3	Public Street	12 Transport Zone II	2.58	Total		16.554
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2.	Explain how the proposed development is in line with the existing land use rights of the property, as you have indicated in the NOI and application form? Include the proof of the existing land use rights granted in Appendix E21.																					
<p>The current zoning of the site is <u>undetermined</u>.</p> <p>The site will be subdivided and rezoned to the following:</p> <ul style="list-style-type: none"> Community Zone I (Education facility) on ±5.34 ha. Eight erven of Industrial Zone I (Industry) on a combined ±5.56ha. Transport Zone I on ±1.76ha Open Space Zone II (Open Space) on ± 1.3 ha. Public Street (Transport Zone II) on ±2.58 ha 																						
3.	Explain how potential conflict with respect to existing approvals for the proposed site (as indicated in the NOI/and or application form) and the proposed development has been resolved.																					
There are no existing approvals or conflicts for the proposed site.																						
4.	Explain how the proposed development will be in line with the following?																					
4.1	The Provincial Spatial Development Framework.																					
<p>Over the past few years, the Western Cape Province has explored ways of fostering intergovernmental planning and implementation. This process has evolved and is now set to enable the implementation of the NDP, on the one hand, and To enhance the development and implementation of the Provincial Strategic Plan, on the other. Planning in the Western Cape Province has matured to a phase where joint planning and implementation are a fundamental element in ensuring Sustainable and integrated service delivery.</p>																						

The Metro Grounds industrial development is a part of the provincial infrastructure investment projects 2022/2023-2023/2024.	
4.2.	The Integrated Development Plan of the local municipality.
The Metro Grounds development is identified as a catalytic project in the Integrated Development Plan (IDP) and is part of the provincial investment projects.	
4.3.	The Spatial Development Framework of the local municipality.
The proposed development falls within the study area of the George South-East Local Spatial Development Framework, 2015, and the area is earmarked for industrial development.	
According to the Municipal Spatial Development Framework (MSDF) (2023), promotes the extension of industrial areas in George. As part of the implementation of the growth policy, new industrial (range of erf sizes and industry types) areas are identified for implementation.	
The Spatial Development for George Municipality is based on six themes. The proposed development is in line with Theme B: Facilitate enabling and inclusive Economic Growth. The expansion of industrial facilities is one of the proposals to achieve the goals of the Economic Growth theme. The Metro Grounds Industrial area package has been released for implementation.	
4.4.	The Environmental Management Framework applicable to the area.
There is currently no adopted EMF for George Municipality.	
5.	Explain how comments from the relevant authorities and/or specialist(s) with respect to biodiversity have influenced the proposed development.
The original layout for the Metro Grounds Industrial development was amended to avoid the environmentally sensitive areas (high biodiversity rating and wetlands) located to the west of the proposed site. The original layout had a footprint of approximately 19.99ha, layout, which was reduced to 18.55ha to accommodate environmental sensitivities (botanical and wetland) and then again to accommodate changes in adjacent projects (i.e. the bus depot and Rand Street extension) and the final footprint is now 16.54ha.	
6.	Explain how the Western Cape Biodiversity Spatial Plan (including the guidelines in the handbook) has influenced the proposed development.
According to the WCBSP (2017), the majority of the Metro Grounds industrial site was not located within a Critical Biodiversity Area (CBA), with only some sections around the periphery of the earmarked site falling within mapped critical biodiversity areas (CBAs) and Ecological Support Areas (ESAs).	
According to the updated WCBSP (2023), the Metro Grounds Industrial site now falls within a Terrestrial Critical Biodiversity Area (CBA1). The site has been ground-truthed by the Terrestrial Biodiversity Specialist and has been confirmed in the report that the new CBA1 areas on the proposed development sites have been incorrectly mapped, and this has been brought to the attention of Cape Nature, as the vegetation is transformed with no natural remaining vegetation.	
7.	Explain how the proposed development is in line with the intention/purpose of the relevant zones as defined in the ICMA.
N/A	
8.	Explain whether the screening report has changed from the one submitted together with the application form. The screening report must be attached as Appendix I.
There are no changes to the screening tool report submitted with the application form.	
9.	Explain how the proposed development will optimise vacant land available within an urban area.
The proposed Metro Grounds Industrial Development will be located on vacant land located outside the urban edge of George. The site has been used for the disposal of night soil in the past; however, this practice has been halted for many years.	
10.	Explain how the proposed development will optimise the use of existing resources and infrastructure.
The waste from the site will feed into the existing municipal waste services. The site will be accessed via the existing dedicated signal-controlled intersection on P.W. Botha Boulevard. The site will utilise a portion of land which is ideally located for light industrial development as it borders the existing industrial area of George. It is ideally located for infill industrial development and optimally uses the portion of land.	
11.	Explain whether the necessary services are available and whether the local authority has confirmed sufficient, spare, unallocated service capacity. (Confirmation of all services must be included in Appendix E16).
The George Municipality has confirmed service capacity for the following: <ul style="list-style-type: none"> • Electrical Capacity – Appendix E16 • Water – Appendix E16 • Sewage – Appendix E16 • Waste – Appendix E16 	
12.	In addition to the above, explain the need and desirability of the proposed activity or development in terms of this Department's guideline on Need and Desirability (March 2013) or the DEA's Integrated Environmental Management Guideline on Need and Desirability. This may be attached to this BAR as Appendix K.
Please see Appendix K.	

SECTION F: PUBLIC PARTICIPATION

The Public Participation Process ("PPP") must fulfil the requirements as outlined in the NEMA EIA Regulations and must be attached as Appendix F. Please note that if the NEM: WA and/or the NEM: AQA is applicable to the proposed development, an advertisement must be placed in at least two newspapers.

1. Exclusively for linear activities: Indicate what PPP was agreed to by the competent authority. Include proof of this agreement in Appendix E22.

N/A

2. Confirm that the PPP as indicated in the application form has been complied with. All the PPP must be included in Appendix F.

- The PPP for the project complies with the requirements of the Environmental Regulation 41 of the EIA Regulations, 2014 (as amended) -
 - Fixing a notice board at a place conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of the site where the activity to which the application relates is or is to be undertaken; and
 - Giving written notice, in any manner provided for in section 47D of the NEMA, to –
 - the occupiers of the site and, if the applicant is not the owner or person in control of the site on which the activity is to be undertaken, the owner or person in control of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
 - owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
 - the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represents the community in the area;
 - (the municipality (Local and District Municipality) which has jurisdiction in the area;
 - Any organ of state having jurisdiction in respect of any aspect of the activity; and
 - any other party as required by the Competent Authority;
 - Placing an advertisement in -
 - one local newspaper; or
 - Using reasonable alternative methods, as agreed to by the Department, in those instances where a person is desirous of but unable to participate in the process due to— (i) illiteracy;(ii) disability; or (iii) any other disadvantage.
- The PPP for the project complies with the regulations stated above. It was undertaken as follows:
 - No pre-application PPP was undertaken.
 - A Site notice was fixed at a location where the public had the best chance of viewing the notice.
 - No alternative sites that warrant a site notice placed at any other location were considered.
 - Notification was given to relevant parties as per the requirements of the EIA Regulations.
 - An advertisement was placed in the 'George Herald' local newspaper. The newspaper complied with the minimum requirements of the Regulations and informed the public of the availability of the Draft BAR 30-day review and comment period, the comment period date, to whom and how to submit comments.
 - One hard copy of the Draft BAR was lodged at the George Library (Caledon Street).
 - A soft copy of the Draft BAR was available on Zutari's website.
 - A register of Interested and Affected Parties (I&APs) was maintained.
- A Comments and Responses Report is being maintained for the project and will be submitted together with the Final BAR for decision-making.
- Proof of PPP is included in Appendix F.

3. Confirm which of the State Departments and Organs of State indicated in the Notice of Intent/application form were consulted with.

The following State Departments would be considered as part of the BA process and are therefore automatically registered as I&APs:

- Breede-Olifants Catchment Management Agency (BOCMA)
- CapeNature
- Department of Agriculture, Forestry and Fisheries (DAFF)
- Garden Route District Municipality
- George Municipality (various branches – refer to I&AP register)
- George Municipality
- Heritage Western Cape
- Western Cape Government, Department of Agriculture
- Western Cape Government, Department of Environmental Affairs & Development Planning
- Western Cape Government, Department of Transport and Public works

4. If any of the State Departments and Organs of State were not consulted, indicate which and why.

- Not applicable

5. If any of the State Departments and Organs of State did not respond, indicate which.

- Pending PPP

6. Provide a summary of the issues raised by I&APs and an indication of the manner in which the issues were incorporated into the development proposal.

Pending PPP

Note:

A register of all the I&AP's notified, including the Organs of State, and all the registered I&APs must be included in Appendix F. The register must be maintained and made available to any person requesting access to the register in writing.

The EAP must notify I&APs that all information submitted by I&APs becomes public information.

Your attention is drawn to Regulation 40 (3) of the NEMA EIA Regulations which states that "Potential or registered interested and affected parties, including the competent authority, may be provided with an opportunity to comment on reports and plans contemplated in subregulation (1) prior to submission of an application but **must** be provided with an opportunity to comment on such reports once an application has been submitted to the competent authority."

All the comments received from I&APs on the pre -application BAR (if applicable and the draft BAR must be recorded, responded to and included in the Comments and Responses Report and must be included in Appendix F.

All information obtained during the PPP (the minutes of any meetings held by the EAP with I&APs and other role players wherein the views of the participants are recorded) and must be included in Appendix F.

Please note that proof of the PPP conducted must be included in Appendix F. In terms of the required "proof" the following is required:

- a site map showing where the site notice was displayed, dated photographs showing the notice displayed on site and a copy of the text displayed on the notice;
- in terms of the written notices given, a copy of the written notice sent, as well as:
 - if registered mail was sent, a list of the registered mail sent (showing the registered mail number, the name of the person the mail was sent to, the address of the person and the date the registered mail was sent);
 - if normal mail was sent, a list of the mail sent (showing the name of the person the mail was sent to, the address of the person, the date the mail was sent, and the signature of the post office worker or the post office stamp indicating that the letter was sent);
 - if a facsimile was sent, a copy of the facsimile Report;
 - if an electronic mail was sent, a copy of the electronic mail sent; and
 - if a "mail drop" was done, a signed register of "mail drops" received (showing the name of the person the notice was handed to, the address of the person, the date, and the signature of the person); and
- a copy of the newspaper advertisement ("newspaper clipping") that was placed, indicating the name of the newspaper and date of publication (of such quality that the wording in the advertisement is legible).

SECTION G: DESCRIPTION OF THE RECEIVING ENVIRONMENT

All specialist studies must be attached as Appendix G.

1. Groundwater

1.1.	Was a specialist study conducted?	YES	✓NO
1.2.	Provide the name and or company that conducted the specialist study.		
N/A			
1.3.	Indicate above which aquifer your proposed development will be located and explain how this has influenced your proposed development.		
N/A			
1.4.	Indicate the depth of groundwater and explain how the depth of groundwater and the type of aquifer (if present) have influenced your proposed development.		
N/A			

2. Surface water

2.1.	Was a specialist study conducted?	✓YES	NO
2.2.	Provide the name and/or company that conducted the specialist study.		
Mr F.M. Ridder and J.M. Dabrowski- Confluent Environmental (Pty) Ltd			
2.3.	Explain how the presence of watercourse(s) and/or wetlands on the property(ies) has influenced your proposed development.		
<p>The DFFE screening tool classified the site as being of Very High aquatic biodiversity for the following reasons:</p> <ul style="list-style-type: none"> • An aquatic Critical Biodiversity Area (CBA1) is mapped along one or more of the property boundaries; and • The entire development area falls within the Outeniqua Strategic Water Source Area (SWSA). <p>The proposed development area is located in quaternary catchment K30C, in the catchment of the Skaapkop River.</p> <p>According to the Aquatic Specialist Report compiled by Confluent, the proposed development will take place within the regulated area of three watercourses, and the development is located within the Outeniqua Strategic Water Source Area (SWSA). Therefore, the aquatic biodiversity potentially affected by the proposed development is confirmed to be Very High.</p> <p>Two unchanneled valley-bottom (UVB) wetlands and a non-perennial stream are mapped adjacent to the boundaries of the development area. None of the watercourses occurs within the boundaries of the development area.</p>			

To easily refer back to the watercourses near the proposed development area, the watercourses will be referred to as hydrogeomorphic units (HGM)¹ in combination with a number.

- HGM1 – An UVB wetland flowing along the western boundary of the development area before it joins the Skaapkop River (Figure 7)
- HGM2 – A non-perennial stream is mapped to flow along the eastern boundary of the development area and flows into the Skaapkop River (Figure 7).
- HGM3 - The Skaapkop River flows along the lower eastern boundary of the proposed development area and is mapped as an UVB wetland. (Figure 7).

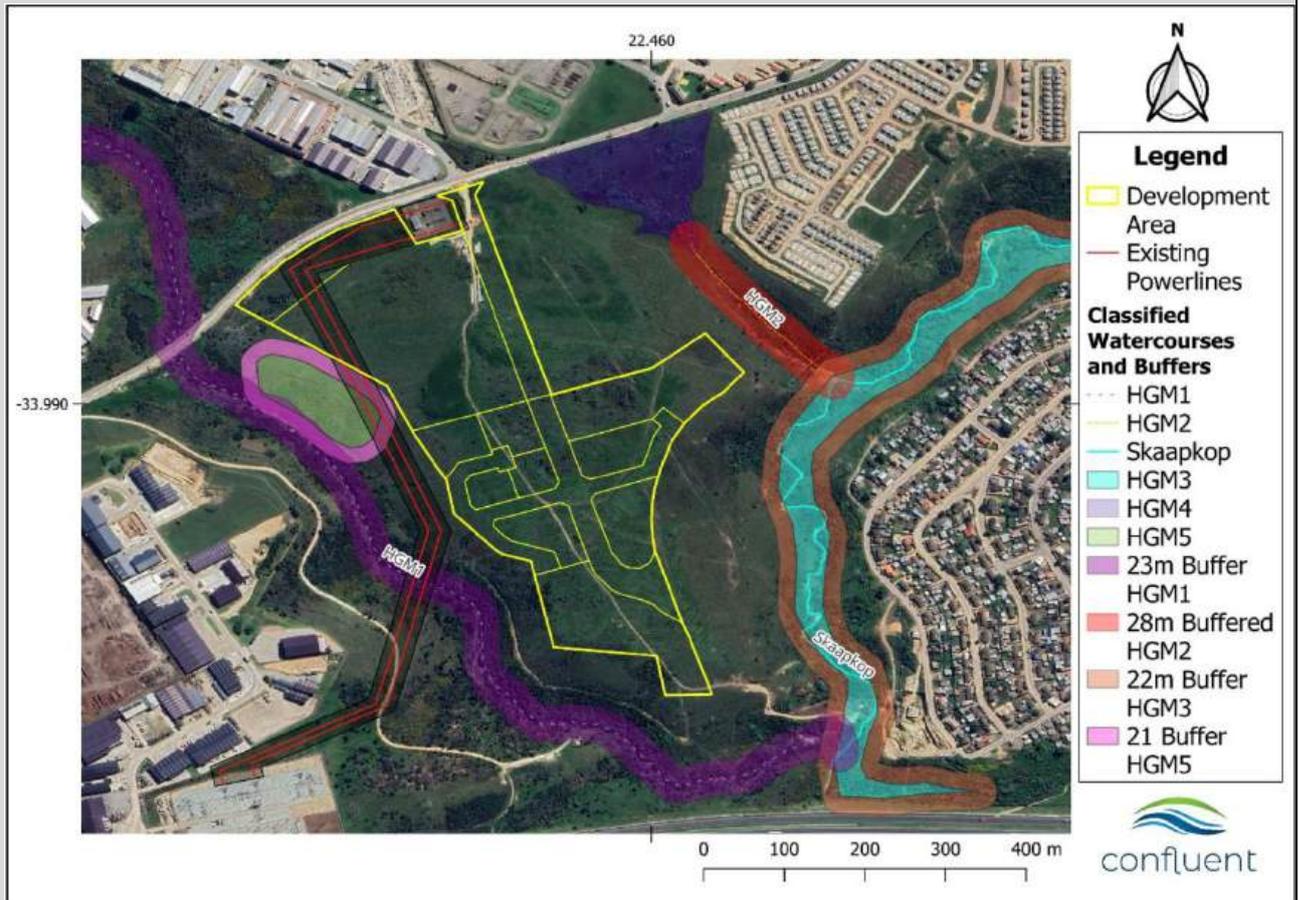


Figure 7: Mapped water resources adjacent to the proposed development site

Historical wetland features associated with HGM1 have now all but disappeared, and it is now more representative of a non-perennial stream HGM1 is primarily dominated by Kikuyu grass and black wattle, with erosion along its banks.

HGM2 is a non-perennial stream, with prominent bed and banks with intermittent flow following rainfall events. The upper section of HGM2 is a seep wetland (HGM4) that follows the contours, changing to a channel as the valley becomes steeper downstream. HGM2 has been subjected to severe head-cut erosion all along its length till its confluence with the Skaapkop River.

Wetland habitat along the Skaapkop River (HGM3) has been heavily eroded, leading to a distinct, incised channel, bordered by remnant wetland vegetation along the banks. The vegetation in wetland areas is dominated by grasses and *Juncus effusus*, other species, including *Zantedeschia aethiopica*, *Cliffortia odorata* and invasives including *Cortaderia selloana*.

HGM4 is classified as an artificial seep wetland (situated on a slope with overland inflow and channelled outflow) associated with stormwater from two culverts draining PW Botha Boulevard and the industrial area upstream

A seep wetland (HGM5) is present near the northwest corner of the proposed development area. HGM 5 is situated on a slope with overland inflow as well as interflow - channelled outflow is, however, absent at HGM5.

The revised Metro Grounds industrial development layout avoids the recommended buffer zones of the watercourses/wetlands near the development site,

¹ The Hydrogeomorphic (HGM) Classification identifies groups of wetlands that function similarly using three criteria that fundamentally influence how wetlands function. These criteria are geomorphic setting, water source, and hydrodynamics. Geomorphic setting refers to the landform in which the wetland occurs, its geologic evolution, and its topographic position in the landscape.



Figure 8: A – Erosion on the western banks of HGM1, B – Headcut erosion within HGM2, C – vegetation within HGM4, D – Sewage leaking into HGM4, E – HGM3 east of the development area, F – Sewage leaking into HGM3.

3. Coastal Environment

3.1.	Was a specialist study conducted?	YES	√NO
3.2.	Provide the name and/or company that conducted the specialist study.		
N/A			
3.3.	Explain how the relevant considerations of Section 63 of the ICMA were taken into account and explain how this influenced your proposed development.		
N/A			
3.4.	Explain how estuary management plans (if applicable) have influenced the proposed development.		
N/A			
3.5.	Explain how the modelled coastal risk zones, the coastal protection zone, littoral active zone and estuarine functional zones have influenced the proposed development.		
N/A			

4. Biodiversity

4.1.	Were specialist studies conducted?	√YES	NO
4.2.	Provide the name and/or company that conducted the specialist studies.		
Bianke Fouche and Dr James Dabrowski-Confluent Environmental (Pty) Ltd			

4.3.	Explain which systematic conservation planning and other biodiversity informants, such as vegetation maps, NFEPA, NSBA, etc., have been used and how this has influenced your proposed development.
<p>The following guidelines were used for the Terrestrial Biodiversity theme:</p> <ul style="list-style-type: none"> • The Western Cape Biodiversity Spatial Plan Handbook and summary booklet (CapeNature, 2017; Pool-Sandvliet et al., 2017). • The Subtropical Thicket Ecosystem Programme Handbook: Integrating the natural environment into land-use decisions at the municipal level: towards sustainable development (Pierce & Mader, 2006). • Vegetation Map (2018) • Ecosystem Guidelines for the Albany Thicket Biome (SANBI & CEN Integrated Environmental Management Unit, 2021) • The Garden Route Initiative (GRI) map (Vlok et al., 2008) • National Freshwater Ecosystem Priority Areas (NFEPA) <p>The proposed development site is mapped as the Garden Route Granite Fynbos (Critically Endangered, with vegetation along the development site not representing natural fynbos. Despite the disturbances from invasive plants and other impacts like illegal dumping on the site, the secondary fynbos sections support a good diversity of plant species.</p> <p>According to the WCBSP (2017), the majority of the Metro Grounds industrial site was not located within a Critical Biodiversity Area (CBA), with only some sections around the periphery of the earmarked site falling within mapped critical biodiversity areas (CBAs) and Ecological Support Areas (ESAs) (Figure 9).</p> <p>According to the updated WCBSP (2023), the Metro Grounds Industrial site now falls within a Terrestrial Critical Biodiversity Area (CBA1). The site has been ground-truthed by the Terrestrial Biodiversity Specialist and has been confirmed in the report that the new CBA1 areas on the proposed development sites have been incorrectly mapped, and this has been brought to the attention of Cape Nature, as the vegetation is transformed with no natural remaining vegetation. (Figure 9).</p> <p>Mitigation measures for the impact of the proposed development have been taken into consideration for the proposed industrial development. Impact has been found not to have any residual impact post mitigation.</p>	

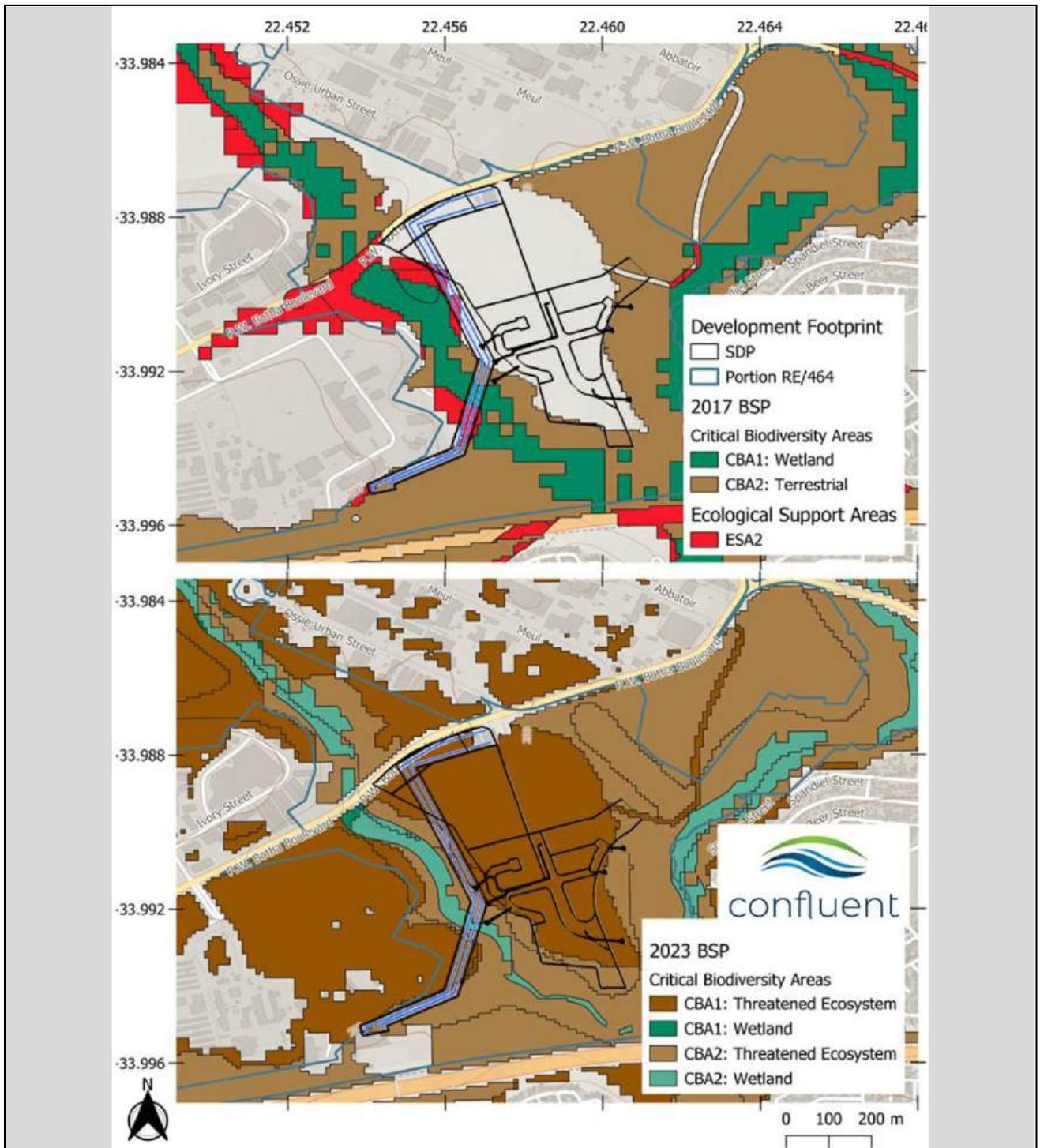


Figure 9: The mapped Western Cape Biodiversity Spatial Plan (WC BSP) categories. The top map represents the 2017 version of the map, which was in place at the beginning of this application, and the bottom map indicates the updated BSP, which was only released in early 2025.

4.4. Explain how the objectives and management guidelines of the Biodiversity Spatial Plan have been used and how has this influenced your proposed development.

- Two of the objectives of the WCBSP is to:
- Provide guidelines that set out the desired management objectives for land and use in each category of biodiversity priority areas.
 - Provide spatial planning and land-use decision-making guidelines to ensure environmentally sustainable development and resource use.

According to the WCBSP (2023), the development site falls within a Terrestrial Critical Biodiversity Area (CBA1). Mitigation measures for the impact of the proposed development have been taken into consideration for the proposed industrial development. The desired management objectives for CBA1 are to maintain in a natural area or near-natural state, with no further loss of habitat. Degraded areas should be rehabilitated. Only low-impact, biodiversity-sensitive land-uses are appropriate. The proposed development will have a low impact post mitigation; therefore, it is in line with the objectives of CBA1.

The Terrestrial Biodiversity Specialist and has confirmed in the report that the new CBA1 areas on the proposed development sites have been incorrectly mapped and this has been brought to the attention of Cape Nature, as the vegetation is transformed with no natural remaining vegetation. Unless actively rehabilitated and restored it is unlikely to return to natural vegetation.

4.5. Explain what impact the proposed development will have on the site-specific features and/or function of the Biodiversity Spatial Plan category and how this has influenced the proposed development.

According to the WCBS (2017), the majority of the Metro Grounds industrial site was not located within a Critical Biodiversity Area (CBA), with only some sections around the periphery of the earmarked site falling within mapped critical biodiversity areas (CBAs) and Ecological Support Areas (ESAs) (Figure 9).

According to the updated WCBS (2023), the Metro Grounds Industrial site now falls within a Terrestrial Critical Biodiversity Area (CBA1). The site has been ground-truthed by the Terrestrial Biodiversity Specialist and has been confirmed in the report that the new CBA1 areas on the proposed development sites have been incorrectly mapped, and this has been brought to the attention of Cape Nature, as the vegetation is transformed with no natural remaining vegetation.

CBA2 areas are in the same place they were in the 2017 version (Figure 9).



Figure 10: WCBS (2023) of the proposed Metro Grounds Industrial Site

4.6. If your proposed development is located in a protected area, explain how the proposed development is in line with the protected area management plan.

N/A

4.7. Explain how the presence of fauna on and adjacent to the proposed development has influenced your proposed development.

The observed faunal diversity during the site visit was notably low, indicating that the area is not functioning as a significant habitat for key faunal species.

Based on the recommendations from the Terrestrial Biodiversity specialist, the development activities should be restricted to the designated footprint area to prevent encroachment into surrounding areas and habitats of conservation concern.

The proposed development will incorporate green spaces with indigenous vegetation into the site plan. These spaces can serve as biodiversity refuges and help mitigate the ecological footprint of the development.

5. Geographical Aspects

Explain whether any geographical aspects will be affected and how this has influenced the proposed activity or development.

The proposed development will have the following geographical and physical aspects:

- The transformation of land from undeveloped to built-up land (i.e. change of human and physical characteristics)
- The removal of vegetation will lead to a visual contrast.
- There will be increased vehicular movement in the vicinity.
- The generation of waste;
- The generation of dust, and
- The use of energy resources and water.

The influence of these aspects on the development relates to the mitigation of predicted impacts.

6. Heritage Resources

6.1.	Was a specialist study conducted?	✓YES	NO
6.2.	Provide the name and/or company that conducted the specialist study.		
Stefan De Kock- Perception Planning			
6.3.	Explain how areas that contain sensitive heritage resources have influenced the proposed development.		
No sensitive heritage resources have been identified on site.			
<p>The study area has been substantially degraded through vegetation clearing, earthworks, dumping, installation of engineering services and various other forms of human intervention for an extended period (i.e. pre-1936) and is now enveloped by established development comprising a broad range of urban-related land uses. Preliminary analysis of the cultural landscape context did not reveal important traditional landscape patterns of cultural significance that may be negatively impacted through the implementation of the proposal. Similarly, the proposal is not likely to impact on archaeological, palaeontological or built heritage of cultural significance.</p> <p>Based on the information made available, it is therefore considered that the proposal would not impact any heritage resources of cultural significance and that no further heritage-related studies would be necessary</p>			

7. Historical and Cultural Aspects

Explain whether there are any culturally or historically significant elements as defined in Section 2 of the NHRA that will be affected and how this has influenced the proposed development.	
<p>No cultural or historically significant elements have been identified. In response to the Notification of Intent to Develop, Heritage Western Cape responded that, <i>You are hereby notified that, since there is no reason to believe that the proposed development of an industrial area on Erf 464 Portion Remainder, Metro Grounds Industrial Development, George will impact on heritage resources, no further action under Section 38 of the National Heritage Resources Act (Act 25 of 1999) is required. However, should any heritage resources, including evidence of graves and human burials, archaeological material and paleontological material be discovered during the execution of the activities above, all works must be stopped immediately, and Heritage Western Cape must be notified without delay.</i></p> <p>Refer to Appendix E1 for the statement issued by HWC.</p>	

8. Socio/Economic Aspects

8.1.	Describe the existing social and economic characteristics of the community in the vicinity of the proposed site.		
<p>The Garden Route District Municipality encompasses seven local municipalities, each contributing differently to its overall composition. Within the Garden Route District Municipality, George Municipality accounts for 35.3% of the total population and 34.1% of the households.</p> <p>The local municipality experienced 2.8% year-on-year population growth between 2013 to 2023, surpassing the district municipality's growth rate of 2.3%. Both the district municipality (DM) and local municipality (LM) experienced higher growth rates compared to the Western Cape (1.9%). The population's growth rate serves as a key indicator of increasing opportunities within both the DM and LM. Furthermore, the population density of 58.3 individuals per km² indicates enough space to accommodate a larger population in the local municipality. The average household income in the local municipality compares close to the district, at an average of R16 502, which is slightly higher than the district's average of R15 368 and significantly lower than the provincial average of R20 266.</p>			
8.2.	Explain the socio-economic value/contribution of the proposed development.		
<p>The proposed development is poised to draw in a surge of residents to the study area, primarily owing to the numerous employment opportunities that will be generated as a direct result of the project. The creation of multiple job opportunities serves as a compelling magnet, enticing individuals to relocate and settle within the vicinity of the project. This influx of population is expected to be a natural consequence of the employment prospects that the project brings, thereby contributing significantly to the demographic landscape of the area. As these employment opportunities take place, the local community is likely to witness an influx of new residents, thereby fostering both social and economic growth within the region.</p>			
8.3.	Explain what social initiatives will be implemented by the applicant to address the needs of the community and to uplift the area.		
<p>Job creation- Due to the operation, industry stimulation and employment opportunities, households could potentially experience better standards of living.</p> <p>Due to the development of a new education facility in the area, the supply of available education facilities for the community of the region.</p>			
8.4.	Explain whether the proposed development will impact on people's health and well-being (e.g. in terms of noise, odours, visual character and sense of place, etc) and how this has influenced the proposed development.		
<ul style="list-style-type: none"> • The removal of vegetation leading to increased visual contrast, degradation of the landscape character and visual intrusion. • Alteration of surface topography as a result of infrastructure placement and positioning, leading to loss of visual quality and visual exposure. • The proposed development will result in noise impacts during the construction and operation phase of the project. • Due to the development of a new industrial zone, new businesses, mainly businesses generating pollutants, the community's view, air and sound can potentially be compromised. <p>There will be planting of trees to mitigate the visual impacts from the N2 and improve scenic quality. The trees will also act as a noise buffer for the neighbouring communities</p>			

SECTION H: ALTERNATIVES, METHODOLOGY AND ASSESSMENT OF ALTERNATIVES

1. Details of the alternatives identified and considered

1.1.	Property and site alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts.
Provide a description of the preferred property and site alternative.	
The proposed Metro Grounds industrial development will be located on the Remainder of Erf 464, George. No site alternatives are available.	
Provide a description of any other property and site alternatives investigated.	
No other properties were investigated.	
Provide a motivation for the preferred property and site alternative including the outcome of the site selectin matrix.	
The proposed site location is owned by George Municipality so this would eliminate the need to buy or lease the property. The proposed development fits in with the surrounding industrial land use. The property and development were earmarked and forms part of the George South-East Local Spatial Development Framework (October 2015). The site is ideally located near existing industrial erven and municipal services.	
Provide a full description of the process followed to reach the preferred alternative within the site.	
The proposed site location is owned by George Municipality so this would eliminate the need to buy or lease the property. The proposed development fits in with the surrounding industrial land use. The property and development were earmarked formed part of the George South-East Local Spatial Development Framework (October 2015). The site is ideally located for a development of this nature, there is easy access to public road transportation.	
Provide a detailed motivation if no property and site alternatives were considered.	
George Municipality proposes the development of a portion of the Remaining Extent of Erf 464.	
There is limited developable land within the George Municipality Urban Edge, the site has been selected for development by the applicant, no other site alternative has been considered for this type of development due to space constraints. The site is ideally located near existing industrial erven and municipal services.	
List the positive and negative impacts that the property and site alternatives will have on the environment.	
No site alternatives were considered so the impacts listed below are for the preferred site alternative.	
<p>Negative:</p> <ul style="list-style-type: none"> • Noise • Dust • Loss of vegetation • An increase in traffic due to construction vehicles and heavy vehicles could create short-term disruptions and safety hazards for current road users. • Removal of vegetation leading to increased visual contrast, degradation of the landscape character and visual intrusion to sensitive receptors. • Risk of erosion • Risk of contaminating watercourses <p>Positive:</p> <ul style="list-style-type: none"> • Job creation • Investment in the facility will generate revenue for the government during the construction period through a combination of personal income tax, VAT, companies' tax etc. • Increased GDP • Temporary increase in household earnings • Contribution to skills development • Temporary increase in employment • Sustainable increase in national and local government revenue 	
1.2.	Activity alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts.
Provide a description of the preferred activity alternative.	
The subject portion of the Remainder of Erf 464, George has been identified as land to accommodate an industrial development.	
The project involves the identification, subdivision and zoning of serviced light industry erven for small- and medium-enterprises development. The industrial stands will be serviced with electrical, water, wastewater, stormwater and road infrastructure, which are included in this application. The small industrial stands will be released to users or buyers. The proposed development also includes an educational erf that is earmarked to be developed as a tertiary educational facility.	
<ul style="list-style-type: none"> • Education facility: 5.32 ha • Industry: 8.33 ha • Private open space: 1.3 ha • Public Street: 3.70 ha 	
A detailed description of the proposed development (preferred alternative) is provided earlier in this report.	
Provide a description of any other activity alternatives investigated.	
Provide a motivation for the preferred activity alternative.	
The preferred activity alternative, which includes education, industrial, private open space, and street zonings, has been identified as the most appropriate option to address the current and future land use needs within the George Local Municipality. This alternative directly supports the municipality's strategic development goals by providing erven that meet growing demand for industrial and educational facilities, while also ensuring the integration of accessible open space and supporting infrastructure.	
The site's location adjacent to the existing industrial area makes it particularly suitable for this form of development.	

Provide a detailed motivation if no activity alternatives exist.

With limited developable land within the George Municipality's Urban Edge, the proposed site has been selected for the development by the applicant, no site alternatives have been considered.

List the positive and negative impacts that the activity alternatives will have on the environment.

Positive

- An increase in employment opportunities during construction and operation.
- Increase in Industrially Zoned Property Supply in the Area.
- Optimize vacant land located within the urban edge.
- Increase in Education Supply in the Area.
- Sustainable increase in national and local government revenue due to the operation of the industrial development and education facility.
- Creation of Sustainable Employment Positions Nationally and Locally.
- Temporary increase in country's GDP due to capital expenditure during the construction period.
- There will be an increased contribution to skills development during construction of the proposed development. The proposed education facility will also contribute to the development and enhancement of skills of young people in George.

Negative:

- An increase in traffic due to construction vehicles and heavy vehicles could create short-term disruptions and safety hazards for current road users.
- An impact on the demographics of the area as a result of in-migration in response to job opportunities will occur.
- Permanent change in the local landscape character from the operation of the industrial complex, educational facility and the proposed bus terminal.
- Risk of erosion
- Risk of contamination of watercourses
- Removal of vegetation leading to increased visual contrast, degradation of the landscape character and visual intrusion to sensitive receptors.

1.3. Design or layout alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts

Provide a description of the preferred design or layout alternative.

The original layout had a footprint of approximately 19.99ha, which was amended to largely avoid the identified environmentally sensitive areas (botanical and aquatic resources), resulting in an amended layout with a footprint of 18.55ha. Subsequently, there were additional changes to accommodate the Rand Street Extension and the bus depot (including access road), which resulted in a further revision of the layout to a 16.54ha footprint. The three key layouts are shown below to understand the progression of the project layout through the application.



Original proposed layout (19.99ha)



Revision 1 Layout (18.55ha)



Revision 2 Layout (16.54ha)

Figure 11: Layout revisions

Provide a description of any other design or layout alternatives investigated.

Original proposed layout - 19.99ha

The original layout had the following components and footprints:

- Education facility: 7.14 ha
- Industry: 9.1 ha
- Public Street: 4.65 ha

Revision 1 – 18.55ha

Revision 1 had the following components and footprints:

- Community Zone I (Education facility) on ±5.32 ha
- Industrial Zone I (Industry) on ±8.33ha
- Open Space Zone II (Open Space) on ± 1.3 ha
- Public Street (Transport Zone II) on ±3.70 ha

Revision 2 – 16.54ha

Revision 2 had the following components and footprints:

- Community Zone I (Education facility) on ±5.34 ha.
- Industrial Zone I (Industry) on ±5.56ha.
- Transport Zone I on ±1.76ha
- Open Space Zone II (Open Space) on ± 1.3 ha.
- Public Street (Transport Zone II) on ±2.58 ha

Provide a motivation for the preferred design or layout alternative.

<p>The proposed layout has largely avoided the sensitive areas and is aligned with future adjoining projects. Therefore, this allows the applicant (George Municipality) to reduce impacts on the environmentally sensitive areas.</p> <p>In terms of the impact mitigation hierarchy, the team has avoided impacts by reducing the footprint of the proposed Metro Grounds development. Efforts have also been made to align the project with future adjoining projects to ensure that an integrated layout is realised.</p>	
<p>Provide a detailed motivation if no design or layout alternatives exist.</p>	
<p>As described above, the applicant considered two layout options before finalising the layout. The original layout encroached on sensitive environmental features (wetlands), and the layout was therefore revised to avoid these features, and further adjusted to align with future adjoining projects (i.e. the bus depot and Rand Street Extension).</p>	
<p>List the positive and negative impacts that the design alternatives will have on the environment.</p>	
<p>Positive:</p> <ul style="list-style-type: none"> The preferred layout has avoided key environmentally sensitive areas. The layout will integrate with the future adjoining projects. <p>Negative:</p> <ul style="list-style-type: none"> Leaking sewage infrastructure is a pervasive problem throughout the whole of the upper Skaapkop catchment, and additional developments will only increase the burden on a system that is currently failing to effectively reticulate existing sewage volumes. 	
1.4.	<p>Technology alternatives (e.g., to reduce resource demand and increase resource use efficiency) to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts.</p>
<p>Provide a description of the preferred technology alternative:</p>	
<p>Implementation of Sustainable Drainage Systems (SuDS) with the objective of Sustainable Drainage Systems (SuDS) must be implemented by the respective end user with the objective of attenuating stormwater onsite and reducing volumes of stormwater input into the development-wide stormwater system and watercourses:</p> <ul style="list-style-type: none"> Rainwater harvesting tanks must be installed at all buildings; Swales and detention ponds must be incorporated into the open space network to attenuate stormwater runoff; encourage infiltration and reduce the speed, energy and volumes at which stormwater is discharged from the site; Use of permeable paving to encourage infiltration into the soil; and Use of detention ponds and artificial wetlands to capture stormwater runoff and reduce the velocity of discharge from the site. 	
<p>Provide a description of any other technology alternatives investigated.</p>	
<p>No other technology alternatives were investigated.</p>	
<p>Provide a motivation for the preferred technology alternative.</p>	
<p>The technology alternative is not being assessed.</p>	
<p>Provide a detailed motivation if no alternatives exist.</p>	
<p>At this stage, there are no feasible or reasonable technology alternatives, and detailed consideration for the use of water and energy-saving technologies will be taken in the next phase of development.</p>	
<p>List the positive and negative impacts that the technology alternatives will have on the environment.</p>	
<p>Technology alternatives are not being assessed.</p>	
1.5.	<p>Operational alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts.</p>
<p>Provide a description of the preferred operational alternative.</p>	
<p>The proposed development will operate as a mixed-use industrial (commercial) and educational facility.</p>	
<p>Provide a description of any other operational alternatives investigated.</p>	
<p>No operational alternatives were investigated.</p>	
<p>Provide a motivation for the preferred operational alternative.</p>	
<p>No operational alternatives exist.</p>	
<p>Provide a detailed motivation if no alternatives exist.</p>	
<p>The site was earmarked for the proposed Metro Grounds Mixed Use development, which was included in the MSDF. The applicant will implement the proposed alternative.</p>	
<p>List the positive and negative impacts that the operational alternatives will have on the environment.</p>	
<p>Negative impacts:</p> <ul style="list-style-type: none"> Degradation and erosion of aquatic habitat/watercourses due to increased stormwater discharge from the development. Degradation of watercourses caused by edge-effects associated with increased anthropogenic activity within and around the development area. Increased human activity that might disturb the habitat of the Knysna Warbler along the Skaapkop River. Negative impacts on the sense of places (noise, dust and visual). <p>Positive impacts:</p> <ul style="list-style-type: none"> Employment creation during construction and operation. Growth of municipal revenues due to raised taxes and service levies. Contribution to Regional GDP. Contribution to skills development. Temporary increase in household earnings Increase in education supply in the George area. 	
1.6.	<p>The option of not implementing the activity (the 'No-Go' Option).</p>
<p>Provide an explanation as to why the 'No-Go' Option is not preferred.</p>	
<p>The "no go" alternative is the option of declining to proceed with the proposed development, in which case the status quo and/or current activities on the project site would continue. If this option is chosen, there will be no impact on the existing environmental baseline and no benefits to the local economy and affected communities.</p>	

The "no go" alternative thus bears the opportunity cost of socioeconomic benefits to the local community that will go unrealised.	
1.7.	Provide an explanation as to whether any other alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts, or detailed motivation if no reasonable or feasible alternatives exist.
N/A	
1.8.	Provide a concluding statement indicating the preferred alternatives, including the preferred location of the activity.
The original proposed layout for the Metro Grounds industrial development was as per Figure 11 above. The original layout was approximately 19.99ha, which was amended to avoid sensitive areas. The amended layout Error! Reference source not found. is approximately 18.55ha in size.	
The preferred layout has avoided all the environmentally sensitive areas and has reduced the environmental impacts on the wetlands and the sensitive vegetation.	

2. "No-Go" areas

Explain what "no-go" area(s) have been identified during the identification of the alternatives and provide the co-ordinates of the "no-go" area(s).	
The identified no-go areas are all the areas outside of the development footprint. Buffers have been created around the environmentally sensitive areas.	

3. Methodology to determine the significance ratings of the potential environmental impacts and risks associated with the alternatives.

Describe the methodology to be used in determining and ranking the nature, significance, consequences, extent, duration of the potential environmental impacts and risks associated with the proposed activity or development and alternatives, the degree to which the impact or risk can be reversed and the degree to which the impact and risk may cause irreplaceable loss of resources.	
No significant impacts were assessed for the proposed development. All specialists undertook compliance statements which were in line with the guidelines and protocols for specialist assessments. The proposed development sites do not contain any definable sensitive areas and has been heavily transformed.	
The following methodology was used to assess the impacts:	
This section outlines the proposed method for assessing the significance of the potential environmental impacts. For each predicted impact, criteria are ascribed, and these include the intensity (size or degree scale), which also includes the type of impact, being either a positive or negative impact; the duration (temporal scale); and the extent (spatial scale), as well as the probability (likelihood). The methodology is quantitative, whereby professional judgement is used to identify a rating for each criteria based on a seven-point scale (refer to Table 3); and the significance is auto-generated using a spreadsheet through application of the calculations in Figure 12. Specialists can comment where they disagree with the auto-calculated impact significance rating.	
<p>Calculations</p> <p>For each predicted impact, certain criteria are applied to establish the likely significance of the impact, firstly in the case of no mitigation being applied and then with the most effective mitigation measure(s) in place.</p> <p>These criteria include the intensity (size or degree scale), which also includes the type of impact, being either a positive or negative impact; the duration (temporal scale); and the extent (spatial scale). These numerical ratings are used in an equation whereby the consequence of the impact can be calculated. Consequence is calculated as follows:</p> <p style="text-align: center;">Consequence = type x (intensity + duration + extent)</p> <p>To calculate the significance of an impact, the probability (or likelihood) of that impact occurring is applied to the consequence.</p> <p style="text-align: center;">Significance = consequence x probability</p> <p>Depending on the numerical result, the impact would fall into a significance category as negligible, minor, moderate or major, and the type would be either positive or negative.</p>	

Figure 12: Calculation of significance

Table 3: Assessment criteria for the evaluation of impacts

Criteria	Numerical Rating	Category	Description
Duration	1	Immediate	Impact will self-remedy immediately
	2	Brief	Impact will not last longer than 1 year
	3	Short term	Impact will last between 1 and 5 years
	4	Medium term	Impact will last between 5 and 10 years
	5	Long term	Impact will last between 10 and 15 years
	6	On-going	Impact will last between 15 and 20 years
	7	Permanent	Impact may be permanent, or in excess of 20 years
Extent	1	Very limited	Limited to specific isolated parts of the site
	2	Limited	Limited to the site and its immediate surroundings
	3	Local	Extending across the site and to nearby settlements
	4	Municipal area	Impacts felt at a municipal level
	5	Regional	Impacts felt at a regional level

	6	National	Impacts felt at a national level
	7	International	Impacts felt at an international level
Intensity	1	Negligible	Natural and/ or social functions and/ or processes are negligibly altered
	2	Very low	Natural and/ or social functions and/ or processes are slightly altered
	3	Low	Natural and/ or social functions and/ or processes are somewhat altered
	4	Moderate	Natural and/ or social functions and/ or processes are moderately altered
	5	High	Natural and/ or social functions and/ or processes are notably altered
	6	Very high	Natural and/ or social functions and/ or processes are majorly altered
	7	Extremely high	Natural and/ or social functions and/ or processes are severely altered
Probability	1	Highly unlikely / None	Expected never to happen
	2	Rare improbable /	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
	3	Unlikely	Has not happened yet but could happen once in the lifetime of the project, therefore there is a possibility that the impact will occur
	4	Probable	Has occurred here or elsewhere and could therefore occur
	5	Likely	The impact may occur
	6	Almost certain / Highly probable	It is most likely that the impact will occur
	7	Certain / Definite	There are sound scientific reasons to expect that the impact will definitely occur

When assessing impacts, broader considerations are also taken into account. These include the level of confidence in the assessment rating; the reversibility of the impact; and the irreplaceability of the resource as set out in Table 4, Table 5 and Table 6, respectively.

Table 4: Definition of confidence ratings

Category	Description
Low	Judgement is based on intuition
Medium	Determination is based on common sense and general knowledge
High	Substantive supportive data exists to verify the assessment

Table 5: Definition of reversibility ratings

Category	Description
Low	The affected environment will not be able to recover from the impact - permanently modified
Medium	The affected environment will only recover from the impact with significant intervention
High	The affected environmental will be able to recover from the impact

Table 6: Definition of irreplaceability ratings

Category	Description
Low	The resource is not damaged irreparably or is not scarce
Medium	The resource is damaged irreparably but is represented elsewhere
High	The resource is irreparably damaged and is not represented elsewhere

Table 7: Significance Categories

Significance:	negative	positive
Negligible	Negligible - negative	Negligible - positive
Minor	Minor - negative	Minor - positive
Moderate	Moderate - negative	Moderate - positive
Major	Major - negative	Major - positive

4. Assessment of each impact and risk identified for each alternative

Note: The following table serves as a guide for summarising each alternative. The table should be repeated for each alternative to ensure a comparative assessment. The EAP may decide to include this section as Appendix J to this BAR.

CONSTRUCTION

Project phase	Construction			
Impact	Visual: Intensification of industrial landscape within the George.			
Description of impact	Alteration of the landscape through its transformation from an urban, undetermined open space to an industrial nature.			
Mitigatability	Low	Mitigation does not exist, or mitigation will slightly reduce the significance of impacts.		
Potential mitigation	Dust management from wind and the movement of vehicles.			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Negative	
Duration	Short term	Impact will last between 1 and 5 years	Short term	Impact will last between 1 and 5 years
Extent	Local	Extending across the site and to nearby settlements	Local	Extending across the site and to nearby settlements
Intensity	Moderate	Natural and/ or social functions and/ or processes are moderately altered	Moderate	Natural and/ or social functions and/ or processes are moderately altered
Probability	Certain / definite	There are sound scientific reasons to expect that the impact will definitely occur	Certain / definite	There are sound scientific reasons to expect that the impact will definitely occur
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	High	The affected environment will be able to recover from the impact	High	The affected environment will be able to recover from the impact
Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance	Minor - negative		Minor - negative	
Comment on significance	The minor significance is largely due to the short-term of construction impacts and the fact that other similar developments already exist in the area.			
Cumulative impacts	Cumulative impacts are expected to be of low significance.			

Project phase	Construction			
Impact	Aquatic: Increase of erosion due to the clearance of vegetation during the construction phase			
Description of impact	As vegetation is being cleared for construction, more soil surface is exposed, which will increase the likelihood of erosion and sediment being deposited into receiving watercourses by surface runoff during heavy rainfall events.			
Mitigatability	High	Mitigation exists and will considerably reduce the significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> Soil loss is related to the length of time that soils are exposed prior to rehabilitation or stabilisation. Therefore, the gap between construction activities and rehabilitation should be minimised. Phased construction and progressive rehabilitation, where practically possible, are therefore important elements of the erosion control strategy. Install silt fences or sediment barriers around the perimeter of the construction site to trap sediment-laden runoff and prevent it from entering the surrounding watercourses. Do not clear vegetation outside the development area. The laydown areas must be constructed on flat surfaces with a minimum distance of 20 m from the buffers. All stockpiles must be covered at the end of the day. Install temporary drainage controls such as swales or berms to manage runoff where necessary. All materials used during construction must follow the best practice guidelines set out for each product. Check weather reports ahead and prepare the site when rainfall is predicted. Discontinue any works on the site during rainfall. Construct check dams or sediment basins for flooded construction areas to be drained into if need be, to trap sediment, and facilitate sediment settlement before runoff reaches the non-perennial drainage line. All bare areas should be revegetated with appropriate locally occurring species, to bind the soil and limit erosion potential. Topsoil should be removed and stored in a designated area separately from subsoil and away from construction activities. Topsoil should be reapplied where appropriate as soon as possible in order to encourage and facilitate rapid regeneration of the natural vegetation in cleared areas. 			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Negative	
Duration	Short term	impact will last between 1 and 5 years	Brief	Impact will not last longer than 1 year
Extent	Very limited	Limited to specific isolated parts of the site	Very limited	Limited to specific isolated parts of the site

Intensity	Very high	Natural and/ or social functions and/ or processes are majorly altered	Very low	Natural and/ or social functions and/ or processes are slightly altered
Probability	Certain definite /	There are sound scientific reasons to expect that the impact will definitely occur	Unlikely	Has not happened yet but could happen once in the lifetime of the project, therefore there is a possibility that the impact will occur
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	High	The affected environmental will be able to recover from the impact	High	The affected environmental will be able to recover from the impact
Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance	Minor - negative		Negligible - negative	
Comment on significance	Agree with assessed significance.			
Cumulative impacts	Same as assessed impact, mitigation measures are appropriate.			

Project phase	Construction			
Impact	Aquatic: An Increase in erosion due to the clearance of vegetation during the construction phase			
Description of impact	As vegetation is being cleared for construction, more soil surface is exposed, which will increase the likelihood of erosion and sediment being deposited into receiving watercourses by surface runoff during heavy rainfall events.			
Mitigatability	High	Mitigation exists and will considerably reduce the significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> Soil loss is related to the length of time that soils are exposed prior to rehabilitation or stabilisation. Therefore, the gap between construction activities and rehabilitation should be minimised. Phased construction and progressive rehabilitation, where practically possible, are therefore important elements of the erosion control strategy. 			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Negative	
Duration	Short term	impact will last between 1 and 5 years	Brief	Impact will not last longer than 1 year
Extent	Very limited	Limited to specific isolated parts of the site	Very limited	Limited to specific isolated parts of the site
Intensity	Very high	Natural and/ or social functions and/ or processes are majorly altered	Very low	Natural and/ or social functions and/ or processes are slightly altered
Probability	Certain definite /	There are sound scientific reasons to expect that the impact will definitely occur	Unlikely	Has not happened yet but could happen once in the lifetime of the project, therefore there is a possibility that the impact will occur
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	High	The affected environmental will be able to recover from the impact	High	The affected environmental will be able to recover from the impact
Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance	Minor - negative		Negligible - negative	
Comment on significance	Agree with assessed significance.			
Cumulative impacts	Same as assessed impact, mitigation measures are appropriate.			

Project phase	Construction			
Impact	Socio-Economic: Increased Production			
Description of impact	Expenditure associated with the construction of the proposed mixed-use development will impact the production of the local economy.			
Mitigatability	Medium	Mitigation exists and will notably reduce the significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> The project developer should use locally sourced inputs where feasible in order to maximize the benefit to the local economy. Sub-contracting of local construction companies to occur as far as possible for the construction of facilities. 			
Assessment	Without mitigation		With mitigation	
Nature	Positive		Positive	
Duration	Short term	Impact will last between 1 and 5 years	Short term	Impact will last between 1 and 5 years
Extent	Municipal area	Impacts felt at a municipal level	Regional	Impacts felt at a regional / provincial level
Intensity	Moderate	Natural and/ or social functions and/ or processes are moderately altered	High	Natural and/ or social functions and/ or processes are notably altered
Probability	Almost certain / Highly probable	It is most likely that the impact will occur	Certain / definite	There are sound scientific reasons to expect that the impact will definitely occur
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	Low	The affected environment will not be able to recover from the impact - permanently modified	Low	The affected environment will not be able to recover from the impact - permanently modified
Resource irreplaceability	High	The resource is irreparably damaged and is not represented elsewhere	High	The resource is irreparably damaged and is not represented elsewhere
Significance	Minor - positive		Moderate - positive	
Comment on significance	Without mitigation, the impact will be of positive nature and of minor significance. Post-mitigation, the significance will be moderate.			
Cumulative impacts	N/A			

Project phase	Construction			
Impact	Socio-Economic: Increase in GDP			
Description of impact	Temporary increase in the country's GDP due to capital expenditure during the construction period			
Mitigatability	Medium	Mitigation exists and will notably reduce the significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> The project developer is to use locally sourced inputs where feasible in order to maximise the benefit to the economy. 			
Assessment	Without mitigation		With mitigation	
Nature	Positive		Positive	
Duration	Short term	Impact will last between 1 and 5 years	Short term	Impact will last between 1 and 5 years
Extent	Municipal area	Impacts felt at a municipal level	Municipal area	Impacts felt at a municipal level
Intensity	Moderate	Natural and/ or social functions and/ or processes are moderately altered	Moderate	Natural and/ or social functions and/ or processes are moderately altered
Probability	Almost certain / Highly probable	It is most likely that the impact will occur	Certain / definite	There are sound scientific reasons to expect that the impact will definitely occur
Confidence	High	Substantive, supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	Low	The affected environment will not be able to recover from the impact - permanently modified	Low	The affected environment will not be able to recover from the impact - permanently modified
Resource irreplaceability	High	The resource is irreparably damaged and is not represented elsewhere	High	The resource is irreparably damaged and is not represented elsewhere
Significance	Minor - positive		Moderate - positive	
Comment on significance	Without mitigation, the impact will be of a positive nature and of minor significance. Post-mitigation, the significance will be moderate.			
Cumulative impacts	N/A			

Project phase	Construction			
Impact	Socio-Economic: Contribution to Skills Development			
Description of impact	Employees will develop and enhance skills, thereby increasing experience and knowledge.			
Mitigatability	Medium	Mitigation exists and will notably reduce the significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> In order to maximise the positive impact, it is suggested that the project company provide training courses for employees, where feasible, to ensure that employees gain as much as possible from the work experience. Facilitate the transfer of knowledge between experienced employees and the staff. Perform a skills audit to determine the potential skills that could be sourced in the area. 			
Assessment	Without mitigation		With mitigation	
Nature	Positive		Positive	
Duration	On-going	Impact will last between 15 and 20 years	On-going	Impact will last between 15 and 20 years
Extent	Limited	Limited to the site and its immediate surroundings	Municipal area	Impacts felt at a municipal level
Intensity	Low	Natural and/ or social functions and/ or processes are somewhat altered	Low	Natural and/ or social functions and/ or processes are somewhat altered
Probability	Likely	The impact may occur	Almost certain / Highly probable	It is most likely that the impact will occur
Confidence	Medium	Determination is based on common sense and general knowledge	High	Substantive supportive data exists to verify the assessment
Reversibility	Medium	The affected environment will only recover from the impact with significant intervention	Medium	The affected environment will only recover from the impact with significant intervention
Resource irreplaceability	Medium	The resource is damaged irreparably but is represented elsewhere	Medium	The resource is damaged irreparably but is represented elsewhere
Significance	Minor - positive		Moderate - positive	
Comment on significance	Without mitigation, the impact will be of positive nature and of minor significance. Post-mitigation, the significance will be moderate.			
Cumulative impacts	N/A			

Project phase	Construction			
Impact	Socio-Economic: Temporary Increase in Household Earnings			
Description of impact	Employed individuals will increase the income of their respective households and thereby experience an improvement in their standard of living.			
Mitigatability	Medium	Mitigation exists and will notably reduce significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> Local employment will benefit local households and the local area. 			
Assessment	Without mitigation		With mitigation	
Nature	Positive		Positive	
Duration	Short term	Impact will last between 1 and 5 years	Short term	Impact will last between 1 and 5 years
Extent	Limited	Limited to the site and its immediate surroundings	Municipal area	Impacts felt at a municipal level
Intensity	Moderate	Natural and/ or social functions and/ or processes are moderately altered	High	Natural and/ or social functions and/ or processes are notably altered
Probability	Likely	The impact may occur	Certain/definite	There are sound scientific reasons to expect that the impact will definitely occur
Confidence	Medium	Determination is based on common sense and general knowledge	High	Substantive, supportive data exists to verify the assessment
Reversibility	Low	The affected environment will not be able to recover from the impact, permanently modified	Low	The affected environment will not be able to recover from the impact, permanently modified
Resource irreplaceability	Low	The resource is not irreparably damaged or is not scarce	Low	The resource is not irreparably damaged or is not scarce
Significance	Minor - positive		Moderate - positive	
Comment on significance	Without mitigation, the impact will be of positive nature and of minor significance. Post-mitigation, the significance will be moderate.			
Cumulative impacts	N/A			

Project phase	Construction			
Impact	Socio-Economic: Sustainable increase in national and local government revenue			
Description of impact	The investment in the facility will generate revenue for the government during the construction period through a combination of personal income tax, VAT, companies' tax, etc.			
Mitigatability	Low	Mitigation does not exist, or mitigation will slightly reduce the significance of impacts		
Potential mitigation	• Positive impact, no mitigation proposed.			
Assessment	Without mitigation		With mitigation	
Nature	Positive		Positive	
Duration	Short term	Impact will last between 1 and 5 years	Short term	Impact will last between 1 and 5 years
Extent	Local	Extending across the site and to nearby settlements	Local	Extending across the site and to nearby settlements
Intensity	High	Natural and/ or social functions and/ or processes are notably altered	High	Natural and/ or social functions and/ or processes are notably altered
Probability	Almost certain / Highly probable	It is most likely that the impact will occur	Almost certain / Highly probable	It is most likely that the impact will occur
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	Low	The affected environment will not be able to recover from the impact - permanently modified	Low	The affected environment will not be able to recover from the impact - permanently modified
Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance	Minor - positive		Minor - positive	
Comment on significance	Without mitigation, the impact will be of positive nature and of minor significance. There would be no mitigation measures.			
Cumulative impacts	N/A			

Project phase	Construction			
Impact	Socio-Economic: Temporary Increase in Employment			
Description of impact	The construction of the projects will positively impact the community and beyond by creating a number of job opportunities.			
Mitigatability	Low	Mitigation does not exist, or mitigation will slightly reduce the significance of impacts		
Potential mitigation	• Organise local community meetings to advise the local labour on the project that is planned to be established and the jobs that can potentially be applied for. Where feasible, effort must be made to employ locally in order to create maximum benefit for the communities.			
Assessment	Without mitigation		With mitigation	
Nature	Positive		Positive	
Duration	Short term	Impact will last between 1 and 5 years	Short term	Impact will last between 1 and 5 years
Extent	Municipal area	Impacts felt at a municipal level	Regional	Impacts felt at a regional/provincial level
Intensity	High	Natural and/ or social functions and/ or processes are notably altered	High	Natural and/ or social functions and/ or processes are notably altered
Probability	Likely	The impact may occur	Almost certain / Highly probable	It is most likely that the impact will occur
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	Low	The affected environment will not be able to recover from the impact - permanently modified	Low	The affected environment will not be able to recover from the impact - permanently modified
Resource irreplaceability	Low	The resource is not irreparably damaged or is not scarce	Low	The resource is not irreparably damaged or is not scarce
Significance	Minor - positive		Moderate - positive	
Comment on significance	Without mitigation, the impact will be of positive nature and of minor significance. Post-mitigation, the significance will be moderate.			
Cumulative impacts	N/A			

Project phase	Construction			
Impact	Socio-Economic: Negative Change to the Sense of Place			
Description of impact	Negative impact on the sense of place (noise, dust and visual) for farmers where construction activities will take place			
Mitigatability	Low	Mitigation does not exist, or mitigation will slightly reduce the significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> Ensure proper health and safety plans are in place during the construction period to ensure safety on and around the site during construction. Site watering (or use of appropriate dust suppressant) when required to reduce dust emitted from the construction site. 			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Negative	
Duration	Short term	Impact will last between 1 and 5 years	Short term	Impact will last between 1 and 5 years
Extent	Local	Extending across the site and to nearby settlements	Limited	Limited to the site and its immediate surroundings
Intensity	Moderate	Natural and/ or social functions and/ or processes are moderately altered	Low	Natural and/ or social functions and/ or processes are somewhat altered
Probability	Likely	The impact may occur	Probable	The impact has occurred here or elsewhere and could therefore occur
Confidence	Low	Judgement is based on intuition	Low	Judgement is based on intuition
Reversibility	Low	The affected environment will not be able to recover from the impact - permanently modified	Low	The affected environment will not be able to recover from the impact - permanently modified
Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance	Minor - negative		Negligible - negative	
Comment on significance	Without mitigation, the impact will be of negative nature and of minor significance. Post-mitigation, the significance will be negligible.			
Cumulative impacts	N/A			

Project phase	Construction			
Impact	Socio-economic: Temporary Increase in Social Conflicts with the Influx of People			
Description of impact	An impact on the demographics of the area as a result of in-migration in response to job opportunities will occur.			
Mitigatability	Medium	Mitigation exists and will notably reduce the significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> Where feasible, effort must be made to employ local labour in order to create maximum benefit for the communities and limit in-migration. Train unemployed local community members with insufficient skills and increase absorption of local labour, thereby decreasing in-migration. 			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Negative	
Duration	Short term	Impact will last between 1 and 5 years	Short term	Impact will last between 1 and 5 years
Extent	Local	Extending across the site and to nearby settlements	Local	Extending across the site and to nearby settlements
Intensity	Low	Natural and/ or social functions and/ or processes are somewhat altered	Very low	Natural and/ or social functions and/ or processes are slightly altered
Probability	Probable	The impact has occurred here or elsewhere and could therefore occur	Probable	The impact has occurred here or elsewhere and could therefore occur
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	Low	The affected environment will not be able to recover from the impact - permanently modified	Low	The affected environment will not be able to recover from the impact - permanently modified
Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance	Minor - negative		Negligible - negative	
Comment on significance	Without mitigation, the impact will be of negative nature and of minor significance. Post-mitigation, the significance will be negligible.			
Cumulative impacts	N/A			

Project phase	Construction			
Impact	Socio-Economic: Impact on Economic and Social Infrastructure			
Description of impact	An increase in traffic due to construction vehicles and heavy vehicles could create short-term disruptions and safety hazards for current road users.			
Mitigatability	Low	Mitigation does not exist, or mitigation will slightly reduce the significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> Provide public transportation service for workers in order to reduce congestion on roads. Partner with local municipalities and other prominent users of the local roads to upgrade them to meet the required capacity and intensity of the vehicles related to the planned construction activities. Transportation contractors must adhere to the road rules and regulations. Utilise only designated access routes & entrance/exits from the site. Implement appropriate signage & road safety measures at entrance/exit to the site and on site 			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Negative	
Duration	Short term	Impact will last between 1 and 5 years	Short term	Impact will last between 1 and 5 years
Extent	Municipal area	Impacts felt at a municipal level	Local	Extending across the site and to nearby settlements
Intensity	Low	Natural and/ or social functions and/ or processes are somewhat altered	Very low	Natural and/ or social functions and/ or processes are slightly altered
Probability	Likely	The impact may occur	Probable	The impact has occurred here or elsewhere and could therefore occur
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	Low	The affected environment will not be able to recover from the impact - permanently modified	Low	The affected environment will not be able to recover from the impact - permanently modified
Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance	Minor - negative		Negligible - negative	
Comment on significance	Without mitigation, the impact will be of negative nature and of minor significance. Post-mitigation, the significance will be negligible.			
Cumulative impacts	N/A			

Project phase	Construction			
Impact	Socio-Economic: Safety and Security			
Description of impact	Farmers might feel that the increase in accessibility will increase theft in the area			
Mitigatability	Low	Mitigation does not exist, or mitigation will slightly reduce the significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> Ensure proper 24/7 security patrols the construction sites, as well as controlled access 			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Negative	
Duration	Short term	Impact will last between 1 and 5 years	Short term	Impact will last between 1 and 5 years
Extent	Local	Extending across the site and to nearby settlements	Local	Extending across the site and to nearby settlements
Intensity	Low	Natural and/ or social functions and/ or processes are somewhat altered	Very low	Natural and/ or social functions and/ or processes are slightly altered
Probability	Probable	The impact has occurred here or elsewhere and could therefore occur	Probable	The impact has occurred here or elsewhere and could therefore occur
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	Low	The affected environment will not be able to recover from the impact - permanently modified	Low	The affected environment will not be able to recover from the impact - permanently modified
Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance	Minor - negative		Negligible - negative	
Comment on significance	Without mitigation, the impact will be of negative nature and of minor significance. Post-mitigation, the significance will be negligible.			
Cumulative impacts	N/A			

Project phase	Construction			
Impact	Terrestrial Biodiversity: The Increased Risk of Invasive Plant Species Proliferation in Sensitive Fynbos Habitat Over Time.			
Description of impact	Disturbance from: a) the period of time passing before the start of construction and b) pre-construction activities (e.g., site clearing, delineating the construction area etc.) will create conditions that favour the establishment of invasive alien plant species such as <i>Acacia mearnsii</i> , <i>Acacia melanoxylon</i> , and <i>Hakea sericea</i> , already documented on site and within the secondary fynbos fragments.			
Mitigatability	Medium	Mitigation exists and will notably reduce significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> Implement an invasive alien plant control and management plan along the valley edges to the valley bottom. This should preferably occur prior to construction. Conduct plant rescue operations for species of conservation concern before site clearing in areas that will be affected by stormwater infrastructure. Require contractor training on avoiding unnecessary encroachment into fynbos areas. All new staff must be briefed about the layout of the construction site, including no-go areas, to ensure awareness of the sensitive surrounding environment that must not be disturbed. 			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Negative	
Duration	Long term	Impact will last between 10 and 15 years	Brief	Impact will not last longer than 1 year
Extent	Limited	Limited to the site and its immediate surroundings	Limited	Limited to the site and its immediate surroundings
Intensity	Moderate	Natural and/ or social functions and/ or processes are moderately altered	Low	Natural and/ or social functions and/ or processes are somewhat altered
Probability	Certain definite /	There are sound scientific reasons to expect that the impact will definitely occur	Certain definite /	There are sound scientific reasons to expect that the impact will definitely occur
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	Medium	The affected environment will only recover from the impact with significant intervention	Medium	The affected environment will only recover from the impact with significant intervention
Resource irreplaceability	Medium	The resource is damaged irreparably but is represented elsewhere	Medium	The resource is damaged irreparably but is represented elsewhere
Significance	Moderate - negative		Minor - negative	
Comment on significance	Agree with assessed significance.			
Cumulative impacts	Same as assessed impact, mitigation measures are appropriate.			

Project phase	Construction			
Impact	Terrestrial Biodiversity: Loss and Further Fragmentation of Garden Route Granite Fynbos due to e.g., Stormwater Infrastructure, Occurring in Sensitive Fynbos			
Description of impact	Vegetation clearance for infrastructure and development will result in direct habitat loss, particularly affecting the critically endangered Garden Route Granite Fynbos.			
Mitigatability	Medium	Mitigation exists and will notably reduce significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> Demarcate no-go high sensitivity areas, especially around valley slopes where fynbos persists. Incorporate a well-planned, phased construction approach to minimize the total disturbed area at any given time. Minimize soil disturbance and establish defined walking paths to prevent soil compaction during clearing. Ensure immediate rehabilitation of disturbed areas with indigenous species to limit reinvasion potential. 			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Negative	
Duration	Long term	Impact will last between 10 and 15 years	Short term	impact will last between 1 and 5 years
Extent	Limited	Limited to the site and its immediate surroundings	Very limited	Limited to specific isolated parts of the site
Intensity	Moderate	Natural and/ or social functions and/ or processes are moderately altered	Low	Natural and/ or social functions and/ or processes are somewhat altered
Probability	Certain definite /	There are sound scientific reasons to expect that the impact will definitely occur	Certain definite /	There are sound scientific reasons to expect that the impact will definitely occur
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	Medium	The affected environment will only recover from the impact with significant intervention	Medium	The affected environment will only recover from the impact with significant intervention

Resource irreplaceability	Medium	The resource is damaged irreparably but is represented elsewhere	Medium	The resource is damaged irreparably but is represented elsewhere
Significance	Moderate - negative		Minor - negative	
Comment on significance	Agree with assessed significance.			
Cumulative impacts	N/A			

Project phase	Construction			
Impact	Increased Negative Edge Effects Leading to Biodiversity Loss due to Construction Activities Occurring Close-by Remnant Fynbos Patches			
Description of impact	<ul style="list-style-type: none"> Increased human activity, construction dust, and potential pollution will degrade remnant fynbos patches, exacerbating ecological stressors like altered fire regimes and further invasive species encroachment. This impact also includes the impact that could occur if the the construction phase is inappropriately concluded and not cleaned up. See table 13 for mitigation measures. 			
Mitigatability	Medium	Mitigation exists and will notably reduce the significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> Implement dust suppression techniques and ensure proper waste disposal on-site. Ensure proper waste management to prevent pollution of sensitive areas. 			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Negative	
Duration	Long term	Impact will last between 10 and 15 years	Short term	impact will last between 1 and 5 years
Extent	Limited	Limited to the site and its immediate surroundings	Limited	Limited to the site and its immediate surroundings
Intensity	Moderate	Natural and/ or social functions and/ or processes are moderately altered	Low	Natural and/ or social functions and/ or processes are somewhat altered
Probability	Almost certain / Highly probable	It is most likely that the impact will occur	Almost certain / Highly probable	It is most likely that the impact will occur
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	Medium	The affected environment will only recover from the impact with significant intervention	Medium	The affected environment will only recover from the impact with significant intervention
Resource irreplaceability	Medium	The resource is damaged irreparably but is represented elsewhere	Medium	The resource is damaged irreparably but is represented elsewhere
Significance	Minor - negative		Minor - negative	
Comment on significance	Agree with assessed significance.			
Cumulative impacts	N/A			

OPERATIONAL IMPACTS

Project phase	Operation			
Impact	Visual: Alteration of the landscape through its transformation from a rural to an industrial nature.			
Description of impact	Alteration of the landscape through its transformation from a rural to an industrial nature.			
Mitigatability	Low	Mitigation does not exist; or mitigation will slightly reduce the significance of impacts		
Potential mitigation	Planting of street trees as per the specifications in the EMP.			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Positive	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Permanent	Impact may be permanent, or in excess of 20 years
Extent	Local	Extending across the site and to nearby settlements	Local	Extending across the site and to nearby settlements
Intensity	Low	Natural and/ or social functions and/ or processes are somewhat altered	Low	Natural and/ or social functions and/ or processes are somewhat altered
Probability	Certain / definite	There are sound scientific reasons to expect that the impact will definitely occur	Certain / definite	There are sound scientific reasons to expect that the impact will definitely occur
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	High	The affected environment will be able to recover from the impact	High	The affected environment will be able to recover from the impact
Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance	Moderate - negative		Moderate - positive	
Comment on significance	The main driver of significance is the long duration. An impact of minor negative is probably more accurate due to the existing built nature of the surrounding areas.			
Cumulative impacts	Cumulative impacts are expected to be of low significance.			

Project phase	Operation			
Impact	Socio-Economic: Sustainable Increase in Production			
Description of impact	Expenditure associated with the operation of the development and its impact on the production of the local economy.			
Mitigatability	Medium	Mitigation exists and will notably reduce the significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> The project developer should use locally sourced inputs where feasible in order to maximise the benefit to the local economy. Sub-contracting of local construction companies to occur as far as possible for the construction of facilities. 			
Assessment	Without mitigation		With mitigation	
Nature	Positive		Positive	
Duration	On-going	Impact will last between 15 and 20 years	On-going	Impact will last between 15 and 20 years
Extent	Municipal area	Impacts felt at a municipal level	Regional	Impacts felt at a regional / provincial level
Intensity	High	Natural and/ or social functions and/ or processes are notably altered	Very high	Natural and/ or social functions and/ or processes are majorly altered
Probability	Likely	The impact may occur	Almost certain / Highly probable	It is most likely that the impact will occur
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	Low	The affected environment will not be able to recover from the impact - permanently modified	Low	The affected environment will not be able to recover from the impact - permanently modified
Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance	Moderate - positive		Moderate - positive	
Comment on significance	Without mitigation, the impact will be of positive nature and of moderate significance. Post-mitigation, the significance will remain moderate.			
Cumulative impacts	N/A			

Project phase	Operation			
Impact	Socio-Economic: Sustainable Increase in GDP			
Description of impact	Temporary increase in the country's GDP due to capital expenditure during the construction period			
Mitigatability	Medium	Mitigation exists and will notably reduce significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> The project developer is to use locally sourced inputs where feasible in order to maximize the benefit to the economy. 			
Assessment	Without mitigation		With mitigation	
Nature	Positive		Positive	
Duration	Long term	Impact will last between 10 and 15 years	Long term	Impact will last between 10 and 15 years
Extent	Municipal area	Impacts felt at a municipal level	Municipal area	Impacts felt at a municipal level
Intensity	High	Natural and/ or social functions and/ or processes are notably altered	Very high	Natural and/ or social functions and/ or processes are majorly altered
Probability	Likely	The impact may occur	Likely	The impact may occur
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	Low	The affected environment will not be able to recover from the impact - permanently modified	Low	The affected environment will not be able to recover from the impact - permanently modified
Resource irreplaceability	Medium	The resource is damaged irreparably but is represented elsewhere	Medium	The resource is damaged irreparably but is represented elsewhere
Significance	Minor - positive		Moderate - positive	
Comment on significance	Without mitigation, the impact will be of positive nature and of minor significance. Post-mitigation, the significance will be moderate.			
Cumulative impacts	N/A			

Project phase	Operation			
Impact	Socio-Economic: Creation of Sustainable Employment Positions Nationally and Locally			
Description of impact	Due to the operation, industry stimulation and employment opportunities, households could potentially experience better standards of living.			
Mitigatability	High	Mitigation exists and will considerably reduce the significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> Organise local community meetings to advise the local labour on the project that is planned to be established and the jobs that can potentially be applied for, where feasible and or practical. Where feasible, effort must be made to employ locally to create maximum benefit for the communities. 			
Assessment	Without mitigation		With mitigation	
Nature	Positive		Positive	
Duration	Long term	Impact will last between 10 and 15 years	On-going	Impact will last between 15 and 20 years
Extent	Municipal area	Impacts felt at a municipal level	Municipal area	Impacts felt at a municipal level
Intensity	Moderate	Natural and/ or social functions and/ or processes are moderately altered	High	Natural and/ or social functions and/ or processes are notably altered
Probability	Likely	The impact may occur	Almost certain / Highly probable	It is most likely that the impact will occur
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	Medium	The affected environment will only recover from the impact with significant intervention	Medium	The affected environment will only recover from the impact with significant intervention
Resource irreplaceability	Low	The resource is not irreparably damaged or is not scarce	Low	The resource is not irreparably damaged or is not scarce
Significance	Minor - positive		Moderate - positive	
Comment on significance	Without mitigation, the impact will be of a positive nature and of minor significance. Post-mitigation, the significance will be moderate.			
Cumulative impacts	N/A			

Project phase	Operation			
Impact	Socio-Economic: Sustainable Increase in National and Local Government Revenue			
Description of impact	Sustainable increase in national and local government revenue due to the operation of the industrial development and education facility			
Mitigatability	Low	Mitigation does not exist, or mitigation will slightly reduce the significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> Positive impact, no mitigation proposed. 			
Assessment	Without mitigation		With mitigation	
Nature	Positive		Positive	
Duration	Long term	Impact will last between 10 and 15 years	On-going	Impact will last between 15 and 20 years
Extent	Municipal area	Impacts felt at a municipal level	Regional	Impacts felt at a regional / provincial level
Intensity	Moderate	Natural and/ or social functions and/ or processes are moderately altered	High	Natural and/ or social functions and/ or processes are notably altered
Probability	Probable	The impact has occurred here or elsewhere and could therefore occur	Likely	The impact may occur
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	Low	The affected environment will not be able to recover from the impact - permanently modified	Low	The affected environment will not be able to recover from the impact - permanently modified
Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance	Minor - positive		Moderate - positive	
Comment on significance	Without mitigation, the impact will be of positive nature and of minor significance. Post-mitigation, the significance will be moderate.			
Cumulative impacts	N/A			

Project phase	Operation			
Impact	Socio-Economic: Increase in Education Supply in the Area			
Description of impact	Due to the development of a new education facility in the area, the supply of available education facilities for the community of the region.			
Mitigatability	Medium	Mitigation exists and will notably reduce significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> In order to maximise the impact of the education facility on the community, the facility can make use of e-learning for students that does not need to be physically present, in order to allow more students to be enrolled at the facility. 			
Assessment	Without mitigation		With mitigation	
Nature	Positive		Positive	
Duration	Long term	Impact will last between 10 and 15 years	On-going	Impact will last between 15 and 20 years
Extent	Regional	Impacts felt at a regional / provincial level	Regional	Impacts felt at a regional / provincial level
Intensity	Moderate	Natural and/ or social functions and/ or processes are moderately altered	Moderate	Natural and/ or social functions and/ or processes are moderately altered
Probability	Likely	The impact may occur	Almost certain / Highly probable	It is most likely that the impact will occur
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	Low	The affected environment will not be able to recover from the impact - permanently modified	Low	The affected environment will not be able to recover from the impact - permanently modified
Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance	Minor - positive		Moderate - positive	
Comment on significance	Without mitigation, the impact will be of positive nature and of minor significance. Post-mitigation, the significance will be moderate.			
Cumulative impacts	N/A			

Project phase	Operation			
Impact	Socio-Economic: Increase in Industrially Zoned Property Supply in the Area			
Description of impact	Due to the expansion of the industrial zone in the town, more properties will be available where industrial operations can occur			
Mitigatability	Low	Mitigation does not exist; or mitigation will slightly reduce the significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> Positive impact, no mitigation proposed. 			
Assessment	Without mitigation		With mitigation	
Nature	Positive		Positive	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Permanent	Impact may be permanent, or in excess of 20 years
Extent	Local	Extending across the site and to nearby settlements	Local	Extending across the site and to nearby settlements
Intensity	High	Natural and/ or social functions and/ or processes are notably altered	High	Natural and/ or social functions and/ or processes are notably altered
Probability	Almost certain/Highly Probable	It is most likely that the impact will occur	Almost certain/Highly Probable	It is most likely that the impact will occur
Confidence	High	Substantive, supportive data exists to verify the assessment	High	Substantive, supportive data exists to verify the assessment
Reversibility	Low	The affected environment will not be able to recover from the impact - permanently modified	Low	The affected environment will not be able to recover from the impact - permanently modified
Resource irreplaceability	Low	The resource is not irreparably damaged or is not scarce	Low	The resource is not irreparably damaged or is not scarce
Significance	Major - positive		Major - positive	
Comment on significance	Without mitigation, the impact will be of positive nature and of major significance. There would be no mitigation measures to be taken.			
Cumulative impacts	N/A			

Project phase	Operation			
Impact	Visual: Negative Changes to the Sense of Place			
Description of impact	Due to the development of a new industrial zone, new businesses, mainly businesses generating pollutants, the community's view, air and sound can potentially be compromised.			
Mitigatability	Medium	Mitigation exists and will notably reduce the significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> The developer can put policies in place in order to minimise pollutants that are expelled by factories, to set time limits on when businesses can operate, to limit noise and 			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Negative	
Duration	On-going	Impact will last between 15 and 20 years	On-going	Impact will last between 15 and 20 years
Extent	Local	Extending across the site and to nearby settlements	Local	Extending across the site and to nearby settlements
Intensity	High	Natural and/ or social functions and/ or processes are notably altered	Low	Natural and/ or social functions and/ or processes are somewhat altered
Probability	Almost certain / Highly probable	It is most likely that the impact will occur	Likely	The impact may occur
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	Medium	The affected environment will only recover from the impact with significant intervention	Medium	The affected environment will only recover from the impact with significant intervention
Resource irreplaceability	Medium	The resource is damaged irreparably, but is represented elsewhere	Medium	The resource is damaged irreparably but is represented elsewhere
Significance	Moderate - negative		Minor - negative	
Comment on significance	Without mitigation, the impact will be of a negative nature and of moderate significance. Post-mitigation, the significance will be minor.			
Cumulative impacts	N/A			

Project phase	Operation			
Impact	Degradation and erosion of aquatic habitats/watercourses due to increased stormwater discharge from the development.			
Description of impact	Increased stormwater discharge has caused widespread erosion and degradation of watercourses throughout George. The effects can be clearly seen in HGM2, which has been severely eroded due to headcut erosion caused by increased stormwater flows.			
Mitigatability	High	Mitigation exists and will considerably reduce the significance of impacts		
Potential mitigation	Implementation of Sustainable Drainage Systems (SuDS) must be implemented with the objective of attenuating stormwater onsite and reducing volumes of stormwater input in watercourses			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Negative	
Duration	On-going	Impact will last between 15 and 20 years	On-going	Impact will last between 15 and 20 years
Extent	Limited	Limited to the site and its immediate surroundings	Limited	Limited to the site and its immediate surroundings
Intensity	Very high	Natural and/ or social functions and/ or processes are majorly altered	Moderate	Natural and/ or social functions and/ or processes are moderately altered
Probability	Certain definite /	There are sound scientific reasons to expect that the impact will definitely occur	Probable	The impact has occurred here or elsewhere and could therefore occur
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	High	The affected environmental will be able to recover from the impact	High	The affected environmental will be able to recover from the impact
Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance	Moderate - negative		Minor - negative	
Comment on significance				
Cumulative impacts				

Project phase	Operation			
Impact	Degradation and erosion of aquatic habitat/watercourses due to increased stormwater discharge from the development.			
Description of impact	Increased stormwater discharge has caused widespread erosion and degradation of watercourses throughout George. The effects can be clearly seen in HGM2 which has been severely eroded due to head cut erosion caused by increased stormwater flows.			
Mitigatability	High	Mitigation exists and will considerably reduce the significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> Implementation of Sustainable Drainage Systems (SuDS) must be implemented with the the objective of attenuating stormwater on each erf and reducing volumes of stormwater input in watercourses. Control of alien invasive plant species must be carried out within buffer areas to encourage recolonisation by indigenous vegetation and improve the structural integrity of the buffer. All headwall outlets and associated erosion control structures (e.g. reno mattresses and gabions) must be inspected and maintained on a routine basis. Inspect reno mattress structures after heavy rains to see if any erosion around or below the mattress has taken place or if stones have been dislodged. 			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Negative	
Duration	On-going	Impact will last between 15 and 20 years	On-going	Impact will last between 15 and 20 years
Extent	Limited	Limited to the site and its immediate surroundings	Limited	Limited to the site and its immediate surroundings
Intensity	Very high	Natural and/ or social functions and/ or processes are majorly altered	Moderate	Natural and/ or social functions and/ or processes are moderately altered
Probability	Certain definite /	There are sound scientific reasons to expect that the impact will definitely occur	Probable	The impact has occurred here or elsewhere and could therefore occur
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	High	The affected environmental will be able to recover from the impact	High	The affected environmental will be able to recover from the impact

Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance	Moderate - negative		Minor - negative	
Comment on significance	Agree with assessed significance.			
Cumulative impacts	Same as assessed impact, mitigation measures are appropriate.			

Project phase	Operation			
Impact	Aquatic: Degradation and erosion of aquatic habitat/watercourses due to increased stormwater discharge from the development.			
Description of impact	Increased stormwater discharge has caused widespread erosion and degradation of watercourses throughout George. The effects can be clearly seen in HGM2 which has been severely eroded due to headcut erosion caused by increased stormwater flows.			
Mitigatability	High	Mitigation exists and will considerably reduce the significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> Implementation of Sustainable Drainage Systems (SuDS) must be implemented on each erf by the end users with the objective of attenuating stormwater onsite and reducing volumes of stormwater input in watercourses. All headwall outlets and associated erosion control structures (e.g. reno mattresses and gabions) must be inspected and maintained on a routine basis. Inspect reno mattress structures after heavy rains to see if any erosion around or below the mattress has taken place or if stones have been dislodged. Control of alien invasive plant species must be carried out within buffer areas to encourage recolonisation by indigenous vegetation and improve the structural integrity of the buffer. 			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Negative	
Duration	On-going	Impact will last between 15 and 20 years	On-going	Impact will last between 15 and 20 years
Extent	Limited	Limited to the site and its immediate surroundings	Limited	Limited to the site and its immediate surroundings
Intensity	Very high	Natural and/ or social functions and/ or processes are majorly altered	Moderate	Natural and/ or social functions and/ or processes are moderately altered
Probability	Certain definite /	There are sound scientific reasons to expect that the impact will definitely occur	Probable	The impact has occurred here or elsewhere and could therefore occur
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	High	The affected environmental will be able to recover from the impact	High	The affected environmental will be able to recover from the impact
Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance	Moderate - negative		Minor - negative	
Comment on significance	Agree with assessed significance.			
Cumulative impacts	Same as assessed impact, mitigation measures are appropriate.			

Project phase	Operation			
Impact	Aquatic: Degradation of watercourses caused by edge-effects associated with increased anthropogenic activity within and around the development area.			
Description of impact	Degradation of watercourses as a result of increased edge effects, including water quality changes, increased litter, erosion and alien plant invasion associated with localised increase in the residential population.			
Mitigatability	High	Mitigation exists and will considerably reduce the significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> Maintain buffer areas around all watercourses. An alien invasive plant management plan must be formulated and implemented to control existing and future invasions along watercourses adjacent to the development areas. A waste management plan must be developed and implemented, and solid waste must be removed from the buffer areas (minimum once a month). 			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Negative	
Duration	On-going	Impact will last between 15 and 20 years	On-going	Impact will last between 15 and 20 years
Extent	Limited	Limited to the site and its immediate surroundings	Very limited	Limited to specific isolated parts of the site
Intensity	High	Natural and/ or social functions and/ or processes are notably altered	Moderate	Natural and/ or social functions and/ or processes are moderately altered
Probability	Certain definite /	There are sound scientific reasons to expect that the impact will definitely occur	Unlikely	Has not happened yet but could happen once in the lifetime of the project, therefore there is a possibility that the impact will occur

Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	High	The affected environmental will be able to recover from the impact	High	The affected environmental will be able to recover from the impact
Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance	Moderate - negative		Negligible - negative	
Comment on significance	Agree with assessed significance.			
Cumulative impacts	Same as assessed impact, mitigation measures are appropriate.			

Project phase	Operation			
Impact	Terrestrial Biodiversity: Long-Term Stormwater Management Impacts on Vegetation Dynamics			
Description of impact	<ul style="list-style-type: none"> Stormwater infrastructure will alter hydrological patterns, affecting remnant fynbos patches. Changes in drainage may lead to localised waterlogging or excessive runoff, negatively impacting species composition. 			
Mitigatability	Medium	Mitigation exists and will notably reduce the significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> Design stormwater outlets to disperse water gradually, preventing concentrated runoff. Conduct routine sediment control inspections to mitigate erosion risks Implement erosion control and plant indigenous wetland-adapted species in affected zones Soft landscaping along road edges and on road islands is preferred over hard landscaping, which aligns with SuDS measures. Soft landscaping are natural spaces around constructed areas with plants, where water can flow into. Hard landscapes are impermeable surfaces, such as pavements and concrete driveways. 			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Negative	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Permanent	Impact may be permanent, or in excess of 20 years
Extent	Very limited	Limited to specific isolated parts of the site	Very limited	Limited to specific isolated parts of the site
Intensity	Moderate	Natural and/ or social functions and/ or processes are moderately altered	Very low	Natural and/ or social functions and/ or processes are slightly altered
Probability	Certain definite /	There are sound scientific reasons to expect that the impact will definitely occur	Certain definite /	There are sound scientific reasons to expect that the impact will definitely occur
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	Medium	The affected environment will only recover from the impact with significant intervention	Medium	The affected environment will only recover from the impact with significant intervention
Resource irreplaceability	Medium	The resource is damaged irreparably but is represented elsewhere	Medium	The resource is damaged irreparably but is represented elsewhere
Significance	Moderate - negative		Minor - negative	
Comment on significance	Agree with assessed significance.			
Cumulative impacts	Same as assessed impact, mitigation measures are appropriate.			

Project phase	Operation			
Impact	Continued Spread of Invasive Alien Species & Potential Litter Effects in Remnant Fynbos Patches & Disturbed Areas Around the Development			
Description of impact	<ul style="list-style-type: none"> Even post-construction altered soil conditions and increased human activity will continue to facilitate the establishment of invasive alien plants. 			
Mitigatability	Medium	Mitigation exists and will notably reduce the significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> Follow a clear "Alien and Invasive Species Management Plan" (refer to the Garden Route District Municipality Invasive Species Monitoring, Control, and Eradication Plan as an example) Establish and maintain indigenous buffer vegetation along the development's periphery. Encourage industrial site tenants to adhere to landscaping guidelines that exclude invasive species. 			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Negative	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Long term	Impact will last between 10 and 15 years
Extent	Limited	Limited to the site and its immediate surroundings	Very limited	Limited to specific isolated parts of the site
Intensity	High	Natural and/ or social functions and/ or processes are notably altered	Moderate	Natural and/ or social functions and/ or processes are moderately altered

Probability	Certain definite /	There are sound scientific reasons to expect that the impact will definitely occur	Certain definite /	There are sound scientific reasons to expect that the impact will definitely occur
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	Medium	The affected environment will only recover from the impact with significant intervention	Medium	The affected environment will only recover from the impact with significant intervention
Resource irreplaceability	Medium	The resource is damaged irreparably but is represented elsewhere	Medium	The resource is damaged irreparably but is represented elsewhere
Significance	Moderate - negative		Minor - negative	
Comment on significance	Agree with assessed significance.			
Cumulative impacts	Same as assessed impact, mitigation measures are appropriate.			

NO GO ALTERNATIVE

Project phase	No-Go			
Impact	Retaining the status quo.			
Description of impact	Possible effect to the landscape through no development of the property.			
Mitigatability	Low	Mitigation does not exist, or mitigation will slightly reduce the significance of impacts		
Potential mitigation	<ul style="list-style-type: none"> Increased policing of the vacant ground to reduce illegal dumping, illegal cattle grazing and illegal land grabs. 			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Negative	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Permanent	Impact may be permanent, or in excess of 20 years
Extent	Local	Extending across the site and to nearby settlements	Local	Extending across the site and to nearby settlements
Intensity	Medium	Natural and/ or social functions and/ or processes are somewhat altered	Low	Natural and/ or social functions and/ or processes are not altered
Probability	Possible	There are sound scientific reasons to expect that the impact may occur.	Possible	There are sound scientific reasons to expect that the impact may occur.
Confidence	Medium	Some supportive data exists to verify the assessment	Low	Substantive supportive data doesn't exist to verify the assessment
Reversibility	High	The affected environment will be able to recover from the impact	High	The affected environment will be able to recover from the impact
Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance	Moderate to High- negative		Low - negative	
Comment on significance	Without mitigation there is a possibility that the vacant land will be used for illegal activities, with the location to employment opportunities and water within the immediate locality. This is likely to degrade the existing, medium to low visual resources of the site and increase the financial burden on the Municipality from having to retrofit a formalised development layout onto an informal development settlement pattern. With mitigation and the increased policing of the vacant land, it is possible that the existing status quo can be retained. This offers Low – negative risks to local landscape resources.			
Cumulative impacts	Cumulative impacts are expected to be of High significance as should a land grab take place, the value of the adjacent industrial parks could decline. Views from the eastern residential areas would also be degraded with reduced access to Public Open Space along the river corridor.			

SECTION I: FINDINGS, IMPACT MANAGEMENT AND MITIGATION MEASURES

1.	Provide a summary of the findings and impact management measures identified by all Specialist and an indication of how these findings and recommendations have influenced the proposed development.
<p>Agriculture:</p> <p>The site has no current agricultural production potential due to the limitations of its location, the occupation of the site by the development cannot change its agricultural production potential. The development will therefore have zero agricultural impact and is therefore assessed as acceptable by the agricultural specialist.</p> <p>The overall conclusion of the agricultural compliance statement is that the proposed development is acceptable because it leads to no loss of future agricultural production potential.</p> <p>The agricultural compliance statement confirms the medium sensitivity rating of the site by the screening tool because of the site's assessed agricultural production potential and current agricultural land use. It however disputes the classified land capability of >6 and rates the entire assessed area as having a maximum land capability of 6.</p> <p>Although the climate and terrain may allow for viable crop production, other factors constrain the potential of the site to practically deliver agricultural produce and therefore limit its agricultural production potential. These factors include:</p> <ul style="list-style-type: none"> • Its location, which has been transformed by expanding urbanisation, leaves it surrounded largely by non-agricultural land uses. • The fact that land use planning in the spatial development framework designates the site for non-agricultural use. <p>For these reasons, the site will never be viably utilised for agricultural production and its potential is therefore assessed here as non-existent.</p> <p>Animal:</p> <p>The site sensitivity verification conducted on RE/Erf 464 has confirmed that the area has been heavily degraded due to past environmental and anthropogenic disturbances, including invasive plants, illegal dumping, and historical waste disposal activities. These factors have resulted in the significant transformation of natural habitats, making the site unsuitable for the SCC identified by the DFFE Screening Tool and public platforms. Although the DFFE Screening Tool initially indicated a HIGH sensitivity rating due to potential habitat for SCC to occur, the site inspection revealed a LOW sensitivity for the following reasons:</p> <ul style="list-style-type: none"> • This is attributed to the degraded condition of the site and the absence of suitable habitat for SCC's. • The habitat of the Knysna Warbler (<i>Bradypterus sylvaticus</i>), which is present in the riparian thick vegetation along the Skaapkop River valley adjacent the proposed development area, will not be impacted as the proposed development footprint is located a significant distance from its suitable habitat. • The observed faunal diversity during the site visit was notably low, indicating that the area is not functioning as a significant habitat for key faunal species. • The development of the industrial zone surrounding the site has largely contributed to the decline of the sites ecological value. Industrial activities often lead to habitat destruction, pollution, and increased human encroachment, which impact the faunal diversity in surrounding areas. <p>The faunal specialist has made the following recommendations:</p> <ul style="list-style-type: none"> • Ensure that the suitable habitat of the Knysna Warbler along the Skaapkop River valley is preserved and buffered from any potential indirect impacts, such as noise, pollution, or increased human activity. • Restrict development activities to the designated footprint area to prevent encroachment into surrounding areas and habitats of conservation concern. • Incorporate green spaces with indigenous vegetation into the site plan. These spaces can serve as biodiversity refuges and help mitigate the ecological footprint of the development. • Create buffer zones around sensitive areas, such as the wetland, to reduce the impact of construction activities. These buffers should include indigenous plants species and support local biodiversity. • Install drainage systems that manage stormwater effectively, preventing contamination and erosion in the wetland. • Implement a monitoring program during and after construction to track ecological changes and ensure compliance with environmental management plans. Use the data to adaptively manage the site to mitigate unforeseen impacts. <p>Aquatic:</p> <p>The site is characterised by sensitive watercourses and wetlands adjacent to the site, including hydrogeomorphic unit 1 (HGM1), HGM2, HGM4, and HGM5, which have been compromised by historical and ongoing impacts mainly attributed to leaking sewage infrastructure and increased stormwater runoff. These factors have led to largely modified ecological states, emphasising the need for mitigation measures to prevent further degradation and improvement of ecosystem services.</p> <p>The following mitigation measures have been recommended by the aquatic specialist:</p> <ul style="list-style-type: none"> • Install silt fences or sediment barriers around the perimeter of the construction site to trap sediment-laden runoff and prevent it from entering the surrounding watercourses. • Do not clear vegetation outside the development area. • The laydown areas must be constructed on flat surfaces with a minimum distance of 20 m from the buffers. • All stockpiles must be covered at the end of the day. • Install temporary drainage controls such as swales or berms to manage runoff where necessary. • Construct check dams or sediment basins for flooded construction areas to be drained into if need be, to trap sediment, and facilitate sediment settlement before runoff reaches the non-perennial drainage line. • All bare areas should be revegetated with appropriate locally occurring species, to bind the soil and limit erosion potential. 	

- Topsoil should be removed and stored in a designated area separately from subsoil and away from construction activities. Topsoil should be reapplied where appropriate as soon as possible in order to encourage and facilitate rapid regeneration of the natural vegetation in cleared areas.
- Maintain buffer areas around HGM1, HGM2, HGM4, and HGM5 Figure 15. Buffers will remove sediment, organic matter, and other pollutants (nutrients, toxins and pathogens) from sheet flow and wastewater before they reach water bodies.
- Ensure that the site is clean of any packaging material, food containers, plastic bottles or any other solid waste products. An integrated waste management system must be followed during construction (e.g. recycling). All waste must be placed in skips on-site and around the construction sites and regularly removed from the site.
- All hazardous storage containers and storage areas must meet relevant SABS standards to prevent leakage and contamination of surface and groundwater.
- Implementation of Sustainable Drainage Systems (SuDS) must be implemented on each erf by the end user with the objective of attenuating stormwater onsite and reducing volumes of stormwater input in watercourses:
 - Rainwater harvesting tanks must be installed at all buildings.
 - Swales and detention ponds must be incorporated into the open space network to attenuate stormwater runoff, encourage infiltration and reduce the speed, energy and volumes at which stormwater is discharged from the site;
 - Use of permeable paving to encourage infiltration into the soil; and
 - Use of detention ponds and artificial wetlands to capture stormwater runoff and reduce the velocity of discharge from the site.
- Control of alien invasive plant species must be carried out within buffer areas to encourage recolonisation by indigenous vegetation and improve the structural integrity of the buffer.
- All headwall outlets and associated erosion control structures (e.g. reno mattresses and gabions) must be inspected and maintained on a routine basis. Inspect reno mattress structures after heavy rains to see if any erosion around or below the mattress has taken place or if stones have been dislodged.
- No stormwater may be directed into HGM2 without prior rehabilitation to address headcut erosion in the watercourse.
- Guidelines for residents must be drawn up which prohibit the dumping of hazardous materials into stormwater drains.

Archaeological:

According to the NID compiled by Perception Planning, the proposed development will not impact on any heritage resources of cultural significance and no further heritage-related studies would be required.

In response to the Notification of Intent to Develop, Heritage Western Cape responded that:

"You are hereby notified that, since there is no reason to believe that the proposed development of an industrial area on Erf 464 Portion Remainder, Metro Grounds Industrial Development, George will impact on heritage resources, no further action under Section 38 of the National Heritage Resources Act (Act 25 of 1999) is required. However, should any heritage resources, including evidence of graves and human burials, archaeological material and paleontological material be discovered during the execution of the activities above, all works must be stopped immediately, and Heritage Western Cape must be notified without delay"

Socio-Economic:

The net positive impacts associated with the construction of the Proposed Project are expected to outweigh the net negative effects. The Project is also envisaged to have a positive stimulus on the local economy and employment creation, leading to the economy's diversification and a small reduction in the unemployment rate.

The proposed mixed-use industrial should therefore be considered for development. It should, however, be acknowledged that the negative impacts would be largely borne by the nearby developments and households residing on them, whilst the positive impacts will be distributed throughout both the local and national economies. Due to this imbalance, it is recommended that the mitigation measures suggested be strictly adhered to.

The following impact mitigation measures have been recommended by the Socio-economic impact assessment:

- Ensure proper health and safety plans in place during the construction period to ensure safety on and around site during construction. Site watering (or use of appropriate dust suppressant) when required to reduce dust emitting from the construction site.
- Where feasible, effort must be made to employ local labour in order to create maximum benefit for the communities and limit in-migration. Train unemployed local community members with insufficient skills and increase absorption of local labour thereby decreasing in-migration.
- Provide public transportation service for workers in order to reduce congestion on roads. Partner with local municipalities and other prominent users of the local roads to upgrade them to meet the required capacity and intensity of the vehicles related to the planned construction activities. Transportation contractors must adhere to the road rules and regulations. Utilise only designated access routes & entrance/exits from the site. Implement appropriate signage & road safety measures at entrance/exit to the site and on site.

Terrestrial Biodiversity:

- The site assessment confirms that the Metro Grounds development is situated within a transformed landscape, with fynbos vegetation primarily restricted to valley slopes, which is largely outside of the Metro Grounds development plan extent. The site assessment on RE/464 was used to create a framework within which the majority of the vegetation on the site could be classified into transformed fields, while the remaining vegetation around the periphery was mainly classified as fynbos.
- The transformed grassy fields have very little ecological value. However, the fynbos vegetation persisting along the valley edges, especially along the western side of the site, exhibits significant biodiversity and ecological importance, supporting a variety of indigenous plant species, including *Drosera sp. nov. "cryptica"*, a potential species of conservation concern, and along the eastern slopes a *Muraltia* was found that might be *M. knysnaensis* (EN). The *Muraltia* identification is tricky and is currently being assessed at Compton Herbarium to definitively confirm if this is *M. ericoides* (LC) or *M. knysnaensis* (EN). Compton has commented that they are still busy with this identification (as at 17 April 2025).
- Historical aerial imagery shows that woody alien invasive species, particularly *Acacia mearnsii* (black wattle) and *Acacia melanoxylon* (blackwood), were widespread on the site from at least 2004 and were cleared between 2006 and 2017,

leaving the fynbos susceptible to reinvasion. Despite past clearing efforts, blackwood wattles have re-established in certain areas, particularly along the edges of the transformed fields. Other invasive species recorded include *Hakea sericea*, *Cenchrus clandestinus* (kikuyu grass), and *Datura stramonium* (jimsonweed).

- The transformed nature of the site means fire-dependent fynbos dynamics are disrupted, reducing the ability of fire-adapted species to regenerate. This current impact is difficult to mitigate, as fire management is highly unlikely to occur in this area.
- The industrial and residential developments surrounding the site (Lawaakamp and George's industrial area) have isolated the remaining fynbos patches to the valley edges, reducing ecological connectivity and ecosystem resilience.

The following mitigation measures have been recommended by the Terrestrial Biodiversity Specialist:

- Implement an invasive alien plant control plan along the valley edges to the valley bottom prior to the commencement of vegetation clearance or construction.
- Development here should prioritise avoiding impacts on the sensitive fynbos and riparian areas by incorporating large buffers around valley edges
- Demarcate no-go high-sensitivity areas, especially around valley slopes where fynbos persists.
- Minimise soil disturbance and establish defined walking paths to prevent soil compaction during clearing.
- Implement dust suppression techniques and ensure proper waste disposal on-site.

Visual:

The finding of the Visual Assessment that the proposed development should be authorised with mitigation for the following reasons:

- High Positive for local planning within existing semi-industrial landscape context that has a High Visual Absorption Capacity.
- The development is suitably set back from sensitive vegetation.
- The 200m (avg.) buffer from the development to the receptors, would allow for some reduction in visual exposure to the proposed landscape change.
- Likely low sensitivity to landscape change from local residential receptors where the light-industrial area could afford employment opportunities.
- Economic benefits/ skills from the industrial/ education developments.

The following mitigation measures have been recommended by the Visual Impact Assessment:

- Dust management from wind and movement of vehicles.
- At the end of construction phase, the trees should be planted in accordance with best practice as specified in the EMP.
- Increased policing of the vacant ground to reduce illegal dumping, illegal cattle grazing and illegal land grabs.
- The contractor's laydown area and construction site should be fenced off with diamond mesh fencing/ green shade-cloth such that the fencing can be used to catch wind blow litter.

Civil Aviation:

- The sensitivities picked up by the DFFE screening tool relate to the Airports Company South Africa (ACSA) George Airport. There are several airspaces associated with the airport, which are not all detailed here as these are captured in the DFFE screening tool sensitivity.
- The very high, high and medium sensitivity ratings identified by the screening tool are a function of the project's proximity to the following aviation installations:
 - George ACSA Airport
 - FAGG Heli-square Helistop at George Airport
 - Titan Offshore Helistop
- The proximity of the above aviation installations was confirmed by the EAP via desktop investigation.
- The project does not pose significant risks to civil aviation as the development will not introduce any obstacles taller than those already present on site and in adjoining industrial areas. As a result, no further investigations are deemed necessary.

2. List the impact management measures that were identified by all Specialist that will be included in the EMP

The following specialist mitigation measures will be included in the EMP:

- Careful stockpiling of topsoil so that this can be used in landscaping/ tree planting and restoration of impacted areas post construction.
- Management of wind-blown dust, as well as dust from moving vehicles should be carried out such that this does not become a nuisance factor for the surrounding residential residents.
- The contractor's laydown area should not be located within view of the N2 Highway.
- The contractor's laydown area and construction site should be fenced off with diamond mesh fencing/ green shade-cloth such that the fencing can be used to catch wind blow litter. The fence line should be checked every week for litter.
- Security fencing should be steel mesh fencing with electric wiring above if required. The fencing should be black in colour and not exceed 2.4m in height.
- The project developer should use locally sourced inputs where feasible in order to maximize the benefit to the local economy. Sub-contracting of local construction companies to occur as far as possible for the construction of facilities.
- The project developer is to use locally sourced inputs where feasible in order to maximize the benefit to the economy.
- Ensure proper health and safety plans in place during the construction period to ensure safety on and around site during construction. Site watering (or use of appropriate dust suppressant) when required to reduce dust emitting from the construction site.
- Ensure proper 24/7 security is patrolling the construction sites, as well as controlled access.
- The developer can put policies in place in order to minimise pollutants that are expelled by factories, to set time limits on when businesses can operate, to limit noise.
- Maintain buffer areas around HGM1, HGM2, HGM4, and HGM5. Buffers will remove sediment, organic matter, and other pollutants (nutrients, toxins and pathogens) from sheet flow and wastewater before they reach water bodies.
- Install temporary drainage controls such as swales or berms to manage runoff where necessary.
- Avoid constructing the road across the wetland area and the upper reaches of the non-perennial drainage line.
- Install silt fences or sediment barriers around the perimeter of the construction site to trap sediment-laden runoff and prevent it from entering the surrounding watercourses.
- Do not clear vegetation outside the development area.

	<ul style="list-style-type: none"> • The laydown areas must be constructed on flat surfaces with a minimum distance of 20 m from the buffers. • Construct check dams or sediment basins for flooded construction areas to be drained into • if need be, to trap sediment, and facilitate sediment settlement before runoff reaches the non-perennial drainage line. • All bare areas should be revegetated with appropriate locally occurring species, to bind the soil and limit erosion potential. • Topsoil should be removed and stored in a designated area separately from subsoil and away from construction activities. Topsoil should be reapplied where appropriate as soon as possible in order to encourage and facilitate rapid regeneration of the natural vegetation in cleared areas. • Implement a preventative maintenance system to ensure that work vehicles are maintained in an acceptable condition. This would involve routinely checking vehicles for leaks before construction begins; and not allowing vehicles with significant leaks to operate or be repaired within the construction site. Ideally, vehicle maintenance and washing occurs in garages and wash facilities, not on active construction site. • Place generators in drip trays during use to ensure that no fuel leakages seep into the soil. • Sanitary facilities should be provided for all construction personnel during the construction phase, placed outside the regulatory buffer zone. • Hazardous chemicals and stockpiles must be stored on bunded surfaces with runoff control measures in place. • Implementation of Sustainable Drainage Systems (SuDS) must be implemented on each erf by the end user to attenuate stormwater onsite and reducing volumes of stormwater input in watercourses: <ul style="list-style-type: none"> ○ Rainwater harvesting tanks must be installed at all buildings. ○ Swales and detention ponds must be incorporated into the open space network to ○ attenuate stormwater runoff, encourage infiltration and reduce the speed, energy ○ and volumes at which stormwater is discharged from the site; ○ Use of permeable paving to encourage infiltration into the soil; and ○ Use of detention ponds and artificial wetlands to capture stormwater runoff and ○ reduce the velocity of discharge from the site. • Control of alien invasive plant species must be carried out within buffer areas to encourage recolonisation by indigenous vegetation and improve the structural integrity of the buffer. • All headwall outlets and associated erosion control structures (e.g. reno mattresses and gabions) must be inspected and maintained on a routine basis. Inspect reno mattress structures after heavy rains to see if any erosion around or below the mattress has taken place or if stones have been dislodged. • No stormwater may be directed into HGM2 without prior rehabilitation to address headcut erosion in the watercourse. • Stormwater outlets located along the eastern boundary of the development area must also consider the proposed Rand Street extension which is also planned along the eastern boundary of the development. • Guidelines for residents must be drawn up which prohibit dumping of hazardous materials into stormwater drains. • Implement an invasive alien plant control plan along the valley edges to the valley bottom prior to the commencement of vegetation clearance or construction. Prioritize clearing of invasive species in high-sensitivity areas before site disturbance. • Conduct plant rescue operations for species of conservation concern before site clearing in areas that will be affected by stormwater infrastructure.
3.	List the specialist investigations and the impact management measures that will not be implemented and provide an explanation as to why these measures will not be implemented.
N/A	
4.	Explain how the proposed development will impact the surrounding communities.
	<p>The proposed development will impact the surrounding communities in the following way:</p> <ul style="list-style-type: none"> • Due to the development of a new industrial zone, there will be generation of pollutants and dust which might affect the air quality of the surrounding areas. • There will an alteration of the landscape through its transformation from an urban undetermined open space to an industrial nature which results in visual intrusion to sensitive receptors. There will also be a permanent change to the landscape. • Due to the development of a new education facility in the area, the supply of available education facilities for the community of the region. • Due to the operation, industry stimulation and employment opportunities, households could potentially experience better standards of living.
5.	Explain how the risk of climate change may influence the proposed activity or development and how has the potential impacts of climate change been considered and addressed.
	<p>The Western Cape is vulnerable to climate change and impacts are already being increasingly felt in many parts of the province. These projected climate change impacts translate into threats for human lives and health, communities and livelihood.</p> <p>According to DEADP, the Western Cape will be affected by climate change in the following ways:</p> <ul style="list-style-type: none"> • Decrease in rainfall • Increased severity of drought • Higher average temperature • Increased intensity of extreme events • Increase in flooding and storm surges • Alien vegetation reduces viability of ecosystems • Increase in coastal impacts • Fewer cold and frost days • Increased fire risk <p>Climate change has been incorporated into the proposed development in the following ways:</p> <ul style="list-style-type: none"> • Rainwater harvesting tanks will be taken into consideration for the proposed development. • The proposed development is not located within any flood lines; this therefore reduces the risk of flooding within the development area. • George Municipality has an alien invasive species management plan. This management plan will be used to manage the invasive alien species on the proposed development site.

- The proposed development is located more than 20km from the coastline.
- The end user must consider the implementation of Sustainable Drainage Systems (SuDS) with the objective of attenuating stormwater onsite and reducing volumes of stormwater input in watercourses.
- No fires are to be lit outside of a facility designed to contain fires. The adequacy and positioning of these structures must be determined in consultation with the ECO. This will reduce the risk of fires.

6. Explain whether there are any conflicting recommendations between the specialists. If so, explain how these have been addressed and resolved.

There are no conflicting recommendations from the specialists.

7. Explain how the findings and recommendations of the different specialist studies have been integrated to inform the most appropriate mitigation measures that should be implemented to manage the potential impacts of the proposed activity or development.

The findings from the specialist have been in the formation of the mitigation measures in the EMPr.

8. Explain how the mitigation hierarchy has been applied to arrive at the best practicable environmental option.

The identified impacts will be minimised, rectified and reduced through measures included in the EMPr which aims to minimise The negative impacts associated with the development.

The mitigation hierarchy allows for successive steps in the once the previous step has been exhausted, the desired outcome of applying the mitigation hierarchy is to ensure that there is no loss of biodiversity, negativity impacts and risks are avoided. The mitigation hierarchy was applied in the following manner for the proposed project:

Avoidance: the proposed development/mining should first attempt to avoid or prevent negative impacts on biodiversity and ecosystem services by exploring alternative development types, locations, scales, layouts, and the siting of development/mining components:

A protective buffer zone was applied to watercourses potentially affected by development activities. Buffer zones are defined as a strip of land with a use, function or zoning specifically designed to act as barriers between human activities and sensitive water resources with the aim of protecting these water resources from adverse negative impacts. These buffers will be maintained to avoid direct impacts to the water resources.

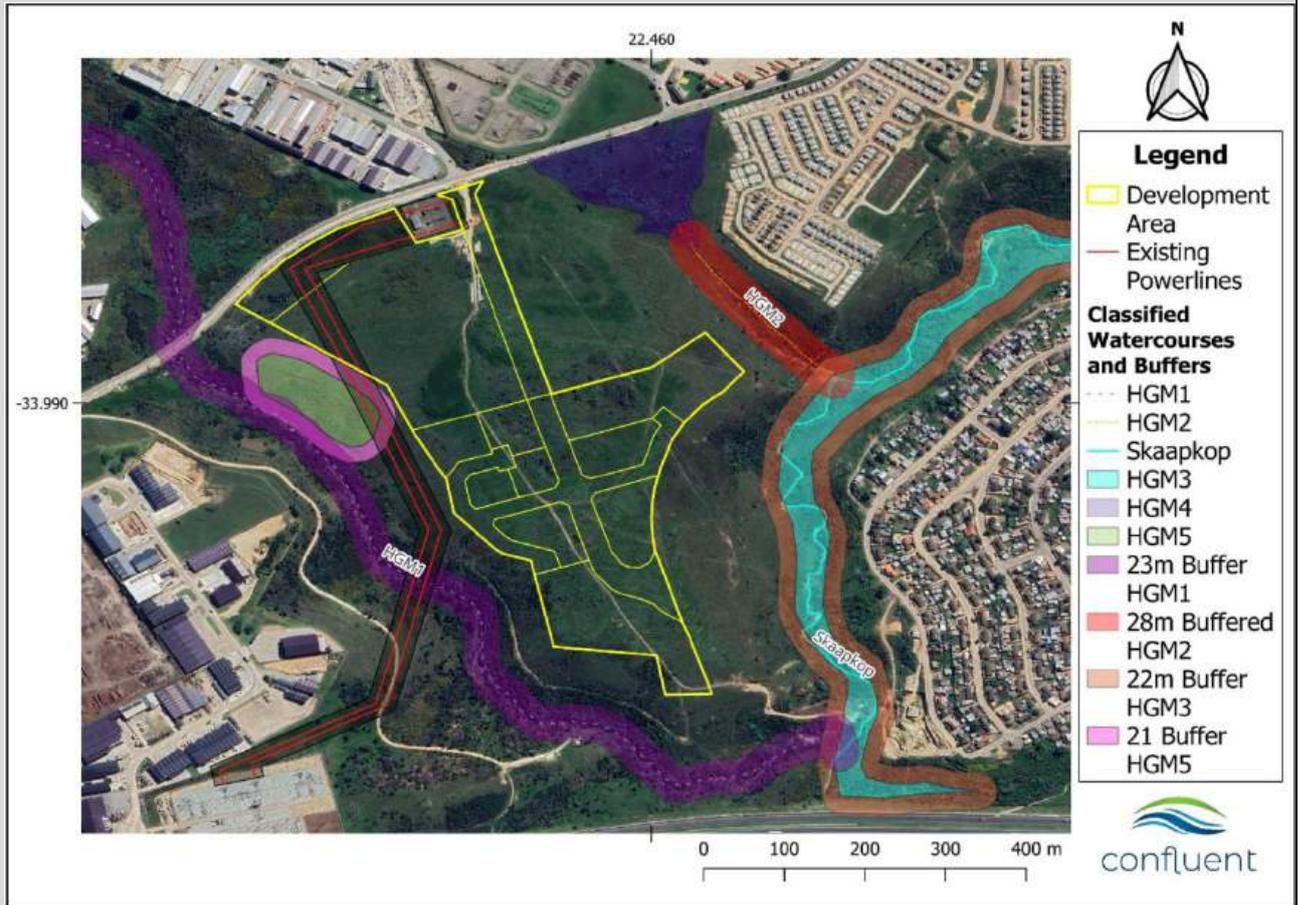


Figure 13: Map showing buffers associated with the watercourses

Minimisation and rehabilitation: when avoidance is not possible, efforts must be made to minimise negative impacts and to rehabilitate or remediate affected areas to reduce residual impacts

The site layout has been amended and changed since the submission of the NOI. The sensitive vegetation outside of the proposed development site has been largely avoided. The original layout was approximately 19.99ha, which was amended to largely avoid sensitive areas. The amended layout is now approximately 18.55ha in size.

Compensate/ Offsetting: residual impacts that remain after minimisation and rehabilitation must be compensated for through biodiversity offsets. Offsets are designed to counterbalance these residual impacts by providing measurable conservation outcomes that ensure the overall biodiversity value is maintained or enhanced.

The majority of the proposed development area is excluded from the 2017 BSP, with only some sections around the periphery of the earmarked site falling within mapped critical biodiversity areas (CBAs) and Ecological Support Areas (ESAs).

In the 2023 updated BSP, the majority of the SDP is not considered as CBA1 areas. According to the Biodiversity Specialist these new CBA1 areas are incorrectly mapped, and this has been brought to the attention of Cape Nature, as the vegetation is transformed with no natural remaining vegetation.

According to the terrestrial biodiversity specialist, the residual impact of the development, i.e., the negative impacts that remain after mitigation, was assessed to be a minor negative. To ensure that the residual impact scenario is true, both under the development and no-go scenarios, mitigation measures must be followed.

The development footprint largely avoids the most sensitive areas, and with adherence to best-practice ecological management (including phased development, ongoing alien clearing, and active rehabilitation), the overall residual impact is expected to be minor and acceptable.

SECTION J: GENERAL

Environmental Impact Statement

1.1.	Provide a summary of the key findings of the EIA.
<p>The key findings of the EIA are as follows:</p> <p>Aquatic</p> <ul style="list-style-type: none"> The proposed development site is located adjacent sensitive watercourses and wetlands; therefore, mitigations measure will need to be implemented to reduce the development impacts on the watercourses. Avoiding buffer zones and the promotion of sustainable development practices will ensure the long-term integrity of these aquatic systems. The proposed development will risk an increase in erosion due to clearance of vegetation. The development footprint has been amended to avoid the identified sensitive aquatic features. <p>Animals:</p> <ul style="list-style-type: none"> The proposed development area has been heavily degraded to past environmental and anthropogenic disturbances, including invasive plants, illegal dumping, and historical waste disposal activities. These factors have resulted in the significant transformation of natural habitats, making the site unsuitable for the SCC identified by the DFFE Screening Tool and public platforms. The observed faunal diversity during the site visit was notably low, indicating that the area is not functioning as a significant habitat for key faunal species. The development of the industrial zone surrounding the site has largely contributed to the decline of the sites ecological value. <p>Terrestrial Biodiversity</p> <ul style="list-style-type: none"> The Metro Grounds development is situated within a transformed landscape, with fynbos vegetation primarily restricted to valley slopes, which is largely outside of the Metro Grounds development plan extent. The fynbos vegetation persisting along the valley edges, especially along the western side of the site, exhibits significant biodiversity and ecological importance, supporting a variety of indigenous plant species, including <i>Drosera</i> sp. nov. "cryptica", a potential species of conservation concern, and along the eastern slopes a <i>Muraltia</i> was found that might be <i>M. knysnaensis</i> (EN). The <i>Muraltia</i> identification is tricky and is currently being assessed at Compton Herbarium to definitively confirm if this is <i>M. ericoides</i> (LC) or <i>M. knysnaensis</i> (EN). Compton has commented that they are still busy with this identification (as at 17 April 2025). <p>Agricultural</p> <ul style="list-style-type: none"> The medium sensitivity rating of the site by the screening tool because of the site's assessed agricultural production potential and current agricultural land use. It however disputes the classified land capability of >6 and rates the entire assessed area as having a maximum land capability of 6. <p>Socio-economic</p> <ul style="list-style-type: none"> The proposed development has raised several potential socioeconomic impacts, both positive and negative. According to the socio-economic specialist, there are no major concerns or issues from a socioeconomic standpoint that would hinder the development. <p>Visual</p> <ul style="list-style-type: none"> The visual impact of the proposed development is rated as medium, where it is expected that visual and scenic resources of the N2 Highway would be marginally affected to some extent by the intensification of the industrial landscape along this section of the higher. The extent of the visual impacts will be local. The proposed landscape change would essentially be contained by the higher terrain to the north and by the built nature of the surrounding areas. <p>Civil Aviation</p> <ul style="list-style-type: none"> This infill development is located adjacent to existing industrial areas, and future above-ground structures are not expected to protrude above those in adjoining industrial areas (which are closer to the airport) or the existing overhead powerlines already present on the site, and the development will thus not introduce any new risks to civil aviation infrastructure or installations. 	
1.2.	Provide a map that that superimposes the preferred activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers. (Attach map to this BAR as Appendix B2)
Please see Appendix B2 for a full-size map that superimposes the proposed development and the environmental sensitivities.	
1.3.	Provide a summary of the positive and negative impacts and risks that the proposed activity or development and alternatives will have on the environment and community.
<p>Positive:</p> <ul style="list-style-type: none"> An increase in employment opportunities during construction and operation. Increase in Industrially Zoned Property Supply in the Area. Increase in Education Supply in the Area, as the proposed infill development includes an education facility. Sustainable increase in national and local government revenue due to the operation of the industrial development and education facility. Creation of Sustainable Employment Positions Nationally and Locally. Temporary increase in the country's GDP due to capital expenditure during the construction period. There will be an increased contribution to skills development during the construction of the proposed development. The proposed education facility will also contribute to the development and enhancement of the skills of young people in George. <p>Negative:</p> <ul style="list-style-type: none"> An increase in traffic due to construction vehicles and heavy vehicles could create short-term disruptions and safety hazards for current road users. An impact on the demographics of the area as a result of in-migration in response to job opportunities will occur. Increase of erosion due to the clearance of vegetation during the construction phase. 	

- Contamination of watercourses by solid waste and chemical pollutants caused by construction activities. Intensification of the industrial landscape within the George.
- Degradation of watercourses caused by edge-effects associated with increased anthropogenic activity within and around the development area. Alteration of the landscape through its transformation from a rural to an industrial nature.

A summary of the positive and negative impact of the proposed Metro Grounds development has been summarised in Table 8 below.

Table 8: Summary of impacts associated with the Metro Grounds Development

Aspect	Impact	Pre-mitigation	Post-mitigation
Construction			
Visual	Intensification of the industrial landscape within the George	Minor (-)	Minor (-)
Aquatic	Increase in erosion due to the clearance of vegetation during the construction phase	Minor (-)	Negligible (-)
	Contamination of watercourses by solid waste and chemical pollutants caused by construction activities	Minor (-)	Negligible (-)
Socio-Economic	Increased production	Minor (+)	Moderate (+)
	Increase in GDP	Minor (+)	Moderate (+)
	Contribution to Skills Development	Minor (+)	Moderate (+)
	Temporary Increase in Household Earnings	Minor (+)	Moderate (+)
	Sustainable increase in national and local government revenue	Minor (+)	Minor (+)
	Temporary Increase in Employment	Minor (+)	Moderate (+)
	Negative Change to the Sense of Place	Minor (-)	Negligible (-)
	Temporary Increase in Social Conflicts with the Influx of People	Minor (-)	Negligible (-)
	Impact on Economic and Social Infrastructure	Minor (-)	Negligible (-)
Safety and Security	Minor (-)	Negligible (-)	
Terrestrial Biodiversity	The Increased Risk of Invasive Plant Species Proliferation in Sensitive Fynbos Habitat Over Time.	Moderate (-)	Minor (-)
	Loss and Further Fragmentation of Garden Route Granite Fynbos due to e.g., Stormwater Infrastructure, Occurring in Sensitive Fynbos	Moderate (-)	Minor (-)
	Increased Negative Edge Effects Leading to Biodiversity Loss due to Construction Activities Occurring Close-by Remnant Fynbos Patches	Minor (-)	Minor (-)
Operation			
Visual	Alteration of the landscape through its transformation from a rural to an industrial nature	Moderate (-)	Moderate (+)
Aquatic	Degradation and erosion of aquatic habitats/watercourses due to increased stormwater discharge from the development	Moderate (-)	Minor (-)
	Degradation of watercourses caused by edge effects associated with increased anthropogenic activity within and around the development area	Moderate (-)	Negligible (-)
Socio-Economic	Sustainable Increase in Production	Moderate (+)	Moderate (+)
	Sustainable Increase in GDP	Minor (+)	Moderate (+)
	Creation of Sustainable Employment Positions Nationally and Locally	Minor (+)	Moderate (+)
	Sustainable Increase in National and Local Government Revenue	Minor (+)	Moderate (+)
	Increase in Education Supply in the Area	Minor (+)	Moderate (+)
	Increase in Industrially Zoned Property Supply in the Area	Major (+)	Major (+)
Terrestrial Biodiversity	Negative Changes to the Sense of Place	Moderate (-)	Minor (-)
	Long-Term Stormwater Management Impacts on Vegetation Dynamics	Moderate (-)	Minor (-)
Terrestrial Biodiversity	Continued Spread of Invasive Alien Species & Potential Litter Effects in Remnant Fynbos Patches & Disturbed Areas Around the Development	Moderate (-)	Minor (-)
	Long-Term Stormwater Management Impacts on Vegetation Dynamics	Moderate (-)	Minor (-)
No-Go			
Visual	Retaining the status quo	Moderate-High (-)	Low (-)
Terrestrial Biodiversity	The Increased Risk of Invasive Plant Species Proliferation in Sensitive Fynbos Habitat Over Time.	Minor (-)	Minor (-)
	Loss and Further Fragmentation of Garden Route Granite Fynbos due to e.g., Stormwater Infrastructure, Occurring in Sensitive Fynbos	Negligible (-)	Negligible (-)
	Increased Negative Edge Effects Leading to Biodiversity Loss due to Construction Activities Occurring Close-by Remnant Fynbos Patches	Negligible (-)	Negligible (-)
	Long-Term Stormwater Management Impacts on Vegetation Dynamics	Minor (-)	Minor (-)

	Continued Spread of Invasive Alien Species & Potential Litter Effects in Remnant Fynbos Patches & Disturbed Areas Around the Development	Moderate (-)	Minor (-)
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Recommendation of the Environmental Assessment Practitioner ("EAP")

2.1.	Provide Impact management outcomes (based on the assessment and where applicable, specialist assessments) for the proposed activity or development for inclusion in the EMPr
<p>All mitigation measures and recommendations provided by the specialists are included in the EMPr. The outcomes of the mitigation measures which have been included in the EMPr include:</p>	
<p>Construction Phase:</p> <ul style="list-style-type: none"> • Conduct plant and animal rescue operations for species of conservation concern before site clearing in areas that will be affected by stormwater infrastructure. • Plant trees to mitigate the visual impacts from the N2 and improve scenic quality. Refer to the George Municipality's Tree Planting Specification (latest at the time to be source from GM by ECO). • Soil loss is related to the length of time that soils are exposed prior to rehabilitation or stabilisation. Therefore, the gap between construction activities and rehabilitation should be minimised. Phased construction and progressive rehabilitation, where practically possible, are therefore important elements of the erosion control strategy. • Install silt fences or sediment barriers around the perimeter of areas where earthmoving activities are taking place to trap sediment-laden runoff and prevent it from entering the surrounding watercourses. • Do not clear vegetation outside the development area. • The laydown areas must be constructed on flat surfaces with a minimum distance of 20 m from the buffers of wetlands/watercourses. • All stockpiles must be covered at the end of the day. • Implement dust management from wind and movement of vehicles. • Install temporary drainage controls such as swales or berms to manage runoff where necessary. • All materials used during construction must follow the best practice guidelines set out for each product by the manufacturer. • Check weather reports ahead and prepare the site when high rainfall is predicted. Discontinue any on the site during rainfall. • Construct check dams or sediment basins for flooded construction areas to be drained, if need be, to trap sediment, and facilitate sediment settlement before runoff reaches the non-perennial drainage line. • All bare areas should be revegetated with appropriate locally occurring species, to bind the soil and limit erosion potential. • Topsoil should be removed and stored in a designated area separately from subsoil and away from construction activities. Topsoil should be reapplied where appropriate as soon as possible in order to encourage and facilitate rapid regeneration of the natural vegetation in cleared areas. • Maintain buffer areas around HGM1, HGM2, HGM4, and HGM5. Buffers will remove sediment, organic matter, and other pollutants (nutrients, toxins and pathogens) from sheet flow and wastewater before they reach water bodies. • The project developer should use locally sourced inputs where feasible in order to maximize the benefit to the local economy. Sub-contracting of local construction companies to occur as far as possible for the construction of facilities. • In order to maximise the positive impact, it is suggested that the project company provide training courses for employees where feasible to ensure that employees gain as much as possible from work experience. Facilitate the transfer of knowledge between experienced employees and the staff. Perform a skills audit to determine the potential skills that could be sourced in the area. • Site watering (or use of appropriate dust suppressant) when required to reduce dust emitting from the construction site. • Where possible and practical, provide public transportation service for workers in order to reduce congestion on roads. Potentially partner with local municipalities and other prominent users of the local roads to upgrade them to meet the required capacity and intensity of the vehicles related to the planned construction activities. Transportation contractors must adhere to the road rules and regulations. Utilise only designated access routes & entrance/exits from the site. Implement appropriate signage & road safety measures at entrance/exit to the site and on site. • Ensure proper 24/7 security is patrolling the construction sites, as well as controlled access. • Should any heritage resources, including evidence of graves and human burials, archaeological material and paleontological material be discovered during the execution of the activities above, all works must be stopped immediately, and Heritage Western Cape must be notified without delay. • Minimize soil disturbance and establish defined walking paths to prevent soil compaction during clearing. <p>Operational Phase:</p> <ul style="list-style-type: none"> • Implementation of Sustainable Drainage Systems (SuDS) on each erf by the end user, with the objective of attenuating stormwater onsite and reducing volumes of stormwater input in watercourses. • Maintain all buffers around the watercourses. • Control of alien invasive plant species must be carried out within buffer areas to encourage recolonisation by indigenous vegetation and improve the structural integrity of the buffer. • All headwall outlets and associated erosion control structures (e.g. reno mattresses and gabions) must be inspected and maintained on a routine basis. Inspect reno mattress structures after heavy rains to see if any erosion around or below the mattress has taken place or if stones have been dislodged. • Stormwater outlets located along the eastern boundary of the development area must also consider the proposed Rand Street extension which is also planned along the eastern boundary of the development. • Planting of street trees as per the specifications of the George Municipality's tree planting guideline. • A waste management plan must be developed and implemented, and solid waste must be removed from the buffer areas (minimum once a month). • Security lights are to be angled downwards to avoid disturbance to adjoining residents and businesses. Illumination of the buildings must consider the possible distraction glare might have on motorists. • Conduct routine sediment control inspections to mitigate erosion risks. 	
2.2.	Provide a description of any aspects that were conditional to the findings of the assessment, either by the EAP or specialist, that must be included as conditions of the authorisation.
There are no conditional findings.	

2.3.	Provide a reasoned opinion as to whether the proposed activity or development should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be included in the authorisation.
<p>Based on the information provided in preceding sections, this report, it is the reasoned opinion of the EAP that the proposed development should be authorised and will bring the following benefits:</p> <ul style="list-style-type: none"> • Increase in education facilities in the area, the proposed development includes an educational zone. • There will be an increase in national and local government revenue as the proposed project is an industrial development. • There will be an improved standard of living for benefiting households due to the operation, industry stimulation and employment opportunities, households could potentially experience better standards of living. • The negative impacts of the proposed development on the environment are mitigable and the impacts are acceptable. • The positive impacts of the proposed development outweigh the negative impacts. <p>The development will have a minor impact on the environment overall, taken mitigation measures into account. The development footprint largely avoids the key sensitive areas, and with adherence to best-practice ecological management (including phased development, ongoing alien clearing, and active rehabilitation), the overall residual impact is expected to be minor and within acceptable levels.</p>	
2.4.	Provide a description of any assumptions, uncertainties and gaps in knowledge that relate to the assessment and mitigation measures proposed.
It is assumed that the information on which this report is based (project information as well as existing information) is correct, factual and truthful.	
2.5.	The period for which the EA is required, the date the activity will be concluded and when the post construction monitoring requirements should be finalised.
<ol style="list-style-type: none"> 1. Construction should commence within five years from the date of authorisation. 2. Construction should be concluded at least ten (10) years from commencement. 3. Construction Completion Statement on handover of the site back to the applicant. 	

Water

Since the Western Cape is a water-scarce area, explain what measures will be implemented to avoid the use of potable water during the development and operational phase, and what measures will be implemented to reduce your water demand, save water and what measures to reuse or recycle water.

Where possible, non-potable water will be used for construction purposes.

Waste

Explain what measures have been taken to reduce, reuse or recycle waste.

Refuse removal will be dealt with once a week, as applicable to all the current residential areas in the George Municipal area.

Residents will be encouraged to follow the George Municipality recycling programme:

- BLUE bags are for non-soiled recyclable materials, including plastic, paper, cardboard, glass, etc.
- GREEN bags are for green waste, including organic kitchen waste such as fruit and vegetable peels, as well as garden waste, including grass cuttings, leaves, etc. No soil is allowed in the green bag.
- BLACK bags are for 'wet' waste, things that cannot be recycled.

Energy Efficiency

8.1. Explain what design measures have been taken to ensure that the development proposal will be energy efficient.

The largest saving in energy requirement lies in making the best possible use of construction labour for tasks that do not specifically require electrical machinery. This will have the added advantage of reducing noise and air pollution generated on-site.

- The use of renewable energy means for the building phase.
- It is proposed that generators be used to augment the existing Eskom power supply during construction. Energy-efficient appliances and lightbulbs will be used where practically possible.
- Energy-efficient lights in the buildings and daylight-saving lights save up to 15% electricity.
- Train business owners and educational staff in energy-wise practices, such as switching off lights.

SECTION K: DECLARATIONS